DETERMINANTS OF ECONOMIC GROWTH IN MALAYSIA 1970-2010

By

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ABSTRACT

Economic growth of a country can be seen in term of increase or growth of Gross Domestic Product (GDP). The rapid economic growth will result in per capita income growth and changes in national economic sectors. Thus economic growth is an important indicator in measuring economic development. The objective of this study is to examine the determinants of economic growth in Malaysia. This study uses trade openness, foreign direct investment, government development expenditure and gross fixed capital formation as an independent variables. The empirical analysis is based on time series data for 40 years for period 1970 to 2010. The model that used to tested the long run relationship is by using Johansen and Juselius cointegration approach shows that trade openness, foreign direct investment, government development expenditure and gross fixed capital formation are the determinants of economic growth in a long run. On the other hand, results that based on Vector Error Correction Model (VECM) shows that trade openness and foreign direct investment are the significant determinants of economic growth in a short run but bring negative impact to economic growth. Furthermore, an ECM variable is negative and significant, that postulates the cointegration among given variables. The response coefficient value is -0.343895, that suggesting moderate adjustment behavior, approx 34.4% percent of the disequilibria of the previous period's shock adjust back to the long run equilibrium in the current year. Based on causality test in this study found that, firstly OPEN variable is Granger cause to GDP variable. Secondly is GDP variable is Granger cause to GDE variable. Thirdly is GDP variable is Granger cause to GFCF variable. Fourthly is OPEN variable is Granger cause to FDI, GDE and GFCF variables. Based on the Ordinary Least Squares (OLS) regression in this study shows that trade openness, government development expenditure and gross fixed capital formation fixed at 1 per cent significance level. This indicates that these variables have a positive effect on economic growth in Malaysia. While foreign direct investment variable is not significant to the growth of Malaysian economy. Results also shows that government development expenditure is the highest variables affect Malaysia economic growth of 1% increase in development expenses will lead to the growth rate increase by 2.16%. Second highest variable is trade openness of a 1% increase in trade openness will lead to 1.28% increase in the growth of the Malaysian economy. Third highest variable is gross fixed capital formation of a 1% increase in gross fixed capital formation will lead 0.98% increase in economic growth in Malaysia. Results obtained in this study suggest that policymakers should keep an eye on all of the significant variables since it will give impact on economic growth.

ABSTRAK

Pertumbuhan ekonomi sesebuah negara boleh dilihat dari sudut peningkatan atau pertumbuhan keluaran Negara kasar (KDNK). Pertumbuhan ekonomi yang pesat akan menghasilkan pertumbuhan pendapatan perkapita dan perubahan besar dalam sektor ekonomi negara. Kajian ini mempunyai objektif untuk mengkaji faktor-faktor penentu pertumbuhan ekonomi di Malaysia. Kajian ini menggunakan keterbukaan ekonomi, pelaburan langsung asing, perbelanjaan pembangunan kerajaan dan pembentukan modal tetap kasar sebagai pembolehubah bebas. Analisis kajian ini adalah untuk tempoh 40 tahun bermula tahun 1970 sehingga tahun 2010. Ujian kointegrasi berdasarkan pendekatan Johansen dan Juselius menunjukkan bahawa keterbukaan ekonomi, pelaburan langsung asing, perbelanjaan pembangunan kerajaan dan pembentukan modal tetap kasar sebagai penentu kepada pertumbuhan ekonomi dalam jangka masa panjang. Keputusan berdasarkan Model Pembetulan Ralat (VECM) bagi hubungan jangka pendek menunjukkan keterbukaan ekonomi dan pelaburan langsung asing signifikan terhadap pertumbuhan ekonomi dalam jangka masa pendek tetapi memberi kesan negatif kepada pertumbuhan ekonomi. Tambahan pula, pembolehubah ECM adalah negatif dan signifikan. Pembolehubah ini menunjukkan lebih daripada 34.4 % pelarasan jangka pendek bagi penentu pertumbuhan ekonomi malaysia. Hasil penganggaran *'Ordinary Least Squares'* (OLS) yang diuji dalam kajian ini menunjukkan bahawa keterbukaan ekonomi, perbelanjaan pembangunan kerajaan dan pembentukan modal tetap kasar pegun pada aras keertian 1 peratus. Ini menunjukkan bahawa pembolehubah ini memberi kesan positif kepada pertumbuhan ekonomi Malaysia. Manakala pembolehubah pelaburan langsung asing adalah tidak signifikan terhadap pertumbuhan ekonomi Malaysia. Hasil penganggaran ini menunjukkan bahawa perbelanjaan pembangunan kerajaan adalah pembolehubah yang paling tinggi memberi kesan kepada pertumbuhan ekonomi malaysia iaitu 1% peningkatan dalam perbelanjaaan pembangunan akan menyebabkan 2.16% peningkatan dalam pertumbuhan ekonomi Malaysia. Pembolehubah kedua tertinggi ialah keterbukaan ekonomi iaitu 1% peningkatan dalam keterbukaan ekonomi akan menyebabkan 1.28% peningkatan dalam pertumbuhan ekonomi Malaysia. Pembolehubah ketiga tertinggi ialah pembentukan modal tetap kasar iaitu 1% peningkatan dalam pembentukan modal tetap kasar akan menyebabkan 0.98% peningkatan dalam pertumbuhan ekonomi Malaysia. Hasil kajian menjadi satu petunjuk bahawa pembuat polisi seharusnya lebih peka kepada pembolehubah-pembolehubah yang signifikan ini semasa menggubal polisi kerana ianya merupakan faktor penting yang mempengaruhi pertumbuan ekonomi.

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ABBREVIATIONS

ADF	---	Augmented Dicky Fuller
AIC	---	Akaike Information Criterion
ARCH	---	Aauto-Regressive Conditional Heteroskedasticity
D-8	---	Developing Eight Organization
ECM	---	Error Correction Model
FDI	---	Foreign Direct Investment
GCC	---	Gulf Cooperation Council
GDP	---	Gross Domestic Product
GFCF	---	Gross fixed capital formation
IMF	---	International monetary fund
INC	---	Per Capita Income
INF	---	Inflation
LDC	---	Less Developed Country
LM	---	Lagrange Multiplier
MWALD	---	Modified Wald Test
NKRA	---	National Key Result Area
NEP	---	New Economic Policy
OLS	---	Ordinary Least Square
OPEN	---	Trade openness
R&D	---	Research and Development
SAARC	---	South Asian Association for Regional Cooperation
VAR	---	Vector Autoregressive
VECM	---	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Sustainable economic growth is a desire of every countries in the world. Malaysia continue to move towards its vision of becoming a high-income developed country. Sustainable economic growth is an important factor to a country because a country can provide a good living standard for community (Osman, 1994). Malaysia is a country that practices a system of export oriented open economy. Malaysia economic growth is measured based on the percent change in the rate of Gross National product (GDP). When a country GDP increased from the previous year, the country is said to have growth in economy. The growth rate is equal to the percentage change in real GDP.

Lai (2003) state that economic growth is one of the key performance measures in the development and growth of the national economy. Economic growth shows the development of physical economy as an additional infrastructure and infrastructure increased from time to time and also will improve the living standards of the people as real income increases from time to time. Chaudhari (1989) defines the gross domestic product (GDP) as the total market value of all goods and services produced within the borders of a country for a period of one year. Lai (2002) also defines GDP as the total value of final goods and services produced by the factors of production owned by locals and foreign national of country.

On the other hand economic growth should have a basic purpose, to raise the standard of the national economy as a whole with the help of the government to eliminate the causes of underdevelopment and promote the efforts for a balanced development and tighten the gap between rich and poor within societies (Jomo and Ishak Shari, 2003). For Muhamed Zulkhibri (2004) noted that, economic growth rate is any increase in the total national income each years. For Mohammed Yusof (1990) economic growth is defined as growth in economic activity, which resulted goods and services in the country can be produced to the public and to improve the welfare of community as a whole. According to Hashmi et al (2012) economic growth is usually associated with the production growth of potential output in full employment and economic growth is fundamental improvement in the literacy rate, improvements in technology and an increase in the capital stock.

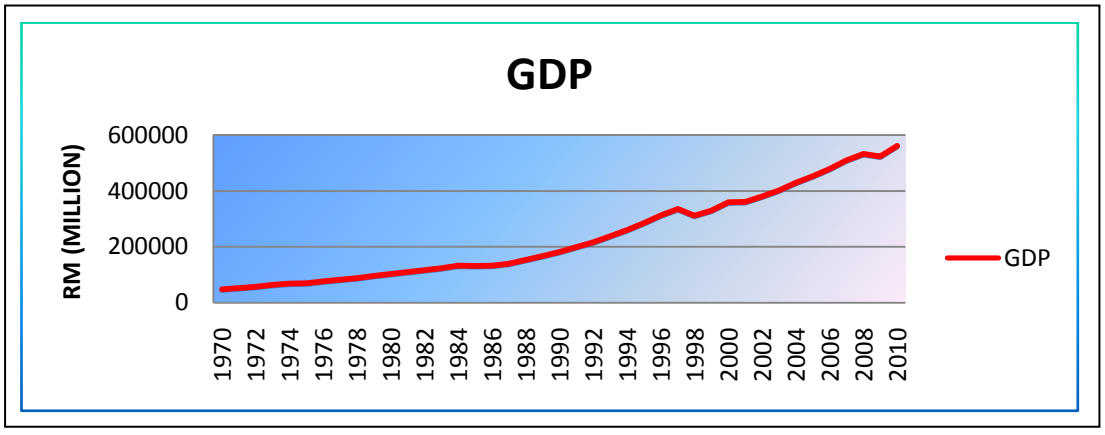
Economic growth is often driven by increased of productivity, which involves the production of more goods and services with the input of manpower, capital and energy. Economic growth is vital to a country because it helped in the development process of a country and economic growth is also a symbolic of the country progress. Consequently, the implementation of appropriate policies by government play an importants role to ensure that the government and country objective can be achieved in ensuring the continued strong growth of the Malaysian economy to achieve developed nation by 2020.

1.2 Malaysia Economic Performance

1.2.1 Economic growth performance

Figure 1.1 shows economic growth trend for the years of 1970 to 2010. In general, the trend rate of economic growth in this period indicates the volatility. There are four times the GDP decline most significantly in 1985, 1998, 2001 and 2009. Economic growth in the seventies had a high performance at an average rate of 6.6 per cent. Based on the figure in 1971 GDP rate of RM 49,947 million, an increase of 10.0 per cent over the previous year. In the period of 1976 to 1980 economic growth also has achieved a high level of 8.5 per cent. This achievement was lead by export growth and private investment (Ishak Shaari, 1993). The export value at current prices increased at an average rate of 25.2 per cent per annum during 1976 to 1980 compared to 12.3 per cent in the period of 1971 to 1975. While private investment increased by 13.6 per cent per annum. These developments have encouraged a more rapid growth of domestic production activities.

Figure 1.1: Economic Growth in Malaysia



Source: Department of Statistic Malaysia

In the first 10 years of implementation of DEB (197 to 1980), Malaysia economy grow at a rate of 7.8 per cent per annum. This average rate is slightly lower than the goal that has been set at 8 per cent per annum. Among the major factors caused this low growth rate is the rate of slow growth in the agricultural (Ishak Shari, 1993). In 1985, Malaysia economic growth had declined due to the global economic downturn. GDP declined by -1.1 to RM 128,748 million over the previous year. This recession was caused by reduction of world market prices of tin and rubber. This phenomenon is caused the country of economic problem that suffers the deterioration in the balance of payments, price falls and the exports decline of commodities, the slowdown in private sector and increase in the unemployment rate directly (Ishak Shaari, 1993). With proper management of our economy, output growth had increased at a faster rate and in a shorter period than expected. In the year 1986 to 1987, the economy started to recover.

In 1986 economic growth is RM 13,0231 million which grow by 1.2 per cent over the previous year. In 1987 economic growth is an increase at RM 137,249 million, an increase of 1.2 per cent over the previous year. In the period of 1987 to 1997, Malaysia economic performance was impressed. In 1987, Malaysia economic growth has increased by 5.4 per cent to RM 137,249 million over the previous year. While economic growth in 1997 increased by 6.8 per cent to RM 310,251 million compared to the previous year. Economic downturn that hit the country in 1997 and 1998 is unexpected and appeared dramatically. Our economic fundamentals are still strong at that time. Turmoil of the financial crisis began in Thailand and later in Indonesia.

Malaysia stuck in the regional financial crisis. A key factor is the attack on the country currency. Financial crisis into an economic crisis in full is 1998, where economic growth slumped by -7.9 per cent to RM 128,748 million compared to the previous year. Proactive government measures to address the economic downturn has been successfully revive the economy more quickly, the surplus in the current account balance of payments, an increase in foreign investment has boosted the confidence of the public and investors at maximum level.

Although economic growth -7.9 per cent in 1998, it grew well at an average rate of 7.2 per cent in the years 1999 and 2000. Post crisis economic performance is good that indicate that the actions introduced by the government has been successful in solving the biggest economic crisis in the nineties. But in 2001 the momentum of world economic growth returns and affect Asia, particularly by the economic slowdown at the United States (U.S.) and the attacked on the United States (U.S) on September 11, 2001. GDP in 2001 had declined by -2.6 per cent to RM 334,404 million compared to the previous year (Economic Report, 2001/2002). The rate of economic growth rebounded in 2002 to 2008. This was supported by the positive contribution from all factors such as high domestic demand, particularly private consumption and private investment that contributes to sustainable growth. Strengthen economic resilience with a more diversified economic base and towards a knowledge-based economy.

The service sector is a major contributor for economic growth, particularly from a new sources of growth in financial cycles, business services and communications. (Achievement, Macro-economic outlook 2006-2007). But in the year 2009 the global crisis economic downturn hit the world again. United State (U.S) recession can be seen as a major source of damaging the world economy. United State (U.S) has failed to manage the economic and international policies that are now threatened by subprime mortgages. Malaysia's economy hard hit by the visibly contraction in exports in turn negative impact on domestic demand. In that year Malaysia economic growth was decreased by -1.7 per cent, with amount of RM521,095 million compared to the previous year.

In 2010 the achievement and economic growth of Malaysia is on the right track to be positive. It was due to the global economic recovery is more stronger, and supported by several factors. Among them is a sustainable fiscal stimulus and accommodative monetary policy throughout the country and strong domestic demand. In addition, a strong economic growth in Asia, especially in China and India as well as Economic Association of Southeast Asian Nations (ASEAN) and the countries that produce oil also affect the global growth. This situation is further strengthened by the recovery in manufacturing and service sectors, as well as a robust exports and imports. During the year Malaysia economic growth exceeded expectations which registered a growth of 6.8 per cent amounted RM 558,382 million.

1.2.2 Trend and flow trade openness in Malaysia

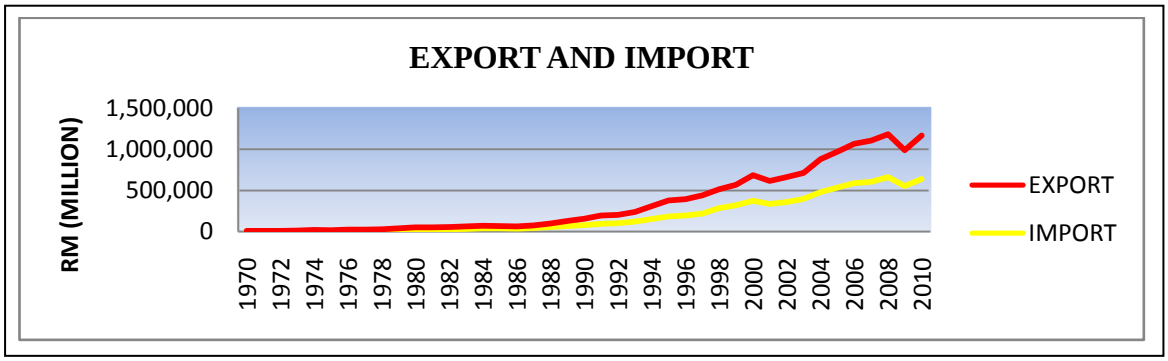
Malaysia is one of the open economic policy and practice in global trading activities. Malaysia is among the 20 largest trading countries in the world and one of the world largest supplier (*Berita Harian,* 2010). This makes trade openness is the engine of economic growth in Malaysia. This can be witnessed with rapid economic growth since before independence until now in line with increases in trade openness activities. Trade openness plays an important role in the economic development of a Malaysia. Malaysia is not only a policy of open economy but also its economy is an open economy. The economy of a country is considered open if heavily dependent on international trade. Since independence, exports play a major role in the national economy. Malaysia is known as the largest exporter of tin and rubber in the world in 1970.

Economic diversification policy since the late 1970s also has lead to a significant increase in exports. Similarly, imports of goods still needed from other countries in the process of development in Malaysia. With the development and sophistication of technology, trade relations between the countries in the world grew closer. This relationships inspire to the economic growth and development world. A country is said to be a policy of open economy when they do business with other countries without significant restrictions. Dealing here means doing export and import activities, dealing in money inflows, including foreign investment (Muhammad Zulkhibri, 2002). According to Muhammed Yusuf (1990) open economy is more vulnerable to economic external actions through international trade and finance. Trade openness is seen as one of the engines that would stimulate the economic.

Trade openness is defined as disposal or barrier to free trade exchange between countries. This included the disposal and barrier in tariff and non tariff. Tariff like surcharge and duties. While Non tariff like import bans, restrictive licensing conditions, complex product testing procedures, labelling and packaging requirements, delay in verification and checking of imported products, burdensome inspection fees and delays in issuance of import permits.

Refer to Wikipedia trade openness is a policy in which a government does not discriminate against imports or interfere with exports. A free-trade policy does not necessarily imply that the government abandons all control and taxation of imports and exports, but rather than that, it refrains from actions specifically designed to hinder international trade, such as tariff barriers, currency restrictions, and import quotas. In the Bhagwati and Krueger (1978) trade liberalization was defined as any policy that reduces the degress of anti-export biasness. Yanikkaya (2003) noted that through research suggest that the trade openness is the removal or reduction of restrictions or barriers on the free exchange of goods between nations.

Figure 1.2: Trade openness in Malaysia



Sources: Economic Report of the Ministry of Finance Malaysia

Based on figure 1.2 above shows the trade performance trend for exports and imports in 1970 until 2010. Generally, the flow of export and import performance is relates directly. Over the period of 40 years the total trade for exports and imports showed an increase in every year except in 1985, 2001 and 2009 that show the number of declined. In 1970, the first phase of the Malaysia economy transformation, the agricultural diversity and economic diversity was emphasized. Timber and palm oil emerged as the most important export commodity for Malaysia. In this year exports amounted to RM 5,163 million. Since the late 1970s the high import content to export materials, especially for manufactured goods. Import growth has been recorded RM 4,288 million. In 1985 and 1986, total exports and total imports declined as a result of which discourage performance in the major industrial countries.

In 1985 the decline in total exports amounted to -1.7 per cent to RM 38,017 million. While the decline in total imports amounted to -8.2 per cent to RM 30,438 million. Meanwhile in 1986 total export and import still decrease. Total export decreased -6.4 per cent to RM 35,721 million and total import reduced by -9.0 per cent to RM 27,921 million. After the economy recovered from economic crisis in 1985, in 1987 to 2000 the total exports and imports rebounded. This was supported by higher exports of electrical and electronic (E & E) and the increase in imports was driven by increased demand for intermediate and capital goods (Economic report, 1999/2000). In 2001 and 2009 the region Asia shocked by unexpected economic downturn. The crisis is caused by negative developments the United States (U.S.). In 2001, Malaysia has experienced a sharp decline in international trade. Malaysia total exports and imports have fallen by -11.7 per cent and -11.1 per cent to RM 334,284 million and

RM 280,229 million. While in 2009 the total export trade fall by -20.0 per cent to RM 552, 518 million and total import trade fall by -19.6 per cent to RM 434,670 million.

But in 2010 the economy began to recover, total exports and imports continue to increase. Rapidly growth was due to the global economic recovery has boosted demand for manufactured goods and commodities. Total exports increased by 13.5 per cent to RM 638,823 million and imports by 17.8 per cent to RM 528,828 million. Clearly trade openness a common phenomenon for most countries. The rate of economic growth, exports and imports are interconnected with each other. For Malaysia the economic growth is depends on the openness of international trade. Exports and imports is an important component in Malaysia economic development. This situation was evidence by many studies conducted in most countries that find exports and imports affecting economic growth. For Malaysia, trade relations are very extensive and covers more than 40 countries in line with the open economic policies through a minimum of restrictions on export and import activities.

1.2.3 Trend and flow of foreign direct investment in Malaysia

Open economic situation enabling Malaysia to become one of the largest FDI recipient. In addition environment and political stability, economic development and social harmony culture has created Malaysia as one of the destinations of FDI flows. Sustained economic growth had a positive effect on the amount of FDI inflow. FDI inflow is an important element of shaping economic development and transformation of the Malaysian economy. More importantly, FDI can also trigger the transfer of

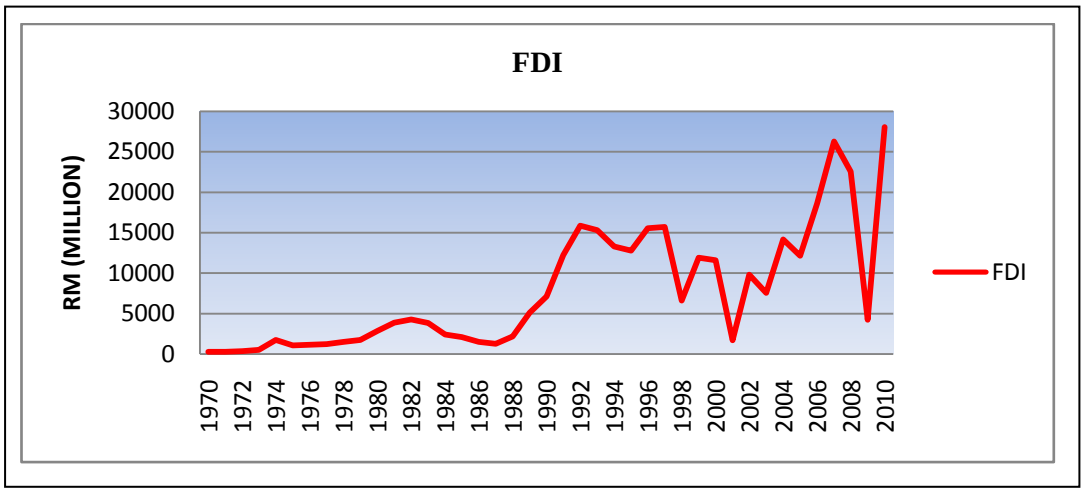
knowledge, promote the development of human resources, the establishment of new industries and products, the introduction of new production processes and technologies, growth of support services and research and development (R&D) (Kevin Zhang, 2006). In addition, FDI inflows can boost overall economic growth by increasing the level of competition in the domestic market and greater efficiency than local companies (Misztal, 2010). FDI can exist in several forms, including greenfield investment and cross-border acquisition. Greenfield investments mean developing a new production facility in the state of the invested. Cross border acquisition involves investments in existing business in a foreign country (Eun and Resnick, 2001).

According to IMF, FDI is means foreign holdings at least 10 per cent of the company ownership with a lasting interest. FDI in financial instruments form is equity capital, reinvested earnings and other capital (inter-company loans, trade credit, advances and other) by foreign direct investors in their direct investors enterprises (subsidiaries, branches or associates) in Malaysia. Sridharan (2009) defined FDI as made investment by foreign citizens of a country in terms of capital, technology and knowledge. The contribution of FDI is important in creating a progress industry and to develop the economy of a country. Nooriah Yusuf (2011) defined FDI also has other motives or objectives such as to penetrate foreign markets, to establish a secure relationship with suppliers and also to overcome trade barriers such as tariffs.

According to Chew (2010) FDI investment means individual or foreign corporation that is not resident in Malaysia has equity or voting power on investment. This means that there is control over the investment management activities. He also argued the

importance of FDI to a country is undeniable. FDI is also defined as the cross-border transfer of management resources. According to Onwumere (2011) FDI is an investment made to obtain lasting interest in enterprises operating outside of the economy investor.

Figure 1.3: Foreign Direct Investment in Malaysia



Sources: World Bank

The figure in 1.3 above shows the total of FDI in Malaysia from 1970 to 2010. Based on the data there are some patterns of decline FDI inflow into Malaysia. The first was in 1975. Second place in the years 1985 to 1987. Third of the decrease in 1997. Later in 2001 and 2009. Decline in FDI inflow is significant with economic recession occur in Malaysia. In 1975, FDI inflows are affected by the economic crisis which has also affected the confidence of investors. FDI inflow declined by -62.9 per cent to RM 1072,303 million. While the decline in FDI in 1985 was also due to the decline in major commodities in the world market. Falling commodity prices such as petroleum, palm oil and tin, which is the main export commodity other than a decline in the demand for manufactured products affect the productivity of the National

State. This recession also affected confidence of investors to invest in that time. Malaysia's recession in this period contributed to the FDI inflow into Malaysia for RM 2125,424 million declined -14.8 per cent compared to a previous years. After an economic crisis in 1985 until 1997 FDI inflow continued to rapidly rise was driven by market developments, technology advancement, competitive pressures, privatization and encourage government policies.

But in 1998 FDI growth momentum cannot be maintained, the flow of FDI inflow in Malaysia badly affected by the Asian financial crisis. This incident has caused investors entry rate to Malaysia decreases and some of the existing investors had to stop doing them because they could not bear the costs and huge losses. FDI has huge dropped by -137.4 per cent to RM 6618,776 million. After the economic recovery is right by the Malaysian government in 1998, FDI inflow continued to sharply rise, this symbolizes the stability and economic development of a successful back interest that confidence a foreign investors, FDI strongly recover. The increase in FDI inflows has resulted Malaysia to become the fastest country to overcome the financial crisis at the time. But in 2001, Malaysia was again hit by the economic downturn due to America Syarikat (USA) economic recession. FDI flow had declined severely. Recession at this year causes the lack of foreign investors confident to invest in Malaysia. FDI inflows has dropped by -583.8 per cent to RM 1694,763 million.

After crisis in 2001, FDI inflows continue to increase until it reaches the highest level in 2007 amounted RM 2628,107 million. In 2009 once again the world

surprised with the regional economic crisis that lead to the decline in total FDI inflow in Malaysia to RM 4244,633 million which decrease of -431.6 per cent compared 2008. FDI inflow in the manufacturing sector experienced the most severe contraction compared with the services and primary sectors (Bank Negara Malaysia, 2009). Strong economic fundamentals and supported by an effective macro demand management Malaysia economic recovery success quickly from the global crisis 2008/2009. FDI inflow increased sharply by 84.9 per cent to RM28046,412 million in 2010 compared RM 4244,633 million in 2009. Conducive business environment and supported by Economic Transformation Programme (ETP) by government is the main cause to attract foreign companies to invest in Malaysia. According to the report (UNCTAD) in this year Malaysia emerging at the highest recorded increase in FDI inflows among 153 Asia countries.

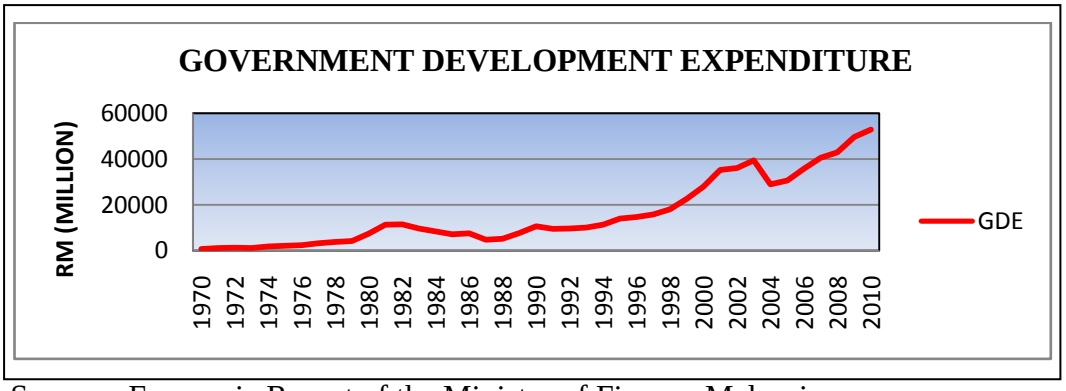
1.2.4 Trend and flow of government development Expenditures in Malaysia

Government development expenditure is the expenditure that is allocate by the government to promote economic growth and social development. These expenses consist of four major sectors in Malaysia, namely economic service, social services, security services and general services. In the economic sector, government spending is to provide infrastructure and public facilities to the public. In the social services sector, government spending is to build hospitals, schools and houses. It includes the provision of modern facilities and equipment for education and health services. In the security sector, government expenditure is to provide weapons and equipment to the military and national police. Expenditure for this sector also includes the provision of living quarters and tools. While the general administration sector, government

spending is for development projects in the public service. These expenses shall to be raise the quality of public sector services. Government development expenditure provided directly as a loan. Through direct allocation channel directly as expenses borne by the government. While a loan is funded by the government allocation and given as loans to be repaid within a certain period.

Norain et al (2010) typically, the government expenditure level depends on the economic situation of the country. When the economy is in recession, the government will increase the amount of development expenditure to boost economic growth. Budget allocation for development is approved by the government to implement development programs/projects in Malaysia Five Year Plan. Development allocation and expenditure is the capital expenditure that does not happen again and not spending use instead as an investment. Hence it involves capital or large allocation, provide long-term benefits and require supervision and maintenance. Example: Construction of roads, schools, offices, hospitals, clinics, police stations, transportation and so on.

Figure 1.4: Government Development Expenditure in Malaysia



Sources: Economic Report of the Ministry of Finance Malaysia

The figure 1.4 above shows the total development expenditure of the government has been increased from year to year. Total spending will continue to increase from year to year, because country development or progress enjoy requires a total expenditure to make it happen. The more a country developed, mean higher of total development expenditure required by the country. Since the 1970 to the present, government expenditure has increased by a huge percentage. These conditions are caused by economic factors, which are the very large changes in the economic structure of the concentration of the first sector or second sector of agriculture to industrial and service sectors. A change in this sector requires a huge government spending.

Since 1970, development expenditure strongly emphasized by the government and the emphasis is in line with government policies to achieve a new economic policy that began in 1971. In 1971, the government development expenditure increased by 33.2 per cent to RM1,085 million compared to RM725 million in the previous year. Starting in 1985 until 1999, the government has given higher allocations to economic services by an average of over 13 per cent. Followed by social services, that is, an average of 7.04 per cent. While general administrative expenses by an average of 1 per cent. (Economic report, 1999). Government expenditure in 1985 amounted to RM 7142 million has increased by 68.4 per cent to RM 22,615 million in 1999.

In 1994, development expenses increased by 10.2 per cent to RM11,277 million. The focus of government spending at this year is focused on infrastructure development to address infrastructure congestion and to fulfill increased manpower requirement especially skilled and semi-skilled. In 2004, development expenses huge decreased

by of -36.0 per cent to RM 28,864 million. This condition is caused by the government objective to reduce the deficit as well as projects that have been completed and the project is accelerated in the first three years of the Eighth eight Malaysia Plan (RMK-8) as part of the government efforts to generate growth and to avoid recession. Smaller expenses, however, sufficient to sustain the growth momentum at the time. Most of the expenditure is for small-scale projects, particularly agricultural and rural development projects, improve water supply and expand of rural roads network for improve the quality of the countryside life (Economic report, 2004/2005).

In 2010 development expenditure was the highest so far. Government expenditure in this year is RM 52,792 million. The increase in expenses was due to the direct fiscal injection by the government of RM 5 billion under the second stimulus package and new commitments under four NKRA is improving rural basic infrastructure, public transport in the city, low-income households and reduce crime. Based on according to sector allocation, economic services remains a major recipient (50.2 per cent), followed by social services (39.2 per cent), security (7.2 per cent) and general administration (3.3 per cent) (Economic report, 2010/2011).

1.2.5 Trend and flow gross fixed capital formation

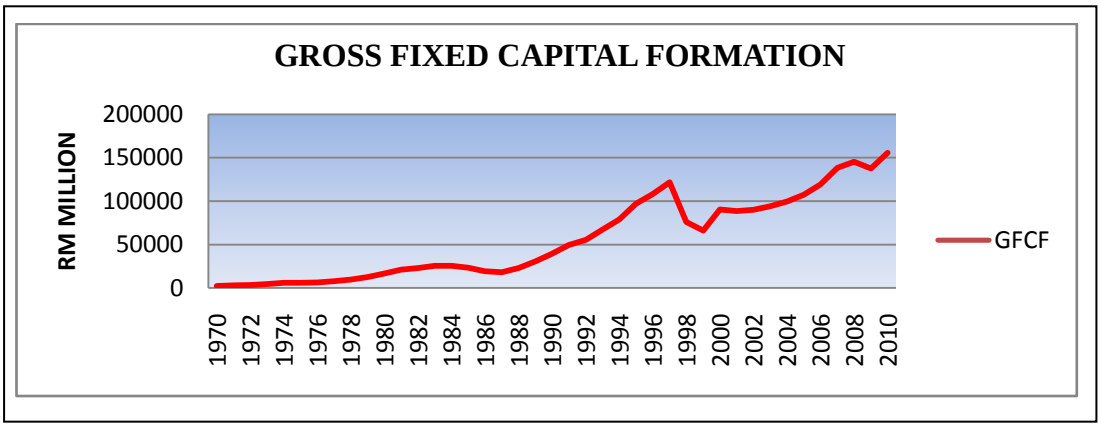
Malaysia economic progress is also driven by gross fixed capital formation. Mehta (2011) noted that gross fixed capital formation also know as investment. Economic growth of a country is very need of capital formation to cater financing development projects. Gross fixed capital formation typically increases the productivity and GDP

growth. Higher capital formation tends to increase productivity and contribute to GDP growth. This make GFCF as well as a leading indicators in promoting economic growth. Fixed capital formation aimed to increasing the productivity and income in the future (Ghali and Mutawa, 1999). Based on Mishra (2010) gross fixed capital formation is capital improvement like equipment purchases, private residential dwellings, machinery, construction of roads, school, hospital and commercial and industrial buildings. Gross fixed capital formation is measured from the manufacturer's total revenue, less disposals, of fixed assets during the accounting period plus a few extras to the value of non-produced assets (e.g soil or subsoil assets), which result from the productive activity of institutional units.

According to world development indicator gross fixed capital formation is formerly gross domestic fixed investment includes land improvements in fences, ditches, drains, plant, equipment purchases, machinery and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. Bakare (2011) stated that gross fixed capital formation refers to acquisition of the new factory together with machinery, equipment and all productive capital goods. He classified gross private domestic investment and gross public domestic investment drive the GFCF. Gross private domestic investment is replacement purchases plus net additions to capital assets plus investments in inventories. While gross public domestic investment is investment by the government and public enterprises. Uremadu (2006) stated that in addition in the stock of capital assets through saving accumulation would have a positive impact on the private savings accumulation. When the savings

accumulate it will lead to an increase in gross domestic investment and income generated as a result of investment projects made will lead to economic growth (Anthony and Peter, 2011).

Figure 1.5: Gross Fixed Capital Formation in Malaysia



Sources: Department of Statistics Malaysia

The figure 1.5 above shows the flow of GFCF. Capital formation was found to increase every year in line with the economic development of Malaysia. However, capital formation has declined in line with the economic downturn. Continuous increase from 1970 to 1980, from RM2, 071 million in 1970 to RM16,597 in 1980 is due to active government measures to provided large-scale infrastructure and programs to increase living standards (Economic reports, 1981-1982). In 1975, the economic downturn has hit the country causing capital formation declined by -3.5 to RM 5,602 million from the previous year. After economic downturn recovering capital formation continued rapidly increase until in 1985 until 1987 Malaysia a second economic crisis again that resulted in the three year capital formation decreased.

In 1985, capital formation fall by -9.8 per cent to RM 23,124 million from the previous year of RM 25,391 million. In 1986 capital formation continued to fall of -2.3 per cent to RM 18,865 million and in 1987 capital formation declined by -5.4 per cent to RM 17,904 million. After the economic crisis in 1985, the rapid growth in 1988 until 1997 in line with the transition by the Malaysia economic structure continuously and is driven by a dynamic private investment. Capital formation continued to increase rapidly. In 1998 the country was facing a acute economic crisis. Capital formation has fallen badly that by -59 per cent to RM 75,982 million compare the previous year. In 2001, capital formation dropped again in line with the global economic uncertainties. Capital formation declined by -1.8 per cent, to RM 88,580 million.

In 2009 the capital formation declined by -1.1 per cent to RM 137,504 million. Public and private investment to be very weak in this period. In 2010 gross fixed capital formation continued to increase the total of RM 155,594 million. Implementation of the government transformation initiatives, measures to enhance the competitiveness and productivity and accommodative monetary policy has driven capital formation activity remained strong in 2010 (Economic report, 2010).

1.3 Problem Statement

Robust and sustainable Malaysia economic growth has lifted the country from a low-income economy based on agricultural commodities to a successful middle-income economy. Since 1945, Malaysia is one of 13 countries that have achieved growth of

over 7 per cent for more than 25 years (Ishak, 1992). This strong economic performance helped to improve the quality of life of Malaysians and support progress in education, health, infrastructure, housing and public amenities and so on. At the present time the world has undergone many changes compared to the past. Open economic environment and economic uncertainties pose challenges to economic growth of Malaysia. During 40 years starting in 1970 to 2010. Malaysia has been the economic downturn at four times in 1985, 1998, 2001 and 2009. This downturn has affected the economic growth of Malaysia. This fall has led Malaysia experienced a reduction in economic activities that contribute the changes in economic growth.

Thus, problems that arise in the factors that influence economic growth should be notified that economic growth can be generating effectively in the future. We need an immediate radical changes in our approach for a growth that will be sustainable in the long run and enjoyed by all citizens and enable Malaysia to achieve high-income status. The macroeconomic variables that influence growth rate in Malaysia should be determined. In this study, 4 indicators will be examined which are trade openness, foreign direct investment, government development expenditure and gross fixed capital formation and their effects on GDP growth of Malaysia. Among the question that arises is whether these variables is relates to study in Malaysia economy with the data set used? If these entire variables are significant in explaining the economic growth in Malaysia, how this information can be use in designing a policy to promote economic growth?

1.4 Objective of the Study

1.4.1 General Objective

The general objective of this study is to examine the determination of economic growth in Malaysia from 1970 to 2010.

1.4.2 Specific Objective

The specific objectives of this study are:

1. Examine long run relationship between trade openness (OPEN), foreign direct investment (FDI), government development expenditure (GDE), and gross fixed capital formation (GFCF) and economic growth (GDP) in Malaysia.
2. Examine short run relationship between OPEN, FDI, GDE, GFCF and GDP in Malaysia.
3. Examine any possible causal relationship between OPEN, FDI, GDE, GFCF and GDP in Malaysia.

1.4.3 Significance of study

This study can provide a good understanding about the importance and impact of variables that have been identified on economic growth in Malaysia. This study is expected to be able to show a real indication of what should be focused as an efforts in the development of economic growth in Malaysia. In addition, this study also expected to make recommendations for the formulation of policies and management of variables that have been identified which is a major catalyst for the development of the Malaysian economy which is more open. The good and accurate action to

ensure that economic growth is essential because it is the main pulse to the development of nations. When the economy is strong it can show the real situation that the development and prosperity of the peoples are at high level and protected. This situation is actually as a catalyst for peace and stability to the economy. These findings would also inspire other researcher to examine about this matter and come out with a better explanation.

1.4.4 Scope and Limitation of the study

The focus of this study is on the determination of the economic growth in Malaysia based on time series data for 40 years that is between years 1970 to 2010. This study used yearly data on GDP, OPEN, FDI, GDE and GFCF. The data were obtained from various sources including Annual Reports from Bank Negara Malaysia, World Bank, Economic Planning Unit website and also Department of Statistics, Malaysia official website. The limitation in this study is a lack of time.

1.5 Organization of the study

This study consist of five chapters. The second chapter are literature reviews discuss on overview the theoretical and empirical of the economic growth, trade openness, FDI, government development expenditure and GFCF. Chapter three describes the methodology used in determine economic growth. Chapter four discuss the empirical results of the analysis with study by Unit Root test, Johansen's co-integration test, Granger causality test and Error correction model (ECM) tests. Finally, chapter five provides the summary of the study and discuss the implications of the finding

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

There exists a large body of theoretical and empirical literatures which examined economic growth and its determinants. This chapter is divided into two subtopics namely theoretical and empirical framework. The former explains the theory of growth while the latter discusses early studies about growth and its determinants. Three variables are investigated in the empirical framework namely trade openness, foreign direct investment, government development expenditure and gross fixed capital formation.

2.2 Theoretical and Conceptual Framework

2.2.1 Economic Growth theories

Economic growth is an important benchmark to measure a country's economic development. Therefore each country will formulate various policies to achieve this goal at a high growth rate. Continued economic growth will increase a country's income and per capita income and employment opportunities to the people. Over the past decade, economists have created numerous theories related to economic growth. The theoretical model employed in this study is based on the postulates of de Mello (1996, 1997, and 1999). The production function equation is written as:

$$Y= f (K, L, T)$$

Where:

Y= Economic growth

K= capital growth

L= Labor growth

T= Technology growth

This growth model shows that how the increase in capital, labor and technological progress interacted in economic and how they affect on production output of country. Common forecast of this model is that the economy will always converge towards a steady growth rate condition, which depends only on the rate of technological progress and the rate of labor. Steady state conditions show a balance of long-term economic. In this model, the main assumption was diminishing return to capital or labor and constant returns to scale. Meanwhile, investment is the indicator used in the Solow Swan growth theory model. This physical investment will enhance the income level of the steady-state and also enhance the speed in growth.

2.2.2 Theoretical studies of trade openness

Economists who concern about the trade openness will mainly focus on the effects trade openness on national economy, and it has been a focus to discuss the theory about relationship between trade openness and economic growth. Grossman and Helpman (1991) stated that openness enhance economic growth through the following channels. First is trade enlarge the available variety of intermediate goods and capital equipment, which can expand the productivity of the country and other

resources. Trade permits developing countries the access to improve technology in developed countries, in the form of embodied capital goods. Second is trade allows intensification of capacity utilization that increase products and consume. Openness offers a larger market for domestic producers, allowing them on one hand to operate at minimum required scale and on the other hand to reap benefit from increasing return to scale.

The Classical and Neo- classical economic theory argue that international trade (openness) leads to economic growth. There are number of reasons why being open to international trade leads to economic growth. Openness to international trade stimulates gains from specialization and trade, innovation and efficient production, and adoption of sound policies to make sure the country is attractive to the foreign investors. Solmaz et al (2010) and Farrokh et al (2003) argue that "larger trade implies greater openness that facilitates the economy's adoption of more efficient techniques of production, leading to faster growth of total factor productivity, and hence, real per capita income. Karl Marx focuses on the role of exchange in economic growth. In his opinion, the expansion of production needs a growing market which will promote production continuously (Chen 2009).

While in the Ricardian model, as trade becomes more open, the country specializes in the production of the good in which it has a comparative labour-productivity advantage, this product is exported and that stimulate economic growth. In the Heckscher–Ohlin model, the country exports the good which uses its abundant factor more intensively. As the economy opens, there is a shift in resources toward the sectors that draw upon the abundant factor, and the value of total production

increases. In new growth theory has provided important insights into an understanding of the relationship between trade and growth. For example, if growth is driven by research and development (R&D) activities, then trade provides access for a country to the advance of technological knowledge of its trade partners. Further, trade allows producers to access bigger markets and encourages the development of research and development (R&D) through increase the returns to innovation. Trade especially provides developing countries with access to investment and intermediate goods that are vital to their development processes. Finally, if the engine of growth is the introduction of new products, then trade play as an important role in growth by providing access to new products and inputs.

2.2.3 Theoretical studies of Foreign Direct Investment

There is a huge literature emphasising the positive impact of FDI that may have on economic growth. FDI effects are generally believed to increase employment opportunities, increase in productivity, an increase in exports and a rising in technology (Lamine and Yang, 2010). The new growth theory emphasizes the importance of new technological changes on economic growth. This theory states that one of the way to improve the technology is FDI. With the large of FDI inflow will contribute to the use of new technology. The use of this new technology will contribute to the productivity of capital and labor is high in the host country. Thus be able to increase the economic growth host country. In growth theory point out that globalization and economic integration in the world. Export and FDI plays an important role on the world because all three of these items FDI, exports and economic growth have a triangular relationship (Nourbakhshian et al 2012). In

Neoclassical theories state that foreign direct investment is the engine of economic growth, because:

a) The entry of foreign direct investment will increase due to increase in capital formation and labor.

b) Foreign direct investment will promote manufactured exports.

c) Foreign direct investment will bring significant resources into the host country such as management, skilled of production labor to international production networks and establish brand names.

d) The impact of foreign direct investment in technology transfers and spillover effects.

Hymer (1976) study of direct investment through industrial organization perspective. He has distinguished portfolio investments and foreign investment. According Hymer, investment portfolio is investment that there is no control over the entity carried out while direct investment refers to there is direct control over investment activities. He state that there are two reasons to invest in direct investment which is to ensure the safety of the investments maded and investors are able to penetrate foreign markets.

For Dunning not only an important organizational structure otherwise investors will engage in FDI if it also fulfills all three circumstances such as ownership advantages. (trademark, production technique, entrepreneurial skills, returns to scale), locational advantages (existence of raw materials, low wages, special taxes or tariffs) and

internalisation advantages (advantages by producing through a partnership arrangement such as licensing or a joint venture). Dunning also stated that market imperfections have been a reasons for investors to carry out investment to penetrate the market potential, ensure that production resources are sufficient for the production of goods and services and to develop comparative advantage.

2.2.4 Theoretical study of Government development expenditure

For every country in the world public expenditure will continue to increase in line with enjoy the economic progress. According to Wagner the expansion of national income is lead to more government expenditure meaning that government expenditure will grow in size of national income. This increase was due to an increase in the administration, security, social and cultural. According to Wagner's, increase in expenses needed due to the three main reasons. Firstly, spending for social activities state. Secondly, spending for administrative and protection action and thirdly, spending for welfare function. This law more specifically, saying that the growth of public spending faster than economic growth. Based on empirical studies in developed countries, Wagner found that the rate of growth of government activities greater than the rate of economic growth. This findings means that the elasticity of public spending on the national revenue is greater than one. The interpretation is when the national revenue increased one percent, then the total public spending increased by more than one per cent.

Gandhi (1971) also has listed five different basic interpretations of Wagner's law. The first basic is, peacock and Wiseman (1961) stated that government spending should grow at a faster rate than the output of the country. This is a prerequisite to get public expenditure elasticity greater than one and further Wagner's law is can be trusted. Peacock and Wiseman use GNP data as an indicator of economic growth. The second basic is, Hock (1962), Emi (1963), Veverka (1963), Andic (1963) and Pryor (1965) has replaced GNP with the national income as a measurement of economic growth. They present the same conclusion that the elasticity of government expenditure to national income must be greater than one to confirm the Wagner's law. The third one is, Goffman (1968) uses GDP per capita as a measurement of economic growth. He concluded that the elasticity of government spending to GDP per capita must be greater than one to confirm Wagner's law.

Fourth, Michos (1975) stated that government spending per capita is more accurate in measuring the growth of government spending. He concluded that the elasticity of per capita expenditure should be greater than one so that the Wagner law is true and confirm. Fifth, Musgrave (1969), Pryor (1968) and Wagner and Weber (1977) use the expense ratio as a measure of government spending growth. They concluded that the elasticity of the expense ratio should be greater than one if wants confirmed Wagner law. While the Macro Economic theory of J.M. Keynes assumes that government expenditure will boost national income. This means that public expenditure cause the national income. In addition, Keynes also proved that the multiplier government spending is greater than the value of the tax multiplier. In effect, the output will increase significantly with the increase in government spending policy than tax reduction policy.

In the Peacock-Wiseman hypothesis, Peacock-Wiseman has been studying the impact on public spending in the U.K in 1891 until 1955 under the laws of Wagner. In this study, he said that Wagner's law still applied. In this study, he agreed that. Firstly an increase in national income will boost public expenditure. Secondly, when increase in revenue collection, the government cannot ignore the peoples demands on various services. Thirdly, government to increase taxes at war time to get more funds for the needs of defense spending.

2.2.5 Theoretical studies of Gross Fixed Capital Formation

Gross fixed capital formation is a component of expenditure on GDP, and thus indicate something about how much of the new value added in the economy was invested rather than consumed. GFCF refers to the net increase in physical assets (investments minus disposals) during the measurement. It does not account for the use (depreciation) of fixed capital, and also does not include the purchase of land. It is a component of the expenditure approach to calculate GDP. For Adam Smith (1776), Ricardo (1817), Harrod (1939), Kaldor (1963), Srinivasan (1964), Jorgenson and Griliches (1967), Kuznets (1973), Marx and Engels (1975), Kendrik (1976), Greenwood and Hercowitz (1991) stated that the capital formation is importance on economic growth. Their statement is that capital formation is very significant for the rate of GDP and sustainable of a country.

In Harrod Domar model says that investment will lead to a higher growth. Each country should use part of the current consumption to invest in capital formation. The increase in capital formation will result investment increased and this lead to an increase in economic growth. Capital formation is very important because it will be able to bring new technology, new techniques and knowledge. Jorgenson and Griliches (1967), Lucas (1988), Blanchard and Fischer (1989), Barro and Sala-i-Martin (1995) noted that capital formation lead to technological progress, innovations, and changes in productivity over time (Mishra, 2010). In new growth theories point out that the important of physical capital in the long run economic growth.

2.3 Empirical studies

2.3.1 Trade openness

Selçuk and Erdal (2005) employed Granger error correction method to investigate causal relationship between openness and economic growth in case of selected MENA countries using different annual data for each countries. Their main findings were categorized into two. Firstly standard granger causality are indicate of unidirectional causality running from openness to economic growth in Jordan, Egypt and Syria and from economic growth to openness in Tunisia, Morocco and Iran. Secondly the result from granger causality test based on vector error correction method are revealed that exist unidirectional causality running from economic growth to openness in Turkey in short and long run and only long run in case of Israel. The results also indicate that there is two way causality only long run in Algeria.

Sinha and Sinha (1998) analyzed the effects of openness and on the GDP for Asian countries. Their results indicated that Iran, Hong Kong, Pakistan, Singapore, Iraq, Myanmar, Israel and China was a positive correlation between openness and economic growth. On the other hand Ahmadi and Mohebbi (2012) in their analysis on the effect trade openness on economic growth in Iran for period from 1971 to 2008. They found trade openness has a significantly positive effect on economic growth in Iran. Javed et al (2012) applied the time series analysis to Pakistan country and emphasized that trade openness has significantly positive effect influence on the economic growth of Pakistan. This findings suggested that trade openness may play paramount important to enhance economy of Pakistan.

Bakare (2011) examined the relationship between trade liberalization and economic growth in Nigeria. He employed ordinary least square multiple regression. The result of this study established a positive relationship between trade liberalization and economic growth in case of Nigeria for period from 1979 to 2009. Onafowora and Owoye (1998) in their analysis for 12 sub-Saharan African (SSA) countries over 1963 to 1993 by using a vector error correction model (VECM). They result expose that trade policies, export and investment have a significantly positive effect on economic growth in 10 of 12 SSA countries. This found suggest that to escalate rapidly economic growth of Africa countries, which countries need to enhance on outward looking strategy.

Chaudhry et al (2010) examined the causality relationship between trade liberalization and economic growth in Pakistan for the period from 1972 to 2007. Their employed cointegration and Granger causality test. The empirical results using Johansen cointegration test and ECM indicated the is exist short and long run relationship between these variable. Furthermore empirical result from Granger causality test show that causality runs from trade liberalization to economic growth. This suggests that trade openness is paramount important for long-term growth and economic development of Pakistan. Moreover Atif et al (2010) using annual data over the period 1980 to 2009 for Pakistan. The author tried to examine the impact trade openness on GDP growth. Their analysis based on the bound testing approach of co-integration advanced by Pesaran et al (2001). Their findings show exist short and long run relationship between this variable. The Granger causality test show that unidirectional causality running from trade to economic growth in the period of study.

By using data from Bangladesh for period 1975 to 2010, Iftikhar (2012) used cointegration test and Granger causality test. They found exist short and long run relationship between trade liberalization and economic growth and unidirectional causality test run from economic growth to trade liberalization. On the other hand Sakyi (2010) in the study of Ghana country, found a significantly positive short and long run relationship between trade liberalization and economic growth although reduced by their interaction. Bajwa and Siddiqi (2011) used panel data to examine causal relationship between trade openness and economic growth for four South Asian countries. They divided into two period before and after implementation of SAARC over 1972 to 1985 and 1986 to 2007. Their main findings were categorized

into three. Firstly short run unidirectional causality from GDP to openness in 1972 to 1985, while in 1986 to 2007 exist bidirectional causality GDP and openness. Secondly in 1972 to 1985 exist long run negative relationship and 1986 to 2007 exist long run positive relationship. Lastly in this finding can conclude that after implementation of SAARC economic better than before implemented SAARC.

Hussin et al (2009) employed ARDL bound test to study openness and economic growth for Malaysia for period 1970 to 2003. Their found in Malaysia exist strong positive impact on economic growth. However, there is another group of studies which argue that trade has no impact on economic growth, so much so that some even claim a possible negative link between the two variables of interest. Vamvakidis (2002) studied about the relationship between openness and economic growth in developed and developing countries over a period 1920-1990. The results revealed that there was no positive relationship between openness and economic growth before 1970. The correlation was even found to be negative in the 1930s, thus implying that the positive relationship between openness to international trade and economic growth was only a recent phenomenon.

Moreover, Hassan and Islam (2005) studied the relationship between the financial development and openness on economic growth in Bangladesh during the period 1974-2003. Their used the Granger-causality test and Johansen co-integration test. The result founded that no co integration relation was detected in the study, and Granger-causality detected no causal relationship between trade openness and growth. Sarkar (2007) investigated the relationship between openness and growth.

Study found majority of LDCs including East Asian countries indicate no positive long-term relationship during of period 1961 to 2002. While for middle income group experienced a positive long-term relationship.

2.3.2 Foreign Direct Investment

Relationship between FDI and economic growth has been studied by many researchers all over the world so far. By many different approaches to the study of the relationship between FDI and GDP, they have conducted studies not only within one nation but also in other regions or continents. Authors have made conclusions consistently with each other, but conclusions of others are not the same even contradictory. Agrawal and Khan (2011) study about the effect of FDI on economic growth in China and India. Using panel data from 1993 to 2009. He found that FDI promote economic growth in both countries. He also found China economics is more affected by FDI than India. This is because China has a biggest market size than India. This is attract majority of the foreign investors prefer China. On the other hand Faras and Khalifa (2009) in their analysis for GCC countries found that all this countries statically significant causal impact of FDI on economic growth.

Mahnaz and Zohreh (2012) used panel data for D8 countries. They found FDI, domestic investment, human capital and investment in ICT show a positive effect and meaningful effect on economic growth of D8 member countries. For Asean 5 countries, Pradhan (2009) who applied paned analysis over the period 1970 to 2007. He found bidirectional causality between FDI and economic growth both at the panel level and individual country level except Malaysia. He result suggest that a high level of FDI can generate high level of economic growth and a high economic

growth can generate high level of FDI. Other researcher, such as Roy and Hendrik (2006) found that FDI is significant positive and meaningful effect on U.S economic growth.

Nabila et al (2011) used the heterogonous panel for the period 1983 to 2008 to studied the relationship between FDI and economic growth in selected Asian. The result reveal that FDI and economic growth are positively related to each other. The results of panel homogeneous causality hypothesis show the existence of bi-directional causality between FDI and economic growth. However the results of panel homogeneous non-causality hypothesis confirm the existence of unidirectional causality running from FDI to economic growth in selected panel. The results of heterogeneous causality hypothesis show only in case of Malaysia existence of bidirectional causality between FDI and economic growth. While uni-directional causality running from FDI to economic growth is observed in cases of Nepal, Singapore, Japan and Thailand whereas the uni-directional causality is also found running from economic growth to FDI for Pakistan, Bangladesh and Sri Lanka. However, no causality in any direction is found in cases of India, Maldives, Indonesia, China, Philippines, Korea Dem and Singapore. Employed Granger causality test to investigate the relationship between FDI and economic growth in Nigeria. In their analysis found that causality relationship run from FDI to economic growth which implies that FDI engine economic growth in Nigeria.

Irfan et al 2010) examine the causal relationship between FDI and economic growth in case of Pakistan. They use cointegration methodology and Granger causality test. The result from this analysis suggest that FDI does not cause GDP. This finding

suggest economic growth in Pakistan is still low to play a important role in influencing foreign investor. The economic instability and dependency on loan and aid from World Bank, IMF and other financial institution as a major reason foreign investor are not interested to invest in Pakistan. According Aitken et al (1997) FDI can also increase job opportunities in which multinational companies will train employees and managers more better. In his study also found that FDI will promote exports through the construction of the factory and help the company in the receiving country into the international market through exports activities. Lamine and Yang (2010) studied FDI on economic growth in Guinea Republic in west Africa used Granger causality test for the period 1985 to 2008. For this country they found a unidirectional causality run from GDP to FDI.

Borensztein et al (1998) study the effect of FDI on economic growth for 69 developing countries. They found an increase in FDI has a positive effect on economic growth. FDI is an important tool to transfer the level of technology from the developed to the developing countries and a relatively contribute to economic growth in developing countries. Majagaiya (2003) attempted to identify the linkage between FDI and economic growth in Nepal by employing samples from 1980 to 2006. He used the cointegration and Granger causality tests. The estimated results of the study provide evidence that there is long-run equilibrium relationship among these variable and Granger causality test suggest that FDI Granges the gross domestic product in Nepal. Katircioglu (2009) examined the relationship and the direction of causality between FDI and economic growth in Turkey by using Bound test for cointegration and Granger causality tests. The results indicated that there is

long run relationship and granger cause run from economic growth to FDI. He suggested that the economic development in turkey stimulate net FDI inflow.

Asheghian (2011) develops the model and examines the economic growth determinants in Canada. He employing a 33-years period of annual data and the model is estimated by using the Beach-Mackinnon technique, which corrects for autocorrelation. The estimate result suggest no support for FDI led growth and the result from granger causality show that no causal relationship between FDI and economic growth. The finding in this study prove that foreign direct investment growth has no significant impact on Canada economic growth. For four OECD countries, Ericson and Irandoust (2001) found that failed to detect any causal relationship between FDI and economic growth for Denmark and Finland. While in Sweden, granger causality is bi-directional and in Norway is uni-directional, running from FDI to economic growth. Duasa (2007) empirically examined the relationship between FDI and economic in Malaysia over the period 1990 to 2002 using quarterly data. He found that there was no strong evidence of causal relationship between FDI and economic growth. He argued that, in the case of Malaysia FDI does not cause economic growth, vice versa, but FDI does contribute to stability of growth as growth contributes to stability of FDI.

Saltz (1992) examined the effect of FDI on economic growth for the third world countries during the period of 1970 to 1980. The results of his empirical tests revealed a negative correlation between the level of FDI and growth. Lensink and Morrissey (2006) also examine the relationship between FDI and economic growth.

They add another aspect to the analysis is volatility. Their analysis indicates that there is not a significant relationship between FDI and economic growth. The same result suggested in a study of Miankhel et al (2009) based on a time series data for six emerging countries of China, India, Mexico, Malaysia, Pakistan and Thailand. They used period of 1970 to 2005 and using vector error correction mechanism (VECM) where they found that for Pakistan result suggests that export drives the economic growth of this country. For India country FDI drives the economic growth. They also find a short run relationship for Mexico and Chile but export affects FDI growth among Latin American countries in the long run and two way causality between GDP and FDI in Thailand while no causal relationship in Malaysia among East Asian countries.

2.3.3 Government Development Expenditure

The relationship between government expenditure and economic growth has continued to generate series of controversies among scholars in economic literature. Rivzi et al (2010) investigate the relationship between government expenditure and economic growth in the province of Sindh. They used thirty years data from 1979 to 2008 and employed Johansen (1991) cointegration, multivariate error correction model (ECM) and Granger causality test. The result found a long run and short run relationship between development expenditure and economic growth. Furthermore they observed unidirectional causality run from GDP to development expenditures. They finding support Wagnerian theory that an increasing in national income cause more development expenditure. This means that, when the growth of the economy grew one percent hence public spending will rise than one percent.

Cheng and Lai (1997) examined the relationship between government expenditure and economic growth in South Korea for period 1959 to 1993. Their applying the techniques of Sims (1980), Johansen's cointegration (1988, 1990), and Hsiao's (1981) version of the Granger causality method. The result show that bidirectional causality between government expenditure and economic growth. The finding in this research support the Keynesian theory that causality runs from government expenditure to national income and the Wagnerian theory that national income cause government expenditure. By using data from Iran, Pahlavani et al (2011) used the bounds test approach to cointegration developed by Pesaran et al. (2001), and Toda's and Yamamoto's to test for Granger causality in this country. They found that there was a unidirectional causality running from economic growth to size of government. They finding show that validity of Wagner law in Iran economy during the period from 1960 to 2008.

Study by Al-Faris (2002) in GCC countries founds for Wagner's law for All countries except for Bahrain where he found bi-directional causality. Similarly for Pakistan, Rehman and Ahmed (2007) in a study for the period 1972-2004, found a long-run relationship between government expenditure and Wagner's law was found to exist in Pakistan. While by Rauf et al (2012) used ARDL and Toda-Yamamoto (1995) causality test in case of Pakistan. They found there is no long run relationship between public expenditure and national income and there is no causality at all from directions, national income to public expenditure and public expenditure to national income. Their findings were not consistent with the Wagner's law prediction and Keynesian hypothesis during the period 1979-2009. Their argued that results might

be influenced by the several other important factors / variables that cause a rapid increase in government expenditure over a long period of time in the case of Pakistan.

On the other hand Hussin and Selamah (2010) study Wagner's law validity application in case of Malaysia. Their said the government expenditure was one of the tools that could affect the GDP in a country. Employed method known as the Autoregressive Distributed Lag model (ARDL) and the border test (bound test) introduced by Pesaran (2001). Their findings suggested that Strong Support for Wagner's law for the Malaysia. Prove that the rapid economic growth of still relevant factor in influencing government development expenditure in Malaysia. Abdulla (2012) in attempt to see the relation between government expenditure and economic growth in case of Qatar for period 1980 to 2011. He employed Johansen cointegration and Granger causality test. His finding showed that exist long run relationship and causality test show unidirectional running from economic growth to government expenditure.

According to Benjamin and Lai (1997) there was a bidirectional causality between government expenditure and economic growth in case of South Korea for period 1959 to 1993. This result support Keynesian theory that causality run from government expenditure to national income and as well as Wagnerian hypothesis that causality run from national income to government expenditure. Taban (2010) empirically examined the relationship between government spending and economic growth in case of turkey for period from 1987:Q1 to 2006:Q4. He employed bound

test and MWALD Granger causality test. The result from he analysis suggest that negative effect in the long run. Finally through the application Granger causality test, the evidence shows that a bidirectional causality between total government expenditure and GDP. Study by Fasano and Wang (2001) for the GCC countries failed to validity find for Wagner's law for any of the GCC countries.

Loizides and Vamvoukas (2005) investigated the simultaneous impact of government expenditure and economic growth using data on Greece, UK and Ireland. He employed bivariate and trivariate causality tests for period 1950 to mid 1990. Their main findings were categorized into two. Firstly Greece, Greek and British is Strong Support for Wagner's law that higher output cause more growth in government expenditure. Secondly Ireland do not support Wagner's law. Another study by Nasiru (2012) investigated the relationship between government expenditures (divided into capital and recurrent) and economic growth in Nigeria for the period 1961 to 2010 and employed bound test approach to co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. The result showed there is no long run relationship between government expenditure and economic growth in Nigeria. Furthermore estimation from Pairwise granger causality test confirmed the strong causality government capital expenditure granger causes economic growth. While no causal relationship between government recurrent expenditure and economic growth. Salih (2012) found that clearly support the Wagner's hypothesis by using cointegration, causality and ECM in case of Sudan for period 1970 to 2010. This study confirms the view of total revenue growth will stimulate the budget size expansion.

Devarajan et al (1996) distinguished productive government expenditure from nonproductive government expenditure indicating that productive expenditure can contribute to a higher rate of economic growth. Grullon (2012) investigates Wagner's Law and the Keynesian hypothesis on the relationship between national income and government spending in the Dominican Republic. He divided two time periods of 1960 to 1984 and 1985 to 2005. He employed bounds testing approach to co-integration and Granger Pairwise causality tests. He study found that in periods of 1960 to 1984 show the existence of a co-integrated and causal linkages running from gross domestic product to government consumption expenditure. The findings for periods of 1985 to 2005 shows also the existence of a co-integrated and causal linkages running from gross domestic product to government consumption expenditure. Both periods has been supporting revenue-expenses and the results show Wagner's law valid for case of Dominican Republic.

2.3.4 Gross Fixed Capital Formation

Mishra (2010) analyzes the between capital formation and economic growth in India using annual data from 1950-1951 to 2008-2009. The results suggest that the long-run unidirectional causality running from capital formation to economic growth. The study by Rekhta (2011) capital formation and economic growth covering the time period from 1950-1951 to 2009-2010. The empirical analysis found strong empirical support for the view that the capital formation as well as its efficiency causes of growth. Ibrahim (2000) analyzes the productivity of public and private capital formation in a developing economy, Malaysia, using annual data from 1961 to 1995. He employed based on neoclassical growth regression. The results suggest that the

public investment has been unproductive over the periods under consideration but private investment significantly related to economic growth.

Anthony and Peter (2011) examined foreign private investment, capital formation and economic growth in Nigeria. He employed the two–stage least squares (2SLS) method of estimation. His results revealed that foreign private investment has a negative impact on capital formation in Nigeria. His also found that both foreign private investment and capital formation significantly determine economic growth in Nigeria. Ghali and Mutawa (1999) try to examine the causal patterns between fixed capital formation and economic growth of the group of seven countries over the period 1960 to 1995. Their findings suggested that for Japan and the United Kingdom, the flow of causality is running in both directions between economic growth and the share of fixed investment in GDP. For Canada, Germany, Italy, causality is running in only one direction from economic growth to the share of fixed investment in GDP, whereas in France and the United States, causality is running from the share of fixed investment in GDP to economic growth.

For transition economic, Vojinovic (2008) carried out a study to examine the causal relationship between GFCF and economic growth in four countries during 1993 to 2005. The empirical results demonstrate that Hungry and Latvia GFCF granger cause GDP. While Bulgaria and Estonia GDP granger cause GFCF. Adhikary (2011) studied the capital formation in Bangladesh over the period 1986 to 2008. He findings suggested that capital formation had a positive effect on GDP. Bakare (2011) applied Harrod-Domar model to examine the relationship between capital formation and economic growth over the period 1979 to 2009. He found that the

results supported the Harrod-Domar model which proved that the growth rate of national income will directly or positively be related to capital formation in case of Nigeria.

Ray (2007) studied about the relationship between economic liberalization on the capital formation in India for 34 period from 1970 to 2004. He used three major forms of capital formation are GFCF, GDCF and NDCF. He findings suggested that there may be not statistically significant impact of economic liberalization on capital formation in India. Fauzi and Noraini (2012) using three panel estimation models which are called pooled model (pooled), fixed effects model (FEM) and random effects model (REM) to examined gross fixed capital formation and economic growth over the period 1981 to 2008 in case of four Asean countries. They found that gross fixed capital formation is positive significantly to growth and engine the positive effect to GDP in each ASEAN-4 countries

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter provides the econometric methods and procedure to analyze the OPEN, FDI, GDE and GFCF on economic growth. In section 3.2, we will present the GDP functions and empirical specifications for our analysis. Later in section 3.3, we will discuss the measurement of variables based from the empirical specifications. The source of data in this study will be presented in section 3.4. Finally in section 3.5, we will be discussing the techniques and procedure in conducting the econometric analysis.

3.2 Model specifications

GDP = f (OPEN, FDI, GDE, GFCF) **(3.1)**

Where GDP = Gross Domestic Product

OPEN = Trade openness

FDI = Foreign Direct Investment

GDE = Government Development Expenditure

GFCF = Gross fixed capital formation

The specification of the GDP function in equation 3.1 drawn from production function. The GDP functions in equation 3.1 shows that GDP is a function of open, FDI, GDE and GFCF. Based on the GDP functions, we finally specify the empirical model (3.1) as below:

$$Y_t = \alpha_0 + \alpha_1 OPEN_t + \alpha_2 FDI_t + \alpha_3 GDE_t + \alpha_4 GFCF + u_t \quad \textbf{(3.2)}$$

Y = Gross domestic product

OPEN = Trade openness

FDI = Foreign direct investment

GDE = Government development expenditure

GFCF = Gross fixed capital formation

α = the parameter for the explanatory variables

t = time series

μ = error terms

In model 3.2, we will modify our model by using log for the variables so that all the variables in our model can show its impact in terms of percentage. Therefore, the model will become as below:

$$\ln Y_t = \beta_0 + \beta_1 \ln OPEN_t + \beta_2 \ln FDI_t + \beta_3 \ln GDE_t + \beta_4 \ln GFCF + u_t \quad \textbf{(3.3)}$$

Y = Gross domestic product

OPEN = Trade openness

FDI = Foreign direct investment

GDE = Government development expenditure

GFCF = Gross fixed capital formation

ln = Log

β = the parameter for the explanatory variables

t = time series

μ = error terms

3.3 Measurement of Variables

In this section, we will see a detailed description and measurement of the various variables in our econometric models. The dependant variables for our model is Gross Domestic Product (GDP). On the other hand, the explanatory variables for both models are OPEN, FDI, GDE and GFCF. Detailed description and measurement is provided below:

a) Gross Domestic Product (GDP)

Economic growth is often defined as a continuous process that enables the production capacity of an economy to grow from time to time and lead to an increase in national income. Usually, economic growth can be measured by looking at the increase in national output, in particular GDP. GDP is the value all of final goods and services produced by factors of production located within a country in a year. Factors of production are owned by locals and foreigners. Generally the concept of GDP is used to investigate the current performance of economic activities in country.

b) Trade openness

Malaysia economy has operated as an open economy and it depend on international trade for it development. For Malaysia, trade relations are very extensive and covers more than 40 countries in line with the open economic policies through a minimum of restrictions on export and import activities. There are various opinions on the definition of openness in accordance with previous studies. Yanikkaya (2003), through research suggest that the trade openness is the removal or reduction of restrictions or barriers on the free exchange of goods between nations. Apart from that the Bhagwati and Krueger (1978) trade liberalization was defined as any policy that reduces the degrees of anti-export biasness. The simplest method used in this study is to summing total exports and total imports, and then divided this amount by the total GDP usually described as trade intensity (TI). It is the measure most popular used in the hundreds of studies published to date for example studies by Balassa (1985), Quah and Rauch (1990), Harrison (1996) and Jang (2000).

c) Foreign direct investment

FDI is divided into two streams that inflow and out flow. This study will collect data only FDI inflows. FDI inflow is a defines as investments made by companies or entities based in other countries. Through FDI the investor obtaining a lasting interest. Importance of FDI to a country is undeniable. FDI can generate economic growth, particularly in ensuring the growth of the industrial, manufacturing and services sector. In addition FDI can also encourage in human resources, technology transfers, creating job opportunities, increasing

competitive power and as well as strengthen the country position in the international value chain. Therefore, the inflow of foreign direct investment is an important element in a country.

The formula to find FDI net inflow is:

FDI net inflow = FDI inflow - FDI outflow

d) Government development expenditure

Development expenditure is implemented expenditure by the government to promote economic growth and social development. There are four expenditure implemented by government. Firstly is on security consist of defence and internal security. Secondly is on social services consist of education and training, health, housing and others. Thirdly is on economic services consist of agriculture and rural development, public utilities, trade and industry, transport, communication and others. Lastly is on general administration. Typically, the government expenditure level depends on the economic situation of the country. When the economy is in recession, the government will increase the amount of development expenditure to boost economic growth.

e) Gross fixed capital formation

Gross fixed capital formation as defined by the European System of Accounts (ESA) consists of resident producers' acquisitions, less disposals, of fixed assets during a given period plus certain additions to the value of non-produced assets realised by the productive activity of producer or institutional units. Fixed assets are tangible or intangible assets produced as outputs from production processes that are used repeatedly, or continuously, for more than one year. (e.g. buildings, dwellings, machines, vehicles so on).

3.4 Sources of Data

The data used in this study is annual time series data that covered the sample period for 40 years which from 1970 to 2010. This study uses yearly data on economic growth (GDP), trade openness, FDI, government development expenditure and GFCF. The data are obtained from various sources including Annual Reports of Bank Negara Malaysia, Department of Statistics Malaysia Economics and World Bank. The data for GDP at constant price with base year 2000 in RM million is taken from the Department of Statistics, Malaysia official website. The data on the openness data obtained from export plus import and divided GDP for each year. The data of export and import in RM million obtained from Department of Statistics, Malaysia official website. The data on FDI in US dollar obtained in World Bank website. Data on government development expenditure, gross fixed capital formation in RM million obtained from Annual Reports of Bank Negara Malaysia.

3.5 Estimation Procedures

In order to examine the relationship between the potential explanatory variables with the economic growth, we should first employ a unit root test before we can proceed with other econometric estimation method. In the next part, we will use the Vector Autoregressive (VAR) approach and test for cointegration using Johansen and Juselius test for cointegration. We will also test for the Granger causality between economic growth and explanatory variables so that we can identify the direction of causality. Later, the cointegration test based on Johansen's and Juselius' approach will also be used to examine the long run relationship of economic growth determinant, while Vector Error Correction Model (VECM) approach is used to analyze the short run relationship. Finally, we will perform a diagnostic test by using Auto-Regressive Conditional Heteroskedasticity (ARCH), Normality and Lagrange Multiplier (LM) test to check the robustness of our model. Detailed procedure for the entire test is presented below.

3.5.1 Unit root test

Econometric theory requires all variables to be stationary if the regressions are to be realistic. Therefore, all variables in the GDP function should be tested to determine whether they are influenced by economic factors of a relatively permanent nature or by self-correcting forces that indicate temporary elements in their dynamics. In this analysis, we will employ the unit root test, more specifically, using augmented

Dicky-Fuller (ADF) tests to check the stationarity of the variables. It is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejections of the hypothesis that there is a unit root at some level of confidence. In order to test it, we consider the equation as follows:

$$\Delta y_t = \beta_1 + \beta_{2t} + \delta y_{t-1} + \alpha_i \sum \Delta y_{t-1} + \varepsilon_t$$

Where y_t is our variable of interest, Δ is the differencing operator, t is the time trend and ε is the white noise residual of zero mean and constant variance. B_1, β_2, δ and α_i are the set of parameters to be estimated. Both the null and alternative hypothesis in unit roots tests are:

H_0: $\delta = 0$ (y_t is non-stationary)

H_1: $\delta \neq 0$ (y_t is stationary)

The H_0 hypothesis can be rejected if the t-test statistic from this test is negatively less than the critical value tabulated. In other words, a unit root exists in the series y_t (implies non-stationary) if the null hypothesis of δ equals zero that is not rejected (Gujarati, 1995).

3.5.2 Vector Autoregressive Models (VAR)

Based on the Vector Autoregressive Model (VAR) approach, this study employs Johansen's and Juselius' (1990) multivariate cointegration test to test the variables of

interest in our models and also employs Granger causality test to investigate the causal relationship between explanatory variables and economic growth.

3.5.2.1 Johansen and Juselius test for cointegration

Given that the time series properties of the data are not stationary, one has to consider the long run relationship between the different time series to see whether there is a cointegration relation among the variables of interest. A series is said to be integrated of order *d* if one can obtain a stationary series by differencing the series for *d* times. Having established the stationarity of the data, we use the Johansen's (1988) and Johansen's and Juselius' (1990) approaches to test for a long run relationship among the variables. This involves the test of cointegrating vectors.

$$Y_t = \prod_1 Y_{t-1} + \prod_2 Y_{t-2} + \ldots + \prod_k Y_{t-k} + \varepsilon_t \qquad t = 1,2, \ldots, n$$

where Y_t is N×1 vector of stochastic variable, $\prod 1, \prod 2, \ldots, \prod k$ is the n×n parameter and ε_t is the random error. When Y_t is non-stationary, the above equation can be written as:

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \ldots + \Gamma_{k-1} \Delta Y_{t-k+1} + \prod Y_{t-k} + e_t$$

Where $\Gamma_i = -[I - \prod_1 - \prod_2 - \ldots. - \prod_i]$

$i = 1,2, \ldots, k-1$ and

$\prod = -[I - \prod_1 - \prod_2 - \ldots - \prod_k]$

The matrix $\prod$ captures the long run relationship between *p* variables, and this can be decomposed into two matrices, A and B, such that $\pi = AB'$. A is interpreted as the vector error correction parameter and B as cointegrating vector. This procedure is used to test the existence of a long run relationship among GDP, OPEN, FDI, GDE and GFCF variables in Equation 3.2. This approach will later be used to examine the long run impact of the explanatory variables on GDP.

3.5.3 Granger causality test

The relationship between savings rate and economic growth has received much attention in the past literature. However, the direction of causality is still unclear. Therefore, we would like to adapt this analysis in our study so that we can identify the causality experienced by Malaysia. Regression analysis can never prove that one variable causes another variable. However, a weaker type of causality can be useful if time series data are used. Granger causality test is a technique for determining whether one time series is useful in forecasting another. A time series X is said to Granger-cause Y if it can be shown, usually through a series of F-tests on lagged values of X (and with lagged values of Y are also known), that those X values provide statistically significant information about future values of Y. Granger causality occurs when X changes and changes in Y follow thereafter. Therefore, we said that X "Granger causes" Y. The hypothesis for our testing is as follows:

H_0: All slope coefficients for the lagged X variables are zero

H_1: At least one coefficient for the lagged X variables are not zero

The test works by first doing a regression of ΔY on lagged values of ΔY. Once the appropriate lag interval for Y is proved significant (t-stat or p-value), subsequent regressions for lagged levels of ΔX are performed and added to the regression provided that they, 1) are significant in and of themselves and 2) add explanatory power to the model. This can be repeated for multiple ΔXs (with each ΔX being tested independently of other ΔXs, but in conjunction with the proven lag level of ΔY). More than one lag level of a variable can be included in the final regression model, provided it is statistically significant and provides explanatory power.

3.5.4 Ordinary Least Squared Method

The ordinary least squares method is one of the most popular and widely used methods for regression analysis. The method was developed by Carl Friedrich Gauss (1821) and has subsequently evolved to become the Classical Linear Regression Model (CLRM). It is mainly used to establish whether one variable is dependent on another or a combination of other variables

$$\mathbf{GDP} = \alpha_i + \beta_1 OPEN + \beta_2 FDI + \beta_3 GDE + \beta_4 GFCF + \mu \qquad (3.4)$$

GDP = Gross domestic product

OPEN = Trade openness

FDI = Foreign direct investment

GDE = Government development expenditure

GFCF = Gross fixed capital formation

α and β = The parameter for the explanatory variables

μ = Error term

The coefficient of regression, β_1, β_2, β_3, β_4 indicates how a unit change in the independent variable (OPEN, FDI, GDE and GFCF) affects the dependent variable (GDP). The error, u, is incorporated in the equation to cater for other factors that may influence GDP. The validity or strength of the Ordinary Least Squares method depends on the accuracy of assumptions.

The validity or strength of the Ordinary Least Squares method depends on the accuracy of assumptions. In this study, the Gauss-Markov assumptions are used and they include; that the dependent and independent variables (GDP, OPEN, FDI, GDE and GFCF) are linearly co-related, the estimators (α, β) are unbiased with an expected value of zero i.e., $E(\varepsilon t) = 0$, which implies that on average the errors cancel out each other. The procedure involves specifying the dependent and independent variables; in this case, GDP is the dependent variable while OPEN, FDI, GDE and GFCF the independent variable.

3.5.5 Vector Error Correction Model (VECM)

According to the Granger Representation theorem, when variables are cointegrated, there must also be an error correction model (ECM) that describes the short run dynamics or adjustments of the cointegrated variables towards their equilibrium values. ECM consists of one period lagged cointegrating equation and the lagged

first differences of the endogenous variables. Using the Vector Autorgession (VAR) method, we can estimate the ECM. In particular, the error correction model (ECM) can be constructed by expressing changes in the dependant variables as a function of the level of disequilibrium in the cointegrating relationship (captured by the error correction term) as well as changes in other explanatory variables. The following error correction model is developed:

$$\Delta GDP_t = a_0 + a_1 \Delta \ln OPEN_t + a_2 \Delta FDI_t + a_3 \Delta GDE_t + a_4 \Delta GFCF_t$$

$$+ a_5 ECM_{-1} + v_t \qquad (3.5)$$

Where ECM_{-1} is the error correction component and is the lagged estimated error series from Equation 3.5 while v and u are the random error terms. From the regression analysis, we are able to interpret the coefficient for the explanatory variables and detect the sign. This approach will show us the speed of adjustment of our model in short run.

3.5.6 Diagnostic test

In order to test the robustness of our model, we will perform the diagnostic test based on Auto-Regressive Conditional Heteroskedasticity (ARCH) test, Normality test and also Lagrange Multiplier (LM) test. The entire test is shown as below.

3.5.6.1 Auto-Regressive Conditional Heteroskedasticity (ARCH) test

Since heteroskedasticity is a common problem for time series data, we will perform ARCH test to detect the presence of this problem. The regression model for ARCH test is shown as below:

$$Y_t = \beta_1 + \beta_2 X_{2t} + K + \beta_k X_{kt} + u_t$$

$$\sigma^2_t = \alpha_0 + \alpha_1 \sigma^2_{t-1} + K + \alpha_p \sigma^2_{t-p} + \varepsilon_t$$

where the null hypothesis is as follows:

$$H_0 = \alpha_1 = \alpha_2 = K = \alpha_p = 0 \text{ (No ARCH effect)}$$

By obtaining the value of the R^2 from the auxiliary regression, we can compute the ARCH test statistic using the formula $(N-p)R^2$. The test statistic is distributed as chi-square with p degrees of freedom (χ^2_p).

3.5.6.2 Lagrange Multiplier (LM) test

In order to test for the presence of autocorrelation problem, we will be using the Breusch-Godfrey serial correlation LM test. Supposed that the disturbance term u_t is generated by the following ρth-order autoregressive model:

$$u_t = \rho_1 u_{t-1} + \rho_2 u_{t-2} + \rho_3 u_{t-3} + \varepsilon_t$$

where εt is a purely random disturbance term with mean zero and constant variance. The null hypothesis for our testing is as follows:

$$\text{Ho: } \rho_1 = \rho_2 = \rho_3 = 0$$

H_1: At least one of the ρ is not equal to zero

The null hypothesis indicates that there is no autocorrelation of any order. The variable $\rho = 3$ indicates that we introduce three lagged values of the residuals as additional regressors in the model. The formula for this analysis is:

$$(n- \rho)\, R^2 \sim \chi^2_\rho$$

Where n is the sample size, ρ is the number of lag and R^2 is the goodness of fit. If the value $(n- \rho)R^2$ exceeds the critical chi-square value at the chosen significance level, we can reject the null hypothesis and conclude that at least one ρ is significantly difference from zero.

3.5.7 Normality test

Normality is commonly assumed in many statistical and economic methods, although often conveniently assumed in reality without any empirical test. Violation of this assumption will result in unreliable inferences and misleading interpretations. With multivariate statistics, the assumption is that, the combination of variables follows a multivariate normal distribution. There are both graphical and statistical methods for evaluating normality. Graphical methods visualize the distributions of random variables or differences between an empirical distribution and a theoretical distribution. We use this method since it is intuitive and easy to interpret. We will compare a histogram of the residuals to a normal probability curve. The actual distribution of the residuals should be bell-shaped and resemble the normal distribution. We will further use Jarque-Bera test statistic to empirically detect the normality. If the errors are not normally distributed, our estimator is biased.

CHAPTER FOUR

DATA ANALYSIS

4.1 Introduction

This chapter presents and discusses the empirical results for our analysis based on the Johansen and Juselius cointegration approach to derive the long run relationship between savings and the explanatory variables, while Vector Error Correction Model (VECM) approach is used to see the short run adjustment. As a preliminary test, we first conducted the unit root test based on Augmented Dicky Fuller (ADF) approach and proceeded with the cointegration test bound upon the Johansen and Juselius multicointegration test to test for the existence of a long run equilibrium relationship among all the variables.

4.2 Unit root test

Stationary time series data is necessary to have a valid t-statistics and F-statistics. Therefore, it is a preliminary condition to test for unit root before we proceed with other econometric analysis. Results for the unit root test is presented in Table 4.1 below.

Table 4.1: Results of the Unit Root Test

Variables	Augmented Dickey Fuller Test (ADF)			
	Level		First Difference	
	Constant	Constant & trend	Constant	Constant & trend
GDP	3.252256 [0] (1.0000)	-0.837494 [0] (0.9532)	-4.863272 [0] (0.0003) ***	-6.436202 [0] (0.0000) ***
OPEN	3.252256 [0] (1.0000)	-0.837494 [0] (0.9532)	-4.863272 [0] (0.0003) ***	-6.436202 [0] (0.0000) ***
FDI	-2.104141 [0] (0.2442)	-3.122538 [1] (0.1154)	-8.468501 [0] (0.0000) ***	-8.291645 [0] (0.0000) ***
GDE	1.581621 [0] (0.9993)	-0.637849 [0] (0.9709)	-4.831351 [0] (0.0003) ***	-5.240332 [0] (0.0006) ***
GFCF	0.414666 [0] (0.9812)	-2.133194 [0] (0.5123)	-5.371858 [0] (0.0001) ***	-5.470748 [0] (0.0003) ***

Note: ***, ** indicates the rejection of the null hypothesis of non-stationary at 1% and 5% significance level.

[ ] indicates the lag specification

( ) indicates the t-statistic value

Table 4.1 presents the result for unit root test on all variables in our study for the period 1970 to 2010. Table 4.1 represents the unit root result based on Augmented Dicky Fuller (ADF) approach which categorized its analysis into two parts, which are, at level and first differentiation which are studied as constant, and also constant with trend. The results presented use different lag specifications to achieve the best result.

Based on Table 4.1, the t-statistics for all variables are statistically insignificant to reject the null hypothesis of non-stationary at any significance level. This result indicates that these series are non-stationary at level. Therefore, we conclude that

these variables contain a unit root. When we conduct ADF test at first difference, the null hypothesis of non-stationary is rejected at 1% significance level. Therefore, we can conclude that all the series are integrated of order one, I(1).

4.3 Cointegration test

The integration test of the variables through the Vector Autoregressive (VAR) model was implemented by Johansen procedure. Cointegration tells us about the presence of long run relation among two or more variables. When we go for cointegration analysis, we assume that all variables are non-stationary. Secondly they are all integrated of the same order. Even if the variables are not integrated in the same order, we still can continue with cointegration analysis. We call this situation Multicointegration. We use Akaike Information Criterion (AIC) to choose the optimum lag length for our cointegration analysis using Johansen-Juselius test. AIC is known for selecting the maximum relevant lag length (Shrestha and Chowdhury, 2005). If we get one or more than one cointegrated vector in the model, we say that there a long run relationship among the variables exists. We will perform the cointegration test where the dependant variable is GDP. The result for cointegration test for linear deterministic trend with restriction based on Trace statistic and based on Max-Eigen statistic is reported in table 4.2.

Table 4.2: Test result from Johansen procedure

H_0	H_1	Test Statistic: λ
	Trace Statistic: λ_{trace}	
$r = 0$	$r > 0$	204.3881*
$r \leq 1$	$r > 1$	123.2364*
$r \leq 2$	$r > 2$	55.22006*
$r \leq 3$	$r > 3$	16.84941*
$r \leq 4$	$r > 4$	2.474919
	Max-Eigen Statistic λ_{max}	
$r = 0$	$r = 1$	81.15175*
$r = 1$	$r = 2$	68.01632*
$r = 2$	$r = 3$	38.37065*
$r = 3$	$r = 4$	14.37449*
$r = 4$	$r = 5$	2.474919

Notes:

*** Indicates significance at 1%
** Indicates significance at 5%
* Indicates significance at 10%

Table 4.2 shows the result of Johansen's cointegration test for the period between 1970 to 2010. In this analysis, trace statistic and Max- Eigen Statistic is compared to the corresponding critical values. It test that the null hypotheses of the number cointegration is rejected at 5% significance level. The results of the trace statistic show there are four cointegrating equations at 5% significance level. On the other hand, Max-eigenvalue test indicates four cointegrating equations at 5%. Based on the results, we can conclude that there is a long run relationship among the variables.

4.4 Pairwise Granger causality test

The Pairwise Granges Causality is performed to see the causality between two variables that are being analyzed. This analysis would like to see the direction of the causality and identify which variable where Granger cause the other variable. This test is employed in testing causality respectively for the GDP, OPEN, FDI, GDE and GFCF. The results of Granger causality test are reported in Table 4.4.

Table 4.3: Pairwise Granger Causality Test for the period 1970 to 2010

Null Hypothesis:	Obs	F-Statistic	Probability
LOPEN does not Granger Cause LGDP	37	**2.53955**	**0.0620***
LGDP does not Granger Cause LOPEN		0.82926	0.5179
LFDI does not Granger cause LGDP	37	0.32545	0.8585
LGDP does not Granger cause LFDI		1.79639	0.1576
LGDE does not Granger cause LGDP	37	0.42687	0.7879
LGDP does not Granger cause LGDE		**2.34881**	**0.0786***
LGFCF does not Granger cause LGDP	37	0.72423	0.5828
LGDP does not Granger cause LGFCF		**2.20975**	**0.0936***
FDI does not Granger Cause OPEN	37	0.67268	0.6165
OPEN does not Granger Cause FDI		**3.79705**	**0.0137****
GDE does not Granger Cause OPEN	37	1.46341	0.2398
OPEN does not Granger Cause GDE		**3.03804**	**0.0337****
GFCF does not Granger Cause OPEN	37	1.42548	0.2515
OPEN does not Granger Cause GFCF		**4.63391**	**0.0054*****

Notes:

*** Indicates significance at 1%
** Indicates significance at 5%
* Indicates significance at 10%

Table 4.3 shows the Granger causality between OPEN, FDI, GDE and GFCF. Result for OPEN shows that the null hypothesis that OPEN does not Granger cause GDP is rejected at 10% significance level concluding that the Granger cause run from OPEN to GDP. This result is consistent with our expectation since we have been expecting that higher trade openness would lead to enhance the GDP. This finding also consistent with other studies such as by Akcay and Demirhan (2005) and Naveed and Shabbir (2006). On the other hand, the null hypothesis that GDP does not Granger cause OPEN is failed to be rejected at any significance level (1%, 5% and 10%) thus concluding that GDP does not Granger cause OPEN.

Result for FDI shows that the null hypothesis that FDI does not Granger cause GDP is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that FDI does not Granger cause GDP. On the other hand, the null hypothesis that GDP does not Granger cause FDI is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that GDP does not Granger cause FDI. This findings are very similar to findings in Malaysia studies by Pradhan (2009), Karimi and Yusop (2009), Abdullahi, Yahya Zakari, Aliero and et al (2012) and Nabila et al (2011).

Result for GDE shows that the null hypothesis that GDE does not Granger cause GDP is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that GDE does not Granger cause GDP. On the other hand, the null hypothesis that GDP does not Granger cause GDE is rejected at 5%

significance. Therefore, it appears that Granger causality runs one way only from GDP to GDE. This supports the notion that Wagner's law in the Malaysia, rather than Keynesian hypothesis. This findings demonstrated that the GDP can promote the level of government development expenditure, which means that if the level of GDP increases in Malaysia, GDE will also follow. This finding consistent with other studies such as Khulaifi (2012) and Hussin and selamah (2010), Grullon (2012), Loizides and Vamvoukas (2005) and Oxley (1994).

Result for GFCF shows that the null hypothesis that GFCF does not Granger cause GDP is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that GFCF does not Granger cause GDP. On the other hand, the null hypothesis that GDP does not Granger cause GFCF is rejected at 5% significance level concluding that Granger causality runs from GDP to GFCF. This shows that economic growth is fundamental determinant of growth in GFCF. This finding in line with study by Vojivonic (2008).

Result for FDI and OPEN shows that the null hypothesis that FDI does not Granger cause OPEN is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that FDI does not Granger cause OPEN. On the other hand, the null hypothesis that OPEN does not Granger cause FDI is rejected at 1% significance level concluding that Granger causality runs from OPEN to FDI. This shows that greater participation in trade openness will expectedly increase the FDI inflows into the economy. This findings also consistent with other studies such as by Mitra (2012), Liargovas and Skandalis (2011) and Marten (2008) explain that

trade openness and foreign direct investment are complement mutually. This means that countries that promote greater freedom of economic activities gain significantly from the FDI inflow presence.

Result for GDE and OPEN shows that the null hypothesis that GDE does not Granger cause OPEN is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that GDE does not Granger cause OPEN. On the other hand, the null hypothesis that OPEN does not Granger cause GDE is rejected at 1% significance level concluding that Granger causality runs from OPEN to GDE. This finding support is consistent with other studies such as by Roddick (1998). This shows that openness will be crucial policies by government in Government development expenditure. Higher degree of openness of an economy will increase government development expenditure.

Result for GFCF and OPEN shows that the null hypothesis that GFCF does not Granger cause OPEN is failed to be rejected since p-value is bigger than any significance level (1%, 5% and 10%) thus concluding that GDE does not Granger cause OPEN. On the other hand, the null hypothesis that OPEN does not Granger cause GFCF is rejected at 1% significance level concluding that Granger causality runs from OPEN to GFCF. This findings supported by Bajwa and Siddiqi (2011) argued that trade openness affect economy through different channels. One of them is generate capital formation. This shows that great OPEN spurs large domestic GFCF and vice versa.

4.5 Gross Domestic Product Determinants

We will regress our model ased on equation 3.2 to analyze the determinants of GDP based on the chosen explanatory variables. We will employ cointegration test based on Johansen and Juselius multicointegration test to analyze the long run impact of the chosen explanatory variables, that is OPEN, FDI, GDE and GFCF on the GDP. On the other hand, Vector Error Correction Model (VECM) is performed to analyze the short run adjustment.

4.5.1 Cointegration analysis

The result for our analysis based on Johansen and Juselius cointegration approach is presented in Table 4.4. On the other hand, a Vector Error Correction Model (VECM) can lead to a better understanding of the natural of any nonstationarity among the different component series and can also improve longer term forecasting over an unconstrained model. We will satisfy all the OLS assumption of our causal VECM model. The result for VECM method is summarized in table 4.5.

Table 4.4: Cointegration result for GDP determinants

variable	Coefficient	t-statistic
LOPEN	1.27633.4	10.69332 ***
LFDI	0.334077	0.394460
LGDE	2.161246	3.784809 ***
LGFCF	0.982530	3.926525 ***

Note : ***,** , * indicates significant at 1% , 5% and 10% significance level

Based on cointegration method, we found that OPEN, GDE and GFCF are seen to be significantly affecting economic growth. Most importantly, the results indicate that GDE has a relatively higher impact and statistically significant positive impact on the economic growth of the Malaysia. In fact, a 1% increase in GDE is seen to cause a 2.16% rise in the economic growth of the Malaysia. This result is consistent with other findings such as by Jiranyakul and Brahmasrene (2007). This finding confirm that strong positive impact of GDE on economic growth during the period of investigation.

For OPEN, the result indicates that has the second higher impact and statistically significance positive effect on economic growth in Malaysia. It is consistent with previous study such as by Sinha and Sinha (2000) and Ahmadi and Mohebbi (2009). Result shows that 1% increase in OPEN is seen to cause a 1.27% rise of GDP in long run. Result suggest that adopting OPEN as a policy tool to accelerate the economic growth.

Our result indicates that FDI is insignificance in long run. This result vary with our theory predicts that the growth rate of GDP should be positively related to the growth rates of FDI. This result also contradicts with other findings such as Majagaiya (2010), Chien and Zhang (2012). But it is consistent with other studies such as by Sukar et al (2011), Ang (2009), Hossain and Hossain (2012), Katerina, John and Athanasios (2004) and Kashif et al (2012). This phenomenon may due to FDI does not correlated to growth for Malaysia. The result is ambiguous for Malaysia and

suggests that FDI has indirect effect on economic growth in Malaysia under the used data set. This indirect effect phenomenon may be due to the still high import content of export products and this resulted income from export is lower, thus give a negative impact on economic growth in Malaysia.

Our analysis also show that GFCF has a statistically significance positive effect on economic growth in Malaysia. This result is consistent with other findings such as by Fauzi and Noraini (2012). This findings shows that GFCF plays a significant role in stimulate economic growth in Malaysia.

Table 4.5: VECM result for GDP determinants

Variable	Coefficient	t-statistic
C	0.062395	1.49042
D(LN_OPEN)	-3.03963	-2.80680**
D(LN_ FDI)	-0.274301	-3.69524***
D(LN_GDE)	0.040153	-0.11805
D(LN_GFCF)	0.001657	0.18173
ECM (-1)	-0.343895	-4.39863***

Note : ***,** , * indicates significant at 1% , 5% and 10% significance level

On the other hand, VECM approach shows that OPEN and FDI are an important short run determinants of GDP. While government development expenditure and gross fixed capital formation are statistically insignificant affecting economic growth in short run.

Based on cointegration and VECM result, we will discuss each of the explanatory variables based on its impact on GDP individually. Based on VECM result, OPEN is

show significantly in short run. Negative coefficient show that may be Malaysia experienced exchange rate depreciation, total import exceed total export which has created negative trade balance position in almost all the years covered in the study. Result suggests that OPEN does not correlated to economic growth in short run under the data set used. Openness can be painful for an economy. This line with Gries and Redlin (2012) and Adhikary (2011). Result shows that 1% increase in OPEN would lead reduction in GDP about 3.3% in short run.

The result for FDI show only significantly negative based on VECM approach for short run. This phenomenon may due to FDI does not correlated to growth in short run for Malaysia. The result is ambiguous for Malaysia and suggests that FDI has indirect effect on economic growth in Malaysia under the used data set. Result show that 1% increase in FDI would reduction GDP to about 0.27% in short run. The variable GDE carries a positive sign in short run. Result show that 1% increase in GDE would increase GDP to about 0.04% in short run. On the other hand the variable GFCF carries a positive sign in short run. Result show 1% increase in GFCF would increase GDP to about 0.001% in short run.

Furthermore, the error correction coefficient that is -0.343895 is statistically significant at 1% significant level with the correct sign as expected. This also indicates that the correction adjustment speed is at a moderate which is about 34.4%.

4.6 Diagnostic test

We perform a diagnostic test to check for the robustness of our model. Therefore, we will perform the ARCH test to detect heteroskedaticity problem, LM test based on Breusch-Godfrey test to detect the presence of autocorrelation and finally the Normality test to check the distribution of the error terms. The entire test is discussed below.

4.6.1 ARCH test

In order to test for heteroskedasticity problem, we perform the ARCH test using 2 lags. The result for this test is summarized in Table 4.6

Table 4.6: ARCH test for GDP determinants

ARCH test:			
F-statistic	1.528167	Probability	0.227034
Obs. R-squared	1.553442	Probability	0.212628

Hypothesis testing:

H_0 : Homoskedasticity (the variance of u is constant)

H_1 : Heteroskedasticity (the variance of u is unequal)

Based on the result in table 4.6, we found that the p-value of the F-test is 0.227034 bigger than any significance level (1%, 5% and 10%). Therefore, we failed to reject H_0 and concluded that our model have constant variance of residuals and thereby fulfilled the homokedasticity assumption

4.6.2 LM Test

We perform the Lagrange Multiplier (LM) test based on Breusch-Godfrey test using 2 lags to detect the presence of autocorrelation problems in our model. Result for the test is reported in Table 4.7

Table 4.7: LM test for GDP determinants

Breusch-Godfrey Serial Correlation LM test:			
F-statistic	32.63906	Probability	0.163385
Obs. R-squared	24.28154	Probability	0.093502

Hypothesis testing:

H_0 : no autocorrelation (no correlation between error term)

H_1 : autocorrelation (correlation between error term)

Based on the result in table 4.7, the p-value for the F-statistic is 0.163385, which is bigger than any significance level (1%, 5% and 10%). Therefore, we failed to reject H_0 and conclude that there is no autocorrelation problem in our model.

4.6.3 Normality test

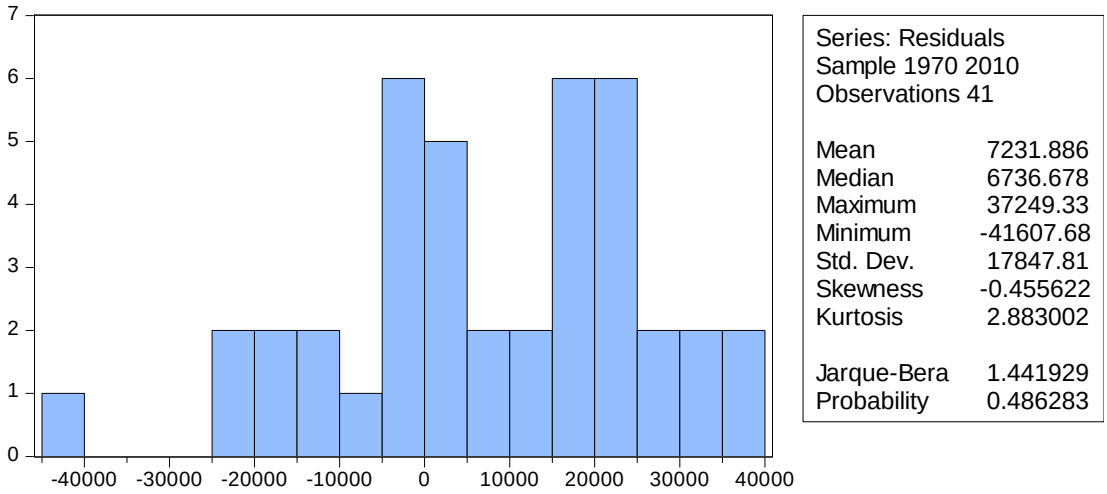
We conduct a normality test to see whether the residual are normally distributed. The result for the test is presented in Figure 4.1 as below.

Hypothesis testing:

H_0 : Residuals (u) are normally distributed

H_1: Not normal distribution

FIGURE 4.1 Normality test for Economic growth



Based on the histogram, we can see the bell shape suggesting that the residuals are normally distributed although some parts show high residuals. This may be due to a shock in the economy. We then proceeded with the statistical method to detect the normality problem. The p-value shows that we failed to reject H_0 since its value is bigger than any significance level that we usually use. Therefore we can conclude that the residuals are normally distributed.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONS

5.1 CONCLUSION

Economic growth can be used as a measurement of performance in the economic development of a country. Therefore, in economic analysis, economic growth can be achieved by a country by measured from the national income growth. Healthy and balance economic growth is necessary in determining the economic development of a country and the living standard of people which is more advanced. In this study, we have examined the determinants of GDP over the periods 1970 to 2010. The main objective of this study is to examine the openness, foreign direct investment, government development expenditure and gross fixed capital formation on economic growth behaviour in Malaysia. The variables chosen in this analysis is guided by theoretical framework based on the new growth theory and also based on previous research.

We use Johansen and Juselius cointegration to examine the long run relationship while VECM approach is used to see the speed of adjustment in the short run. Furthermore, we have conducted the Granger causality test between openness, foreign direct investment, Government development expenditure, gross fixed capital

formation and economic growth to see the direction between those two variables. Based on our results for long run analysis, we found that openness, foreign direct investment, government development expenditure and gross fixed capital formation have a statistically significant in long run. Therefore, openness, foreign direct investment, government development expenditure and gross fixed capital formation is a crucial component to achieve economic objectives.

On the other hand, short run analysis based on VECM model shows that only openness and foreign direct investment show a statistically significant result while government development expenditure and gross fixed capital formation are found to be insignificant. The speed of adjustment in short run is moderate based on the variable ECM shows that 34.4% of the adjustment is completed in a year for economic growth determinant.

The result of the granger causality found that unidirectional causality running from openness to economic growth. This finding supports our argument which expects that openness may lead to economic growth and confirms that the policies which promotes openness is important in exerting influence on economic growth. Result granger causality for foreign direct investment found that no relationship between foreign direct investment and economic growth under data set used in Malaysia. Result shows that one way causality running from economic growth to government development expenditure. While Granger causality test the result for gross fixed capital formation it shows that unidirectional causality running from economic growth to gross fixed capital formation. The finding suggests that stability and higher

economic growth for Malaysia will influence the gross fixed capital formation in this study. To get more government development expenditure and gross fixed capital formation, there is need of sustainable economic growth in the economy.

Result also show that openness play a main role in influence inflow of foreign direct investment, government development expenditure and gross fixed capital formation. Result shows that one way causality running from openness to foreign direct investment, to government development expenditure and to gross fixed capital formation. These findings suggest that trade openness lead to good macroeconomic performance and play an important role in the development of any economy and assumed to be an engine of growth.

5.2 Policy Implications

Based on the results of this study several recommendations can be taken and performed to increase economic growth. These proposals also allow the economic growth of a country's grow faster through improvements on variables that have significant effect on national income. We have the choice of economic growth determinants. Policymakers have a choice of long run and short run policies or a combination of both in promoting economic growth. Based on the results, we can see that openness would affect economic growth in both long run and short run. On the other hand government development expenditure and gross fixed capital formation only will influence in long run while foreign direct investment would only affect

economic growth in short run. Therefore, policymakers should manipulate the significant variables to achieve its long run and short run goals.

Based on the result, we can see that openness is one of the factors that stimulate economic growth in Malaysia. We have successfully found positive correlation between the economic growth. High degree of openness leads to enhance the large economic growth rates. Malaysia should be looking forward and more open in order to realize dream, comparable and progressive like others developed countries. Therefore, in order to encourage economic growth, Malaysia should practice a more economic openness to boost the country GDP. We need to remove the dependency mentality, otherwise focusing on economic openness and competitiveness. Trade openness can be achieved through reduce tariffs and export expansion and reinforcement of professional and efficient labor force. With export expansion, demand for domestic goods increases and felt the need to develop production. Reduce taxes on imported goods also causes can reduction in industry costs and leads to expansion of industry sector thus gross domestic product increased. Therefore, we conclude that trade, free from any limitations, may show the way for economic growth and reveal its positive effect on it.

Government development expenditure shows a positive influence in long run and short run although a result is only significant in long run. This shows that government development expenditure is more important to strengthen the economic and social development. Development expenditure is the important provision in the development project because development projects cannot be carried out if there is

insufficient or no provision. Therefore, a systematic government spending is very important to bring the economic growth for a country. Development spending should be used efficiently so that it can really generate positive economic growth. In this context, the government should regulate all forms of leakages and wastage. If not it will have a negative effect on the economic position of the country.

Development expenditure consists of economic services, social services and security which are the most important factor that influencing economic growth in Malaysia. Government should allocate more fund to sector of economic services, social services and the defences. Government should give more emphasis distribution in capital expenditure to productive the expenses. The example of capital expenditure are transport and communications, trade and industry, agriculture and rural development and etc. On the other hand the second priority is in social sector like in education and training, health and housing. Third priority is security like defence and internal security. The increase in the capital budget for security is also necessary because when the economy began to grow. Function and safety protection is to attract foreign investors and ensure the smooth operation of the domestic market. Therefore, in view of infrastructure provided by the government is to be complementary to private sector productivity is appropriate infrastructure to be implemented as a whole, across a range of sectors and geographies making toward Malaysia as developed countries.

On the other hand, gross fixed capital formation shows only a positive effecting on economic growth in long run. Therefore policies that encourage gross fixed capital formation should be designated so as to enhance the economic growth in Malaysia. Gross fixed capital formation supported by capital spending by both the private and public sectors. Therefore the government should be take serious action in both sector to spur gross fixed capital formation. The government should promote policies that will increase investment in major sub sector in the public and private sector through increasing in capital.

On the other hand the public sector should act as a complement to private investment. Therefore the government should provide a variety of tax incentives to promote investment of public investment. For example, income tax act 1967 and investment promotion act 1986 should be revised in order to provide a tax relief incentive system that is able to encourage public investment. Increase in public investment, such as the provision of infrastructure and public services can stimulate private sector participation in investment activities because public investment activities reduced the production costs and lead increase the profitability of the private sector, thus helping to spur economic growth. Government also need to implement the concept for improving the partnership between the public and private sector in investing activities. Concept of partnership will certainly enhance private commitments in financing and capital expenditure because government are able to reduce the costs and risks beared by the private sector.

Savings is the main key to capital formation. Savings can ensure sufficient internal resources to fund the capital formation. Higher saving means the nation have large funds available to investment opportunities which can generate more projects either in the public and private sector thus boost the economic growth. Government should establish of a cabinet committee to supervise and coordinate the implementation of all programs and projects related to the savings incentive strategy. In a large context, the government should continue to implement policies that lead to the achievement of relative price stability, in order to save the environment that will be comfortable so there are concerns that inflation will erode the real value of savings over time. The government, through its various programs, including the dissemination of information, will create awareness among the people about the importance of saving and the goodness of smart spending habits.

On the other hand the banking sector should not only think about profit alone. They also have a moral responsibility toward society. It is also a self-interest to encourage savings. In doing so, it will ensure the growth of our economy in the future. For this purpose, it is necessary to enhance financial infrastructure to create a comfortable and attractive for people to do a saving. Bank institutions need to be examined critically to review its operation and identify areas which can consolidate efforts mobilize savings.

5.3 Recommendation of the future studies

Understanding the relationship and the direction of causality between economic growth and other macroeconomic indicators is important as it gives possibility for the economies to define their developing policies. The findings of this study may shed some lights for readers about the economic growth behavior in Malaysia and may build an interest for the next researchers to analyze about this matter and enhance the scope. Since our analysis only have 4 explanatory variables in explaining the economic growth behavior, future studies can include other potential determinants that may affect economic growth such as domestic savings, foreign aid, government deficit, government revenue and other explanatory variables that may explain the model better.

More interestingly, future study may add domestic investment as the explanatory variable and indentify whether it gives any influence on the foreign direct investment if refer some studies such as by Apergis te al (2006) claimed that possible crowding in or crowding out effects between FDI inflows and domestic investment. We can also analyse whether this two variables has a complement or supplement to stimulates economic growth. The next study can also add in other variables like public investment and private investment. Both public and private investment are the next new thing for powering economic growth. We can analyze the link between these two variables. Besides that, future study may expand the scope of the study by make a comparison with other countries such as with Asian countries so as to see how the result may differ across countries.

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APPENDICES

APPENDICES 1

Cointegration Test

Economic growth

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.895044	204.3881	69.81889	0.0000
At most 1 *	0.848829	123.2364	47.85613	0.0000
At most 2 *	0.655566	55.22006	29.79707	0.0000
At most 3 *	0.329205	16.84941	15.49471	0.0311
At most 4	0.066438	2.474919	3.841466	0.1157

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.895044	81.15175	33.87687	0.0000
At most 1 *	0.848829	68.01632	27.58434	0.0000
At most 2 *	0.655566	38.37065	21.13162	0.0001
At most 3 *	0.329205	14.37449	14.26460	0.0480
At most 4	0.066438	2.474919	3.841466	0.1157

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

APPENDCES 2

Unit Root Test Results (First Differences)

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.863272	0.0003
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP,2)
Method: Least Squares
Date: 12/28/12 Time: 16:50
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.830221	0.170712	-4.863272	0.0000
C	10965.91	2851.037	3.846289	0.0005

R-squared	0.389957	Mean dependent var	839.2821
Adjusted R-squared	0.373469	S.D. dependent var	15364.85
S.E. of regression	12161.85	Akaike info criterion	21.69992
Sum squared resid	5.47E+09	Schwarz criterion	21.78523
Log likelihood	-421.1484	Hannan-Quinn criter.	21.73052
F-statistic	23.65142	Durbin-Watson stat	1.893831
Prob(F-statistic)	0.000022		

Null Hypothesis: D(OPEN) has a unit root
Exogenous: Constant
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.584127	0.0000
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPEN,2)
Method: Least Squares
Date: 12/28/12 Time: 16:51
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPEN(-1))	-1.097674	0.166715	-6.584127	0.0000
C	0.052992	0.020027	2.645958	0.0119

R-squared	0.539519	Mean dependent var	0.005538
Adjusted R-squared	0.527073	S.D. dependent var	0.169685
S.E. of regression	0.116692	Akaike info criterion	-1.408639
Sum squared resid	0.503829	Schwarz criterion	-1.323328
Log likelihood	29.46846	Hannan-Quinn criter.	-1.378030
F-statistic	43.35072	Durbin-Watson stat	1.979151
Prob(F-statistic)	0.000000		

Null Hypothesis: D(FDI) has a unit root
Exogenous: Constant
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.468501	0.0000
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI,2)
Method: Least Squares
Date: 12/28/12 Time: 16:52
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-1.587248	0.187430	-8.468501	0.0000
C	770.8781	874.6057	0.881401	0.3838

R-squared	0.659662	Mean dependent var	609.8309
Adjusted R-squared	0.650464	S.D. dependent var	9236.254
S.E. of regression	5460.620	Akaike info criterion	20.09843
Sum squared resid	1.10E+09	Schwarz criterion	20.18374
Log likelihood	-389.9194	Hannan-Quinn criter.	20.12904
F-statistic	71.71550	Durbin-Watson stat	2.147514
Prob(F-statistic)	0.000000		

Null Hypothesis: D(GDE) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.240332	0.0006
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDE,2)
Method: Least Squares
Date: 12/28/12 Time: 16:53
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDE(-1))	-0.864905	0.165048	-5.240332	0.0000
C	-398.2526	985.3631	-0.404168	0.6885
@TREND(1970)	74.05073	43.34329	1.708470	0.0962

R-squared	0.432815	Mean dependent var	74.79487
Adjusted R-squared	0.401305	S.D. dependent var	3746.266
S.E. of regression	2898.688	Akaike info criterion	18.85571
Sum squared resid	3.02E+08	Schwarz criterion	18.98367
Log likelihood	-364.6863	Hannan-Quinn criter.	18.90162
F-statistic	13.73569	Durbin-Watson stat	1.996056
Prob(F-statistic)	0.000037		

Null Hypothesis: D(GFCF) has a unit root
Exogenous: Constant
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.371858	0.0001
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GFCF,2)
Method: Least Squares
Date: 12/28/12 Time: 16:55
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFCF(-1))	-0.898634	0.167285	-5.371858	0.0000
C	3568.325	1855.476	1.923132	0.0622

R-squared	0.438175	Mean dependent var	447.6923
Adjusted R-squared	0.422991	S.D. dependent var	14487.52
S.E. of regression	11004.88	Akaike info criterion	21.49999
Sum squared resid	4.48E+09	Schwarz criterion	21.58530
Log likelihood	-417.2497	Hannan-Quinn criter.	21.53060
F-statistic	28.85686	Durbin-Watson stat	1.902468
Prob(F-statistic)	0.000004		

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.436202	0.0000
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP,2)
Method: Least Squares
Date: 12/28/12 Time: 16:55
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-1.096720	0.170399	-6.436202	0.0000
C	1999.990	3665.853	0.545573	0.5887
@TREND(1970)	581.7404	172.7178	3.368155	0.0018

R-squared	0.536132	Mean dependent var	839.2821
Adjusted R-squared	0.510362	S.D. dependent var	15364.85
S.E. of regression	10751.42	Akaike info criterion	21.47727
Sum squared resid	4.16E+09	Schwarz criterion	21.60523
Log likelihood	-415.8067	Hannan-Quinn criter.	21.52318
F-statistic	20.80418	Durbin-Watson stat	2.012156
Prob(F-statistic)	0.000001		

Null Hypothesis: D(OPEN) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.514295	0.0000
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPEN,2)
Method: Least Squares
Date: 12/28/12 Time: 16:56
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPEN(-1))	-1.099288	0.168750	-6.514295	0.0000
C	0.039993	0.040532	0.986695	0.3304
@TREND(1970)	0.000622	0.001681	0.370304	0.7133

R-squared	0.541266	Mean dependent var	0.005538
Adjusted R-squared	0.515781	S.D. dependent var	0.169685
S.E. of regression	0.118077	Akaike info criterion	-1.361159
Sum squared resid	0.501917	Schwarz criterion	-1.233192
Log likelihood	29.54259	Hannan-Quinn criter.	-1.315245
F-statistic	21.23843	Durbin-Watson stat	1.983292
Prob(F-statistic)	0.000001		

Null Hypothesis: D(FDI) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.291645	0.0000
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI,2)
Method: Least Squares
Date: 12/28/12 Time: 16:57
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-1.581106	0.190687	-8.291645	0.0000
C	233.2616	1882.962	0.123880	0.9021
@TREND(1970)	25.57112	79.04249	0.323511	0.7482

R-squared	0.660649	Mean dependent var	609.8309
Adjusted R-squared	0.641796	S.D. dependent var	9236.254
S.E. of regression	5527.912	Akaike info criterion	20.14681
Sum squared resid	1.10E+09	Schwarz criterion	20.27478
Log likelihood	-389.8628	Hannan-Quinn criter.	20.19272
F-statistic	35.04238	Durbin-Watson stat	2.156795

Null Hypothesis: D(GDE) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.240332	0.0006
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDE,2)
Method: Least Squares
Date: 12/28/12 Time: 16:57
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDE(-1))	-0.864905	0.165048	-5.240332	0.0000
C	-398.2526	985.3631	-0.404168	0.6885
@TREND(1970)	74.05073	43.34329	1.708470	0.0962

R-squared	0.432815	Mean dependent var	74.79487
Adjusted R-squared	0.401305	S.D. dependent var	3746.266
S.E. of regression	2898.688	Akaike info criterion	18.85571
Sum squared resid	3.02E+08	Schwarz criterion	18.98367
Log likelihood	-364.6863	Hannan-Quinn criter.	18.90162
F-statistic	13.73569	Durbin-Watson stat	1.996056
Prob(F-statistic)	0.000037		

Null Hypothesis: D(GFCF) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.470748	0.0003
Test critical values:	1% level	-4.211868	
	5% level	-3.529758	
	10% level	-3.196411	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GFCF,2)
Method: Least Squares
Date: 12/28/12 Time: 16:58
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFCF(-1))	-0.923041	0.168723	-5.470748	0.0000
C	196.2972	3728.280	0.052651	0.9583
@TREND(1970)	164.6087	157.9203	1.042353	0.3042

R-squared	0.454635	Mean dependent var	447.6923
Adjusted R-squared	0.424337	S.D. dependent var	14487.52
S.E. of regression	10992.04	Akaike info criterion	21.52153
Sum squared resid	4.35E+09	Schwarz criterion	21.64950
Log likelihood	-416.6699	Hannan-Quinn criter.	21.56745
F-statistic	15.00541	Durbin-Watson stat	1.925619
Prob(F-statistic)	0.000018		

APPENDCES 3

VAR Lag Order Selection Criteria
Endogenous variables: GDP OPEN FDI GDE GFCF
Exogenous variables: C
Date: 01/01/13 Time: 22:01
Sample: 1970 2010
Included observations: 37

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1586.133	NA	1.55e+31	86.00721	86.22491	86.08396
1	-1401.191	309.9040	2.76e+27	77.36166	78.66781	77.82214
2	-1361.449	55.85296	1.35e+27	76.56482	78.95943	77.40903
3	-1320.122	46.91175	6.89e+26	75.68228	79.16535	76.91022
4	-1245.587	64.46301*	7.50e+25*	73.00469*	77.57622*	74.61637*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion