

CHAPTER 4

RESULTS AND ANALYSIS

4.1 Introduction

This study is carried out to examine the impact of foreign direct investment (FDI) in the economic development of 5 selected ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand) by graphically and empirically evaluating the direct effect of FDI on the growth and savings equations as described in Chapter 3.

A descriptive study using graphs is carried out on the relationship between FDI, growth and savings rates by analyzing the effect of change in FDI on growth rate and savings rate of each selected ASEAN countries over the period from 1970-2000.

To enhance the graphical result, annual data for the relevant variables for the period from 1970 to 2000 were used to estimate the 2 single-equations in terms of Ordinary Least Squares. Before applying the data, tests for stationarity are conducted to make sure that these data are stationary. Analyzing the estimation of the parameters of the independent variables in both models will show the significant factors that effect the growth and savings rates of the selected ASEAN countries during the period concerned. In this chapter, these results are presented and analyzed in line with the objectives of the study.

4.2 An Analysis of the Selected Variables

4.2.1 GDP growth rate (GR)

Gross Domestic Product growth rate of each selected ASEAN countries is the dependent variable in the growth equation and the explanatory variable in the savings equation. This variable is used to indicate the degree of progress or economic growth of an economy. GDP growth rate is the percentage change in real gross domestic product from one year to the next.

GDP values in current prices for the 5 selected ASEAN countries are obtained from various issues of International Financial Statistics Yearbook (IFS) published by International Monetary Fund (IMF), various issues of National Accounts Statistics published by United Nations (UN) and Trends in Developing Countries by World Bank. These GDP values are converted into constant prices, the prices for a specific base year. In this study (1995=100) is used as the base year. The values of GDP deflator (1995=100) for each country are obtained from IFS Yearbook, 2001 and used for the purpose of converting current prices into constant prices. Real GDP, also termed as constant GDP, adjusts gross domestic product for inflation.

4.2.2 Domestic Savings Rate (S)

Domestic savings rate is a dependent variable in the savings equation and is used as an explanatory variable in the growth equation. It is measured as gross domestic savings (GDS) expressed as percentage of GDP at current market prices and local currencies for each country. Gross domestic savings values are obtained

from various issues of Key Indicators of Developing Asia & Pacific Countries of ADB (Asian Development Bank) and from the national account published in IFS, IMF by calculating GDP less government consumption and private consumption.

Gross domestic saving is used to finance government and private expenditure. It is a source of domestic fund for investment activities. In this study, the change in domestic savings rate as a percentage of GDP (ΔS) is defined as S (gross domestic saving)/GDP_t - S/GDP_(t-1).

4.2.3 Foreign Direct Investment (FDI) inflow

Data pertaining to FDI inflows which is an explanatory variable in both the growth and savings equation used in this study, was obtained mainly from the balance of payments break down of the various issues of IFY and from various issues of Balance of Payments Statistics Yearbook, IMF. Annual inflows of FDI values in current prices (in US\$) of the 5 selected countries for the period from 1970 to 2000 were obtained and converted into local currencies. In this study, the change in FDI/GDP (ΔFDI) ratio is measured as $FDI/GDP_t - FDI/GDP_{(t-1)}$ inflows FDI is expressed as percentage of GDP to avoid the problem of heteroscedasticity.

For the purpose of this study, foreign direct investment inflows is defined as foreign direct investment capital into the relevant country including equity capital, reinvested earnings and other capital associated with various inter-company transactions between affiliated enterprises, excluding flows of direct investment capital into the country for exceptional financing, such as debt for equity swaps (as defined in International Financial Statistics, IMF)

4.2.4 Other Foreign Capital (OFC) Inflows

This is another explanatory variable that effects both the growth and savings equations. Other foreign capital (OFC) inflow includes values of two components: portfolio investment liabilities and other investment liabilities. The values for these two components are obtained from balance of payments breakdown of the various issues of IFS Yearbook and various issues of Balance of Payments Statistics Yearbook. The sum of these two components is expressed as percentage of GDP in current prices and local currencies as to avoid heteroscedasticity. In this empirical study, change in OFC/GDP (ΔOFC) inflows represents $\text{OFC/GDP}_t - \text{OFC/GDP}_{(t-1)}$

4.2.4 Growth Rate of Labor Force (GRL)

Growth rate of actual numbers employed proxies for the growth rate of labor force. Thus, $\text{GRL} = \Delta \text{employment} / \text{employment}$. This variable is used as an explanatory variable in both the growth and savings equation. The data on numbers employed are obtained from various issues of IFS Yearbook and from various issues of Key Indicators of Developing Asia & Pacific Countries, ADB.

4.2.5 Change in Exports (X)

This variable is an explanatory variable that effects growth and savings. It is expressed as percentage of GDP. ΔX represents $X/\text{GDP}_t - X/\text{GDP}_{(t-1)}$. Data on exports are collected from various issues of IFS yearbook and Key Indicators of Developing Asia & Pacific Countries, ADB.

4.3 Magnitude and trend of FDI inflow

In this study, a brief account on the magnitude and the trend of FDI inflow into the 5 selected ASEAN countries during the period from 1970 to 2000 is discussed. The role of FDI in bridging the savings-investment gap in the selected countries is also examined briefly.

FDI inflows (current prices) into Indonesia, Malaysia, the Philippines, Singapore and Thailand from 1970-2000 are as appeared in Table 4.1. Table 4.2 (constant prices) shows FDI inflows in constant prices (US\$, base year 1995=100) into Indonesia, Malaysia, the Philippines, Singapore and Thailand during 1970-2000.

Table 4.1

FDI inflows (current prices) into the 5 selected ASEAN countries (US\$Million)

1970-2000

	Indonesia	Malaysia	Philippines	Singapore	Thailand	ASEAN-5
1970	83	94	-29	94	43	285
1971	151	100	-6	117	39	401
1972	207	114	-21	161	68	529
1973	16	172	54	353	77	672
1974	-50	571	4	340	189	1054
1975	459	350	97	292	86	1284
1976	346	381	126	231	79	1163
1977	244	406	210	291	106	1257
1978	291	500	101	300	56	1248
1979	239	573	7	836	55	1710
1980	176	934	-106	1236	190	2430
1981	133	1256	172	1660	291	3521
1982	225	1397	16	1602	191	3431
1983	292	1261	105	1134	350	3142
1984	222	797	9	1302	401	2731
1985	310	695	12	1047	163	2227
1986	258	489	127	1710	263	2847
1987	385	423	307	2836	352	4303

	Indonesia	Malaysia	Philippines	Singapore	Thailand	ASEAN-5
1988	576	719	936	3655	1105	6991
1989	682	1668	563	2887	1775	7575
1990	1093	2332	530	5575	2444	11974
1991	1482	3998	544	4887	2014	12925
1992	1777	5183	228	2204	2113	11505
1993	2004	5006	1238	4686	1804	14738
1994	2109	4342	1591	8550	1366	17958
1995	4346	4178	1478	8788	2068	20858
1996	6194	5078	1517	10372	2336	25497
1997	4677	5137	1222	12967	3895	27898
1998	-356	2163	2287	6316	7315	17725
1999	-2745	3895	573	7197	6213	15133
2000	-4550	3788	2029	6390	2999	10656
1991-1997	22589	32922	7818	44759	15596	122318
1997-2000	-7651	9846	4889	19903	16527	43514
1970-2000	21276	58089	15927	100016	40497	235668

Table 4.2: FDI inflows (constant prices) into the 5 selected ASEAN countries
(US\$ Million) from 1970-2000

Year	Indonesia	Malaysia	Philippines	Singapore	Thailand	Total
1970	2184.21	279.76	-557.69	263.31	193.69	2363.28
1971	3871.79	306.75	-103.45	313.67	177.27	4566.04
1972	4600.00	348.62	-338.71	409.67	289.36	5308.95
1973	271.19	445.60	739.73	800.45	275.99	2532.95
1974	-574.71	1312.64	41.24	666.67	562.50	2008.33
1975	4683.67	831.35	915.09	559.39	247.13	7236.64
1976	3089.29	802.11	1095.65	434.21	217.03	5638.29
1977	1921.26	800.79	1693.55	537.89	274.61	5228.10
1978	2063.83	897.67	742.65	541.52	132.70	4378.36
1979	1284.95	918.27	44.30	1433.96	119.83	3801.31
1980	730.29	1400.30	-630.95	1901.54	366.09	3767.27
1981	466.67	1876.85	914.89	2405.80	516.87	6181.09
1982	750.00	2021.71	78.43	2215.77	323.18	5389.09
1983	815.64	1734.53	450.64	1509.99	570.96	5081.76
1984	573.64	1037.76	25.14	1722.22	644.69	4003.46
1985	748.79	918.10	28.50	1401.61	256.69	3353.69
1986	586.36	707.67	293.30	2323.37	407.12	4317.83
1987	790.55	570.08	658.80	3781.33	520.71	6321.48

Year	Indonesia	Malaysia	Philippines	Singapore	Thailand	Total
1988	1076.64	926.55	1831.70	4609.08	1543.30	9987.26
1989	1140.47	2056.72	1010.77	3478.31	2335.53	10021.80
1990	1668.70	2769.60	842.61	6408.05	3039.80	14728.75
1991	2041.32	4584.86	742.16	5411.96	2369.41	15149.71
1992	2307.79	5804.03	288.24	2403.49	2379.50	13183.06
1993	2374.41	5394.40	1465.09	4948.26	1954.50	16136.65
1994	2317.58	4499.48	1710.75	8778.23	1427.38	18733.43
1995	4346.00	4178.00	1478.00	8788.00	2068.00	20858.00
1996	5698.25	4896.82	1408.54	10238.89	2235.41	24477.91
1997	3824.20	4787.51	1070.99	12712.75	3619.89	26015.34
1998	-166.04	1850.30	1809.34	6309.69	6252.14	16055.42
1999	-1111.79	3346.22	419.78	7284.41	5503.10	15441.73
2000	-1659.98	3117.70	1393.54	6461.07	2610.10	11922.43
1970-2000	53684.68	65872.73	21695.97	111054.60	43683.87	294189.40

Sources: International Financial Statistics Yearbook - IMF various issues.

FDI/GDCF ratio

Table 4.3 below shows the magnitude of FDI inflow relative to gross domestic capital formation (GDCF) among the ASEAN-Five countries. Although the FDI inflows have grown very rapidly, they remain a very limited form of investment financing except for Singapore and Malaysia. The FDI/GDCF ratio in the 1990-94 period range from high of 28 per cent in Singapore to less than 10 per

cent for Indonesia, the Philippines, and Thailand among the ASEAN-Five. In the 1995-2000 period range, FDI was becoming one of the main sources for financing investment in Thailand and Philippines, other than for Singapore and Malaysia. Indonesia experienced negative FDI/GDFCF ratio from 1998-2000 due to disinvestment.

The large FDI role in Singapore may appear surprising; as Singapore is economically the most advanced country in ASEAN, has a national savings rate exceeding 40 per cent since the early 1980s, and has been a net capital exporter since 1986. However, financial savings of Singapore are not necessarily available for private sector investments, as a substantial part of national savings is held by the public sector in the form of compulsory savings through the Central Provident Fund and of budgetary and operating surpluses of the government and statutory boards. Additionally, to turn national savings into successful business ventures, entrepreneurship is required, and Singapore has a relative scarcity of indigenous industrial entrepreneurs. Among the ASEAN countries, Singapore is also the most heavily dependent on FDI as a source of external finance. It so reflects the priority that Singapore's economic strategy places on foreign multinational corporations (MNCs) to provide the technological, managerial, organizational and marketing capabilities.

**Table 4.3: ASEAN - Foreign Direct Investment/Gross Domestic Capital
Formation Ratio, 1980-2000**

	Indonesia	Malaysia	Philippines	Singapore	Thailand
1970	6.9	11.73	-2.12	13.23	2.65
1975	7.41	17.35	2.15	13.54	2.32
1980	1.16	12.81	-1.14	22.25	2.10
1985	1.26	7.89	0.28	13.32	1.46
1990	2.73	16.35	5.70	39.94	6.84
1991	3.33	21.33	5.75	30.94	4.74
1992	3.62	25.41	1.98	12.47	4.77
1993	4.35	20.04	9.70	21.37	3.64
1994	3.91	13.80	9.54	34.98	2.35
1995	6.91	10.94	9.05	30.41	2.97
1996	9.03	12.2	7.65	30.55	3.11
1997	10.91	16.51	8.13	39.75	11.65
1998	-0.65	10.88	16.48	23.41	28.53
1999	-15.17	2215	4.14	25.92	25.30
2000	-18.93	15.76	17.21	22.23	11.41

Sources: International Financial Statistics Yearbook - IMF various issues & various issues of Key Indicators of DMCS of ADB

Savings-Investment gap

It would also be useful to examine the role of FDI in bridging the savings-investment gap in the ASEAN-Five countries. In the early 1980's, most of the ASEAN countries were facing twin problems of negative or low economic growth and mounting external debt burden. Consequently, the gaps between gross domestic savings and gross domestic investment as a percentage of GDP were widening as shown in Table 4.4. The gap reached an unsustainable level in nearly all the ASEAN countries in the early 1980's before narrowing down in some countries on account of the improved external environment and the structural adjustment policies in the respective ASEAN countries. However, the problem of the savings-investment gap and particularly, the external imbalance became serious again. For countries like Thailand, Malaysia and Indonesia, the strong inflows of foreign capital have helped considerably in closing such a gap.

From the year 1990, the saving-investment gap was widening at a rapid rate. For countries like the Philippines, Thailand, Indonesia and Malaysia, there were years when the saving-investment gap was at a negative value. These countries had to rely on foreign capital to narrow down the gap and FDI was found to be the most efficient, beneficial and least costly source of foreign capital. Thus many of these countries began to liberalize policies to attract more foreign direct investment.

After the 1997 financial crisis, the saving-investment gap (1998) for the 5 ASEAN countries widened enormously. An increase in the inflow of foreign capital in the form of FDI and official development finance (ODF) helped to

narrow down the gap. Thus FDI still plays a vital role in bridging the saving-investment gap in the post-crisis period.

Table 4.4: Resource Gap, ASEAN-5 Economies 1980-2000

$$\frac{(\text{GDS}-\text{GDI})}{(\text{GDP})}$$

Country	1980	1985	1990	1995	1996	1997	1998	1999	2000
Indonesia	8.30	1.70	0.50	-1.30	-0.60	-0.30	9.70	8.00	7.80
Malaysia	2.50	5.10	2.00	-3.90	1.40	0.90	21.80	24.80	19.90
Philippines	-2.50	4.50	-5.50	-8.00	-9.40	-10.60	-7.40	-3.70	-0.60
Singapore	-7.50	-1.90	6.80	15.10	12.70	11.10	17.10	16.00	16.00
Thailand	-6.80	-3.90	-7.40	-4.80	-5.50	1.90	14.20	12.40	9.40

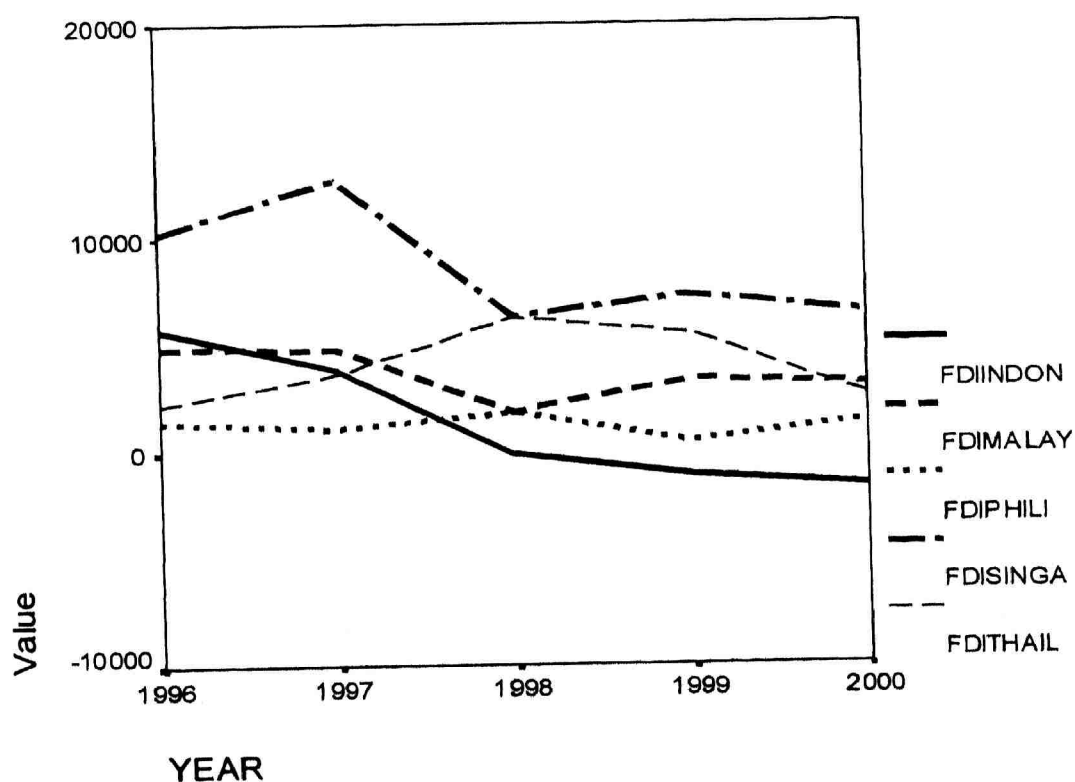
Sources: International Financial Statistics Yearbook - IMF various issues & various issues of Key Indicators of DMCS of ADB

Magnitude and trend of FDI inflows after the Asian crisis

By mid 1997 Southeast Asian countries (namely Thailand, the Philippines, Indonesia and Malaysia) were hit by the Asian financial crisis. During the pre-crisis period, the level of FDI inflows to the affected countries increased sharply from a total of US\$1.7 billion in 1980-1984 to almost US\$20 billion in 1996. When the crisis kicked in, the level of FDI inflows fell from US\$19.2 billion in 1997 to US\$16.7 billion in 1998- a significant drop but far from a collapse. It began increasing again in 1999, reaching US\$17.4 billion (Asian Development

Bank Review, 2001). However, individual national performances varied greatly as shown in Figure 4.1 (a) and 4.1 (b).

Figure 4.1 (a): Trends in FDI inflows (constant prices) into the 5 ASEAN countries from 1996-2000 (line graph)



Sources: International Financial Statistics Yearbook - IMF various issues.

In Thailand, the pickup in FDI inflows started about 1998. Compared with 1997, the amount of inflows doubled in 1998, after which a decline set in. Direct investment data show a downward trend for 2000, but this decline may simply be a reflection of investor weariness resulting from the slowdown in both the rates of asset disposals and the reform momentum.

In sharp contrast, FDI inflows to Indonesia have been negative since 1998, with outflows currently on a rise due to non-economic factors such as the volatile political and security situations in the country. Meanwhile, the amount of FDI inflows into the Philippines has remained relatively small and hardly changing before and after the crisis.

In Malaysia, despite a small pickup in 1999, FDI inflows have been falling since 1996. There may be a number of reasons for this. First, unlike in the Republic of Korea and Thailand, mergers and acquisitions (M&As) activity has not been an important component of foreign capital inflows during this period. Corporate distress was far less widespread in Malaysia than elsewhere and there were simply fewer bargain assets. Second, Malaysia's foreign investment regime has remained more liberal and for a longer time than other countries, and in some sectors the presence of multinational enterprises had already reached high levels before the onset of the crisis. These suggest that the FDI slowdown in Malaysia may not reflect a reversal in attitudes of foreign investors toward the country as an investment site, but rather a temporary adjustment.

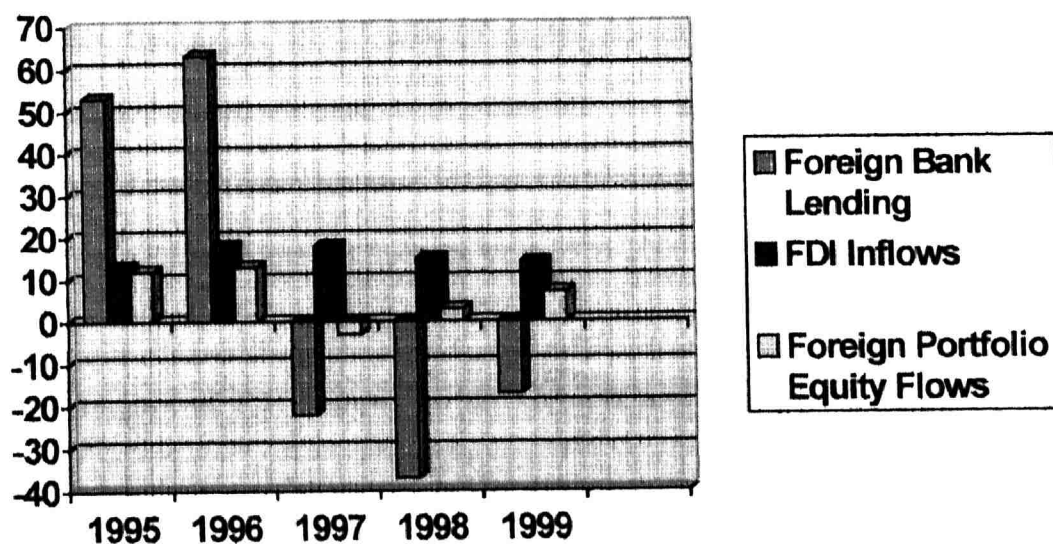
In addition to providing much needed capital, foreign firms also appear to have played an important role in weathering the crisis. Relative to domestic firms, they displayed greater capacity to switch sales from depressed domestic markets to international markets, allowing them to limit the number of layoffs and reductions in fixed capital formation, which tempered the contractionary effects of the crisis. Through M&A, they have also facilitated corporate restructuring in the countries concerned.

FDI inflows to the ASEAN-5 were remarkably resilient when compared with foreign bank lending and foreign portfolio equity investment before and during the financial crisis (Figure 4.2). In contrast to portfolio investment and bank lending, the withdrawal of which triggered a downturn in overall private capital inflows, FDI remained relatively stable and increased its importance in private capital flows.

There are several reasons for this: corporate networks of integrated international production that have already existed in Asia allowed some TNCs to compensate for declining domestic sales through increased exports spurred by devaluations; some TNCs took advantage of cheaper asset prices; in some cases, parent firms increased investment stakes in their existing affiliates, either to buy some or all shares of distressed joint venture partners or to alleviate affiliates' financial difficulties in the wake of the crisis; and some TNCs have increased capital investments in response to the relaxation of FDI regimes that has taken place after the financial crisis.

Figure 4.2: FDI Inflows, Foreign Portfolio Equity Flows and Foreign Bank Lending to the five Asian countries most affected by the financial crisis, 1995-1999

(Billions of dollars)



Source: UNCTAD, FDI/TNC database for FDI inflows and Institute of International Finance, 1999b for portfolio flows and bank lending

4.4 A Graphical Analysis on the Impact of FDI on the Economic Growth and Domestic Saving Rates

An analysis of the impact of the change in FDI inflows as a percentage of GDP on the economic growth and domestic saving rates is carried out graphically. In this analysis, the impact of FDI inflows on the growth and saving rates of a country is studied, holding all other factors constant. It is hoped this analysis will give an overall picture of the impact of FDI on economic growth and saving rates of each of the 5 ASEAN countries from the year 1970-2000.

4.4.1 The Impact of FDI Inflows on the Growth and Domestic Savings of Indonesia

In Figure 1A, the trend in the change of FDI/GDP ratio was due to the change in attitude of Indonesia towards FDI from the year 1970-2000. In accordance with the 1967 Law of Foreign Investment, the government gave liberal incentives and guarantees to foreign investment. But from 1974 onwards there emerged a more restrictive set of policies. Indonesia has not succeeded in attracting much foreign investment. One of the facts discouraging foreign investment in Indonesia must have been the low yield in all areas except for the petroleum industry. Since 1984, tax incentives have been reduced as the government feels that it needs to raise tax revenues. The general investment climate relating to such things as inflation, balance of payments problems, and government regulations were not satisfactory in Indonesia.

From the year 1987, the FDI inflows into Indonesia grew at a slow rate until the year 1997, followed by disinvestment due to the Asian financial crisis 1997. In 1987, the government announced an economic reform package that eased restrictions on trade and inward foreign investment; this attracted some amount of FDI into Indonesia. The Asian financial crisis of 1997, hit Indonesia the hardest, all major sectors suffered setbacks. The impact of the crisis was aggravated by some serious non-economic factors. The resultant loss of confidence of foreign investors caused a net disinvestment.

In regard to the graphical analysis of the impact of the change in FDI inflows as a percentage of GDP (CFDI) on the growth rates (GR) of Indonesia, Figure 1A which shows the two line graph, is analyzed in detail. As shown in Figure 1A, an increase in the change of FDI inflows had positive impact on GR of Indonesia for the years 1970-71, 1976-77, 1994-95 and 1998-99. In these years, an increase in the change of FDI/GDP ratio also caused the GR to increase. It shows the importance of FDI in improving economic growth of a country. The change in FDI/GDP inflows did have negative effect on the GR of Indonesia for the years 1973-75 and 1977-78. The negative impact occurred in these years could be due to distortion in the host country in the form of financial repression and trade control.

In the analysis of the impact of FDI on the saving rates of Indonesia, it is observed in Figure 1B that an increase in the change in FDI/GDP ratio had negative impact on the domestic saving rates (SY) of Indonesia for the years 1974-75, 1994-1995 and 1998-1999. There was positive effect only for the year 1973-74. The impact of the change in FDI inflows/GDP on the SY rate is not

significant for the years from 1976-94, as there wasn't much change in the FDI/GDP ratio during these years.

From the above analysis on Figure 1A, it can be concluded that the occurrence of positive impact of the change in FDI/GDP ratio on growth was more frequent than negative impact through out the period 1970-2000. This is also seen clearly in the overall picture of Figure 1A, as the relationship was generally positive from the year 1992-2000. This supports the "orthodox position" (Rosenstein-Rodan, 1961; Chenery and Strout, 1966), who sees foreign capital as a supplement to local capital resources. According to this orthodox position, all capital inflows constitute net additions to a country's productive resources, thus increasing its growth.

The occurrence of negative impact of the change in the FDI/GDP ratio on the savings rate of Indonesia from the year 1970-2000 was more frequent than positive impact. The relationship between the change in FDI/GDP ratio and SY was also negative through out the year 1970-2000 as shown in Figure 1B. This supports Trygve Haavelmo (1963) hypothesis that domestic savings depend directly on income and relate negatively to foreign capital inflows. His hypothesis relating investment, GNP and capital inflows can be written as: $I(t)=[Y(t)+H(t)]$ where I = gross investment, Y = GNP, H = capital inflows. Haavelmo saw investment as a function of income, including what a country gets from abroad, and domestic savings could be negative if foreign capital (H) is large enough. Rahman (1968) interpreted this to mean that domestic savings depend not only on income, but also, negatively on foreign capital. Rahman concluded that it

was quite likely that foreign capital not only augmented investment, but also substituted for domestic savings. Thus, governments in developing countries, like Indonesia may voluntarily relax the domestic savings effort when more foreign capital is available than might be the case otherwise.

Figure 1A: The Impact of change in FDI/GDP ratio (CFDI) on the growth rate (GR) of Indonesia

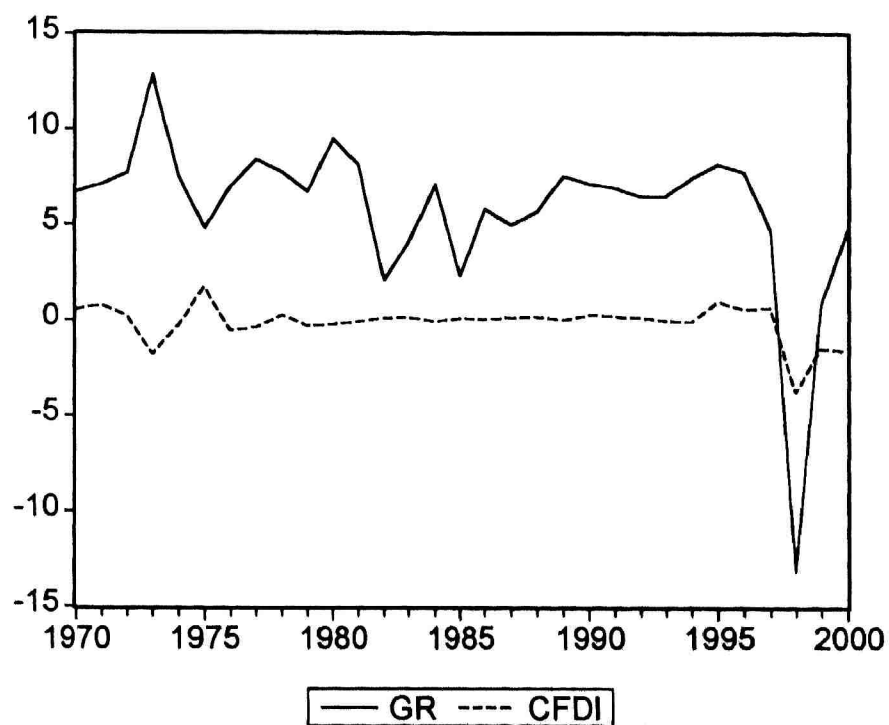
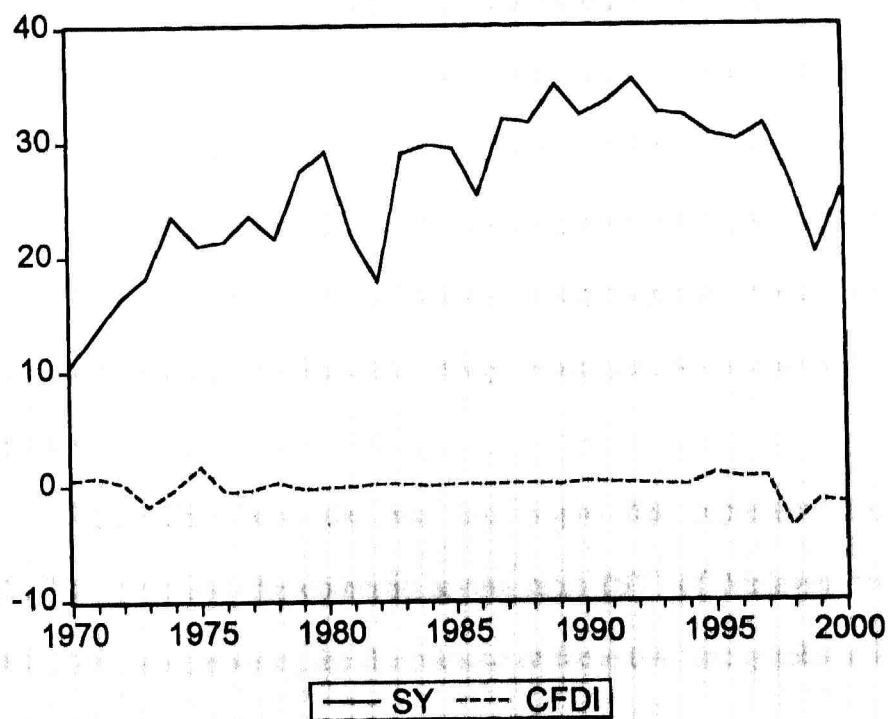


Figure1B: The impact of the change in FDI/GDP ratio on the savings rate of Indonesia



4.4.2 The Impact of FDI Inflows on the Growth and Domestic Saving Rates of Malaysia

Malaysia's attitude was to encourage and welcome FDI within the framework of the New Economic Policy 1971. Generous investment incentives offered by Malaysia have influenced foreign investors to locate their operations in the country. Political stability, a cheap and trainable labor force, infrastructural facilities, and the macroeconomic environment prevailing in Malaysia have also exerted strong influence on foreigner's offshore investment decisions.

In analyzing the impact of the change in FDI/GDP ratio on the growth rate of Malaysia, Figure 2A shows graphically the relationship between the two variables. From Figure 2A, the impact of the change of FDI/GDP inflows on the economic growth (GR) of Malaysia is positive for the years 1975-76, 1987-89, 1990-91, 1994-96 and 1998-99. In these years, when there was an increase in the change of FDI/GDP inflows, there was also an increase in the GR. The inflows of FDI did benefit the host country in a positive way. Whereas, the years 1973-74, 1979-80, 1984-85 and 1995-96 showed negative effect of the change in FDI/GDP inflows on growth rate of Malaysia. The negative effect for these years may be due to trade barriers, a lack of effective competition in product market, under developed financial markets and many other policies associated with import substitution.

Figure 2B shows the two line graphs that represents the change in FDI/GDP ratio and the domestic saving rates (SY) of Malaysia from the year 1970-2000. In comparing the fluctuations of these two line graphs, it is shown that

the change in FDI inflows as a percentage of GDP had negative impact on SY for the years 1973-74, 1979-81, 1984-85, 1987-89, 1990-91, 1995-97 and 1998-99. For these years, when there was an increase in the change of FDI/GDP ratio, the SY rate decreased, showing a negative impact.

Thus overall, the occurrence of positive impact is more frequent than negative impact of the change in FDI/GDP on growth rate of Malaysia for the period from 1970-2000. From Figure 2A, the relationship between the change in FDI/GDP ratio and GR was also positive as shown in the fluctuations of the two line graphs. This may be due to the fact that Malaysia leaned heavily on foreign technology in the manufacturing sector. FDI into Malaysia for the period 1970-2000 were strongly concentrated in the manufacturing sectors. Hence strong technological impact, through FDI inflows into the manufacturing sector, had caused rapid growth in Malaysia. This is in support of the study conducted by Dunning (1970).

The change in FDI/GDP ratio had negative impact on the savings rate of Malaysia over the period 1970-2000. This is also seen in the fluctuations of the two line graphs in Figure 2B, as they show a negative relationship between the change in FDI/GDP ratio and the savings rate. This supports the studies of K. Griffin and J. Enos (1970) and Thomas Weisskopf (1972), that, there is a possible reduction in domestic savings, as a result of foreign capital inflows. FDI is said to reduce the incentives to save and also stimulate a higher consumption level for imported goods, made available through the foreign capital inflows. With current consumption increasing at a given income level, domestic savings would fall.

Figure 2A: The impact of the change in FDI/GDP ratio (CFDI) on the growth rate (GR) of Malaysia

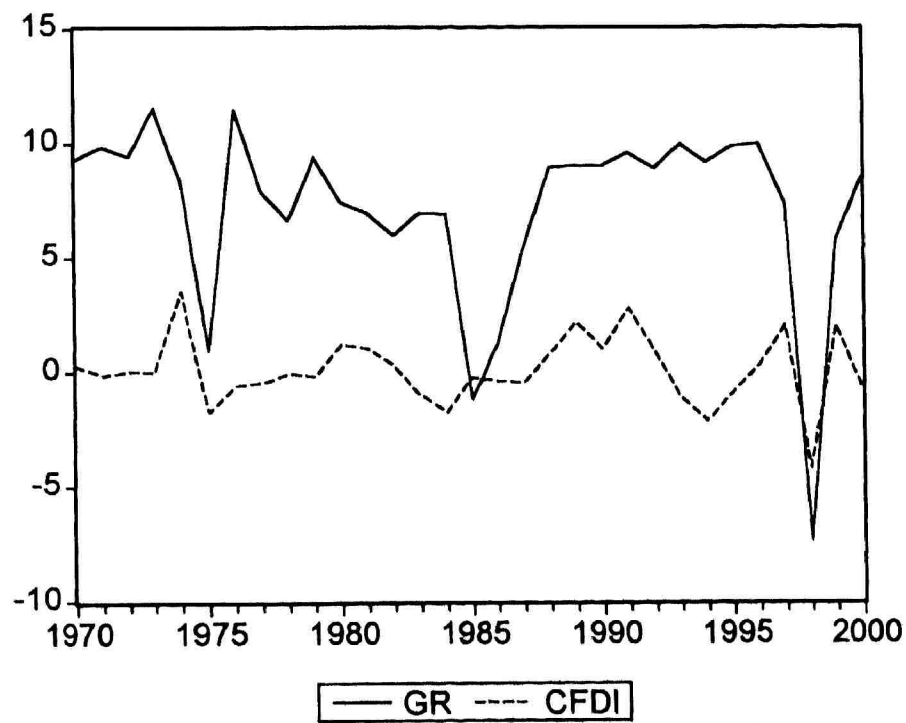
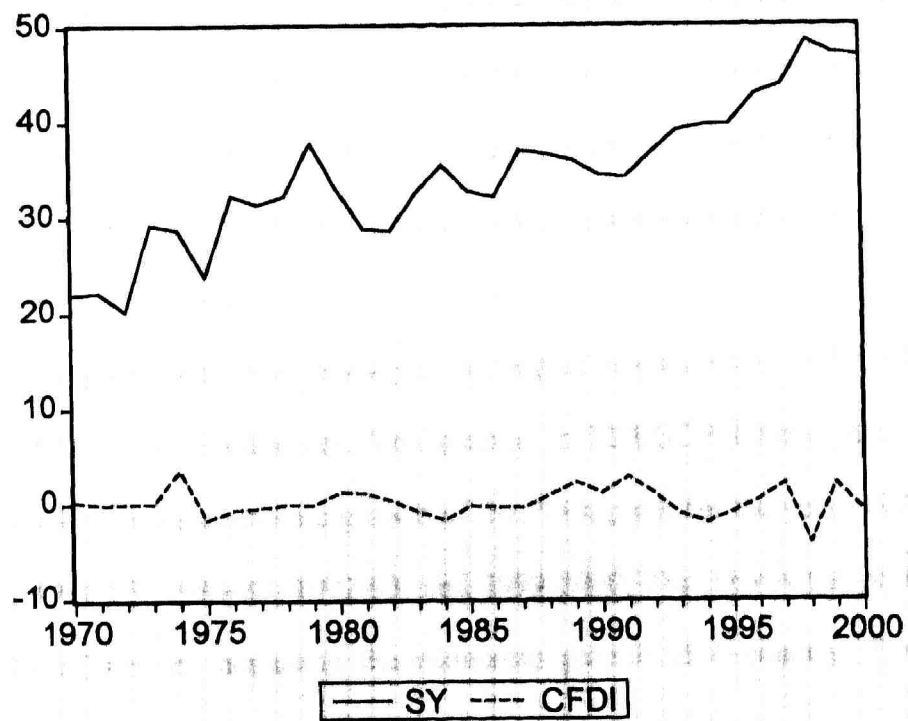


Figure 2B: The impact of the change in FDI/GDP ratio (CFDI) on the savings rate (SY) of Malaysia



4.4.3 The Impact of the change of FDI/GDP inflows on the Growth and Domestic Saving Rates of the Philippines

The amount of FDI inflows into the Philippines has remained relatively small before 1987, even though a number of taxes and other incentives, including availability of export processing zones, were provided to the foreign investors. One of the major reasons for this must be the low rate of return on FDI in the Philippines. The Investment Incentive Act of 1967 was enacted to promote an accelerated pace of industrialization but the investment climate, despite tax incentives, has not been conducive to attracting foreign investment. Mismanagement of the economy under the Marcos regime and emphasis on government investment, inflation and perhaps crowding out of local financial markets have all played a role in making the Philippines not as attractive as Malaysia, Singapore and Thailand.

After the year 1987, the FDI inflows into the Philippines began to increase at a slow rate, this change came about when the 1987 Omnibus Investment Code consolidated various investment laws and incentives scheme. This was followed by the 1991 Foreign Investment Act, which liberalized the rules and regulations on foreign ownership.

Figure 3A is used to analyze the impact of the change in FDI/GDP ratio on the GR of the Philippines. The change in FDI/GDP inflows had contributed favorably to the economic growth of the Philippines for the years 1970-71, 1972-73, 1974-75, 1986-88, 1992-93, and 1999-2000. This shows the positive role of FDI inflows in increasing the economic growth of a country. The change in

FDI/GDP inflows into the Philippines contributed a negative impact on its economic growth for the years 1980-81 and 1982-83. Distortion in the domestic country may cause FDI inflows to be associated to a low or negative growth.

In analyzing Figure 3B, which shows two line graphs representing domestic saving rates (SY) and FDI/GDP ratio from the year 1970-2000, an overall picture of the impact of FDI on the saving rates can be obtained. For the year 1970-1986, there was not much change in the FDI inflows into the Philippines, whereas the SY line graph shows an increase in its value, fluctuating on a year-to-year basis. This indicates that the change in SY rate was not due to the change in FDI/GDP ratio and therefore the two variables did not show any relationship from the year 1970-1986. As shown in Figure 3B, from the year 1986-2000, the relationship between the change in FDI/GDP ratio and GR was negative. For the years 1992-93 and 1997-98, when there was an increase in FDI inflows, the SY rate decreased. In other words, the change in FDI/GDP inflows had negative effect on the domestic savings rates of the Philippines.

In conclusion, the analysis above indicates that the occurrence of positive impact of the change in FDI/GDP ratio on the growth rate of the Philippines was more frequent than negative impact during the period 1970-2000. FDI, by bringing in new investible funds and foreign exchange, can help a less developed country to achieve higher investment rates and accelerate growth. The essential characteristic of FDI is that they are foreign investments made to acquire a lasting interest and managerial influence in enterprise. As such, FDI tends to contribute more to growth in developing countries since it often involves more long-term and

productive investments which are more likely to create more beneficial impacts such as technology acquisition, market linkages and managerial skills, the diffusion of which can have substantial effects on productivity growth.

For the Philippines the impact of the change in FDI/GDP ratio on the saving rate was negative for the period 1970-2000. This result supports two hypotheses, which explains how foreign capital could lead to a decline in domestic savings. First, foreign capital could induce governments to relax their tax efforts and increase their consumption expenditure or else to liberalize imports. Second, FDI pre-empt investment opportunities and displace domestic investment. If savings were determined by available investment opportunities, this would cause domestic savings to fall.

Figure3A: The Impact of the change in FDI/GDP ratio on the growth rate of the Philippines

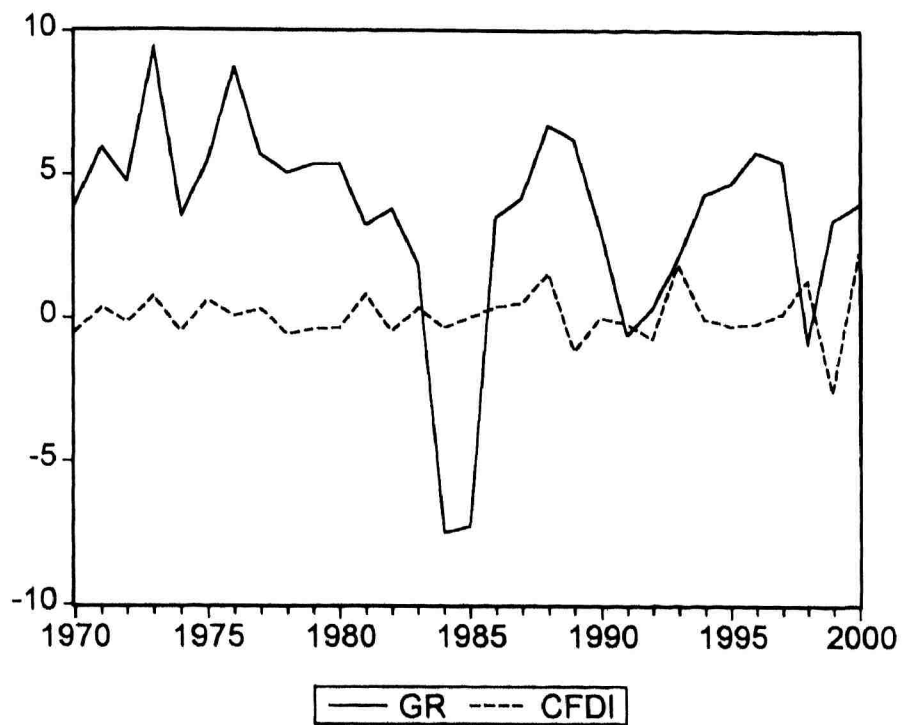
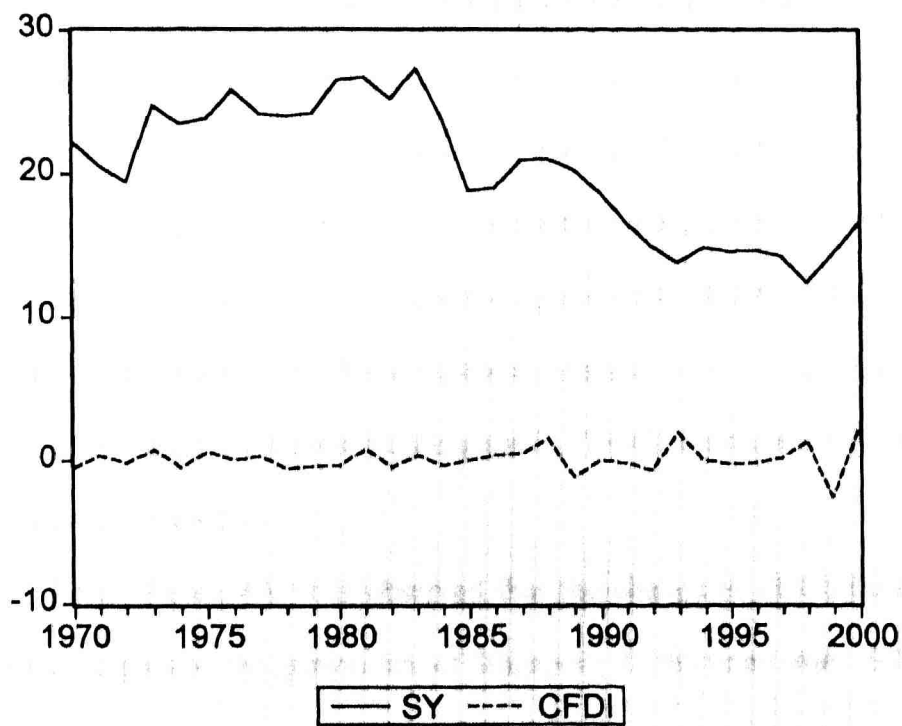


Figure3B: The impact of the change in FDI/GDP ratio (CFDI) on the savings rate of the Philippines



4.4.4 The Impact of FDI on the Economic Growth and Domestic Saving Rates of Singapore.

Singapore has always maintained a highly open economy and a friendly foreign investment regime, and FDI has always played a critical role in the economy. The economic policy of the government as a whole is geared towards attracting FDI through political stability, peaceful industrial relations, orderly wage increases, manpower development, tax incentives, government provision of industrial estates, and equity and loan financing in the local as well as developed capital and money markets. The activities of EDB (Economic Development Board) with its aggressive policies implemented through a network of worldwide branches have also helped to bring about a large inflow of FDI.

This is shown clearly in the line graph showing the relationship between the change in FDI/GDP ratio and the growth rate (GR) in Figure 4A. From the year 1973, generally there had been an increase in FDI inflows into Singapore and the importance of FDI in relative to GDP had also increased steadily with a few fluctuations from year-to-year basis. In general, the economic growth rate of Singapore had also increased throughout these years, except for 1975, 1985 and 1998 where it experienced a decline in growth rate due to a decline in world economic growth and the Asian financial crisis of 1997. From the year 1973-1999, the relationship between the change in FDI/GDP ratio and GR of Singapore was generally positive.

From Figure 4A, it is observed that the change in FDI inflows/GDP had positive impact on the growth rate of Singapore for the years from 1976-77, 1978-

79, 1985-86, 1992-93, 1996-97 and 1998-99. For these years, an increase in FDI inflows has caused also an increase in GR of Singapore. The inflow of FDI also has had negative impact on GR of Singapore for the years from 1972-73, 1974-75, 1989-90 and 1995-96.

In regard to the relationship between the change in FDI/GDP inflows and saving rates of Singapore, it varies across time as shown in Figure 4B. For the year 1970-73, the relationship was positive. Then from the year 1974-2000, the relationship was negative. The change in FDI/GDP inflows into Singapore had negative effect on SY rate for the years from 1985-86, 1995-96 and 1998-99. The years 1972-73, 1978-79 and 1989-90 showed positive impact of the change in FDI/GDP ratio on the growth rate of Singapore.

Thus, in conclusion, the occurrence of positive impact of the change in FDI/GDP ratio on the GR of Singapore was more frequent than negative impact for the period 1970-2000. This is in support with some studies, which argue that FDI has positive growth-effect when the country is sufficiently rich (Blomstrom, Lipsey, and Zejan 1994), with sufficiently developed financial markets (Alfaro, Chandra, Kalemli-Ozcan, and Sayek, 2000) and maintains trade openness (Balasubramanyam, Salisu, and Dapsoford, 1996). FDI is more productive in countries (like Singapore) that have pursued export promotion rather than import-substitution policies (Balasubramanyam, 1999, 1996).

The effect of the change in FDI/GDP inflows on the domestic saving rates of Singapore was generally negative. This is according to K. Griffin and J. Enos (1970) and Thomas Weisskopf (1972) that there is a possible reduction in

domestic savings, both private and public, as a result of foreign capital inflows. FDI is said to reduce the incentives to save and also stimulate a higher consumption level for imported goods, made available through the foreign capital inflows. In other words, foreign capital inflows and domestic savings are seen as substitutes. The underlying rationale for this hypothesis is that the foreign capital supplements the country's available resources, and it can be assumed that a portion of the additional financial resources will be allocated toward current consumption. With current consumption increases at a given income level, domestic savings would fall.

Figure 4A: The impact of the change in FDI/GDP (CFDI) ratio on the growth rate (GR) of Singapore

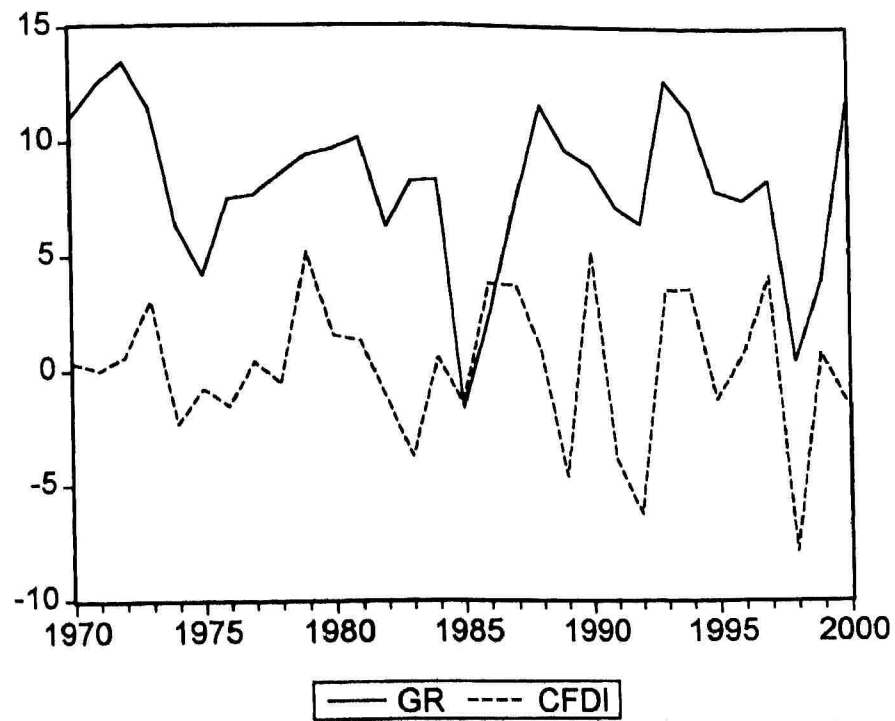
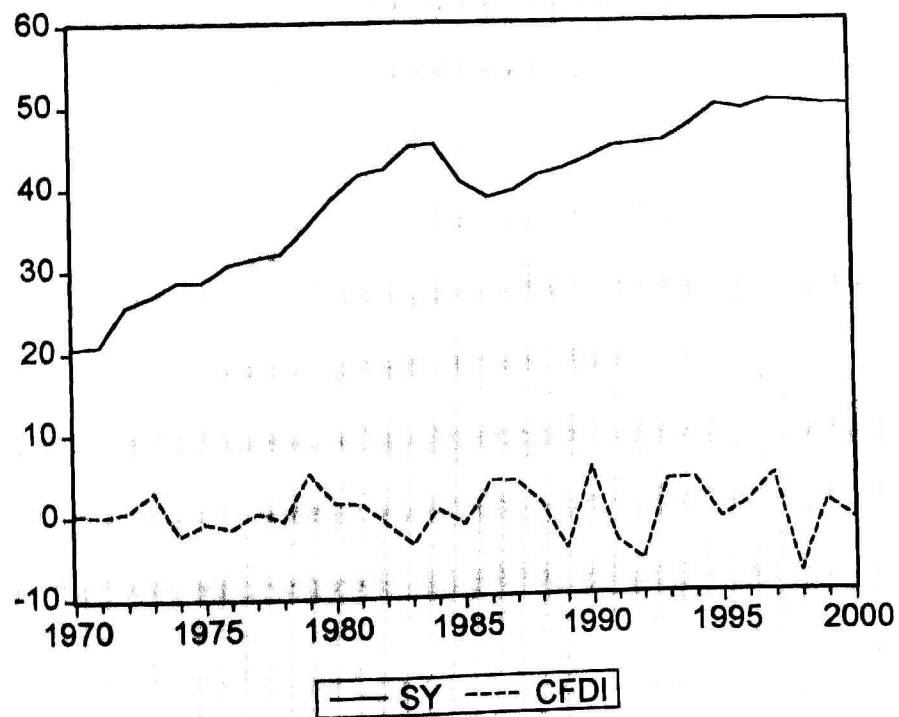


Figure 4B: The impact of FDI/GDP ratio (CFDI) on the savings rate (SY) of Singapore



4.4.5 The Impact of FDI inflows on the Growth and Domestic Saving Rates of Thailand

Figure 5A shows the trend of the change in FDI inflows as a percentage of GDP (CFDI) and the growth rate (GR) for Thailand from the year 1970-2000.

FDI in Thailand started to expand at a rapid pace after 1987, as rising costs of production, especially labor costs, and the appreciation of the currencies of Japan and the Asian newly industrializing economies (NIEs), led to the relocation of production bases to Thailand and other developing countries. This trend began to change at the beginning of the 1990s. The decline in FDI probably resulted from the competition of the production-base adjustment by multinational firms from Japan and the NIEs, the emergence of infrastructure and human resource bottlenecks, and domestic and international political instability.

From the year 1996, FDI in Thailand, unaffected by plummeting GDP growth, has boomed to historical highs since the onset of the crisis. Financial institutions and machinery and automobile industries were the largest recipients of FDI. The dramatic increase in FDI flows to Thailand reflected a significant rise in cross-border mergers and acquisitions (M&As). The negative impact of FDI on the economic growth of Thailand shows that when Thailand attracted more FDI, the rate of its economic growth declined. Hence, FDI appears to have been immiserizing in Thailand. When the domestic economy is distorted, that is the presence of financial repression and trade controls after the crisis, FDI inflows are associated with negative growth. After 1998, there was a downward trend in FDI

inflows, but this decline may simply be a reflection of investor weariness resulting from the slowdown in both the rates of asset disposals and the reform momentum.

From the year 1970-1990, Figure 5A shows the change in FDI/GDP inflows into Thailand had negative impact on the GR for the years 1973-74, 1978-80, 1991-92, 1994-95 and 1996-97. For these years, an increase in FDI/GDP shows a decrease in GR rate. For the year 1982-1983, 1985-86, 1987-88, the impact of the change of FDI/GDP on the GR was positive, that is an increase in FDI/GDP shows an increase in GR. This supports the orthodox position, that foreign capital inflows had made a positive contribution to growth.

In Figure 5B, the relationship between the change in FDI/GDP ratio and domestic savings rate (SY) can be observed. From the year 1970-1987, FDI inflows virtually remained unchanged because of resentment towards FDI which were reflected in policies like limits on the share of foreign equity, local content requirements and bans on foreign ownership in certain sectors. As a result, most of the FDI in this period were concentrated in import-substitution manufacturing industries. As the change in FDI/GDP ratio remained unchanged, the SY fluctuated at an increasing rate. This shows that there wasn't any relationship between the two variables during this period.

From the year 1987-89, there was an increase in the change of FDI/GDP inflows and also a gradual increase in SY rate. Thus, the impact of the change in FDI/GDP inflow on the SY rate for this period was positive. There wasn't any significant year where the impact of the change in FDI/GDP ratio on saving rates

was negative. From Figure 5B, the relationship between the change in FDI/GDP ratio and SY was positive for the period 1996-2000.

As a conclusion, the occurrence of negative impact of the change in FDI/GDP ratio on the economic growth rate was more frequent than positive impact during the period 1970-2000. Figure 5B also shows a negative relationship between the change in FDI/GDP ratio on the GR from the year 1996-2000. Financial repression and trade controls in the domestic economy, a lack of effective competition in product markets, under-developed financial markets and many other policies associated with import substitution, can cause FDI to immerse. When the domestic country is distorted, FDI inflows are associated with low or negative growth (Fry, 1993). Another dominant view is the dependency hypothesis emphasizes the risks that MNEs pose to the developing countries. In the short run, an increase in FDI will increase investment and consumption, consequently result in higher economic growth. However, as FDI accumulates, there will be adverse effects on the rest of the economy that reduce economic growth. In the long run, the effect of FDI is negative. This is due to intervening mechanisms of dependency, in particular, domestic "decapitalization" and "lack of linkages" (Bornschiefer, 1980). MNEs monopolize rather than inject new capital resources, displace rather than generate or reinforce local business, and worsen those countries' balance of payments problems.

The impact of the change in FDI/GDP ratio on the saving rate was generally positive for Thailand during the period 1970-2000. FDI has encouraged domestic savings or one could say FDI has a catalytic effect on domestic savings. Here, FDI

appears to complement domestic savings. This result of a positive effect on the savings is also in accordance with Gupta (1970) views. This may happen if FDI inflows are allocated to projects that increase disproportionately the income of groups whose propensities to save are substantially high.

Figure5A: The impact of the change in FDI/GDP ratio(CFDI) on the growth rate(GR) of Thailand

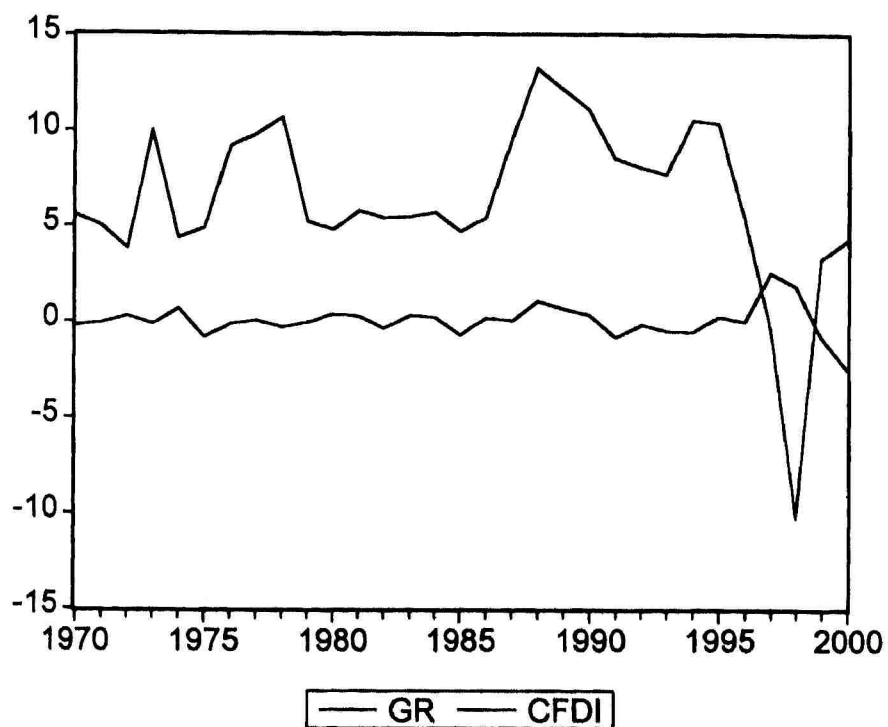
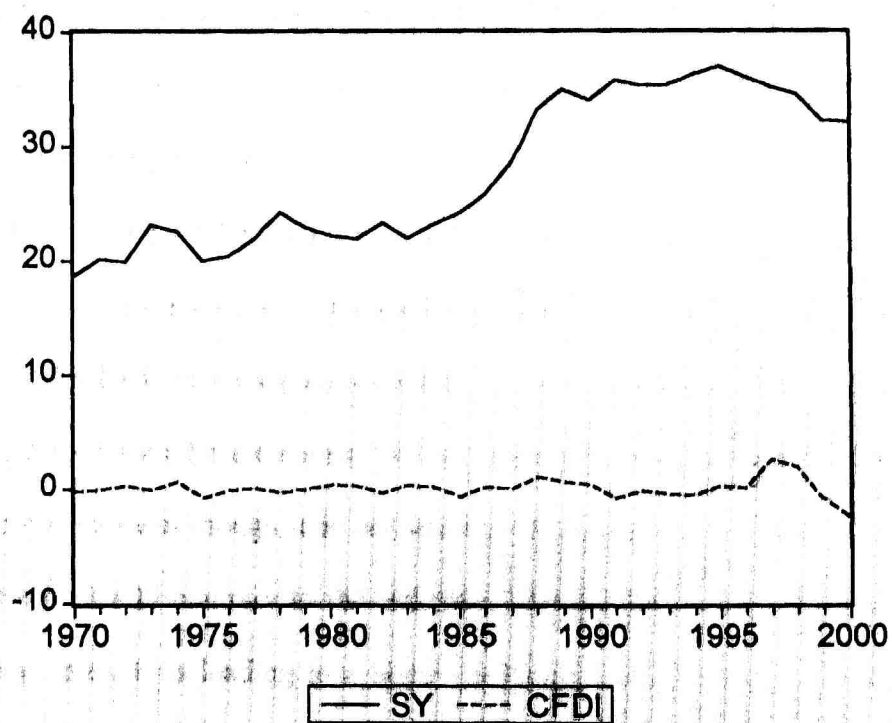


Figure5B: The impact of the change in FDI/GDP ratio (CFDI) on the savings rate (SY) of Thailand



The graphical analysis resulted in the following conclusion:

In regard to the relationship between FDI and growth rate, Indonesia, Malaysia, the Philippines and Singapore generally showed a positive relationship. The occurrence of positive impact of FDI on growth rate was more frequent than negative impact for these 4 countries during the period 1970-2000. Thus, from this graphical study it can be said that there is strong evidence that FDI inflows into Indonesia, Malaysia, the Philippines and Singapore had positive impact on the growth rates of these countries from 1970-2000. This result supports the "orthodox position" that FDI has positive growth effect on host country. On the other hand, Thailand showed generally showed a negative relationship between FDI inflows and its growth rate. The occurrence of negative impact of FDI on growth rate was more frequent than positive impact from 1970-2000 for Thailand. Thailand showed strong evidence that FDI inflows from 1970-2000 had negative impact on its growth rate. This result supports studies by radical economists who see the negative aspects of FDI and MNCs.

The relationship between FDI inflows and the saving rates of Indonesia, Malaysia, the Philippines and Singapore was generally negative especially from the year 1995-2000, as shown in the graphs. The occurrence of negative impact of the FDI inflows into these countries on their savings rates was more frequent than positive impact even though it is not seen so clearly as in the impact on growth rate. This is clearly contrary to the orthodox view that FDI positively influences the saving rates, thus leading to a higher economic growth rate in the recipient country. Whereas, for Thailand the relationship between FDI inflows and the

savings rate was generally positive from 1995-2000 and the occurrence of positive impact of FDI inflows on the saving rate was more frequent than negative impact. This clearly supports the orthodox view that FDI positively influences the saving rates, thus leading to a higher economic growth rate in the recipient country.

Thus, in conclusion, the negative effect of FDI on the domestic savings rate of Indonesia, Malaysia, the Philippines and Singapore could dampen the FDI effect on growth. Thus diminishing the growth-inducing effects of FDI inflows into these countries. On the other hand, for Thailand, the positive effect of FDI on domestic savings rate can have a catalytic effect on economic growth.

4.5 Testing for Stationarity of data series

The main purpose of this study is to determine the impact of FDI on the growth and savings rates of the 5 selected ASEAN countries. For this purpose, the models introduced in this study will be estimated to get the values of the parameters using ordinary least squared (OLS) method. When the OLS method is used for estimation of a model, it is assumed that the data series relevant to each variable is stationary i.e. integrated of the order $I(0)$. If it is not the case, hypothesis testing is not valid. Therefore it has to be clear that the relevant data series are stationary. Broadly speaking, a stochastic process is said to be stationary if its mean and variance are constant over time and the value of covariance between two time periods depends only on the distance or lag between the two time periods and not on the actual time at which the covariance is computed (Gujarati, 1995).

The Augmented Dickey-Fuller (ADF) unit root test was used for testing for stationarity. According to the procedure of this test, first difference of each data series is checked on its first lag value, to check whether the series is $I(0)$ i.e. stationary. Conventionally computed t statistic (called tau statistic), which is resulted from that regression is compared with its critical value at suitable confidence levels. If the computed absolute value of the tau statistic exceeds the ADF absolute critical tau values, the hypothesis that the time series is stationary is not rejected. Using the E views computer program, each time series in the two models were tested for stationarity. Table 4.5 presents ADF statistics for each of the 5 selected ASEAN countries computed using the E views software.

Table 4.5: Results of unit root test for stationarity (ADF Test) on time series data for the 5 selected ASEAN countries

Variable	Indonesia	Malaysia	Philippines	Singapore	Thailand
GR	-3.2960**	-3.6549**	-3.2061**	-4.2653***	-2.8095*
ΔS	-5.3576***	-6.3286***	-4.6897***	-3.4665**	-3.1599**
ΔFDI	-3.3161**	-3.5663**	-5.0943***	-4.9653***	-3.9876***
ΔOFC	-5.6045***	-4.2671***	-5.3606***	-7.0343***	-4.2561***
GRL	-5.5057***	-5.7657***	-4.0047***	-3.1028**	-3.4564**
ΔX	-5.3890***	-5.0032***	-2.7217*	-3.9968***	-2.9771**

Note: MacKinnon critical values for the rejection of hypothesis of a unit root test are as:

***1% Critical Value -3.6752

** 5% Critical Value -2.9665

* 10% Critical Value -2.6220

According to the results of unit root test appeared in Table 4.6, computed ADF statistics (absolute value) does exceed the critical values for all variables at 10% level. Thus we do not reject the hypothesis that the time series for all the variables are stationary. In other words all of the variables used in the growth and savings model for all the 5 selected ASEAN countries are $I(0)$. It reflects that there is no unit root problem in any of the variables used i.e. the time series data exhibits a stationary situation. Hence these data can be applied to analyze the two models.

4.6 Estimation of the Growth Model : the Impact of FDI on Growth

The following model for growth (equation 1 in chapter3) was estimated using the OLS method on time series data for each of the 5 selected ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand) from the period 1970-2000.

$$GR = a_1 + a_2 \Delta FDI + a_3 \Delta OFC + a_4 \Delta S + a_5 GRL + a_6 \Delta X$$

where:

- GR = GDP growth rate
- ΔFDI = change in foreign direct investment inflow as a percentage of GDP $(FDI/GDP_t - FDI/GDP_{t-1})$
- ΔOFC = change in other foreign capital as a percentage of GDP $(OFC/GDP_t - OFC/GDP_{t-1})$
- ΔS = change in gross domestic saving as a percentage of GDP $(S/GDP_t - S/GDP_{t-1})$
- GRL = growth rate of employment
- ΔX = change in export as a percentage of GDP $(X/GDP_t - X/GDP_{t-1})$

Results of the estimation of this growth model for the 5 ASEAN countries in this study are as in Table 4.6.

Empirical evaluation of the impact of FDI on economic growth of the 5 selected ASEAN countries in the period 1970-2000, is discussed in two sections. Firstly, the impact of FDI on growth of each of the selected countries, then, the comparison of the contribution of FDI to economic growth across country.

Table 4.6
Impact of FDI on growth of 5 ASEAN countries: Empirical Results

Variables	Indonesia	Malaysia	Philippines	Singapore	Thailand
Constant	5.05* (5.97)	5.82* (4.19)	3.68* (4.07)	6.63* (10.23)	6.59* (8.68)
Δ FDI	2.23* (3.44)	1.08* (2.66)	0.40 (0.61)	0.25** (1.59)	-0.61*** (-0.83)
Δ OFC	0.38* (1.84)	-0.03 (-0.19)	0.02 (0.12)	0.04** (1.40)	0.16*** (1.15)
Δ S	0.34* (1.84)	0.48* (2.20)	1.19* (4.62)	1.14* (3.85)	1.26* (3.60)
GRL	0.33** (1.59)	0.42*** (1.23)	0.07 (0.39)	0.12*** (0.93)	0.20*** (1.07)
Δ X	0.08 (0.58)	-0.27* (-1.94)	-0.24** (-1.33)	-0.01 (-0.28)	-0.63* (3.21)
R squared	0.48	0.50	0.48	0.53	0.63
Adjusted R ²	0.37	0.39	0.37	0.44	0.55
Durbin- Watson	1.62	1.16	1.05	1.35	1.67
F statistics	4.56	4.91	4.58	5.74	8.48

Note: 1. The critical t value, under 26 degree of freedom, at 95% confidence level is 1.706(*), at 90% confidence level is 1.315(**) and at 75% confidence level is 0.684(***). The significance of each variable is denoted by the symbol * in Table 4.7.

2. The critical F value for the degree of freedom 5 and 25 at 95% confidence level is 2.61. Estimated results of the growth model of the 5 ASEAN countries (Table 4.7) indicates the computed F statistic values for all 5 countries exceeds the critical F value. Therefore the overall model is significant statistically. Hence we can reject the null hypothesis that $H_0: a_2=a_3=a_4=a_5=a_6=0$ are jointly or simultaneously equal to zero.

3. The adjusted R^2 is low for all the 5 countries selected, it does not mean the model is necessarily unsatisfactory. This study is more concerned about the logical or theoretical relevance of the explanatory variables to the dependent variable and their statistical significance.

4.6.1 The Impact of FDI on the economic growth of each selected country.

- a. The estimated growth model for Indonesia can be presented as follows:

$$GR = 5.05 + 2.23\Delta FDI + 0.38\Delta OFC + 0.34\Delta S + 0.33GRL + 0.08\Delta X$$

(5.97) (3.44) (1.84) (1.84) (1.59) (0.58)

$$R^2 = 0.48, \text{ adj}R^2 = 0.37, \text{ Durbin-Watson} = 1.62, \text{ F statistics} = 4.56$$

All the explanatory variables carry the expected sign (positive). According to the t test, ΔFDI , ΔOFC and ΔS are significant at 95% confidence level. GRL is significant at 90% confidence level. Variable ΔX is not significant. Thus, the Indonesian economic growth rate is a function of ΔFDI , ΔOFC , ΔS and GRL. The result also support the hypothesis that ΔFDI has contributed positively to Indonesia's economic growth in the period covered. However, the ΔOFC , ΔS and GRL contributed less to the economic growth compared to the FDI rate. Estimated result of these model shows that variable ΔX has no impact on the economic growth.

Relatively, the ΔFDI rate contributed higher and more significantly than ΔOFC and ΔS to the Indonesian economic growth. Each one per cent increase in ΔFDI rate contributes to a 2.23 percent increase in growth rate while each one per cent increase in the ΔOFC rate and ΔS rate contributed to a 0.38 and 0.34 per cent increase in growth rate respectively.

b. The estimated growth model for Malaysia is as follows:

$$GR = 5.82 + 1.08\Delta FDI - 0.33\Delta OFC + 0.48\Delta S + 0.42GRL - 0.27\Delta X$$

(4.19) (2.66) (-0.19) (2.20) (1.23) (-1.94)

$$R^2 = 0.50, \text{adj}R^2 = 0.39, \text{Durbin-Watson} = 1.16, F \text{ statistics} = 4.91$$

According to the t test, coefficient of ΔFDI is statistically significant and contributes positively to the Malaysian economic growth. A one per cent increase in ΔFDI contributes to a 1.08 per cent increase in the growth rate. The variables S and GRL also significantly contributed positive effects to the economic growth. Relatively ΔFDI contributed higher and more significantly than the variable S. The estimation result shows that variable ΔX has a negative effect on the Malaysian economic growth. The variable ΔOFC carries a negative sign but it is not significant and thus does not have an impact on growth.

c. The estimation result for growth rate of the Philippines can be presented as follows:

$$GR = 3.68 + 0.40\Delta FDI + 0.02\Delta OFC + 1.19\Delta S + 0.07GRL - 0.27\Delta X$$

(4.07) (0.61) (0.12) (4.62) (0.39) (-1.33)

$$R^2 = 0.48, \text{adj}R^2 = 0.37, \text{Durbin-Watson} = 1.05, F \text{ statistics} = 4.58$$

The t test, indicates that the Philippines economic growth is positively effected by the variable ΔS and negatively effected by the variable ΔX . The

other variables, ΔFDI , ΔOFC and GRL have positive coefficient but the effect is not statistically significant.

d. The estimated growth model for Singapore can be presented as follows:

$$GR = 6.63 + 0.25\Delta FDI + 0.04\Delta OFC + 1.14\Delta S + 0.12GRL - 0.01\Delta X$$

(10.23) (1.59) (1.40) (3.85) (0.93) (-0.28)

$$R^2 = 0.53, \text{adj}R^2 = 0.44, \text{Durbin-Watson} = 1.35, F \text{ statistics} = 5.74$$

The explanatory variables ΔFDI , ΔOFC , ΔS , and GRL carry the positive sign and are statistically significant. Thus the results support the hypothesis that ΔFDI rate has a positive impact on Singapore's economic growth, where a one per cent increase in FDI rate increases the growth rate by 0.25 per cent. Thus, Singapore's economic growth is a function of the variables ΔFDI , ΔOFC , ΔS and GRL . The estimated results of the growth model shows that the coefficient of variable ΔX is negative but it is not significant.

Relatively, for Singapore, the ΔS rate contributed higher and more significantly than the ΔFDI rate and ΔOFC rates. Thus, the domestically financed investment is more efficient and more versatile than foreign capital.

e. The estimated growth model for Thailand is as follows:

$$GR = 6.59 - 0.01 \Delta FDI + 0.16 \Delta OFC + 1.26 \Delta S + 0.20 GRL - 0.63 \Delta X$$

$$(8.68) \quad (-0.83) \quad (0.15) \quad (3.60) \quad (1.07) \quad (-3.21)$$

$$R^2 = 0.63, \text{adj}R^2 = 0.55, \text{Durbin-Watson} = 1.67, F \text{ statistics} = 8.48$$

All the explanatory variables are statistically significant. The variables ΔOFC , ΔS and GRL carry the expected positive sign, whereas, ΔFDI and ΔX carry the negative sign. Thus, from the estimation results it is shown that the ΔFDI rate has a negative impact on the economic growth of Thailand, where one per cent increase in ΔFDI rate contributes to a 0.01 per cent decrease in the economic growth of Thailand. The ΔS rate contributes 1.26 per cent increase to the economic growth when there is an increase of one per cent in its rate. The ΔS rate is found to be more superior to ΔFDI or ΔOFC , both in terms of size of the coefficient as well as statistical significance. Thus, domestically funded investment is more efficient.

Using the single equation growth model, it has been found in this study that FDI inflows and domestic savings (S) make positive contributions to the economic growth of Indonesia, Malaysia, the Philippines and Singapore though the coefficient of FDI is not statistically significant in the regression analysis of the economic growth of Philippines. This analysis supports the orthodox position, for example, (Rosenstein-Rodan, 1961; Chenery and Strout, 1966), that all capital inflows constitute net addition to a LDC's productive resources, thus increasing its growth rate.

This study also shows that FDI inflows into Thailand exert a significantly negative impact on its economic growth. Thus when Thailand attracted more FDI, the rate of its economic growth declined. Hence, FDI appears to have been immiserizing in Thailand. With the presence of financial and trade distortion in Thailand's domestic economy, FDI inflows into this country are associated with negative growth.

From the regression analysis, it has also been found, that in Indonesia and Malaysia, FDI is relatively more important (in terms of magnitude as well as statistical significance of the coefficient estimates) than domestic savings. In these countries, the parameters associated with FDI are larger than those associated with domestic savings. Thus, FDI is more efficient and versatile than domestic savings in financing investment.

From the regression analysis, it has been found that for the Philippines and Singapore, the domestic savings is relatively more important than FDI for economic growth, supporting the developed countries' position on self-reliant approaches for developing countries. The coefficients of domestic savings variable have high significant positive value than the FDI variable. This analysis supports the orthodox position that FDI complements and not substitutes for domestic savings to finance investments. This result suggests that, while FDI is still useful, more effort should be given to mobilize resources from internal sources to promote economic growth through self-reliance.

Turning now to the ranking of FDI inflows and other foreign capital (OFC) inflows, the result of the single equation growth model indicates that in Indonesia,

Malaysia, the Philippines and Singapore, FDI is more productive than OFC and in most cases the coefficient of OFC is not statistically significant. On the other hand, Thailand's growth model shows that OFC contributes favorably to growth than FDI.

In regard of the effects of other variables on economic growth, the coefficients of the variable growth rate of labor (GRL) have a significant positive impact on the economic growth of all the 5 ASEAN countries in this study. The results of the single equation growth model shows that export (X) do not show a favorable effect on growth.

In conclusion, FDI has some positive role to play in the economic growth of the 5 ASEAN countries in this study and that, it will continue to play a crucial role in restoring economic growth in the countries affected by the financial crisis. Indonesia, Malaysia and Singapore have shown that FDI can contribute positively to the economic growth of their country. Thus Thailand should promote FDI inflows into its country to restore its economic growth. The results from the single equation growth model also suggests that while FDI is still useful, more effort should be given to mobilize resources from internal sources so that gradually these countries can be self-reliant in financing its investment.

4.7 Estimation of the Domestic Savings Rate: the Impact of FDI on the Savings Rate.

The following savings model was used to estimate the time series data for the 5 selected ASEAN countries over the period 1970-2000 using OLS method.

$$SY = a_1 + a_2 \Delta FDI + a_3 \Delta OFC + a_4 GR + a_5 GRL + a_6 \Delta X + a_7 SY_{t-1}$$

where: SY = gross domestic savings as percentage of GDP
 ΔFDI = change in foreign direct investment inflow as a percentage of GDP ($FDI/GDP_t - FDI/GDP_{t-1}$)
 ΔOFC = change in other foreign capital as a percentage of GDP ($OFC/GDP_t - OFC/GDP_{t-1}$)
GR = GDP growth rate
GRL = growth rate of employment
 ΔX = change in export as a percentage of GDP ($X/GDP_t - X/GDP_{t-1}$)

Results of the estimation of this savings rate model for the 5 ASEAN countries in this study are as in Table 4.7.

Table 4.7

Impact of FDI on domestic saving of 5 ASEAN countries: Empirical Results

Variable	Indonesia	Malaysia	Philippines	Singapore	Thailand
Constant	4.98* (2.03)	0.71 (0.25)	-1.75*** (-0.88)	-0.80 (-0.51)	-0.37 (-0.31)
Δ FDI	-0.05 (-0.07)	-0.58** (-1.65)	-0.9 (-0.24)	-0.07*** (-0.81)	0.30*** (0.90)
Δ OFC	-0.29** (-1.41)	0.04 (0.32)	0.03 (0.34)	-0.003 (-0.22)	0.002 (0.03)
GR	0.28** (1.64)	0.28* (1.84)	0.39* (4.47)	0.30* (3.26)	0.30* (3.99)
GRL	-0.45* (-2.58)	0.51* (1.91)	0.01 (0.13)	0.03 (0.44)	0.03 (0.31)
Δ X	0.18** (1.55)	0.44* (4.34)	0.19** (1.50)	0.02*** (0.75)	0.31* (3.33)
SY_{t-1}	0.80* (9.93)	0.86* (12.07)	1.00* (11.60)	0.98* (32.0)	0.93* (22.19)
R^2	0.82	0.91	0.89	0.98	0.97
Adj R^2	0.78	0.88	0.86	0.97	0.96
Durbin-Watson	2.35	1.59	1.97	1.69	2.07
F statistics	18.25	38.52	32.14	193.25	117.8

Note: 1. The critical t value, under 25 degree of freedom, at 95% confidence level is 1.708(*), at 90% confidence level is 1.316(**) and at 75% confidence

level is 0.684(***). The significance of each variable is denoted by the symbol * in Table 4.7.

2. The critical F value for the degree of freedom 5 and 25 at 95% confidence level is 2.62. Estimated results of the growth model of the 5 ASEAN countries (Table 4.8) indicates the computed F statistic values for all 5 countries exceeds the critical F value. Therefore the overall model is significant statistically. Hence we can reject the null hypothesis that $H_0: a_2=a_3=a_4=a_5=a_6=0$ are jointly or simultaneously equal to zero.

3. The adjusted R^2 is high, in the range of 0.78-0.97, for the 5 countries selected for this study. These values indicate that more than 78% variation of dependent variable, savings rate (SY) is explained by the 6 explanatory variables of this model for any of the 5 ASEAN countries in this study.

On the basis of the results on the regression analysis of the single equation for savings model, it was found that FDI have differential impacts on the domestic savings rate in each of the 5 ASEAN countries in this study. The empirical results for savings rate are more ambiguous than for growth.

It was found from this study that the sign of the coefficients of FDI are negative in Indonesia, Malaysia, the Philippines and Singapore but statistically significant only in Malaysia and Singapore. This is clearly contrary to the orthodox views that foreign capital positively influences the saving rates, thus leading to a higher economic growth rate of the recipient country. This result is in support of K. Griffin and J. Enos (1970) and Thomas Weisskopf (1972) views that there is a possible reduction in domestic savings, both private and public, as a

result of foreign capital inflows. FDI is said to reduce the incentives to save and also stimulate a higher consumption level for imported goods, made available through the foreign capital inflows. In other words, foreign capital inflows and domestic savings are seen as substitutes. The underlying rationale for this hypothesis is that the foreign capital supplements the country's available resources, and it can be assumed that a portion of the additional financial resources will be allocated toward current consumption.

Another finding is that the coefficient of FDI in the savings equation for Indonesia, Malaysia, the Philippines and Singapore lies between 0 and -1.0, which indicates that FDI has only negatively affected the savings rate, but has not reduced the absolute level of savings. Here FDI appears only to have a substitute or negative effect on savings. FCI received by recipients will be either wholly or only partly consumed. A portion of FCI used for consumption may substitute for domestic savings, while the remainder may augment capital formation and accelerate growth. It was argued that the portion of FCI used for consumption will reduce the savings rate of the recipient country, and not the savings level even if all the FCI is consumed. The absolute volume of savings will only be reduced if all FCI is consumed while part of the hitherto saved locally available resources is also consumed. This result supports the study carried out by Newly (1977) clarifying the difference between an absolute and a relative reduction in the savings rate. He pointed out if the FCI coefficient in the savings equation lies between 0 and -1.0, it merely indicates that only a part of the FCI has been consumed. This means that FCI has only negatively affected the savings rate, but

has not reduced the absolute level of savings. Here, FCI appears to have had a substitute effect on savings.

For Thailand, the FDI coefficient in the savings equation is found to be significantly positive, thus it can be said that FDI has a catalytic effect on the domestic savings rate of Thailand. Here FDI appears to compliment domestic savings. This is in accordance with Gupta (1970) views. This may happen if FDI inflows are allocated to projects that increase disproportionately the income of groups whose propensities to save are substantially high.

The contribution of other foreign capital (OFC) inflows to the savings rate varies across country. OFC contributes positively to the savings rate of Malaysia, the Philippines and Thailand, but it is not statistically significant in these countries, thus it does not affect the savings rate function. For Indonesia, the coefficient of OFC is statistically negative and for Singapore it carries a negative sign but statistically insignificant.

Using the single equation savings model, it was found that all other explanatory variables; growth rate of GDP (GR), growth rate of labor (GRL), export (X) and lagged of savings rate contributed positively to the savings function of all the 5 ASEAN countries, (with an exemption, where in Indonesia's savings function the variable GRL contributed negatively). Furthermore, the variables GR and X are statistically significant for all the 5 ASEAN countries, that is, any increase in the growth rate of GDP and export will accelerate the savings rate. The variable GRL is only statistically significant for Malaysia and

Indonesia. Thus, all the explanatory variables in the savings function carry the expected sign.

Overall, from the comparison of the impact of FDI on the savings rate of the 5 ASEAN countries, it can be concluded that in Malaysia and Singapore, the FDI inflows have a substitute or negative effect on the savings rate but did not reduce the level of savings. FDI inflows into Thailand have a catalytic effect on domestic savings, that is it compliments domestic savings.