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Foreign Direct Investment and Economic Growth

A Thesis submitted to the Graduate School in partial
fulfillment of the requirements for the degree
Master of Economics
Universiti Utara Malaysia

by

Khor Chia Boon

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ABSTRAK

Pertengahan tahun 1980-an telah menyaksikan gabungan faktor-faktor yang menggalakkan aliran masuk pelaburan langsung asing (PLA) ke Malaysia. Seperti negara-negara sedang membangun yang lain, kerajaan Malaysia lebih mengalu-alukan kedatangan PLA daripada pelaburan portfolio kerana kerajaan mempercayai bahawa PLA dapat memainkan peranan yang penting dalam pembangunan ekonomi Malaysia. Memang tidak dapat dinafikan bahawa PLA telah banyak menyumbang kepada ekonomi Malaysia secara umumnya dan sektor pembuatan secara khasnya. PLA telah berjaya mempelbagaikan ekonomi Malaysia. Justeru itu, ekonomi negara kita tidak lagi bergantung kepada komoditi primer, tetapi sektor pembuatan telah muncul sebagai jentera penggerak ekonomi negara yang utama.

Objektif tesis ini adalah untuk menyiasat hubungan sebab-akibat antara PLA dengan pertumbuhan ekonomi. Topik ini agak lama dan telah dibincangkan oieh para penyelidik sejak tiga dekad yang lalu. Sejak tahun kebelakangan ini, minat dalam bidang ini dihidupkan semula, memandangkan pengiktirafan bahawa keterbukaan ekonomi dan aliran masuk modal antarabangsa (khasnya PLA) memainkan peranan penting dalam mempromosikan pertumbuhan ekonomi di negara-negara sedang membangun,

Kebanyakan kajian empirikal telah mengabaikan kewujudan hubungan sebab-akibat dua hala antara PLA dengan pertumbuhan ekonomi. Maka, kajian ini menggunakan analisis siri masa dan aplikasi *"Granger Causality"* untuk menentukan hubungan sebab-akibat antara PLA dengan pertumbuhan ekonomi di Malaysia.

Penemuan tesis ini ialah hubungan sebab-akibat dua hala wujud antara PLA dengan pertumbuhan ekonomi di Malaysia, di mana pertumbuhan dalam KDNK akan menarik masuk PLA, manakala PLA juga menyumbang kepada peningkatan dalam output negara.

ABSTRACT

The mid 1980s saw the convergence of various factors which encouraged the inflow of FDI into Malaysia. Like most other developing countries, the Malaysian government welcome FDI rather than portfolio investment simply because the government believed that FDI would play an important role in Malaysia's economic development. It cannot be denied that FDI has contributed significantly to the Malaysian economy in general and the manufacturing sector in particular. FDI has played a key role in the diversification of the Malaysian economy, as a result of which the economy is no longer precariously dependent on a few primarily commodities, with the manufacturing sector as the main engine of growth.

The objective of this thesis is to investigate the causal relationship between foreign direct investment (FDI) and economic growth. The topic is in fact quite old and has been discussed by researchers for the last 3 decades. Interest in this area has been revived in recent years largely due to the recognition that the economy's openness and international capital inflows (particularly FDI) play an increasing role in promoting economic growth in developing countries.

Most previous empirical studies have ignored the bi-directional causal relationship between FDI and economic growth. In this study, I employed time series analysis and Granger Causality test to determine the causal relationship between FDI and economic growth in the case of Malaysia.

The finding of this thesis is that bidirectional causality exist, between foreign direct investment and economic growth in Malaysia, i.e. while growth in GDP attracts FDI, FDI also contributes to an increase in output.

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I would like to express deep gratitude to Prof. Dr. Mohammad Haji Alias, not only for his valuable assistance , but also for his encouragement and guidance. Besides this, I would also like to thank Tang Tuck Cheong for all his help, and I am also grateful to Khor Kok Keat, Bong Wee Kiau and all my classmates.

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CHAPTER 1
INTRODUCTION

1.0   Introduction

It is difficult to provide a comprehensive definition of foreign direct investment (FDI). Some authors define it in terms of its international characteristics and contrast it with portfolio investment; others express it in terms of the activities of multinational corporations (MNCs). Most definitions, however seem to have two common elements. One is that FDI involves at least two countries. This criterion relates to the multinational character of FDI. The other is the issue of ownership and control, which distinguishes FDI from portfolio investment. Foreign portfolio investment is a simple transfer of financial capital – equity or loan – from one country to another, whereas FDI involves the ownership and control of production activities abroad. FDI is more complex in nature than portfolio investment since it often involves the transfer of inputs such as technical know-how, managerial and organisational ability, and so on. Moreover, when the necessary finance is raised locally there is no capital flow at all, at least not in a strict sense. Finally, FDI is embodied in the activities of MNCs. Therefore the definition of FDI cannot be practically considered in isolation from the definition of a MNC, which is also difficult to establish.

The International Monetary Fund (IMF) defines foreign direct investment (FDI) as "an investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise" (UNCTAD, 1993, 1994).

As the term implies, 'foreign direct investment' distinguishes itself from other types of international capital flows, for example, portfolio diversification or debt purchases, because it involves some degree of ownership control (Plummer and Montes, 1995). In the light of the new growth theory, parallel to domestic investment, FDI is an important factor which contributes to economic growth through technology transfer, efficiency improvement, its intricate link with trade flows and foreign exchange demands in a country. Specifically, FDI affects economic growth in several ways.

First, it is argued that FDI has been a major channel for the access to advanced technologies by recipient countries and hence plays a central role in the technological progress of these countries (Borensztein et al. 1998). Findlay (1978) asserts that the host countries can benefit from the 'contagion effects' associated with the advanced technology, management practices and marketing skills used by the foreign firms.

Second, outputs from FDI activities are often destined mainly to third-country markets outside the host and source countries. As inputs, FDI activities have used capital goods and other intermediate inputs supplied by host and other foreign countries. Thus, FDI is associated with both import and export trade in goods, and the hosting country can benefit from an investment-led export growth.

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Third, FDI is an agent for the transformation of both the host and source economies (Lyold, 1996). Multinationals have played a central role in developing the host countries' production capacities which are often directed towards export-oriented activities. As a result, FDI contributes to the transformation of the industrial structure of the host economy and the commodity composition of its exports.

Finally, the presence of foreign firms in the economy with their superior endowments of technology and management skills will expose local firms to fierce competition. Foreign firms will progressively induce plant managers and government officials to adopt the rules of a market economy, through the diffusion of management and marketing skills and the adoption of legislation aimed at promoting greater reliance on the market (Chen et al. 1995). Local firms may also be under pressure to improve their performance and to invest in research and development (R&D). Thus, FDI enhances the marginal productivity of the capital stock in the host economies and thereby promote growth (Wang and Blomstrom, 1992). In addition, Lahiri and Ono (1998) observed that higher efficiency of foreign firms may help lower prices and hence increase consumers' surplus. Furthermore, FDI raises employment by either creating new jobs directly or using local inputs (thus creating more jobs indirectly).

According to Xiao Qin Fan and Paul M. Dickie (2000), FDI contribute to growth through several channels. It directly affects growth through being a source of capital formation. Capital formation refers to net additions to the capital stock of an economy, including the creation of factories, new machinery and improved transportation. As a

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part of private investment, an increase in FDI will, by itself, contribute to an increase in total investment. An increase in investment directly contributes to growth.

FDI also contributes to growth indirectly. FDI beneficially influences other macroeconomic variables, such as employment, exports, consumption and savings. These, in turn, enhance growth.

FDI not only affects the level of investment, but also the quality of investment. In the view of industrial organisation theory of FDI (Hymer, 1976), MNCs face some disadvantages imposed by both geographic and cultural distances when competing with indigenous firms. To overcome these inherent disadvantages, MNCs must posses some kind of ownership advantage in order to compete with local enterprises. These ownership advantages can be expressed as technology, cost effectiveness, established markets and financial strength. These advantages enable them to operate in a foreign market. As such, FDI also consist of a bundle of intangible assets, including capital, new technology, management skills and market channels. The inflow of FDI can therefore contribute to improved technology, equipment and infrastructure in host countries.

Related to the technological advantages of FDI is the benefit accruing to domestic firms through the 'spillover effects' (Caves,1974;Globerman, 1979;Blomstrom & Perssion,1983;Athukorala & Menon,1996). When FDI flows into a host economy, there is a potential for FDI to act as a vehicle through which new ideas, technologies, and best working practises can be transferred to domestic firms. During this process, domestic firms can gain through several channels. The technology of local firms may improve as foreign firms demonstrate new technologies, provide technological

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assistance to their local suppliers and customers and train workers whom local firms may later employ. Furthermore, the competitive pressures exerted by foreign affiliates may force local firms to operate more efficiently and stimulate them to introduce new technologies. Because foreign firms are not able to extract the full value of these gains, they are often called 'externalities' or the 'spillover effect' from foreign direct investment (Kokko,1994).

FDI also strengthens the capability of a host economy to reach international markets through its international links (Chia,1995). Many MNCs use global trading and distribution channels established by parent firms to produce capital goods and intermediate inputs and to export their products. New FDI inflows often come in the form of import of capital equipment. Imports by affiliates of MNCs can increase productive capacity and improve the technological competitiveness of a host economy. Such imports are often required when a economy is going through the process of upgrading industries. The inflow of new production facilities enabled the receiving Malaysian economy to grow faster.

There is also evidence that foreign affiliates in developing economies often demonstrate a high propensity to export and tend to be more export-oriented relative to domestic firms. This is because one motivation for investing in developing economies is to enhance multinational firms export competitiveness through the use of cheaper labour inputs. Petri (1995) found that the export to sales ratio for foreign affiliates in East Asia was 63 % in the 1990s. UNTACD (1993) reported that investment flows to developing

East Asia had been directed at the creation on export-oriented industries. This had led to rapid growth in the region's manufacturing exports.

By frequently engaging in trade, affiliates in host economies gain access to these complex marketing and distribution networks. This, in turn, can create market opportunities for other firms in the host economy. Inter-firm linkages through subcontracting networks increase domestic firms' access to international markets. This applies especially to suppliers of parts and components. Thus, even firms who are not members of a MNC system can gain advantages in accessing international markets.

Even though FDI augments growth through direct as well as indirect channels, it is intrinsically difficult to quantitatively measure the contribution of FDI to growth. This is specially true for the indirect effects of FDI. Foreign direct investment can contribute to the upgrading of the whole industrial structure of economies through affecting macroeconomic variables such as employment, exports, consumption and savings. All of these factors contribute to technological progress and efficiency improvement, not only stimulate economic growth, but also directly to raising living standards within host economies.

However, empirical evidence has shown that the effect of FDI on economic growth is dependent upon a set of conditions in the host country's or local economy, for example, the level of human capital, government policies, location and infrastructure. In the absence of these preconditions, FDI may serve to enhance the private return to

investment only while exerting little positive impact in the recipient country (Balasubramanyam et al. 1996). It may even thwart rather than promote growth.

Like most other developing countries, the Malaysian government welcome FDI rather than portfolio investment simply because the government believed that FDI would play an important role in Malaysia's economic development. It cannot be denied that FDI has contributed significantly to the development of the Malaysian economy in general, and the manufacturing sector in particular. FDI has played a key role in the diversification of the Malaysian economy, as a result of which the economy is no longer precariously dependent on a few primarily commodities, with the manufacturing sector as the main engine of growth. Table 1 show the contribution of major sectors of economy to the GDP from 1960 to 1999.

Table. 1 Sectoral Contribution to GDP, 1960-1999 (% of GDP)

Sector \ Year	1960	1970	1980	1990	1999
Agriculture,Forestry & Fishing	40.5	30.8	22.8	18.7	9.4
Mining & Quarrying	6.1	6.3	10.0	9.7	7.2
Manufacturing & Construction	8.0	13.4	20.0	27.0	33.5
Services	3.0	3.9	4.6	3.5	7.9
Tertiary	42.4	45.6	42.6	41.1	42.0
Total	100.0	100.0	100.0	100.0	100.0

It is no exaggeration to state that the structural transformation of Malaysia would not have taken place with such rapidity in the absence of FDI. Foreign direct investment has helped the Malaysian economy in several ways. It has been financing a large proportion of the country's current account balance of payments deficits and/or contributing to the growth of the country's external reserves. FDI has also served as a means of filling the country's domestic resource gap (Ariff, Mohamed, 1991). In addition, FDI has brought with it modern technology without which industrialisation could not have taken off the ground. What is more, the country's export drive would have been severely handicapped but for the extensive market networks of foreign investors.

This reflects the general view of economists that FDI not only contributes to the growth of a country's income and employment, but it also helps to modernize industrial technology, particularly through the transfer of technology from developed countries to the developing countries. Foreign direct investment is a complement to local private and public investment and played an crucial role towards the expansion of the production capacity of the Malaysian economy. Apart from the role of closing the savings-investment gap, it also allowed for greater transformation of production technology and management skills. Coupled with a fairly liberal policy towards foreign investment, the country's FDI has continued to grow over the years. Unfortunately, the East Asia financial crisis in mid-1997 had caused the foreign direct investment to decline dramatically. The belief on FDI as a key factor driving export-led growth in Southeast

Asia, particularly Malaysia, had driven those countries to review and re-evaluate their

foreign investment policy in order to attract more foreign direct investment inflows.

Figure 1 shows the annual inflows of FDI into Malaysia from 1970 to 1999.

Figure 1. Annual FDI flows to Malaysia, 1970-99
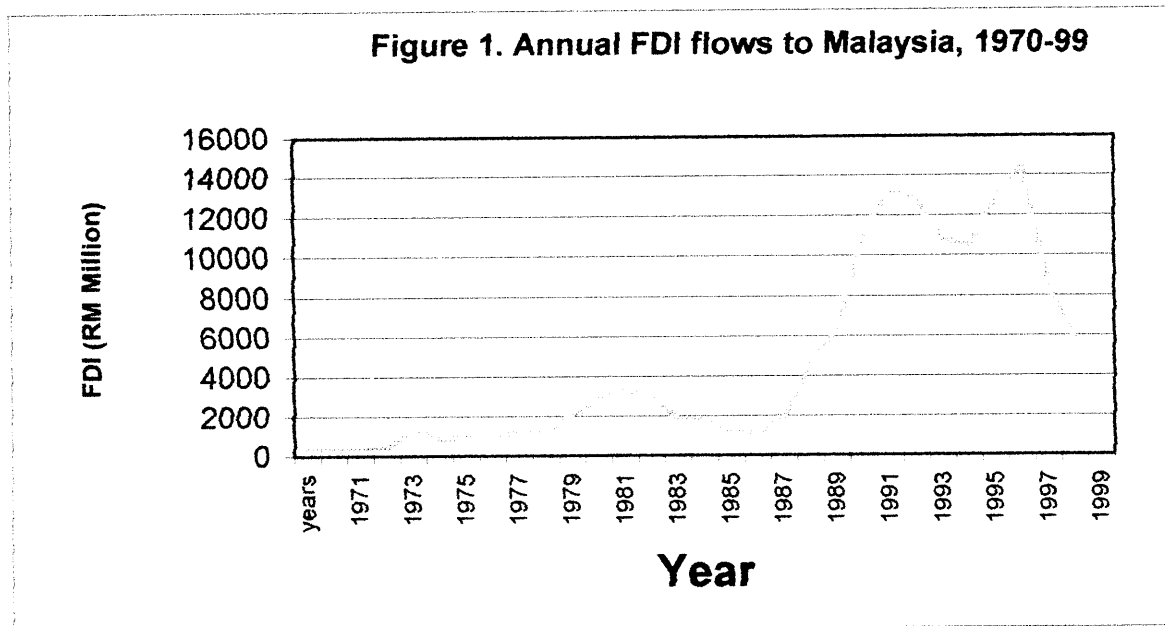
1.1   Problem Statement

In recent years, the issue of openness of an economy and growth has attracted

much attention from economists. The Endogenous Economic Growth model proposed

that it is possible to establish a long run equilibrium relationship between economic

openness and economic growth. Some researchers have argued that there is evidence

suggesting that an open economy country outperforms those countries pursuing

protectionism (Edwards, 1993). As pointed out by Marwah and Klein (1995), two

primary determinants of an economy's openness are free trade and free capital flows.

This study focuses on the inflows of foreign direct investment (as one of the many types

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of foreign capital inflows) into the economies of developing countries which has drawn considerable attention in the studies of development economics.

The major obstacle in the process of promoting economic development in developing countries is lack of capital. Theoretically, less developed countries that are short of domestic resources can further their economic expansion by utilizing foreign capital. Under conditions of perfect capital mobility, these inflows would also help equalize rate of return on capital across countries and narrow the development gap (Gupta & Islam, 1983).

In the literature, most studies have concentrated upon examining the impact of foreign capital inflows on the rate of economic growth of the developing countries. The 'advocates' of imported capital have put forth the notion that all capital inflows constitute net additions to less developed countries productive resources, without in any way substituting for savings. They further assume that such inflows have no effect on the incremental capital-output ratio. Hence foreign capital inflows had a favourable effect on the growth rate. This favourable effect was illustrated through the use of the Harrod-Domar and the two-gap model where foreign capital inflows facilitated and accelerated growth by removing the foreign exchange or domestic saving-investment gap. Papanek (1973) and others have empirically tested that foreign capital contributed significantly to growth.

The assertion that foreign capital inflows raise the growth rate by adding to a country's investible resources came under attack in the early 1970s, particularly after the

publication of the articles by Griffin (1970) and Enos (1970). Many empirical studies that followed tested the impact of foreign capital on economic growth. While there is substantial empirical evidence indicating that foreign capital inflows had in large part, displaced domestic savings, the statistical studies on the relationship between foreign capital inflows and growth produced inconclusive results.

The linkage between FDI and economic growth has been the subject of considerable research for many decades. However, the link between FDI and economic growth which has been subjected to empirical scrutiny remains the subject of debate. There is renewed interest in this area of research in recent years largely due to the globalisation of the world economy and due to the recognition that multinational corporations play an increasingly important role in trade, capital accumulation and economic growth in developing countries. Three developments have added an additional twist to the literature on the FDI-led growth study, particularly in the area of empirical studies. First, previous studies based on the assumption that there is one-way causality from FDI to GDP growth have been noted and criticised in more recent studies (for example, Kholdy 1995). In other words, not only can FDI 'Granger-cause' GDP growth (with either positive and negative effects), but GDP growth can also affect the inflow of FDI. Failure to consider either direction of such a causality can lead to an inefficient estimation of the impacts of FDI on economic growth and hence is subject to the problem of simultaneity bias. Second, the so-called 'new growth theory' has resulted in some reappraisal of the determinants of growth in modelling the role played by FDI in the growth process. Third, new developments in econometric theory, such as time-series

concepts of cointegration and causality testing, have further expanded the debate on the FDI-growth relationship.

1.2   Objectives of the Study

This study will test the causal relationship between foreign direct investment (FDI) and economic growth in Malaysia from 1970-99 by using the time series data. The objective of this study is to investigate whether FDI Granger-cause GDP growth or the other way round (GDP Granger-cause FDI). Previous empirical studies have ignored the bi-directional causal relationship among foreign direct investment inflows and economic growth. Beside this, this study, by using graphical analysis, tries to explain the relationship between FDI and domestic investment, export, import, economic growth and employment in Malaysia. In summary, the two objectives of this study are:

1. To determine the causal relationship between FDI and GDP growth.
2. To determine the relationship between FDI and domestic investment, exports, imports and employment

1.3   Methodology

In order to achieve the first objective, I employed time series analysis, Unit Root test and Granger Causality test. Unit root test was used to examine whether the data are stationary or not. In order to determine whether FDI Granger cause economic growth, or the other way round, the Granger causality was used. For the second objective, graphical analysis was used.

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CHAPTER 2
LITERATURE REVIEW

2.0 Literature Review

Empirical studies on the FDI-growth nexus can be categorised into two broad groups: (i) the studies which focus on the role of multinational firms and on the determinants of FDI; and (ii) the studies which, very recently, applied casualty tests based on time-series data to examine the nature of causal relationship between FDI and output growth. Some noteworthy studies in the first group are Scaperlanda and Mauer (1969), Dunning (1970) and Vernon (1971). More recently, Rugman (1994), Root and Ahmed (1978), Graham and Krugman (1989), O'Sullivan and Geyikdagi (1994), Lin (1995), Cable and Persaud (1987), Tsai (1994) and Chao and Yu (1994), among others, have examined the factors that influence the inflows and outflows of foreign direct investment.

In the second group of studies on the FDI-growth nexus, some scholars have applied time-series data analysis and directed their FDI-led growth studies towards the use of Granger no-causality testing procedure. These include, for instance, Karikari (1992), Saltz (1992), de Mello (1996), Kasibhata and Sawhney (1996), Kholdy (1995), Pfaffermayr (1994) and United Nations (1993). However, one of the problems with these studies is their arbitrary choice of the lag length used for causality test.

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Furthermore, these studies have applied F-test statistic for the causality test. It is now well established in the econometric literature that the F-test statistic is not valid if time series are integrated as argued by Zapata and Rambaldi (1997) and Gujarati (1995).

Some empirical studies have examined the FDI-led growth hypothesis in the case of Chinese economy. Recent attempts include Chen, Chang and Zhang (1995), Zhang (1995), Chen (1996), Pomfret (1991), Kueh (1992), Plummer and Montes (1995), Sun (1996), Wei (1996), Lee (1994) and Wang and Swain (1995). However, these studies suffer from two major problems. First, none of these studies have tested for the direction of causality between GDP growth and FDI inflow; they have implicitly assumed a one-way causality running from FDI to GDP growth and estimated the impacts of FDI based on such a causality which cannot yield reliable conclusions. Second, most of these studies have used cross-section data, the validity of which is also subject to debate.

The main arguments against the use of cross-section data and in favour of the use of time-series data have been: cross-country studies implicitly impose or assume a common economic structure and similar production technology across different countries which is most likely not true, but also by a host countries of domestic policies such as monetary, fiscal and external policies. Finally, the significance of the conclusions drawn from cross-section data is claimed not to be sufficient in finding a long-run causal relationship. Some studies have attempted to overcome the problems with cross-section data analysis and the simultaneity bias by using a simultaneous equations model. However, these studies, as pointed out by White (1992a, 1992b), suffer

from the problems of both inadequate theoretical foundations and poor econometric methodology.

As far as the model specification is concerned, most of these studies have used a simple two-variable relationship. It should be pointed out that the approach using a simple two-variable framework in the causality test without considering the effects of other variables is subject to a specification bias. It is established in the econometric literature that causality tests are sensitive to model selection and functional form (Gujarati, 1995). Riezman, Whiteman and Summers (1996) have pointed out an important finding that omitting the import variable in the vector-autoregression (VAR) estimation process can result in both 'type I' and 'type II' errors, that is, spurious rejection of one causality as well as spurious detection of it.

Another problem that has often been ignored and/or has not been dealt with adequately in the literature, yet far more important, is the endogenous nature of a production function as argued by Greenway and Sapsford (1994). Therefore, studies which do not consider the endogenous nature of the growth process are subject to a simultaneity bias. The use of a VAR model has proved to generate more reliable estimates in an endogenous context (Gujarati, 1995).

Although the choice of the optimal lag length in the causality test has been noted in some studies, very few studies have considered the problem of the sensitivity of the causality test results under different lag structures. It is vital to obtain consistent

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causality results for at least some conventional criterion such as Akaike Information Criteria (AIC) and/or the Schwartz Criterion (SC).

Theoretically, the causality between FDI and GDP growth could run in either direction: FDI could promote further GDP growth as postulated, among others, by Todaro (1982), Chenery and Strout (1966), Dunning (1970), the World Bank (1993) and Krueger (1987). Recently some economists, in the line with the 'new growth theory', argued that through the capital accumulation in the recipient economy, FDI is expected to generate non-convex growth by encouraging the incorporation of new inputs and foreign technologies in the production function of the recipient economy. Further, through knowledge transfers, FDI is expected to augment the existing stock of knowledge in the recipient economy through labour training and skill acquisition, on the other hand, and through the introduction of alternative management practices and organisational arrangements, on the other (de Mello and Sinclair, 1995). As a result, foreign investors may increase the productivity of the recipient economy and FDI can be deemed to be a catalyst for domestic investment and technological progress.

However, the causality could also run the opposite way: rapid GDP growth could induce the inflow of FDI. This is because rapid GDP growth will usually create a high level of capital requirement in the host country, and hence the host country will demand more FDI by offering concessional terms for FDI to attract overseas investors. Further, rapid economic growth, accompanied by an increased higher per capita income, will create huge opportunities for FDI to invest in industrial sectors, consumer durable goods production and infrastructure in the host country.

It should be pointed out that the direction of the causality between FDI and GDP growth depends on many economic as well as political and cultural factors, such as the level of economic development, the productivity of FDI and the policies shaping FDI inflow. Ultimately, we shall have to 'let data speak'. Malaysia's case fits neatly into this context. Since the adoption of the export-led, and FDI driven growth, Malaysia has achieved high rates of economic growth. During the 1990s, Malaysia's rapid economic growth was increasingly dependent on the huge FDI inflow, while rapid economic growth also attracted more capital from overseas.

Studies by Hills (1985), Kojima (1978;1985), and Lee (1983;1984) suggested that foreign direct investment by various multinational corporations contributed immensely to the growth of the Pacific Rim countries. Multinational corporations contribute to the growth and development of host countries through transfer of technology, training and skill development, providing capital for further development and the exporting of manufactured goods. Borenstein (1995) agreed that FDI has a larger impact on growth than domestic investment after he regressed data from 69 economies. Besides this, he also found that FDI did not crowd out domestic investment.

Lee, Rana and Iwasaki (1986) estimate a simultaneous equations model of saving and growth for a sample of Asian developing countries. Of the various capital inflow components included in their growth rate equation, FDI has the greatest positive impact. The authors also find that FDI increases total factor productivity. Husain and Jun (1992) use a similar approach and also detect a significantly positive effect of FDI on the rate of

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economic growth for four ASEAN countries- Indonesia, Malaysia, Thailand and Philippines. Maxwell J. Fry (1996) found that FDI does not have a significantly different effect from domestically financed investment on growth in the sample of six Pacific Basin countries (Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand). Hence, its impact on growth is exerted indirectly through its effects on the investment ratio and the export growth rate. He also concluded that both the nature and the effects of FDI flows vary significantly between different regions of the developing world. Outside the Pacific Basin, FDI appears to have been used in large part as a substitute for other types of foreign flows; it has not increased aggregate domestic investment. When the control group countries attracted more FDI inflows, national savings, domestic investment and the rate of economic growth all declined. Hence, FDI appears to have been immizering in these countries. In contrast, the role of FDI in the Pacific Basin has been benign. In these economies, FDI financial flows have not been close substitutes for other types of foreign capital flows. Hence, its impact on growth is exerted indirectly through its effects on the investment ratio and the export growth rate.

Studies by Blejer and Khan (1984) found that FDI increases capital formation in the Pacific Basin countries. Indeed, this estimate is consistent with the statement that FDI in the Pacific Basin corresponds to capital formation on a one-to-one basis, since the coefficient of FDI is not significantly different from 1. This implies that FDI may not be a close substitute for other forms of capital inflow in these economies. Furthermore, it suggest that FDI does not crowd out or substitute for domestically financed investment.

2.1   Theories of FDI

Many theories of foreign direct investment have come to the fore trying to explain its wholesale expansion in the post-World War II era and its allocation by country and region as well. Of course, the oldest is the hypothesis of differential rates of return (Argawal,1980: 741). This is simply an extension of the hypothesis concerning domestic investment – that funds flow to where they earn the highest yield (Argawal,1980: 4). In the domestic context, this can mean a particular industry or product; in the foreign context, it means a given nation. Here the assumption is that firms maximize profits by equating marginal return with marginal cost of capital. Yet empirical studies on comparative rates of return have been inconclusive. The reason for such lack of conclusivity appears to be the data and time periods used.

Another widely-held explanation of foreign direct investment was the product-cycle theory, particularly as put forward by Vernon (Bergsten, Moran & Horst, 1978: 56-57). According to this theory, multinational corporations (MNC) tends to develop relatively advanced, high-priced products with little foreign demand. As the product and its market matures, price decreases and its production becomes more standardized as competition increases. At this happens, foreign demand, which heretofore had been satisfied by exports, increases and local production becomes more feasible. Other factors spurring the establishment of a foreign subsidiary include the simplification of the technology of the product and/or its production process and the desire to try to protect its market position on the part of the multinational. Usually, the investing firm

will vie for an oligopoly position overseas, while back home its market position have tended to recede toward monopolistic competition. Hence, when products are new, exporting is generally preferable but, when the product and market are mature, local production tends to become more cost-beneficial.

A logical extension of the product-cycle theory is the Marxist-Leninist corollary that describes imperialism as the "highest form of capitalism" (Oneal & Oneal,1988: 347-373). In Lenin's 1916 book on the subject, written at the zenith of the colonial period and the era of exploitative monopolies and cartels, the author described home markets as "saturated" with labour costs rising because of increasing unionisation, making for lower rates of return. Such a process drives multinationals to try secure nascent markets, low-cost labour and raw materials overseas for themselves and this in turn necessities political control by the home country of the investing company. Yet some empirical studies of rates of return during the peak periods of empire from the late 1800s to the early 1900s indicate that, especially when government administrative costs are included, the economic return for colonialism was nominal at best. This points to non-pecuniary origins for empire-building, namely nationalism. And to bring this theory up to modern times, critics of the theory point to generally higher rates of return in developed regions of the world and the lack of political control by multinationals in most lesser-developed countries in the post-colonial age. This theory might have had some validity a century ago, but in the post-World War II era has lost much of its intellectual appeal.

The behavioural approach to foreign direct investment de-emphasizes quantitative factors like rates of return and hones in on internal corporate motivation. Aharoni (1966: 49,182,115) was a strong supporter of this theory which stated that often the firm is faced with an equanimical choice between exporting versus overseas production and that top management makes its decision based on qualitative factors. Another factor is the level of the firm's experience abroad; the more it has, the less reticence it has about opening up foreign production facilities. Aharoni blamed lower management for sometimes initiating overly optimistic reports recommending overseas investment, in effect "forcing" top management into a positive decision on the subject. The approach has many opponents who criticize the investment process as described in the theory as too serendipitous and not sufficiently rational from an economics viewpoint.

The industrial organization approach, pioneered by Hymer, characterized foreign direct investment as a strategy by which multinationals attempt to limit local competition through technological superiority, product differentiation and access to credit (McClintock,1988: 478; Hymer,1972:133: Little,1982: 183). Essentially a Marxist approach, this theory espoused the "law of uneven development", which stipulated that multinationals and the ruling elite in lesser-developed countries are allies who undermine the general interest of the host country. Indeed, Hymer specifically recommended that lesser-developed countries extricate themselves from multinational investment by nationalization and use government planning to create autarky. Hence, the industrial organization theory conceded that foreign direct investment by multinationals

creates economic benefits are concentrated in the hands of relatively few, the lesser-developed country is better off without such investment. Critics of this theory refuted such conclusions, claming that economic benefits "trickle down" to include more than just an elite. In addition to the local payroll generated by foreign-owned plants, indirect benefits include new skills learned by local workers and management: alike, transfer of new technology and improvement of local infrastructure.

The "Japanese school" of thought on foreign direct investment combined micro- and macroeconomic variables to explain the role of comparative advantage in the process (McClintok,1988: 479-480). Propounded by Kojima and Ozawa, the theory used such mirco variables as relative factor endowments and intangible assets and such macro variables as government industrial and trade policies to account for differences in foreign direct investment levels among countries. Using the post World War II experience of Japan as example, the authors advocated a strong government role in research and development in order to "socialize" risk while simultaneously maintaining a competitive environment in the business realm itself. In addition, the theory promoted the role of the state in assisting companies to set up operations overseas to take advantage of cheaper labour. This would be facilitated through low-cost, government-assisted financing and selective tax and exchange rate policies. Hence, the net result is improved comparative advantage for both nations – the home country because of its technological edge and the host country as recipient of new production facilities.

In the appropriability theory of the multinational corporations, best represented by Magee, the industrial organization approach to foreign direct investment was

combined with the neoclassical concepts of private appropriability of the returns from investments in technology (Calvet,1981: 49, Magee,1976: 317, 333). Such technology is created during the following five stages: new product discovery, product development, formulation of the production process, market creation and appropriability. Because sophisticated product discovery, product development, formulation of the production process, market creation and appropriability. Because sophisticated technology is more difficult to imitate than simple technology, the multinational company tends to favour the former, even to the detriment of the customer, particularly in lesser-developed countries. Also, the theory asserted that technology is transferred more efficiently internally rather than by the market. The net result is a technology cycle in which young companies expand rapidly to accommodate new technologies, while older firms reach their optimum size because of the low level of new technology produced. Thus, expanding firm will tend to invest directly in production facilities abroad, whereas non-innovating companies will tend to license more because of less fear of loss of technology.

The internalisation theory puts forth the notion that foreign direct investment is an outgrowth of the bureaucratic desire on the part of multinationals to integrate vertically (Calvet,1981: 49-50; Buckley & Casson, 1976: 33). From research and development to raw materials acquisition to production to marketing, market external to the multinational tend to be imperfect and difficult to organize, especially when overseas. Therefore top management "organically" wants to be able to control such external markets as much as possible, resulting in the purchase of relevant resources

abroad. Thus, foreign direct investment represents an international extension of managerial control over foreign subsidiaries as opposed to merely a transfer of capital to reap the highest possible return. And finally, according to this theory, multinationals must internalise their resources optimally in order to succeed; that is, it is not enough merely to possess such resources, but they must be managed properly.

Various theories of foreign direct investment considered the important aspect of political risk (Schneider & Frey,1985: 162). "Political risk" means the possibility of nationalization, expropriation, or destruction of the multinational's property. In light of such risk, it is reasonable that businesses expect a higher rate of return from their investment than a comparable one in, say, the home country or a developed one. Some studies indicated that top management decision makers rank political stability equally with potential and economic consideration. Of course, this subject is pertinent mainly to lesser-developed countries. Virulent swings in government policy, from right to left wing, have occurred often, resulting in nationalization or expropriation. An example of the latter took place in Cuba; after seizing many foreign-owned firms during his takeover, Castro declined to compensate their owners at all. Nationalization, of course, is much more common, whereby the host country pays at least something for the property, through usually much less than market value. And numerous wars and revolutions have also taken their toll in foreign-owned property. Statistical tests of the effect of political instability on foreign direct investment have been done but were inconclusive because of the difficulty of establishing for time lags.

The diversification theory of foreign direct investment with respect to multinationals is analogous to that of domestic or even personal investment. To reduce aggregate risk and maximize overall return, a multinational should diversify its facilities regarding host countries (Calvet,1981: 50-51). This theory obviously concentrated on large, established multinationals with world-wide operations as opposed to, say, a firm seeking.

In summary, economic theory and empirical evidence postulate that FDI can contribute both positively and negatively to economic growth. On the one hand, some economists have admitted that FDI is more important than domestic investment in terms of its individual contribution to the growth rate.

CHAPTER 3
HISTORICAL BACKGROUND OF FDI IN MALAYSIA

3.0 Historical Background of FDI in Malaysia

FDI in Malaysia has a fairly long history. British investment in the country reached substantial levels as early as the 1920s (Fong, 1992). However, British investment was heavily concentrated in the plantation and mining sectors, which together accounted for over 90 % of the total British investment in the country (Saham, 1980). This investment pattern was a result of the fact that Malaysia's comparative advantage lay in the production of primary commodities and mineral products. The investment of British multinational corporations (MNCs) in local manufacturing did not become evident until the early 1960s. The British MNCs that initiated investment in the manufacturing were responding in part to the Malaysian government's import substitution industrialisation program, and in part to a desire to maintain their share of the Malaysian market for consumer goods (Fong, 1992). Participation by other foreign countries were negligible.

According to Charles Hill, Malaysia depends on FDI for expansion, modernisation and technology transfer. Substantial FDI exist not only in agriculture, mining, construction, service sectors as well as manufacturing and industrial sector.

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Over the years, FDI had evolved from a source of investment in import substitution industries to a source of investment in export-oriented and high technology industries. Table 2 below show the Malaysian government tried to shape the nature of FDI and the economy.

Table 2. The Evolutionary Phases of FDI in Malaysia

Time Period	Nature of FDI	Incentives offered
Prior to Independence in 1957; Early 1950s	Concentrated in primary industries	Nil
After Independence	Emphasis is on development manufacturing sector	Pioneer Industries Ordinance Relief from Income Tax Foreign investors encourage to develop import substitution industries
Late 1960s	Export-oriented and labour intensive industries	Investment Incentives Act, 1968
1970s	Encourage export-oriented industries to overcome limitations of domestic market and absorb the growing pool of unemployed	Liberal policies on equity, tax incentives and provision of extensive infrastructure

Setting up of Free Trade Zones (FTZ) |
| 1980s | Increase internationalisation of economy Investments mostly in semiconductor industry | Industrial Master Plan (IMP) launched in 1985 Widen and deepen industrial base, encourage resource-based, engineering, supporting and heavy industries Diversification and upgrading of non resource based industries for export |
| 1990s | High value-added and high technology industries Capital intensive projects | Cluster-based strategy to strengthen industrial linkages Identification and promotion of key industrial clusters |

(Source: Malaysia Today (Towards Vision 2020)by Asian Strategy & Leadership Institute, 1997)

According to the traditional economic view, FDI is needed because of the shortfall in the domestic investment-savings gap: and FDI is pursued by firms seeking to maximise profit. On the other hand, contemporary economists argue that it is the country's comparative advantage that determines the flow of FDI. In the case of Malaysia, however, the evolutionary phases and flow of FDI date as far back to the colonial period. The official statistics of FDI in Malaysia before independence are practically impossible to obtain. The data sources that have been used in other studies have had to rely on estimates. Moreover, even after independence in 1957, the official data on FDI collected by the main government agency, MIDA, only began from 1980; and BNM started from 1960.

3.1 Evolutionary Phases of FDI in Malaysia

However, the flow of FDI in Malaysia can be said to have evolved through four major phases: FDI in the early development phase, FDI in the import-substitution phase, FDI in the export-oriented phase and FDI in the Multimedia Super Corridor (MSC) phase of development.

3.1.1 FDI in the Early Development Phase

Previous studies have argued that the flow of FDI in Malaysia before and after independence was mainly in the agricultural sector. The early development phase which took part before the First and Second Malaysia Plan indicated that the Malaysian

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economy was heavily dependent on agricultural resources. Even after the First Malaysia Plan, the main export earner for the nation was rubber and tin. One estimate puts it that 70 % of FDI in Malaysia during the early development was in agriculture (Edwards,1994).

The reasons for investing heavily in the agricultural sector by the British colonial masters was purely to provide raw materials to feed the industries in Britain in particular and Europe in general. It is not surprising that the bulk of FDI in the country was in the agricultural sector. In 1950, gross export earnings was US$ 2,608 million. Of the total GDP in 1950, rubber and tin contributions amounted to 86.3 %, 85.1 % in 1955 and 79.9 % in 1960 (Lim, 1973). The increasing contribution as well as fluctuation of rubber and tin to the GDP showed heavily reliance of the country's development on the agricultural sector. Meanwhile the prices of rubber and tin in the international market continued to decline from 98 cents per pound in 1956, 87 cents per pound in 1957 to 80 cents per pound in 1960. Likewise GDP fell from 2.5 % in 1957 to 0.5 % in 1958. In fact, the population growth rates during the same period were much higher, making it difficult to sustain a reasonable economic development. The 1947 population increased from 5.8 million to 7.4 million in 1957. Moreover in 1955, the agricultural sector's contribution to GDP was about 40 %, whereas manufacturing was only 8 %. In 1960, total agricultural contribution had declined to 38 % while manufacturing was only 9 %. It is evident that the flow of FDI in the early phase of development was greatly determined by demands of the agricultural sector under the colonial masters.

3.1.2   FDI in the Import-Substitution Phase

Between 1965 and 1980, total FDI is estimated to have increased by 145 % from RM 300 million to RM 1.4 billion in 1980. The bulk of FDI was in the manufacturing sector, especially in projects which aimed to cater to the local market. Unlike the early development phase, the import-substitution phase was a carefully planned development process which covered the periods of the First, Second and Third Malaysia Plan. Although the agriculture sector continued to play a major role in the overall economy, its significance and dependence was slowly being reduced. In 1970, the agricultural sector's contribution to the GDP declined to 31 %, then 28 % in 1975, and finally to 23 % in 1980. Conversely, the manufacturing sector was increasingly gaining prominence with a total share of contribution amounting to 13 % in 1970, 16 % in 1975 and 20 % in 1980.

In essence, the import-substitution phase not only encouraged more FDI into the country but enabled the government to re-strategize the economy from an agriculture-based to manufacturing. At the same time, investors were provided with various forms of incentive mainly to meet local market production. Joint ventures were highly encouraged as this was seen to be essential and also in line with the government's goal for economic development. However, this does not a strategy to encourage foreign investors and increase the number of local entrepreneurs simultaneously.

3.1.3   FDI in the Export-Oriented Phase

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Given the limited size of the domestic market during the 1970s, the economy had always relied on FDI and it was time for the government to embark on market-oriented strategy which is often known as the export-led growth. Arising from the open nature of the domestic economy was the massive inflow of FDI, which today, has shaped the economy in line for the next millennium. In 1980, total FDI inflow amounted to RM 730 million.

In 1995, FDI increased to RM 9.1 billion. Between 1980 and 1995, Malaysia received FDI by MNCs totalling RM 120 billion. Moreover, in 1981, the share of FDI to total investment was 29 %, 33 % in 1986 and 54 % in 1988. By 1995, Malaysia already the largest recipient of FDI in ASEAN. The massive influx of FDI meant job opportunities, shortage of manpower and, more importantly, less dependence on the primarily sector. In 1981, the primarily sector which consists of agriculture, forestry, livestock, fishery, mining and quarrying, recorded growth rates of 3.2 %, 0.8 % in 1986 and 1.0 % in 1988. The secondary sector, which is made up of manufacturing, grew at the rate of 7.0 % in 1981, 1.5 % in 1986 and 4 % in 1988. The shift of the economy from an agriculture and import-substitution based to export-led was a major achievement.

It can be safely said that Malaysia's economic development in the last forty years is undoubtedly a success story. The main engine of this growth has been the flow of FDI. Since the early 1990s, FDI flow has been directed to the high-tech industries in support of the establishment of the MSC and the realisation of Vision 2020.

3.1.4   FDI in the MSC Development Phase

The successful attraction of FDI inflow into Malaysia between 1996 and 2020 will be the most crucial for the nation. It is expected to be the period when the nation will have achieved its industrialised status and attained much higher living standards for its citizens. Moreover, the MSC development is the most prominent symbol of Malaysia's efforts to use information technology (IT) as a foundation in all aspects of its national development. The country's comparative advantage in this millennium lies in the development of the MSC. MSC is seen as the centre of attraction for FDI and the ladder to leap frog towards attaining a fully developed industrialised status and to transform the economy from production-base economy (P-economy) to knowledge-base economy (K-economy).

Based on the data provided from MIDA, the flow of FDI between 1980 and May 1998, amounted to RM 140 billion. RM 40 billion of the total was accounted for between 1980 and 1990 and over a hundred billion between 1991 and May 1998. It is evident from the data that the bulk of Malaysia's FDI took place between 1991 and 1998. This is explained though the government 's effort to encourage MSC and FDI in the high-tech industries. In 1997, FDI inflow was RM 24.7 billion. Due to the recession in1998, FDI inflow has dropped to RM 10.26 billion, before rose by 31 % to RM 13.3 billion in 1999. The strong FDI inflows is reflected in a 67.6 % increase in applications for investments in the manufacturing sector in the first seven months in 2000. This translate into a valued at RM 17.5 billion. To date, the government has approved seven projects valued at RM 11.25 billion. In addition, investments in high technology developments in the MSC totalled RM 2.8 billion (New Strait Times, 28 Oct 2000).

According to the Minister of International Trade and Industry, Datuk Rafidah Aziz, the manufacturing's performance was good during 2000. It received applications that worth RM 45.875 billion, and 64.7% or RM 29.7 billion came from the foreign investors. She also added that the approval FDI for last year was RM 19.8 billion (7 February 2001, Nanyang Siang Pau).

The quality of investment would be the major concern in our economic growth process. We noticed that the bulk of the investment applications are concentrated on high value added projects and this argues well for the technological upgrading of the country's industrial capacity.

However, Malaysia's challenges is to attract high quality FDI that is appropriate to its present stage of economic development. With anticipated strong domestic aggregate demand and export performance, we expect FDI to increase moderately in 2001. However, FDI will unlikely reach pre-crisis level. During 1990-97, total foreign investment applications and approvals averaged RM 15.8 billion and RM 11.5 billion respectively.

3.2   The Sources of FDI in Malaysia

It is evident that the flow of FDI in Malaysia indicates the special relationship that exist between the government and foreign investors. The changing pattern of the sources of FDI in Malaysia are indeed interesting. Official statistics supplied by MIDA

indicates that in 1980, Singapore was the biggest investor. After one and a half decades, the United States became the biggest investor in the country until now.

In the period of 1991 to 1997, Malaysia drew most of its FDI from five countries, namely Japan, United States, Taiwan, Singapore and Korea. Together they accounted for RM 60.8 billion or 67.4 % of the total proposed FDI. Investments from these countries were mostly concentrated in the electrical and electronics sector, chemical and chemical products, basic metal products and petroleum refinery industry.

By industry, Japan's investment has largely concentrated in the electrical and electronics sector, chemical and chemical products, basic metal products and non-metallic mineral products. The United States continues to renew its investment in petroleum refining and the electrical and electronics industry. The bulk of Taiwan's investments between 1991 and 1997 was in electronics, textiles, wood-based products and petroleum refining. Between 1991 and 1997, Singapore invested more than RM 10 billion or 11.3 % of the total proposed FDI in Malaysia. Singapore has largely concentrated on the electrical and electronics sector, basic metal products industry and lately petroleum refining. Korean investment for the same period amounted to RM 4.4 billion or about 5 % of total FDI. Most of its investments have been in non-metallic mineral products and the electrical and electronics industry. Wholly foreign and majority projects totalled about 41 % of FDI in 1998. Wholly Malaysian and majority Malaysian projects amounted to 51 %.

Proposed foreign investment in applications received amounted RM 12,651.2

million in 1998 compared to RM 14,382.9 million in 1997, registered a decrease of 12

%. The trend of investments of countries remained similar to that observed the previous

year although the levels registered were lower. The top five major sources of investment

were the US (RM 6,534.3 million or 51.6 % of total foreign investment), Japan (RM

1,143.9 million or 9 %), the Netherlands (RM 1,091.4 million or 8.6 %), Singapore (RM

805.5 million or 6.4 %) and the United Kingdom (RM 614.6 million or 4.9 %).

Investment from these five countries amounted to RM 10,189.7 million or 80 % of total

foreign investments.

Proposed foreign investment in applications received amounted RM 29.7 billion

in the year of 2000. The top five major sources of investments were the US (RM 7.5

billion), Japan (RM 2.9 billion), the Netherlands (RM 2.2 billion), Singapore (RM 1.8

billion) and Germany (RM 1.7 billion). The approved projects in manufacturing sector

from January to October, by foreign investors is RM 10,435.5 million (MIDA, 2000).

Table 3. show the top five sources of foreign investment in Malaysia, from 1980 to

2000.

Table 3 The Top Five Sources of Foreign Investment in Malaysia, 1980 – 2000 (RM billion)

Country \ Year	1980	1985	1990	1995	2000
United States	1.05	1.11	-	18.01	7.50
Singapore	1.17	1.00	8.95	10.08	1.80
Japan	0.94	2.64	42.12	20.96	2.90
Netherlands	0.41	-	-	-	2.20
United Kingdom	0.48	0.28	8.67	1.89	-
Hong Kong	-	0.28	-	1.75	-
Korea	-	-	18.18	-	-
Indonesia	-	-	1.08	-	-
China	-	-	-	-	-
Germany	-	-	-	-	1.70

(Sources: Malaysian Industrial Development Authority ,MIDA)

3.3 Sectoral Distribution of FDI

The changing distribution of the total foreign investments is reflected in the year-by-year differences in industries by state. For instance, the proposed total foreign investments in applications received in 1996 amounted to RM 17,607.3 million. Of this total, high levels of foreign investments were recorded in four industries: electrical and electronic products (RM 6,276.6 million), paper, printing and publishing (RM 4,635.7

million), chemical and chemical products (RM 3,430.1 million) and basic metal products (RM 864.1 million). These four industries contributed RM 15,206.6 million or 86.4 % of the proposed foreign investments.

In terms of capital investment, the state of Sarawak emerged as the largest recipient with a proposed capital investment of RM 10,834.2 million. This contributed to 26 % of the total. Pahang came second on the list of the recipients of proposed capital investment (RM 5,727.5 million), followed by Kedah (RM 4,996 million), Penang (RM 4,577 million), Johor (RM 4,426.4 million) and Selangor (RM 4,577 million).

In 1997, though total foreign investment registered a decrease of 22.6 %, actual investment amounted to RM 13,643.4 million. Applications for high levels of foreign investment were mainly recorded in six industries: petroleum products (RM 4,765.6 million), electrical and electronics products (RM 2,998 million), basic metal products (RM 1,591.3 million), fabricated metal products (RM 893.5 million), chemical and chemical products (RM 629.9 million) and food manufacturing (RM 445.1 million). These six industries accounted for RM 11,316.4 million or 82.9 % of the proposed total foreign investments.

The changing pattern of the distribution of foreign investment among the manufacturing industries indicates the comparative advantage in attracting FDI for that year. In 1998, the electrical and electronic products industry received a total of 186 applications with investments of RM 5,821.4 million. Nine projects each with RM 100 million or more accounted for the bulk of investments, i.e. RM 4,624.8 million or 79.4

% of the total. A total of 147 or 79.4 % were expansion and diversification projects. These projects also absorbed a sizeable portion of the total investments proposed in the industry, i.e. RM 5,165.6 million or 88.7 % of the total. OF the 147 projects, 87 were wholly foreign-owned and 21 were with majority foreign equity. Foreign investments proposed in the expansion and diversification projects totalled RM 5,073.9 million.

In the year of 2000, the top five industries which received the largest portion of foreign investment were electrical and electronics (RM 12.2 billion), natural gas (RM 7.2 billion),petroleum products (RM 2.3 billion), non-metalic products (RM 1.8 billion) and paper, printing and publishing (RM 1.5 billion) Table 4. show the approved foreign investment in projects by top five industries in Malaysia, from 1980 to 2000.

Table 4. Approved Foreign Investment in Projects by Top Five Industries, 1980- 2000 (RM billion)

Sector \ Year	1980	1985	1990	1995	1999	2000
Food Manufacturing	1.07	-	-	-	2.76	-
Chemical & Chemical Products	-	0.68	-	17.27	18.25	-
Non-Metalic Products	0.88	1.10	-	12.54	2.66	1.80
Basic Metalic Products	0.88	1.48	45.38	4.74	-	-
Electrical & Electrics	1.93	1.10	37.73	23.73	59.46	12.2
Transport Equipment	-	1.86	-	-	-	-
Paper, Printing & Publishing	-	1.01	-	-	10.71	1.50
Petroleum Products	-	-	27.03	-	31.47	2.30
Machinery Manufacturing	-	-	11.67	-	-	-
Wood & Wood Products	-	-	-	7.42	-	-
Natural Gas	-	-	-	-	-	7.20
Textiles & Textiles Products	-	-	-	-	-	0.6

(Source: MIDA.)

3.4   Cost and Benefits of FDI: Theoretical Issues

Host governments may have influences upon the way in which foreign firms approach host country market. The general political, social and economic environment (the so-called environment climate) will affect firms perceptions of risk and thus influence the decision of the foreign investors. The main issue is for the recipient country to devise policies that will succeed in encouraging a greater inflow of FDI and ensuring that it makes the maximum contribution feasible toward the achievement of the country's development objectives. However, the policies taken by the developing countries reveal a mix picture of restrictions and incentives (G. M. Meier, 1989). On the one hand, the foreign investors' freedom of action may be restricted by a variety of governmental regulations that exclude FDI from certain 'key' sectors of the economy. On the other hand, a number of investment incentives measures have been adopted or are under consideration. To understand the discrepancy that characterise these mixed policy, it is important to examine the role of FDI by assessing the cost and benefits of FDI. Such an assessment may provide a more rational basis for host governments to devise policies which will meet the mutual interests of private investors and host countries. The proceeding discussion will be centred on the development debate (including FDI) that is divided between a range of a more orthodox views (the neo-classical economics), which stressed the potential for development for within helped if necessary by the industrialised countries, a less radical views (dependency theories), which stressed the difficulties faced by the developing countries in the world economy, and finally a quite in-the-middle approach (structuralist). We will see that, the growth in Malaysia has taken the third approach as a tool to justify its development measures.

There is little agreement among economists about the costs and benefits of FDI to a host country, just as there are radically different views of MNCs and FDI in general (Rhys Jenkins, 1987). The major problem costs and benefits of FDI is assessing the counterfactual case, that is what would have happened in the absence of FDI.

There are neo-classical economists who argue that MNCs are generally beneficial to the economies of the host countries. They provide a superior management allied to advanced technology. In this view, FDI is a supplement to domestic savings but also provides foreign exchange (Khor Kok Peng, 1983). However, although FDI provides a source of higher productivity, there are limits to the miracles that MNCs management can perform with the level of skills generally available in LDCs. It is likely that to obtain higher levels of productivity, the product has to be reasonably standardised. The argument is that, the production most suited to LDCs will be passed down from rich countries such as in Western Europe and America. This is Vernon's product cycle theory in which relatively 'mature products' are most aptly produced in the LDCs (N.Hood & S. Young, 1979).

In this neo-classical view, MNCs are not the cause of imperfections in factor and product markets which are likely to be introduced or permitted by governments. These imperfections increase the opportunities for profits and the MNCs, instead of causing the imperfections, reduce them by 'internalising' them (N. Hood & S. Young, 1979).

A quite different views is put forward by those who see the MNCs as bringing more costs than benefits to the host countries particularly the Marxist theorists. In this

view, FDI is treated as a major vehicle of imperialism under colonialism with MNCs being the economic linkage or appendage to the political body. Marx held that capitalism would help development by breaking down the obstructive pre-capitalist "models of production" which he believed to prevail in the colonies (I. M. Wallerstein, 1979). Governments in the capitalist nations are considered by the Marxists as simple pawns in the hands of the owners of the means of production. Therefore, government policy is designed to entrench the power base of the capitalists. Eventually, the proletariats (the destitute workers in LDCs) will recognise their common blight and by virtue of sheer numbers rise up to overthrow the very powerful but numerically inferior capitalists class. The revolt of the proletariat will then lead to a socialist society which will permit the workers to assume control of both government and the means of production. The final stage of society evolution will be withered away and each person will be free to pursue his or her own desires.

The Marxist version of dependency is thus fairly clear-cut. International investment is a tool of the capitalist nations used to maintain economic dominance over the Third World, and the way to remedy the situation is to establish socialist regimes in the developing nations and break the "linkage" (MNCs) leading to the capitalist countries.

There were also less Marxist but still radical approach known as dependency theories. This approach does not agree with Marx's thesis but consider that structural characteristics make it very difficult for LDCs to get a fair share in the international investment game (Raul Prebisch, 1971). Raul Prebisch has been one of the most

articulate representatives of this school. He argues that the Third World nations will continue to lose ground so long as they import industrial products and export commodities. Since wage is relatively high and other production cost increases in the advanced industrial societies, the price for developing countries to acquire these goods will continue to escalate in terms of what these countries can receive for their raw materials. Consequently, the system of trade and investment is structurally biased against the economic advancement of the developing countries (Raul Prebisch, 1971). Furthermore, FDI is viewed as leeching off local financing for the establishment of indigenous business. MNCs are also accused of maintaining monopolistic advantages in the LDCs markets, stifling local competition, stripping developing countries of their precious resource base and creating a technological dependence in these poor countries because of the strigent strings etched to technology transfer and the lack of R&D performed in their subsidiaries (S. Hymer, 1972). Moreover, the technology which is transferred is often considered inappropriate and multinationals are blamed for creating distorted consumer taste.

Dependency theories view the MNCs as having market power and the ability to impose inappropriate capital-intensive production techniques and inappropriate production pattern on the host countries. Such distortion have been imposed on the Malaysian economy (Khor Kok Peng, 1983). The question is, how are the MNCs are allowed to get away with this? The answer is that they do it by corrupting a local bourgeoisie whereby the latter become a comprador bourgeoisie. These individuals are bought off with directorships on the boards of the MNCs subsidiaries (Rhys Jenkins,

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1987). This process may be particularly relevant to ethnically-divided societies like Malaysia where the MNCs are used to by-pass an economically dominant minority ethnic group, In this dependency view, MNCs are a replacement than a supplement to local investment and the emphasis switches away from 'new' value added created to value added drained out of the economy. Furthermore, it is argued that FDI often takes place in an economic enclave having few linkages to the rest of the economy. This dependency approach gained a number of supporters in the intermediate aftermath of the political independence of the Third World in the 1950s and 1960s. It also provided an intellectual backing for a move towards economic nationalism through import-substituting industrialisation (ISI), state enterprises and policies which were opposed to FDI.

However, in the 1970s and 1980s with the indifferent performance or even outright failure of many policies of economic nationalism a more pragmatic view of FDI has emerged on the political left. There is much more emphasis on the autonomy of the state and on its political and technical capacity to get incentive from the investment package and to bargain with the MNCs. In this view, it is recognised that MNC tend to be concentrated in technology-intensive industries with a higher than average proportion of R&D expenditure (Rhys Jenkins, 1987). Given this, it is possible that the LDCs can be benefit from being 'late-starters' (A. Amsden, 1989). Certainly the evidence from the rapid South Korean development is that the state supported the industrialisation process in a number of ways (A. Amsden, 1989). However, it is precisely because the state's

capability or willingness to bargain differs that the effects will also vary. Uneven development is therefore inevitable.

In this structuralist view, there is a heavy emphasis on MNCs as part of a process of the industrialisation of capital and the increasing integration of the world economy. Although this means that national economies are becoming less independent, it does not mean that the nation state are becoming less important. Therefore, the demise of the national economy does not mean the demise of the nation state (Rhys Jenkins, 1987).

In conclusion, there are quite different views of MNCs and the likely effects of FDI. Given these, it is perhaps not surprising that they have quite different implications for government policy.

CHAPTER 4
METHODOLOGY

4.1 Data

Annual data on Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Domestic Investment (DI- proxy by Gross Fixed Capital Formation), Exports (EX), Imports (IM) and Employment (EM) for the period 1970 to 1999 were employed in this study. All data were extracted from the International Financial Statistics Yearbook, Bank Negara Malaysia Annual Reports and Economic Reports. Both the series of GDP and FDI were deflated by the GDP deflator (1995=100) to obtain their values.

4.2 Characteristic of the data

According to Figure 2, we can conclude that real FDI and real GDP are not closely related because from the economic theory, we know that FDI can contribute both positively and negatively to economic growth. The effects of FDI to GDP is different among countries because of the policy adopted by the governments.

Figure 2. Relationship Between Real FDI and Real GDP, 1970-1999
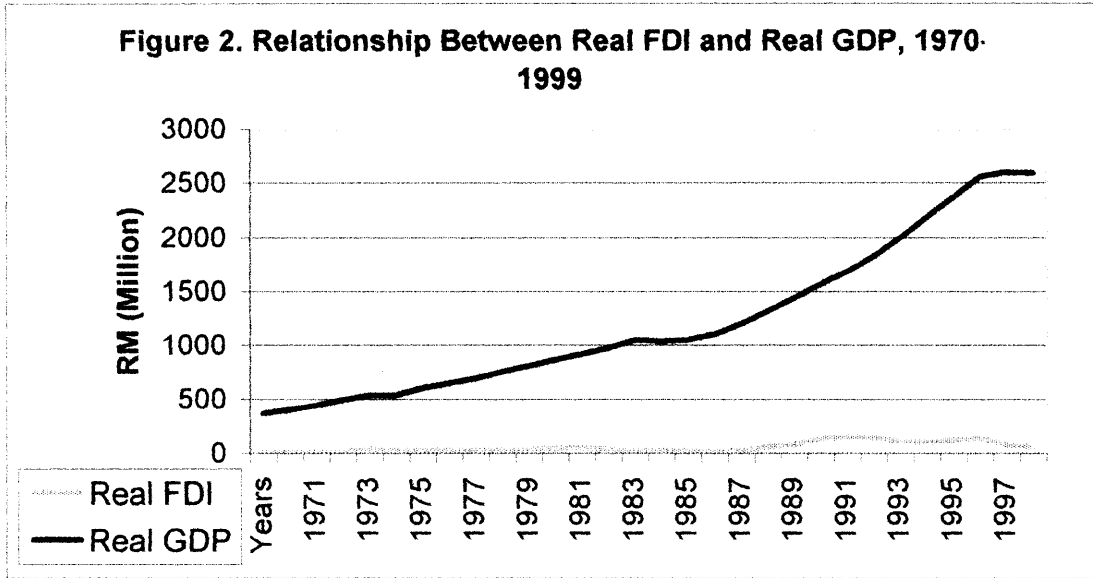
From Figure 3, we can say that FDI and domestic investment are strongly positive related. This is because FDI is not a substitute to local investment but rather a complement.

Figure 3. Relationship Between FDI and Domestic Investment, 1970-1999

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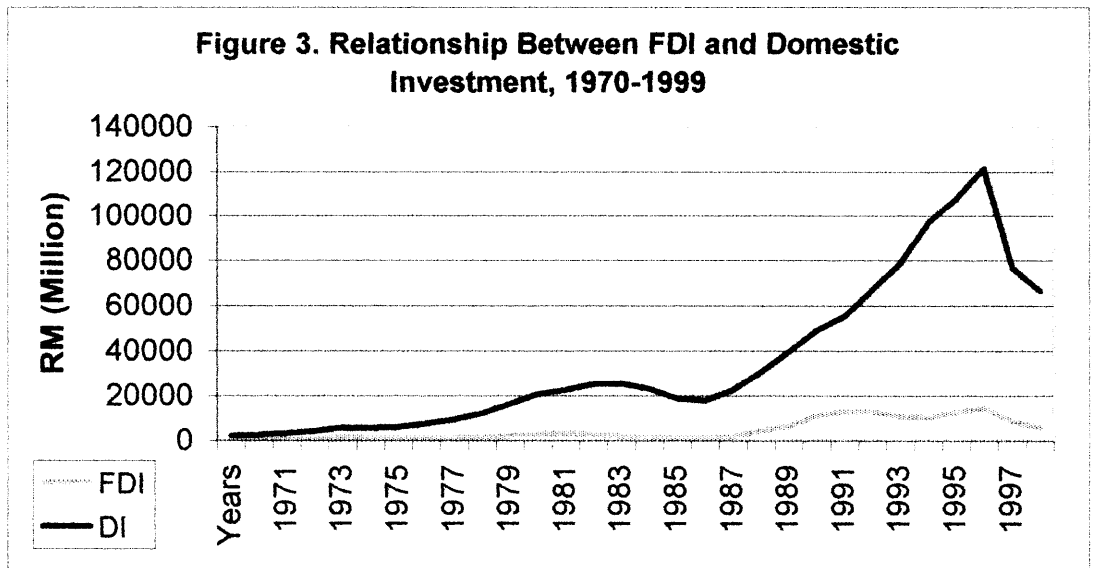
Figure 4 show that FDI and exports are not closely related because the growth

rates was the main indicator to foreign investors, whether to invest in Malaysia or not.

On the other hand, Malaysian exports was mainly came from the electric and electronic

industry in the manufacturing sector, which are not affected by the economic growth.

Figure 4. Relationship Between FDI and Exports, 1970-1999
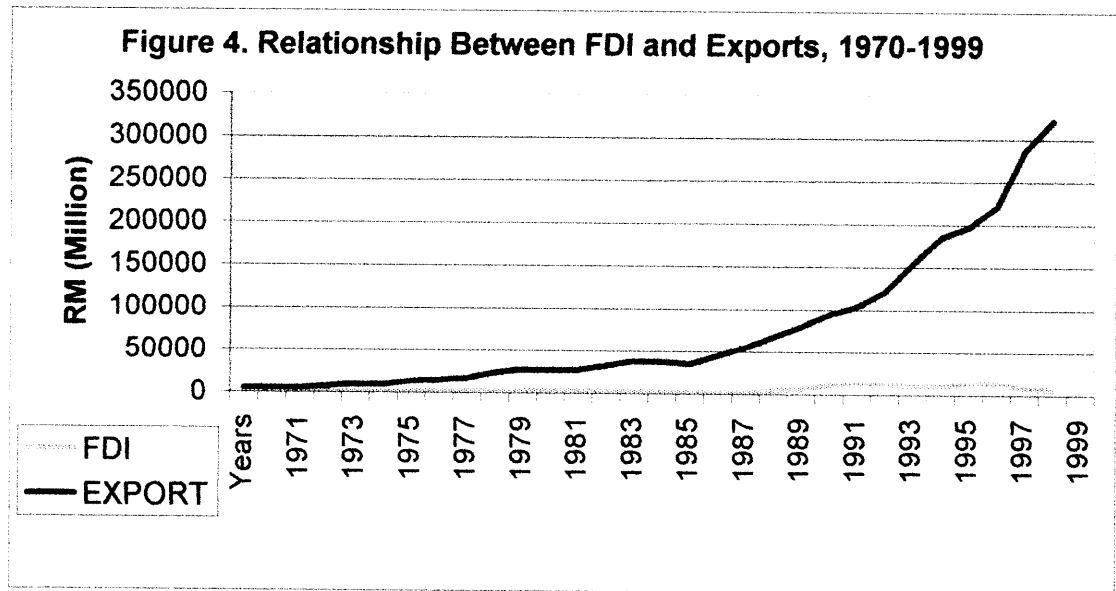
According to Figure 5, we can conclude that FDI and imports are closely related

during the 1970s and 1980s. This is because Malaysian imports at that time was mainly

consists of intermediate goods, such as machine. But the increase in purchasing power

of the residents has make the consumer goods to be the main imports. As a result, FDI

and imports are not closely related at the 1990s.

Figure 5. Relationship Between FDI and Imports, 1970-1999
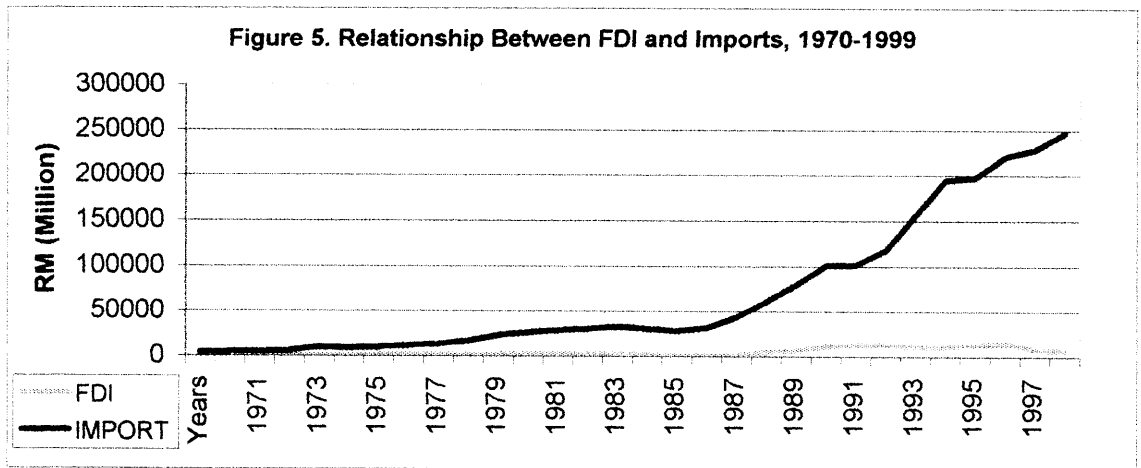
From Figure 6, we can say that FDI and employment are not closely related. This is because FDI only create a small portion of job opportunities, especially in the Free Trade Zones (FTZs) area.

Figure 6. Relationship Between FDI and Employment, 1970-1999
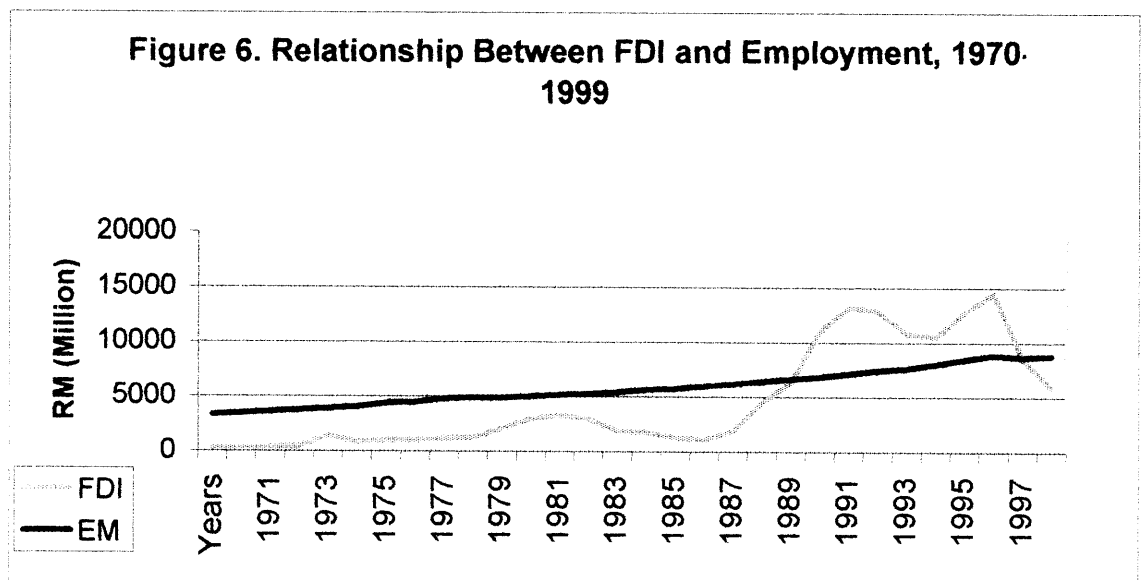
4.3   Unit Root Tests

Unit root tests (or equivalent ADF- augmented Dickey-Fuller) are important in examining the stationarity of a time series. Stationary is a matter of concern in three important areas. First, a crucial question in the Autoregressive Integrated Moving Average (ARIMA) modeling of a single time series is the number of times the series needs to be first differenced before an Autoregressive-Moving Average (ARMA) model is fit. Each unit root requires a first differencing operation. Second, stationarity of regressors is assumed in the derivation of standard results and require special treatment. Third, in cointegrating analysis, an important question is whether the disturbance term in the cointegrating vector has a unit root.

The ADF test consists in running a regression of the first difference of the series against the series lagged once, lagged difference terms, and optimally, a constant and a time trend. With two lagged difference terms, the regression is

$$\triangle y_t = \beta_1 y_{t-1} + \beta_2 y_{t-1} + \beta_3 y_{t-2} + \beta_4 + \beta_5 t$$

They are three choices in running the ADF test regression. One is whether to include a constant term in the regression. Another is whether to include a linear time trend. The third is how many lagged difference are to be included in the regression. In each case, the test for a unit root is a test on the coefficient of y_{t-1} in the regression. If the coefficient is significantly different from zero then the hypothesis that y contains a unit root is rejected and the hypothesis is accepted that y is stationary rather than integrated.

4.3 Granger Causality test

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The Granger approach to the question whether X causes Y is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation. Y is said to be Granger-caused by X if it helps in the prediction of Y, or equivalently if the coefficients on the lagged Xs are statistically significant. Note that two-way causation is frequently the case; X Granger causes Y and Y Granger causes X. It is important to note that the statement "X Granger causes Y" does not imply that Y is the effect or the result of X. Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term.

The Granger Causality test are whether all the coefficients of the lagged Xs in the second equation may be considered to be zero, and similarly whether the coefficients of the lagged Ys is the fourth equation are zero. Thus, the null hypothesis being tested are that X does not Granger-cause Y and that Y does not Granger-cause X. Output from the test gives the relevant F-statistics for these two hypotheses.

4.4   Cointegration

The formal definition of cointegration of two variables, developed by Engle and Granger (1987) is as follows:

Definition: Time series x_t and y_t are said to be cointegrated of order d, b where $d \geq b \geq 0$, written as as:

$$x_t, y_t \sim CI(d,b)$$

if:

I) Both series are integrated of order b.

II) There exists a linear combination of these variables, say $\alpha_1 \bullet X_t + \alpha_2 \bullet y_t$, which is integrated of order d-b.

The vector $[\alpha_1, \alpha_2]$ is called a cointegrating vector.

CHAPTER 5
RESULTS

5.0   Results

This paper employs the Granger (1969) causality test to establish causality if any,
between real FDI and real GDP. The test is premised on the formulation of a vector
autoregression (VAR) model. To avoid obtaining results that may be spurious, it is
important to establish the stationarity properties of the principle series, i.e. the order of
integration of real FDI and real GDP needs to established. The augmented Dickey-Fuller
test (1979) was used to determine the degree of integration of both series, by estimating
the following equation.

$$\Delta Z_t = \mu + \alpha Z_{t-1} + \sum_{i=1} \theta_i \rho Z_{t-i} + \mu_t \tag{1}$$

where Δ represents first difference and the error term μ_t is assumed to follow a white
noise process. The null hypothesis of $\alpha = 0$ is tested using the Dickey-Fuller t_μ test
statistic. Under the null hypothesis, the series contains a unit root and is not stationary.
The test statistic is computed for the logarithm of real FDI and real GDP. The use of
logarithm transformation has the advantage of stabilizing the variances of the series.
Given that economic time series have the tendency to trend up over time, they may be
stationary around a deterministic trend. It is therefore imperative to test for the presence

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trend augmented. The number of lags of first difference, p in equation (1), is selected to ensure that the error terms are not serially correlated.

The results do not provide evidence to reject the presence of unit roots in both the logarithm of real FDI and real GDP, and are qualitatively invariant of the value of p. Since both variables are not stationary in levels, it is necessary to determine if they are first difference stationary. The t_μ ,test statistic is computed by replacing Z_t in equation (1) with ΔZ_t . For both series the null hypothesis that a unit root exists was not rejected using the augmented Dickey-Fuller test revealed that the data had been rendered stationary. Thus the logarithm of both series are I(1) or integrated of order one.

The implication of the results is that the first differences of the logarithm of the two variables should be used in the Granger causality test.

Table 5. Results of the Augmented Dickey-Fuller Test for Unit Roots

Dependent Variable	Level	First Difference
Real FDI	-0.915	-3.683*
Real GDP	-0.097	-4.217 **

* Significant at 1 % level.
** Significant at 5 % level

Granger (1988) maintains that a VAR-type causality test will be subjected to misspecification in the underlying model if the variables in equation are cointegrated, as

such a model may miss one source of causation. If cointegration is established, the error correction model should be used instead as the specification for the causality test.

The Engle and Granger (1987) two-step procedure provides an easy means of establishing the possibility of cointegration between real FDI and real GDP. The procedure involves estimating the following two equations:

$$\ln X_t = \delta + \phi \ln Y_t + \epsilon_t \tag{2}$$

$$\Delta e_t = \tau + \beta e_{t-1} + \sum_{i=1} \phi_i \rho e_{t-1} + v_t \tag{3}$$

where X_t is real FDI, Y_t is real GDP and e_t represents the estimated residuals from the cointegrating regression (2). The levels of both the series are used to test for cointegration in equation (2) since they are integrated of order one. But the variables are cointegrated if the augmented Dickey-Fuller (ADF) t_μ test reject the null hypothesis that $\beta=0$, i.e., e_t contains a unit root. The test of cointegration is also performed by normalizing equation (2) using $\ln Y_t$.

Table 6. Results of the Tests for Cointegration

Normalising Variable	t_μ (q=1)	t_μ(q=2)
Real FDI (ln)	-2.599	-2.565
Real GDP (ln)	-2.286	-2.001

The results reveal no evidence of cointegration between real FDI and real GDP. These findings indicate that the two series do not trend together in the long run and as a

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result, the causality test should be performed by using a VAR model which captures the short-run dynamics of the movements of these variables.

The earlier findings suggest that the identification of causality, if any between real FDI and real GDP, should be based on a VAR model using the first-differenced series. The following equations were estimated to establish Granger causality.

$$\Delta \ln Y_t = \alpha_1 + \sum_{i=1} \beta_{1i} \, \Delta \ln X_{t-i} + \sum_{i=1} \theta_{1i} \, \Delta \ln Y_{t-i} + u_{1t} \tag{4a}$$

$$\Delta \ln X_t = \alpha_2 + \sum_{i=1} \beta_{2i} \, \Delta \ln Y_{t-i} + \sum_{i=1} \theta_{2i} \, \Delta \ln X_{t-i} + u_{2t} \tag{4b}$$

where u_{1t} and u_{2t} are disturbances which are uncorrelated. FDI growth leads growth in GDP if $\sum \beta_{1i} \neq 0$ and $\sum \beta_{2i} \neq 0$. The reverse is true if $\sum \beta_{1i} = 0$ and $\sum \beta_{2i} \neq 0$. Feedback, or bilateral causality, is suggested when both $\sum \beta_{1i}$ and $\sum \beta_{2i}$ are statistically different from zero, and an inter-temporal lead-lag relationship does not exist if they are both not significant. The joint significance of these parameters can be tested using the conventional F-test.

The VAR model is estimated using one and two lags of first differences and only the equations which yield the smaller value of the AIC criterion (Akaike, 1970) are reported. The equations are passed through a battery of diagnostic checks for normality, autocorrelation and heteroscedasticity and no statistical problem is found. This model is now deemed acceptable for performing the Granger causality test. As both the F-test statistics are significant, the results show bilateral causality between the growth in FDI and GDP, i.e. while growth in GDP attracts FDI. FDI also contributes to an increase in

output. The results obtained was the same with the results obtained by Anita Doraisami and Goh Kim Leng (1995). But their results was highly significant. The estimated model and the results of the causality test are shown in Table 7.

Table 7. The VAR model and Results of the Granger Causality Test

Explanatory Variable	Dependent Variable	
	$\Delta \ln X_t$	$\Delta \ln Y_t$
Constant	-0.231 (0.18)	0.076 (0.02)
$\Delta \ln X_{t-1}$	-0.237 (0.23)	0.010 (0.02)
$\Delta \ln X_{t-2}$		0.046 (0.02)
$\Delta \ln Y_{t-1}$	5.637 (2.66)	0.332 (0.21)
$\Delta \ln Y_{t-2}$		-0.489 (0.23)
R^2	0.159	0.292
Granger F-test	4.470 [0.04]	3.417 [0.05]

Notes: (1) X_t is real FDI and Y_t is real GDP.
(2) Figures in parentheses are standard errors.
(3) Granger F-test is the test for causality as described in the text.
(4) Figures in brackets are the t statistics.

CHAPTER 6
POLICY IMPLICATIONS

6.0   Policy Implications

The results indicate that there is a bi-directional causality running between FDI and economic growth in Malaysia. Therefore, both FDI-led growth and growth-driven FDI hypotheses are supported by the empirical evidence from Malaysia. The results merely demonstrate that both economic growth and FDI inflow reinforce each other in the course of economic development. On the one hand, the exceptional economic performance in Malaysia from 1988-1996, was propelled by a strong FDI inflow, helping Malaysia's access to overseas markets, improving technology and supplementing domestic saving and investment. On the other hand, Malaysia has benefited from a rapid growth of domestic demand and hence a high level of domestic investment, which enabled the country to achieve rapid economic growth rates and industrial restructuring. Therefore, as an outcome of this rapid economic growth in Malaysia, the emergence of large domestic markets and increased per capita income, along with the emergence of a large middle class, have attracted foreign investments into Malaysia.

The observations on Malaysian past economic development process fit into the above argument. The empirical evidence for the causality running from economic

growth to FDI in the case of Malaysia indicates that the rapid economic growth has accelerated the inflow of FDI into Malaysia. Along with the high economic growth during 1988-1996 (pre-crisis period), there have been swift structural changes within the Malaysian economy which attracted investment from MNCs in the areas of capital - and skill – intensive manufacturing (especially electronics and electrical) and service sectors. Further, rapid economic growth, along with the rising per capita income in Malaysia, has created bigger domestic markets and business opportunities for overseas investment and hence has strengthened business confidence for investing in Malaysia.

The FDI-led growth hypothesis is also consistent with Malaysia past economic record. This can be partly explained by the dynamic benefits brought about by FDI as it induces and creates the production from other industries which can be measured by the 'backward linkage index'. Ghazali Atan (1994), for instance, has shown that the inflow of FDI in Malaysia has contributed to the expansion of the industrial networks in Malaysia by the so-called 'spillover effect'. Foreign direct investment, by bringing in capital, new technology and export market linkages, is considered as an important catalyst of economic growth and industrial development.

CHAPTER 7
CONCLUSIONS

7.0   Conclusions

This study has examined the causality between FDI and economic growth in Malaysia, over the period 1970 to 1999. The empirical results suggest bidirectional causality between FDI and economic growth i.e. that FDI contributed to economic growth in Malaysia and that foreign investors were also attracted to Malaysia because of its economic growth rates. However, there was no evidence to suggest that this relationship holds in the long run.

These results confirm the widely held consensus in Malaysia that the FDI led industrialisation strategy pursued has contributed to high economic growth but provide the additional insight that high economic growth rates also attract foreign direct investment.

The implication of this study concerning the two-way causality between FDI and economic growth is that a host country such as Malaysia should adopt a policy of promoting FDI, especially those with high value-added and high tech to promote economic growth. At the same time, the country should adopt a policy of mobilising domestic resources and promoting further GDP growth to attract new inflows of FDI. In

other words, the efforts of promoting further economic growth using a set of well-designed domestic policies is no less important than relying on FDI inflows.

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APPENDIX 1

DATA OF FOREIGN DIRECT INVESTMENT (FDI), GROSS DOMESTIC PRODUCT
(GDP), DOMESTIC INVESTMENT (DI), EXPORTS (EX), IMPORTS (IM) AND
EMPLOYMENT (EM)

Year	FDI	GDP	EXPORT	IMPORT	DI	EM
1970	287	12155	5163	4288	2152	3340.0
1971	306	12955	5017	4416	2701	3467.0
1972	320	14220	4854	4543	3211	3599.0
1973	420	18723	7372	5934	4219	3735.0
1974	1374	22858	10195	9891	5798	3877.0
1975	839	22322	9231	8530	5602	4020.0
1976	969	28085	13442	9713	6206	4376.0
1977	999	32340	14959	11615	7465	4476.0
1978	1158	37886	17074	13646	9381	4759.0
1979	1255	46424	24222	17161	12250	4925.0
1980	2033	53308	28172	23451	16597	4835.2
1981	2914	57613	27109	26604	20759	5019.7
1982	3263	62579	28108	29023	22745	5122.8
1983	2926	69941	32771	30795	25213	5250.4
1984	1869	79550	38647	32926	25391	5382.0
1985	1725	77547	38017	30438	23124	5625.0
1986	1262	71594	35319	27921	18865	5706.5
1987	1065	79625	45225	31934	17904	5984.0
1988	1884	90861	55260	43293	22726	6176.0
1989	4518	102451	67824	60858	30599	6390.0
1990	6309	115701	79646	79119	39348	6621.0
1991	10996	132381	94497	100831	49126	6849.0
1992	13204	148537	103657	101441	55191	7096.0
1993	12885	165206	121238	117405	66936	7396.2
1994	10798	190274	153921	155921	78663	7618.4
1995	10464	218671	184987	194345	96967	7999.0
1996	12777	249503	197026	197280	107825	8426.5
1997	14450	275367	220890	220936	121383	8817.4
1998	8490	284474	286756	228309	76725	8596.9
1999	5901	299193	320929	246870	66683	8741.0

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APPENDIX 2

DATA OF ln REAL FDI AND ln REAL GDP

Year	ln Real FDI	ln Real GDP
1970	2.156000	5.902000
1971	2.251000	5.997000
1972	2.292000	6.087000
1973	2.399000	6.197000
1974	3.466000	6.278000
1975	3.003000	6.285000
1976	3.028000	6.394000
1977	2.992000	6.470000
1978	3.046000	6.534000
1979	3.014000	6.624000
1980	3.428000	6.695000
1981	3.778000	6.762000
1982	3.867000	6.821000
1983	3.707000	6.881000
1984	3.204000	6.956000
1985	3.139000	6.945000
1986	2.917000	6.956000
1987	2.691000	7.008000
1988	3.216000	7.092000
1989	4.060000	7.181000
1990	4.365000	7.274000
1991	4.868000	7.356000
1992	5.010000	7.431000
1993	4.960000	7.511000
1994	4.731000	7.600000
1995	4.650000	7.690000
1996	4.800000	7.772000
1997	4.902000	7.846000
1998	4.351000	7.863000
1999	3.933000	7.859000

APPENDIX 3

Augmented Dickey-Fuller Unit Root Test on ln Real FDI

ADF Test Statistic	-0.915	1% Critical Value*	-1.6752
		5% Critical Value*	-0.8240
		10% Critical Value	-0.6963

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
LS // Dependent Variable is D(FDI)
Date: 03/02/01   Time: 13:47
Sample(adjusted): 1971 1999
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.129113	0.074977	-1.722018	0.0965
C	0.525596	0.277801	1.891985	0.0693

R-squared	0.098959	Mean dependent var	0.061276
Adjusted R-squared	0.065587	S.D. dependent var	0.372438
S.E. of regression	0.360018	Akaike info criterion	-1.976733
Sum squared resid	3.499541	Schwarz criterion	-1.882437
Log likelihood	-10.48659	F-statistic	2.965346
Durbin-Watson stat	1.495249	Prob(F-statistic)	0.096505

APPENDIX 4

Augmented Dickey-Fuller Unit Root Test on D(FDI)

ADF Test Statistic	-3.683	1% Critical Value*	-3.8959
		5% Critical Value*	-3.5750
		10% Critical Value	-3.1265

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
LS // Dependent Variable is D(FDI,2)
Date: 03/02/01   Time: 13:58
Sample(adjusted): 1973 1999
Included observations: 27 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-0.789131	0.280180	-2.816510	0.0096
D(FDI(-1),2)	0.014378	0.220661	0.065160	0.9486
C	0.044721	0.079805	0.560377	0.5804

R-squared	0.372900	Mean dependent var	-0.017000
Adjusted R-squared	0.320642	S.D. dependent var	0.476368
S.E. of regression	0.392638	Akaike info criterion	-1.765297
Sum squared resid	3.699944	Schwarz criterion	-1.621315
Log likelihood	-11.47983	F-statistic	7.135704
Durbin-Watson stat	1.970411	Prob(F-statistic)	0.003699

APPENDIX 5

Augmented Dickey-Fuller Unit Root Test on ln Real GDP

ADF Test Statistic	-0.097	1% Critical Value*	-0.1752
		5% Critical Value*	-0.0765
		10% Critical Value	-0.0359

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
LS // Dependent Variable is D(GDP)
Date: 03/02/01 Time: 14:04
Sample(adjusted): 1971 1999
Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.015063	0.010494	-1.435443	0.1626
C	0.171581	0.072762	2.358096	0.0259

R-squared	0.070904	Mean dependent var	0.067483
Adjusted R-squared	0.036493	S.D. dependent var	0.032573
S.E. of regression	0.031973	Akaike info criterion	-6.819272
Sum squared resid	0.027601	Schwarz criterion	-6.724976
Log likelihood	59.73023	F-statistic	2.060498
Durbin-Watson stat	1.225510	Prob(F-statistic)	0.162645

APPENDIX 6

Augmented Dickey-Fuller Unit Root Test on D(ln real GDP)

ADF Test Statistic   -4.217   1% Critical Value*   -4.6959
                                      5% Critical Value   -3.9750
                                      10% Critical Value   -2.9265

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
LS // Dependent Variable is D(GDP,2)
Date: 03/02/01   Time: 14:13
Sample(adjusted): 1973 1999
Included observations: 27 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.701707	0.269694	-2.601861	0.0156
D(GDP(-1),2)	0.106754	0.226238	0.471864	0.6413
C	0.045323	0.020036	2.262026	0.0330

R-squared	0.275387	Mean dependent var	-0.003481
Adjusted R-squared	0.215003	S.D. dependent var	0.036210
S.E. of regression	0.032082	Akaike info criterion	-6.774462
Sum squared resid	0.024703	Schwarz criterion	-6.630480
Log likelihood	56.14390	F-statistic	4.560574
Durbin-Watson stat	1.887090	Prob(F-statistic)	0.020954

APPENDIX 7

RESULTS OF THE TESTS FOR COINTEGRATION

Date: 03/02/01   Time: 14:18
Sample: 1970 1999
Included observations: 28
Test assumption: Linear deterministic trend in the data
Series: FDI GDP
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.388211	15.26588	15.41	20.04	None
0.052419	1.507600	3.76	6.65	At most 1

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. rejects any cointegration at 5% significance level

Unnormalized Cointegrating Coefficients:

FDI	GDP
-0.495577	0.657344
-0.075742	0.456400

Normalized Cointegrating Coefficients: 1 Cointegrating Equation(s)

FDI	GDP	C
-2.599	-2.286	5.566498
	(0.17039)	

Log likelihood 86.49539

APPENDIX 8

RESULTS OF THE VAR ESTIMATES

Date: 03/02/01   Time: 14:27
Sample(adjusted): 1972 1999
Included observations: 28 after adjusting endpoints
Standard errors & t-statistics in parentheses

	FDI	GDP
FDI(-1)	0.237	-0.010
	(0.23)	(0.02)
FDI(-2)	-0.242	0.046
	(0.197)	(0.02)
GDP(-1)	5.637	0.332
	(2.66)	(0.21)
GDP(-2)	-5.984	-0.489
	(2.269)	(0.23)
C	-0.231	0.076
	(0.18)	(0.02)

R-squared	0.1590762	0.292064
Adj. R-squared	0.120025	0.216553
Sum sq. resids	2.258050	0.023597
S.E. equation	0.313331	0.032031
Log likelihood	-4.482338	59.37337
Akaike AIC	-2.160560	-6.721682
Schwarz SC	-1.922666	-6.483789
Mean dependent	3.707750	7.013143
S.D. dependent	0.837487	0.545552

Determinant Residual Covariance	4.98E-05	Akaike Information Criteria	-9.550696
Log Likelihood	87.24919	Schwarz Criteria	-9.312802

APPENDIX 9

RESULTS OF THE GRANGER CAUSALITY TEST

Pairwise Granger Causality Tests
Date: 03/02/01 Time: 14:40
Sample: 1970 1999
Lags: 2

Null Hypothesis:	Obs	F-Statistics	Std. Error	Probability
GDP does not Granger Cause FDI	28	3.41787	0.0410	0.00108
FDI does not Granger Cause GDP		4.47548	0.0514	0.00020