THE EFFECT OF CAPITAL FLOW ON REAL EXCHANGE RATE: CASE STUDIES OF THAILAND, KOREA, MALAYSIA, AND INDONESIA

by

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STATEMENT BY AUTHOR

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Table of Contents

LIST OF TABLES.....6

LIST OF FIGURES.....7

ABSTRACT.....8

CHAPTER 1 INTRODUCTION.....9

1.1 Background and Justification of the Study.....9

1.2 Layout of the Study.....13

CHAPTER 2 EXPERIENCES OF CAPITAL FLOWS.....14

2.1 THAILAND.....15

2.2 KOREA.....22

2.3 MALAYSIA.....28

2.4 INDONESIA.....35

2.5 SUMMARY.....41

CHAPTER 3 LITERATURE REVIEW.....44

3.1 Theoretical Literature.....44

3.1.1 Basic Theory for Demand and Supply of Currency.....45

3.1.2 Purchasing Power Parity (PPP) and Real Exchange Rate.....46

3.1.3 Balassa-Samuelson (B-S) Theory.....47

3.1.4 Short-run and Long-run Effect of Capital Flows on Exchange Rate.....47

3.1.4.1 Short-run Effect of Capital Flows on Real Exchange Rate.....48

3.1.4.2 Long-run Effect of Capital Flows on Exchange Rate.....51

3.1.5 Keynesians, Monetarists, and Crowding-Out Effect.....51

Table of Contents - *Continued*

3.2 Past Empirical Studies 53

3.3 Summary 55

CHAPTER 4 DATA AND RESEARCH METHODOLOGY 57

4.1 Data 57

4.2 Methodology 59

4.2.1 Individual Country Models 60

4.2.2 Asian Financial Crisis and Structural Change 62

CHAPTER 5 EMPIRICAL RESULTS 69

5.1 Econometric Results for Individual Country Models: 69

5.2 Chow's Test Results – Before and After the Financial Crisis. 72

CHAPTER 6 CONCLUSION 77

APPENDIX A: DATA SET 82

REFERENCES 88

List of Tables

Table 1.1, Capital Flows between the 1980s and 1991-1996 (billion dollars).....9

Table 2.1, Capital Inflows in Thailand (as a percentage of GDP, period average).....16

Table 2.2, Capital Flows in Thailand, Korea, Malaysia, and Indonesia
(as a percentage of GDP during 1981-1998).....26

Table 2.3, Malaysia: Net Capital Inflows by Major Category, 1989-1995
(% of GDP).....29

Table 2.4, Net Capital Flows to East Asian Developing Economies ($ millions).....30

Table 4.1, Summary Statistics for Variables in the Data.....59

Table 5.1, Regression Results for Thailand, Korea, Malaysia, and Indonesia.....70

Table 5.2, Regression and Chow's Test Results for Thailand.....73

Table 5.3, Regression and Chow's Test Results for Korea.....75

List of Figures

Figure 2.1, Thailand's Capital Flows and Current Account.....16

Figure 2.2, Korea's Capital Flows and Current Account.....23

Figure 2.3, Malaysia's Capital Flows and Current Account.....31

Figure 2.4, Indonesia's Capital Flows and Current Account.....38

Figure 3.1, Equilibrium in the foreign exchange market.....45

Figure 3.2, Effect of a Rise in the Money Supply.....50

Figure 3.3, Response to a Change in the Money Supply.....50

Figure 4.1, Scatter Diagram of Real Exchange Rate and Net Capital Inflows for Thailand (1976:1-2000:4).....63

Figure 4.2, Scatter Diagram of Real Exchange Rate and Government Budget Surplus for Thailand (1976:1-2000:4).....63

Figure 4.3, Scatter Diagram of Real Exchange Rate and Net Capital Inflows for Korea (1976:1-2000:2).....64

Figure 4.4, Scatter Diagram of Real Exchange Rate and Government Budget Surplus for Korea (1976:1-2000:2).....64

Figure 4.5, Scatter Diagram of Real Exchange Rate and Net Capital Inflows for Malaysia (1974-1999).....65

Figure 4.6, Scatter Diagram of Real Exchange Rate and Government Budget Surplus for Malaysia (1974-1999).....65

Figure 4.7, Scatter Diagram of Real Exchange Rate and Net Capital Inflows for Indonesia (1981-1999).....66

Figure 4.8, Scatter Diagram of Real Exchange Rate and Government Budget Surplus for Indonesia (1981-1999).....66

Abstract

This study empirically tests the effect of capital flows on real exchange rate, and analyzes the government responses in Thailand, Korea, Malaysia, and Indonesia. The tests are carried out in econometric models to study the relationships between real exchange rates, capital inflows, and government budget surplus from 1976 to 2000, according to the availability of data for each country.

The result shows that capital inflows in those four East Asian developing countries were associated with a slight appreciation of real exchange rate. However, when considering long-run effect of capital inflows on real exchange rate by using long-run elasticity, Thailand has a considerable appreciation of real exchange. The Chow's test for Korea indicates that there was a structural break in 1997. The real exchange rate has been able to respond to the capital inflows easier than the pre-crisis period since the Asian financial crisis occurred in 1997.

For Thailand and Indonesia, having more government budget surplus limits an appreciation of real exchange rate; however, it is the other way around for Korea. There is no significant effect of government budget surplus on real exchange rate for Malaysia.

CHAPTER 1

INTRODUCTION

1.1 Background and Justification of the Study

Since the collapse of the Bretton Woods system, the most important feature of the international financial system has been the increased volume of financial flows. There has been dramatic growth of the volume of transactions. Foreign direct investment (FDI) and portfolio capital both increased dramatically among developing countries in East Asia, such as Thailand, Korea, Malaysia, and Indonesia. It is often argued that FDI is a desirable form of capital flow to the host country, as it may bring in positive externalities, such as technology and management expertise. Portfolio flows are known to be difficult to cope with if the recipient country does not have well-developed macroeconomic policy instruments, or if the economy has fundamental weakness, such as a weak banking system (Khan 1995).

During 1990-1996, a large volume of foreign capital surged into developing countries in Asia. These countries experienced a net inflow of $240.2 billion during 1990-1996 more than twice that for the entire 1980s.

Table 1.1 Capital Flows between the 1980s and 1991-1996 (billion dollars)

	1980s	1991-1996
Thailand	30.3	85.3
Korea	-1.1	68.9
Malaysia	15.9	43.6
Indonesia	36.1	42.4
Total	81.2	240.2

Source : International Financial Statistics (IFS) under IMF

According to Park (1996), approximately 50 percent of total capital inflow was into developing countries in the early 1990s. However, much of the inflow in the 1990s has been portfolio investment, a contrast to the 1980s. Whereas the share of foreign portfolio investment in total net inflow was 8 percent on average during 1983-89, it rose to 24 percent during 1990-94. Net foreign portfolio investment increased from $10 billion during 1983-89 to $63 billion during 1990-94. Still, even in the 1990s, FDI has been the most important source of external financing in these countries. The net inflow of FDI markedly increased from $36 billion during 1983-89 to $117 billion during 1990-94, accounting for 45 percent of the total net inflow. After 1994, portfolio capital flows made up the largest proportion of private capital flows to these nations. However, recent experience shows large capital outflows from Asian countries after the financial crisis hit them in 1997.

The causes of the capital inflows can be categorized into those that are external to the economies receiving the flow and the factors internal to those economies (Calvo 1996). Several of these factors and trends interacted in the early 1990s to make the developing countries of Latin America and Asia fertile territory for foreign lending. In the early 1990s there was a sustained decline in world interest rates. The lower interest rates in the developed nations attracted investors to the high-investment yields and improving economic prospects of economies in Asia and Latin America. Plus there were recessions in the United States, Japan and many countries of Europe in the early 1990s. This reason doubtless made profit opportunities in developing countries appear relatively more attractive. However, as economies of those developed countries move toward

recovery in the mid-1990s, this factor will become less important in generating capital flows to Asia. The tightening of monetary policy in the United States and the resulting rise in interest rates in early 1994 made investment less attractive. Another external factor is that there has been a trend toward international diversification and toward growing integration of world capital markets (Gooptu 1993).

For internal factors, many heavily indebted countries made significant progress toward improving relations with external creditors, and they began to adopt sound monetary and fiscal policies as well as market-oriented reforms that have included trade and capital market liberalization. A large shift in capital flows to one or two large countries in a region may generate externalities for the smaller neighboring countries. These are called "contagion effects".

Foreign capital can finance investment and stimulate economic growth, helping increase the standard of living. Capital flows can increase welfare by enabling households to smooth out their consumption over time and achieve higher levels of consumption (Calvo 1996). With access to foreign direct investment and portfolio capital provided by foreign savers, domestic households and businesses then may expand their lending and borrowing activities abroad. This allows domestic businesses and consumers to continue to spend and invest during domestic economic downturns. They repay foreign savers during periods of economic growth. In this way, foreign capital inflows can help to offset domestic business cycles, providing greater stability to the domestic economy. Hence, domestic savers can diversify internationally and reduce their exposure to domestic economic shocks.

Moreover, for developing nations, access to global capital in the form of foreign direct investment and portfolio capital inflows considerably reduces the cost of financing investment projects. This permits domestic firms and individuals to undertake more investment projects, which contributes to the development of real resources. In the long run, this translates into higher standards of living and higher rates of economic growth. That is the big reason why most developing countries have tried to attract foreign capital. For example, Thailand established "Financial Liberalization" in the 1990s to increase competition in stock and bond markets.

However, there are several problems, such as rapid monetary expansion, inflationary pressures, real exchange rate appreciation and wider current account deficits. According to Calvo (1993), capital inflows in Latin America have been associated with a real exchange rate appreciation. The desire by some central banks to attenuate the real exchange rate appreciation in the short run frequently leads them to intervene, purchasing from the private sector part of the inward flow of foreign exchange. Moreover, the attempt to avoid domestic monetization of these purchases has often led the monetary authorities to sterilize some of the inflows, a step that tends to perpetuate a high domestic-foreign interest rate differential and that gives rise to increased fiscal burdens. The recipient country needs to carefully cope with and adjust the macroeconomic policy instruments accordingly.

The change in real exchange rate due to the capital inflows can be an important problem for governments. For example, the large capital inflows put too much pressure on the fixed exchange rate regime and Thailand ended up with severe currency crisis and

a deep economic crisis. This thesis starts from introducing the historical evidence for the four East Asian countries (Thailand, Korea, Malaysia, and Indonesia) which experienced the massive capital inflows in the 1990s, and provides some theoretical discussion about how the real exchange rate is determined especially when countries are in the period of massive capital inflows. The study basically focuses on the effect of capital flows on real exchange rate, and analyzes the government responses in those four countries. Empirical tests for the relationship among these financial variables will be carried out in various econometric models with different time frames according to the availability of data for each country. In addition, since there was the Asian financial crisis in 1997, the structural change will also be tested by using Chow's test.

1.2 Layout of the Study

The study will be laid out in the following manner. Chapter 2 reviews the experiences of capital flows. Chapter 3 introduces some theoretical literature which has a bearing on the study, and provides an overview of previous literature relevant to the study. Chapter 4 comprises two parts. The first gives a description of the data employed in this study and some manipulations performed on the data. Also the scope of the study in terms of period and country will be discussed. The second part discusses the methodology used in the study. Techniques used to estimate the effects of capital flows and government response on the real exchange rate are outlined. Also hypotheses established will be discussed. Chapter 5 will present the empirical results, including analysis and discussion. Finally Chapter 6 will provide conclusions and policy recommendations.

CHAPTER 2

EXPERIENCES OF CAPITAL FLOWS

East Asia led the developing world in the resurgence of private capital flows in the late 1980s. It quickly emerged as the most important destination for private capital flows as its share of total capital flows to developing countries increased from 12 percent in the early 1980s to 43 percent during the 1990s. In the second half of the 1980s and the early 1990s, the bulk of the increase in investment was financed by a corresponding increase in national savings. During the more recent period, however, a higher fraction of the increase in investment was financed abroad. Nevertheless, the magnitude of private capital flows was much higher than the amount of foreign savings absorbed, leading to substantial reserve accumulation.

During the inflow periods, macroeconomic policies in Thailand, Korea, Malaysia and Indonesia mostly shared some broad elements in common. For instance, they adopted an exchange rate regime oriented toward enhanced competitiveness – i.e. the achievement of a real exchange rate target, and the adoption of a tight medium-term stance for fiscal policy. The following section in this chapter outlines the nature of capital flows, the experiences of managing capital flows in these countries with different economic and institutional structures. Macroeconomic effects and policy responses to capital inflow are then analyzed.

2.1 THAILAND

Thailand benefited a great deal from the Plaza Accord in 1985, because excess capital flows from Japan in the form of foreign direct investment, as a result of the surging value of the yen, stimulated investment and export activities (Siamwalla 1999). Capital inflows increased rapidly after 1985-6, reaching very high levels in the 1990s. Figure 2.1 shows that since the mid-1980s the capital inflows exceed the current account deficit, implying a rapid increase in official reserves. Around 1983 Thailand went through a minor debt crisis and a period of structural adjustment, including significant fiscal reform (Jansen 1997). In the later periods, public sector borrowing disappeared; and since 1987 capital inflows have been totally directed at the private sector. In the years 1987-92 direct investments made an important contribution, but the main form of capital inflow was borrowing of the non-financial private sector. Private capital inflows to Thailand are usually classified into 2 categories which come through bank and non-bank systems. The non-bank sector can be decomposed into six categories, including foreign direct investment, loans, portfolio investment, non-resident baht accounts, trade credits, and others.

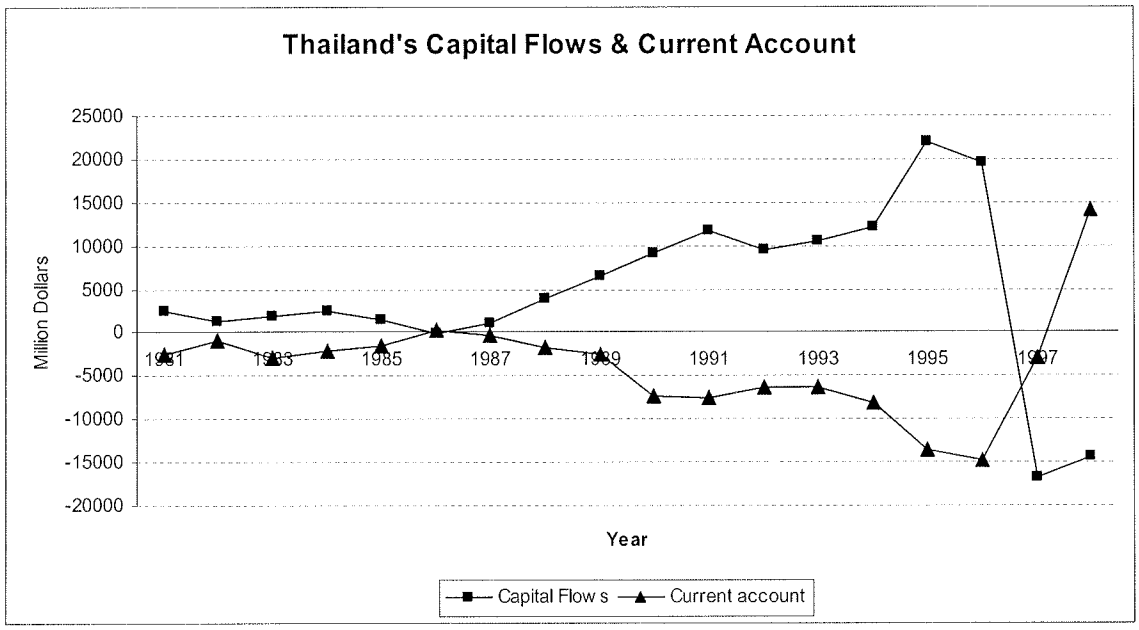
After committing to the obligations under IMF's Article VIII, the Thai government decided to start canceling its exchange controls in 1991 and liberalizing activities of financial institutions, but left its pegged exchange rate unchanged. Table 2.1 provides detail on the changing composition of capital inflows since 1980. In the 1980s capital inflows were dominated by loans taken in almost equal proportions by the public and the private sector (Jansen 2001).

Table 2.1 Capital Inflows in Thailand (as a percentage of GDP, period averages)

	1980-6	1987-92	1993-6
Total	5.0	7.8	10.1
Public sector	2.4	-0.3	0.4
Private sector	2.6	8.1	9.7
DFI	0.7	2.1	0.8
PFI	0.1	0.7	2.1
Financial institutions	0.1	0.8	7.3
Other private	1.7	4.5	-0.5

Source: Jansen 2001

Figure 2.1 Thailand's Capital Flows and Current Account



Source: International Financial Statistics (IFS).

In the early 1990s, the financial liberalization that took place stimulated the capital inflows through financial institutions. It started with the lifting of the ceilings on interest rates, and opened new lines of business, particularly for finance companies. The most important part of the reforms was the liberalization of transactions on the current and on the capital account of the balance of payments. The Bangkok International

Banking Facility (BIBF) was established to have offshore banking, and it can help Bangkok to be a regional financial centre with the "out-out" transaction (i.e. banks of the BIBF borrowing abroad and on-lending abroad. Unfortunately, most transactions were "out-in" which is borrowing abroad and lending within Thailand. With the large gap between the international and domestic interest rates, this type of transaction is highly profitable. Foreign funds tended to increase remarkably. Borrowings via BIBF, as indicated in Table 1, helped increase the share of capital inflows into the banking sector from around 20 percent in 1992 to 56 percent in 1993-1996.

Since November 1984, the baht has been tied to a multiple-currency basket while it was pegged to the US dollar previously. According to Euromoney (1995), the baht weighted 80-85 percent on the US dollar, 8-15 percent on the yen, and 4-10 percent on the Deutsche mark. In effect, the baht value was practically pegged with the US dollar, engendering negligible exchange risks upon dollar denominated foreign borrowings. Substantially higher domestic interest rates together with the small exchange risks induced the Thai non-bank sector to tap funds from abroad (Siamwalla 1999).

After 1992 that pattern was to change drastically: Now capital inflows were dominated by portfolio investment and, particularly, borrowing by financial institutions. The central authority believed that resource inflows represented a key driving force for continual economic expansion. This dependence on external capital is a longer-standing characteristic of Thai development (Jansen 1997). Thailand needs foreign capital since its domestic savings are not high enough to finance the high level of investment necessary for rapid growth. The savings ratio had increased from 27 percent in 1987 to 33 percent

in 1996, a substantial level but not enough to finance the investment ratio at 41 percent of GDP.

At the same time, Thailand has had to deal with adverse effects on its economy related to the large inflow of foreign capital. A high priority has been given to exchange rate stability (Nijathaworn 1994 and 1995). The bath-dollar rate has been more flexible since 1989. Since Thailand had pursued the export-led growth policy, it was crucial to maintain prices competitive for its exports. The exchange rate needed to be stable to attract foreign capital and maintain a high rate of domestic investment. However, stabilizing the nominal exchange rate generated the burden to the central bank by using monetary sterilization to reduce the excess liquidity arising from the increase in foreign assets.

According to Jansen (2001), monetary authorities in Thailand have several reasons to be concerned about such large capital inflows, particularly when they are routed through financial institutions. The first impact combines with domestic credit growth and aggregate demand, and those can lead to pressures on prices of assets and goods. The increase of domestic prices will lead to an appreciation of the real exchange, weakening export competitiveness, and widening the current account deficit. A second concern relates to the volatility of international financial markets. Capital flows to emerging markets such as Thailand are sensitive to fluctuations in international interest rates. They may suddenly be withdrawn. If the US interest rate rises, capital flows to emerging markets fall (Eichengreen 1998). Such abrupt withdrawals will exert a shock effect on the economy by reducing banks' reserves and will lead to a sharp contraction of

domestic credit. The last concern is that when capital flows in and reserves are ample and domestic credit is growing rapidly it is possible that banks become less careful with assessment of loans, partly because the banks are optimistic about the performance of the economy and partly because they expect to be bailed out by the government in case of trouble. The average quality of bank assets will then decline and this will translate into loan problems later when the economy slows (McKinnon 1998).

The Bank of Thailand was also concerned about large capital inflows and wrote in its 1993 and 1994 Annual Report that

"With increased capital flows and the resulting volatility in the financial markets caused by monetary conditions abroad, it is important that the authorities maintain a cautious approach in their formulation of monetary policy" (Bank of Thailand 1994: 8)

"High credit growth was recorded in 1994, made possible by the increased use of foreign capital by the banking system. Therefore, to ensure that domestic demand does not rise too rapidly, commercial bank credit should grow at a more moderate pace in 1995. At the same time, commercial banks and finance companies should ensure that credit is channeled to productive use and not to luxury consumption or speculative ventures. (Bank of Thailand 1995: 7).

In Thailand, various policy measures were introduced over the years to try to relieve the expansionary impact of the capital inflows and to reduce the impact of the capital inflows on domestic credit growth. Some important monetary instruments dealing with capital inflows are monetary sterilization and interest rate stabilization. The Bank of Thailand has used open market operations to control excess liquidity resulting from the

increase in its net foreign assets and to reduce the volatility of domestic interest rates. They increased the reserve requirements and discouraged certain types of capital inflow. According to Hataiseree (2001), the experience of Thailand suggests that a sterilization policy tends to be short lived and its effectiveness in mopping up liquidity tended to cause an increase in domestic interest rates that preserved the incentive for capital inflows.

Fiscal discipline has been a main instrument to manage the inflow of foreign capital (Nijathaworn 1994 and 1995). The government has tightened fiscal policy to reduce domestic aggregate demand and inflationary pressures, as well as to lower the dependence on foreign capital by increasing national savings. The government was able to restrain its expenditure and, at the same time, improved tax revenue by enhancing efficiency of tax collection and introducing new taxes, including a value-added tax in 1992. Over the period 1988-95 the fiscal surplus averaged 3.1 percent of GDP. As its fiscal position improved, the government repaid foreign debt in an effort to offset the inflow of foreign capital. The strong fiscal consolidation greatly contributed to a reduction in domestic inflationary pressure.

Thailand implemented most of the policies that are suggested to deal with capital surges, but this could not prevent the build-up of serious imbalances and, eventually, the crisis. It could be argued that the interventions were too little (e.g. sterilization efforts) and too late (e.g. capital controls), but it should also be pointed out that there were major inconsistencies in the policy package. For example, some policy inconsistencies are the sharply expansionary fiscal policy in 1996 and the import liberalization which reinforced

the negative effect of the real exchange rate appreciation on the current account deficit (Jansen 2001). During this period a main concern of the Bank of Thailand had been to defend the exchange rate peg. The rising overvaluation of the baht translated into stagnation in exports and a very large current account deficit for 1996, and to stagnation of GDP growth in the first two quarters of 1997. There were also other signs that the boom was over: during 1996, Real estate prices and the stock market index had fallen sharply and some financial institutions developed problems. These were the signs for investors and speculators that the boom was over and that the exchange rate could not hold, so speculation against the baht started.

The central bank chose to counter these attacks by swap operation (Daniels 2001, p.374). Instead of selling its dollar reserves in the spot market alone to support the baht, which would over time lead to a rise in interest rates, it simultaneously sold baht for dollars in the spot market and covered it with a reverse trade in the future. The effect of this is basically the same as if it has sterilized the support operations. However, in selling baht in the spot market, it handed the currency to foreigners who could use it to turn around and attack the baht (Siamwalla 1999). This operation was stopped on May 15, 1997, when after the latest and most severe attack, the Bank of Thailand told Thai banks to cease lending baht funds to foreigners, and to try and close down the offshore baht market. This measure effectively stopped the speculators and imposed severe losses on them, but it was too late because by then net reserves of the central bank dwindled down to near zero. Six weeks later, on 2 July 1997, the baht was floated. The crisis that started in July 1997 was unprecedented in Thai history and brought to an end more than forty

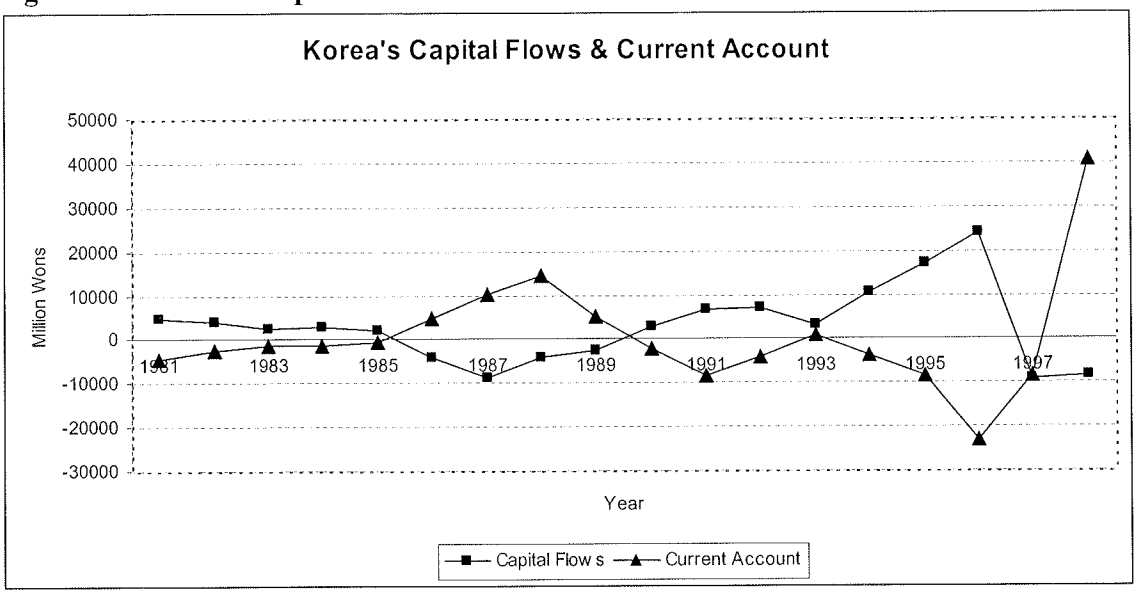
years of uninterrupted growth. While on average capital inflows over the period 1990-1996 were equivalent to 10 percent of GDP, in 1998 there was an outflow of 8.5 percent of GDP and in 1999 of 5.9 percent.

2.2 KOREA

Prior to the 1990s, Korea's policies on capital account liberalization were pursued in a passive manner and largely in reaction to the developments in the external current account. The exchange rate was rigidly managed and not allowed to respond to capital flows. As a result, the burdens of financing current account deficits (surpluses) were assigned to direct quantitative controls over flows. For example, in the first half of the 1980s when the current account showed continued deficits, various liberalization measures were taken to induce capital inflows. In particular, the Korean government guided domestic banks to borrow from abroad. Figure 2.2 shows Korea's current account and capital flows between 1981-1998.

Faced with a significant surplus in the current account balance over the period 1986-89, the authorities progressively liberalized the import regime through a pre-announced schedule of measures. Restrictions on payments for current international transactions were relaxed and Korea accepted the obligations of Article VIII in 1988. Capital outflows were also promoted by liberalizing direct investment, purchased real estate overseas, and certain portfolio investment outflows by institutional investors. At the same time, the central bank undertook various measures aimed at reducing net capital inflows, including encouraging the early repayment of external

Figure 2.2 Korea's Capital Flows and Current Account



Source: International Financial Statistics (IFS).

borrowing, tightening of the regulations on foreign commercial loans and foreign bank borrowing, and imposing restrictions on the volume of foreign exchange that could be brought in and sold to domestic banks.

Beginning in 1989, the current account balance began to weaken reflecting the background of a weakening fiscal position (in an attempt to stimulate the economy), an appreciation in the real exchange rate, and rising inflation. The authorities responded by encouraging capital inflows. Some of the earlier measures aimed at limiting capital inflows were reversed – foreign exchange banks were allowed to raise funds offshore through certain instruments, and the limits on the amounts of foreign exchange that could be imported and sold to local banks were raised. The authorities also accelerated the liberalization of direct investment inflows, by lifting the ceilings on the amounts of direct investment inflows automatically approved; replacing approvals with notifications;

providing tax incentives; and expanding the sectors where foreign direct investment was permissible.

In the early 1990s, the key change was "se-sye-wha" (globalization), which the Kim Young Sam administration (1993-1998) declared as the top policy priority. During that time, the benefits of capital account liberalization were considered for the first time. Also balanced current accounts during the years were thought to be favorable conditions for pursuing liberalization. The government relaxed or abolished many of the restrictions on financial markets and foreign exchange transactions. Another factor behind the rapid pace of financial deregulation was the government's desire to make Korea the second Asian country to join the OECD. According to Yoon Je Cho, almost every group except the bureaucrats, who were averse to losing their authority over financial institutions, was in favor of financial liberalization. For the industrial firms, financial liberalization meant unlimited access to credit and a chance to establish their own financial institutions; for the bankers it was freedom from government intervention; and for the politicians it was a move away from an authoritarian government and a symbol of democratization.

Korea began to receive massive inflow of foreign capital in 1991. The large interest rate differential between domestic and foreign financial markets together with the favorable prospects of the economy made Korea one of the most attractive markets among emerging economies to foreign investors. In January 1992 the Korean stock market was opened to foreign investors for the first time. Commercial loans by domestic firms, which had been prohibited since 1986, were allowed in 1995. However, for portfolio flows the Korean government remained cautious and preferred gradual

liberalization. For stock investment, a 10 percent aggregate ceiling on the foreign ownership of listed firms was imposed. This ceiling continued to exist until the crisis of 1997, although it was relaxed to 12 percent in December 1994 and further to 15 percent in July 1995. Therefore, most capital flows through the stock market or by firms were not that free from the controls, but the government allowed banks to have more freedom to borrow abroad.

However, considering the size of the economy, the magnitude of the flow has been relatively small compared to other East Asian countries since Korea's controls of capital were much tighter. Part of the difference is attributable to Korea's tighter control of capital movements (Park 1996). The capital account surplus between 1990 and 1994 averaged only 1.8 percent of GDP, compared to 9.6 percent for Thailand, 9.9 percent for Malaysia, and 3.7 percent for Indonesia (see Table 2.2).

Korea's economic growth has been propelled by the rapid expansion of exports and investment arising from increases in foreign demand. The level of openness, which is exports plus imports as a percentage of GDP, has been very high since the mid 1980s, and has reflected export-oriented development. No matter if overall balance was surplus or deficit, the foreign exchange rate policy was provided to maintain a weak won not to allow the competitiveness of Korean products to fall behind competitors in other countries especially between 1990 and 1993. Therefore, the Korean won depreciated even when a large capital inflow generated an overall account surplus. Since 1992, the won has been experiencing strong upward pressures as a result of large overall surpluses. Even though there were large capital inflows and improvement in the current account, the

Table 2.2 Capital Flows in Thailand, Korea, Malaysia, and Indonesia (as a percentage of GDP during 1981-1998).

Year	Thailand	Korea	Malaysia	Indonesia
1981	7.1	6.8	10.4	2.0
1982	3.5	5.3	14.0	6.0
1983	4.9	2.8	12.8	7.1
1984	6.1	3.1	8.9	3.9
1985	4.0	2.1	6.2	2.0
1986	-0.3	-3.7	4.0	4.8
1987	2.1	-6.6	-4.8	4.4
1988	6.2	-2.3	-5.8	2.5
1989	9.1	-1.2	3.5	2.9
1990	10.7	1.1	4.2	3.9
1991	12.0	2.3	11.7	4.4
1992	8.5	2.2	15.0	4.4
1993	8.4	0.9	16.8	3.6
1994	8.4	2.7	1.8	2.2
1995	13.0	3.5	8.7	5.1
1996	10.5	4.6	9.4	4.8
1997	-11.3	-1.9	2.7	-0.3
1998	-13.0	-2.6	-3.5	-10.2

Source: Data analysis (IFS)

won continued to depreciate until the end of 1993. It could be implied that the Bank of Korea actively intervened. The won has started to appreciate against the US dollar since 1994 because of the appreciation of the yen-dollar rate. The strong yen has contributed to a sharp increase in export earnings and the central bank could let the won appreciate some without lowering the price competitiveness of Korean exporters.

The government used an active sterilization to counter the effects of foreign capital inflows on the money supply as a monetary policy. With foreign exchange market intervention, the holdings of foreign assets by the central bank rose, thereby increasing the money supply. To offset the increase, the monetary authorities required financial institutions to purchase monetary stabilization bonds (MSBs). Due to sterilization,

Korea's money supply growth has been kept under control and the inflation rate has also been falling. However, interest rates have risen gradually and the wide interest rate gap between Korea and the industrial economies has been a reason for capital inflows. Fiscal discipline in Korea has been prudent. The government maintained a balanced budget or small surplus since 1994. This is in sharp contrast with the Latin American debt crisis in the early 1980s, which featured the mismanagement of macroeconomic policies: namely, large fiscal deficits and consequent monetary expansion. The Korean crisis was definitely not a result of profligate fiscal and monetary policies (Hong 2000).

However, as the currency crisis began to unfold it became clear that the Korean economy had a number of structural weaknesses. The impressive macroeconomic performance covered up some serious structural problems, notably weak financial sectors and over-indebted corporate sectors. The key feature of the Korean crisis was a large inflow and a sudden withdrawal of foreign capital. During the 1990s Korea had a successful macroeconomic performance which contributed to the rapid capital inflows into the economy. Capital inflows continued to increase in Korea, reaching 24 billion dollars in 1996 (about 5 percent of GDP). When foreign investors began to lose confidence in the Korea economy, these large inflows turned into sudden outflows. Therefore a sudden liquidity crisis began. Massive capital inflows and outflows brought about more problematic consequences in Korea because financial systems were not well developed.

2.3 MALAYSIA

Compared with those in other developing countries, Malaysia's financial system is relatively well developed with its history going back to the British colonial era. The Malaysian government has made efforts to attract foreign capital to supplement domestic savings since 1957. From the late fifties until the eighties, this mainly consisted of foreign direct investment as well as foreign aid. Promotion of Kuala Lumpur as a global financial centre became a key element of Malaysia's growth in the late 1980s. The government announced on 27 October 1989 delisting of Malaysian registered companies from the Stock Exchange of Singapore (SES) to set the stage for developing the KLSE as an independent stock exchange, to attract international investors in competition with SES. Like other emerging markets in the region, Malaysia experienced an unprecedented surge of foreign investment inflows, especially from portfolio management funds.

Liberalization of the financial market provided the impetus for the massive portfolio inflows seeking to maximize capital gains in the generally bullish Malaysian stock market. As Table 2.3 shows, net portfolio capital inflows have proved to be very volatile, rising from -1.5 percent of GDP in 1991 to 14.5 percent in 1993, before dropping off to 1.2 percent in 1995. Bank loan flows have also been almost as volatile, while foreign direct investment and official development assistance have been far less volatile. Table 2.4 provides comparative data on the pattern of net foreign capital inflows to the four crisis-hit countries in the region during 1990-1996. The data clearly bring out the relatively high concentration of inflows to Malaysia in portfolio capital. Portfolio flows accounted for 55.5 percent in Malaysia during this period. Among the four crisis-

Table 2.3 Malaysia: Net Capital Inflows by Major Category, 1989-1995 (% of GDP)

	1989	1990	1991	1992	1993	1994	1995
Net Capital Inflows	3.5	4.2	11.9	15.2	16.8	1.6	8.5
Official Development Finance	-2.4	-2.4	-0.5	-1.4	0.6	0.3	2.7
Foreign Direct Investment	4.4	5.4	8.5	9.0	7.8	6.0	4.7
Commercial Bank Funds	1.1	2.0	2.8	6.3	6.6	-7.0	0.1
Portfolio Equity	n.a.	n.a.	-1.5	5.6	14.5	5.7	1.2

Source: BNM's Cash BOP Reporting Systems, as cited by Ong (1998:222).

hit countries, only Korea had a higher share of portfolio investment than Malaysia. In the other two countries this share was less than a quarter of that of Malaysia.

Faced with a substantial foreign capital inflow, until early 1994, the government mainly used sterilized intervention in the foreign exchange market to offset negative consequences to the economy from the inflow. Capital inflow controls implemented by Bank Negara Malaysia (BNM) in 1994 (and which lasted until mid-1995) were successful in moderating the surge of short-term flows. Since 1975, the ringgit has been pegged to a basket of currencies of Malaysia's major trading partners – principally the United States, Japan, Singapore, Germany, Great Britain, and the Netherlands. The central bank has intervened frequently in the interbank foreign exchange market to maintain the ringgit-dollar exchange rate within a target range.

During 1990-1993, despite a large current account deficit, the overall account maintained a surplus as a result of the huge inflow of foreign capital (see capital flows and current account in figure 2.3) . In particular, during 1991-1993, the interest rate

Table 2.4 Net Capital Flows to East Asian Developing Economies ($ millions)

	1991	1992	1993	1994	1995	1996	1991-96	(%)
Thailand								
Total capital inflows	11591	9808	10768	12560	22529	18144	14233	100
Private capital inflows	10511	9696	10518	12415	21352	16874	13561	95.3
Foreign direct investment	1473	1560	1377	1011	1177	1633	1372	9.6
Portfolio investment	n.a.	557	4007	1299	3194	1089	1691	11.9
Bank and trade-related lending	9037	7579	5134	10106	16981	14153	10498	73.8
Korea								
Total capital inflows	6766	6775	3328	8425	17342	23269	10984	100
Private capital inflows	6472	7391	5325	8705	17798	23754	11574	105
Foreign direct investment	-294	-616	-666	-842	-1825	-1939	-1030	-9.4
Portfolio investment	3236	5851	10650	5055	8671	11150	7436	67.7
Bank and trade-related lending	3530	2156	-4660	4493	10953	14543	5169	47.1
Malaysia								
Total capital inflows	5584	6607	10799	1235	7612	9416	6876	100
Private capital inflows	5391	6665	11185	1089	7699	9516	6924	101
Foreign direct investment	3995	5158	5014	4140	4200	5055	4594	66.8
Portfolio investment	-708	3027	9497	5485	2110	3468	3813	55.5
Bank and trade-related lending	2104	1520	-3326	-8536	1389	993	-976	-14
Indonesia								
Total capital inflows	6648	4609	6320	7076	12128	12734	8253	100
Private capital inflows	5365	3201	4898	6899	12532	14326	7870	95.4
Foreign direct investment	1399	1536	1896	2476	4649	6367	3054	37
Portfolio investment	n.a.	n.a.	1738	1061	1415	1817	1006	12.2
Bank and trade-related lending	3965	1664	1264	3361	6468	6140	3810	46.2

Source: Athukorala 2001

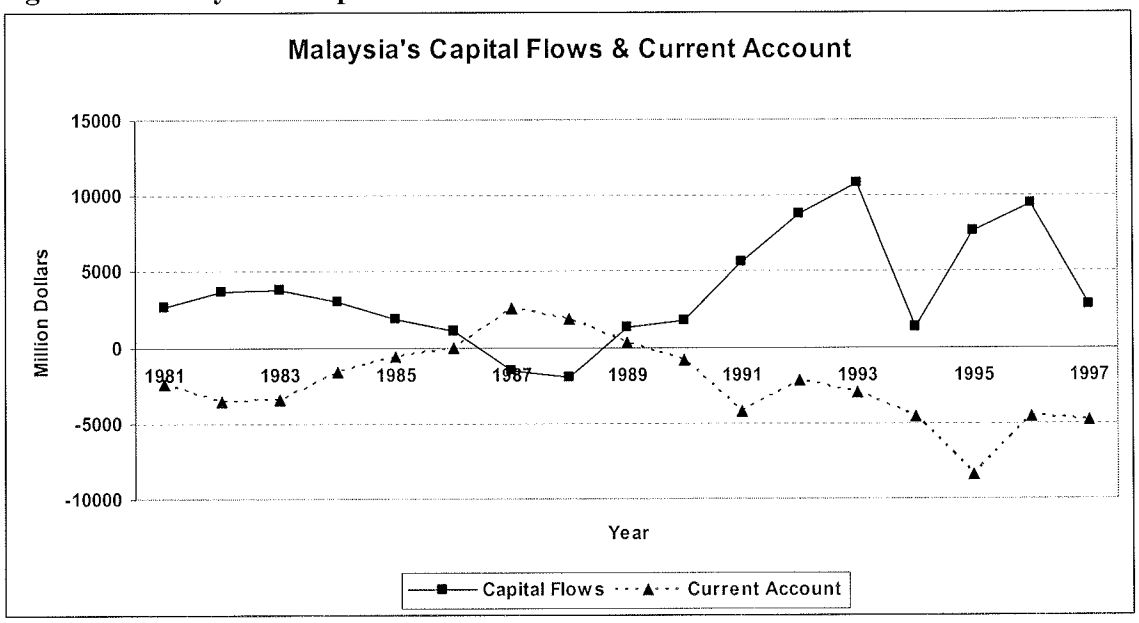
Notes:

1. Net capital flows comprise net direct foreign investment, net portfolio investment (equity and bond flows) and official and private bank borrowings. Changes in national foreign exchange reserves are not included. For each country, the difference between total and private flows represents net official flows.
2. Annual average

differential between Malaysia and the rest of the world began to widen. At the same time, the market expected the ringgit to appreciate, as it was considered significantly undervalued. These resulted in a pronounced increased inflow of foreign capital in this period (Park 1996). The overall account surplus raised pressure on the ringgit, but the central bank of Malaysia was able, except in 1992, to sterilize both nominal and real exchange rates by actively intervening in the local foreign exchange market. In fact, the

nominal exchange rate of the ringgit depreciated against the US dollar in 1991 and 1993. The bank is thought to have allowed the ringgit to appreciate in 1992 as the current account balance improved. The active intervention by the bank led to a substantial increase in its foreign exchange reserves, increased liquidity, and inflationary pressures in the Malaysian economy.

Figure 2.3 Malaysia's Capital Flows and Current Account



Source: International Financial Statistics (IFS).

The central bank has often relied on monetary sterilization to control excess liquidity. The main instruments during 1991-1992 were interbank market operations and changes in the statutory reserve requirement (SRR). Overall, the central bank absorbed 24 billion ringgit from the banking sector through sterilization measures in 1992, equivalent to 90 percent of the outstanding stock of reserve money (Park 1996). However, the

monetary sterilization resulted in a persistent rise in domestic interest rates until early 1993, leading to a widening gap between domestic and foreign rates. The high interest rate differential and the good performance of the Malaysian market attracted additional foreign capital, especially in the form of portfolio investment, thus necessitating further sterilized intervention.

The government also applied fiscal policy to manage the augmented money supply resulting from the inflow of foreign exchange. This restrained government spending and as a result, the government deficit continued to decrease and then in 1993, the fiscal balance recorded a surplus.

Malaysia experienced significant capital outflows from 1997. In other words, the reversal began prior to the devaluation of the Thai baht in early July 1997. Clearly anxiety among investors over the over-heating of Southeast Asian economies, especially Thailand, was already mounting before the currencies began to fall in July 1997. After the baht was floated on 2 July 1997 and the ringgit fell in mid-July 1997, foreign portfolio investment (FPI) inflows fell drastically, and continued to dwindle throughout 1998. FPI inflows fell from US$16.6 billion in the second quarter of 1997 to US$7.2 billion in the fourth quarter of 1997, and to US$1.5 billion in the fourth quarter of 1998.

Most portfolio investment into Malaysia has been channeled into the stock market because of the limited range of investment instruments for foreign investors to choose from (Jomo 2001). The increased foreign capital flows into and out of Malaysia, with the growing share of portfolio investment funds involved, allowed foreign institutional investors to develop disproportionately greater influence on the Malaysian stock market.

The growing presence of foreign funds also makes the national economy become much more vulnerable to international macroeconomic fluctuations as well as capital flight, rendering the tasks of exchange rate management, controlling inflation and capital account management much more difficult.

Unlike the other crisis-affected economies which succeeded in attraction of considerable, mainly short-term US dollar bank loans into their more bank-based financed systems, Malaysia's vulnerability was primarily due to the volatility of international portfolio capital flows, mainly into its stock market. Monetary policy as well as banking supervision in Malaysia had generally been much more prudent compared to the other crisis victims. Banks in Malaysia had not been allowed to borrow heavily from abroad to lend in the domestic market, as in the other economies. Such practices involved currency and term mismatches, which increased financial system vulnerability to foreign bankers' confidence as well as pressure on the exchange rate pegs.

According to Athukorala (2001), there is considerable evidence that Malaysia succumbed to the Thai contagion because its economy had developed considerable vulnerability to a speculative attack. At least three clear signs of vulnerability were visible in the lead-up to the crisis: inadequacy of foreign exchange reserves to face a speculative attack, considerable deterioration in the quality of financial sector performance (financial fragility) and a significant appreciation of the real exchange rate.

The Malaysian currency with limited reserves to rely on to meet a sudden outflow of funds naturally becomes an easy target for speculators. Prior to the 1997 crisis, the massive increase in the stock of mobile capital was not matched by an increase in

national foreign exchange reserves. Foreign exchange reserves as a ratio of the stock of mobile capital (R/MC) declined from over 150 percent in the early 1990s to 72 percent by the end of 1996 (Athukorala 2001). The most important factor behind the rapid decline in R/MC ratio was accumulation of portfolio inflows. However, stagnation of foreign reserves also played a role. At least three factors contributed to the latter development: rapid import growth fuelled largely by massive construction projects, slowing of export growth reflecting adverse demand conditions faced by the electronics exports, and rapid expansion of Malaysian overseas investment. In the run-up to the crisis, R/MC declined significantly in each of the four crisis countries. The degree of decline in the ratio is most striking for Thailand and Korea; however, in all these countries there was a persistent deterioration in the degree of reserve cover provided for mobile capital compared with the first half of the 1990s.

In the lead-up to the crisis there was a massive accumulation of outstanding domestic credits in the banking system, with a heavy exposure to the property sector (Soros 1998). Rapid credit growth with a greater concentration of new lending in the property sector occurred in Malaysia in the context of an unprecedented asset price bubble. Malaysia's real exchange rate continued appreciating from about 1992, with the rate of appreciation accelerating in the run-up to the crisis. In the first half of 1997, the real exchange rate of Malaysia had appreciated by about 18 percent compared to the average level for the period 1988-95. With rapid build-up of mobile capital in relation to the level of international reserves, deterioration in he health of the financial system and a significant appreciation of the real exchange rate which were the main signs of

Malaysia's vulnerability, the Malaysian economy had developed considerable vulnerability to a speculative attack on the ringgit. For Malaysia (and also for Indonesia and Korea), the key trigger that will push a vulnerable situation into an actual collapse was the Thai contagion: investor panic spreading from Thailand. Following the Bank of Thailand's unexpected decision on 2 July 1997 to abandon the cherished exchange rate peg, the baht collapsed dramatically relative to other currencies in the region, which they had until then treated as equals in the same growth club. Malaysia and other countries, which had developed considerable vulnerability, succumbed to these speculative attacks.

2.4 INDONESIA

Beginning in 1985, Indonesia's economic reform focused on reorienting the economy to reduce its dependence on the oil sector, expanding the role of the private sector, and encouraging the creation of a competitive non-oil, export-oriented industrial base that would absorb the rapidly growing labor force. In 1985, Indonesia maintained a liberal regime for capital outflows while prohibiting lending abroad by banks and financial institutions. Selective controls applied to capital inflows; direct investment inflows were limited by domestic ownership requirements; the purchase of equity by foreign investors in the local stock market was prohibited; and limits were imposed on foreign borrowing.

Direct investment inflows were liberalized by expanding the fields where such investments were permitted, by limiting the equity ownership rules to production of certain goods and investments in certain sectors, and by lengthening the period after which a company had to revert to domestic ownership.

In 1987, institutional reforms were undertaken to strengthen the operations of the capital market, including reforms to the stock exchange and introduction of new capital market instruments. The reforms in 1988 emphasized the functioning of the banking system, enhanced bank supervision and development of the money market such as improving the functioning of the capital market, extending the role of the market in raising funds for investments, lengthening the maturity of money market instruments, and broadening the range of market makers. Subsequently, in 1989, the authorities liberalized portfolio capital inflows by eliminating quantitative limits on banks' borrowing from nonresidents. Foreigners were permitted to invest in the stock market, and to acquire up to 49 percent of the ownership of listed stocks. Restrictions on direct investment inflows were also further relaxed and foreign direct investors were allowed to sell foreign exchange directly to commercial banks instead of through the central bank.

Indonesia has experienced massive inflows of foreign capital since 1990. The inflow increased from $3.6 billion in 1989 to $6.8 billion in 1990 and to $7.1 billion in 1992. Long-term loan was the principal form of inflow throughout the 1980s and until 1993. While most borrowing during the 1980s was by the public sector, the level of borrowing by private firms and banks has increased substantially since 1990. Removing the ceiling on foreign commercial borrowing by banks in 1989 and high domestic interest rates in the early 1990s are the principal factors in the increase in private borrowing. Deregulation of inward FDI and an improved economic outlook have helped increase the flow of FDI. Still, Indonesia has not been able to secure enough FDI to fill as much of the investment-saving gap as the other East Asian countries such as Malaysia. This is

attributable to poor infrastructure and low-quality labor. Accordingly, Indonesia had to rely on loans with government guarantees.

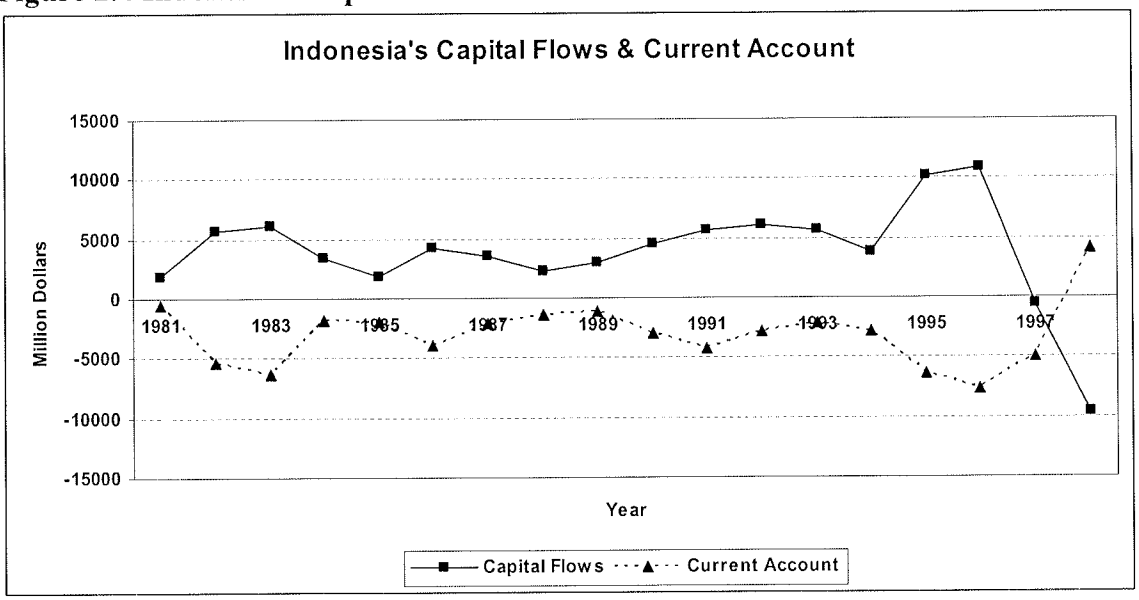
The loan portion of the total capital inflow fell in the 1990s, while that of FDI and portfolio investment rose compared to the 1980s. While FDI and portfolio investment made up only 12 percent and 7 percent, respectively, of total inflow during 1982-89, their shares increased to 23 percent and 21 percent during 1990-93. Finally, the amount of inward FDI exceeded that of long-term loans in 1994.

Most of foreign portfolio investment in Indonesia has been made through the stock market in which foreign investors were allowed to participate in 1987. Increased portfolio investment in the early 1990s is closely related to deregulation of domestic capital markets. The bullish stock market and the large interest rate differential between Indonesia and industrial countries resulted in a large inflow of portfolio investment in 1993. With improved credit rating of Indonesia firms, issuances of Indonesian securities in international capital markets have increased.

Rapid economic growth of Indonesia in the 1990s benefited from an inflow of foreign capital. However, there were also adverse effects such as accelerating money supply growth. In 1990-91, the Indonesian economy began to overheat, the current account deficit widened (see figure 2.4), inflation accelerated, and interest rates rose substantially (Johnston 1997). The inflow of foreign capital increased domestic liquidity and foreign exchange reserves held by Bank Indonesia. Like Korea and Malaysia, the Indonesian government attempted to absorb the excess liquidity mainly through monetary sterilization. It also increased prudential requirements for commercial banks and imposed

some direct controls on credit expansion. Despite the difficulties in managing the macroeconomy, the first priority always has been given to maintaining a weak rupiah to enhance the international competitiveness of exports. The central bank has intervened in the interbank foreign exchange market to maintain this policy.

Figure 2.4 Indonesia's Capital Flows and Current Account.



Source: International Financial Statistics (IFS).

However, the policy aimed at maintaining stability of the exchange rate in the face of a massive inflow of foreign capital has led to an increase in the money supply, making the change in net foreign assets an important determinant of the change in money supply. This outcome led Bank Indonesia to pursue monetary sterilization continuously. In 1984, Bank Indonesia issued Bank Indonesia Certificates (Sertifikat Bank Indonesia, SBI) which were short-term central bank securities, to absorb excess liquidity. Also, the bank absorbs liquidity by selling money market securities (Sural Berharga Pasar Uang,

SBPU) to commercial banks. SPBUs are short-term private securities traded in the money market, including promissory notes issued by banks and their customers and bills of exchange.

The increase in issuance of central bank securities in the early 1990s tended to raise their discount rates, thus leading to higher interest rates in the Indonesian economy and further widening the gap between home and abroad. The larger interest rate differential, coupled with the development and deregulation of the domestic capital market, provided a strong incentive for foreigners to invest in Indonesian securities. As a result, an inflow of foreign portfolio investment – presumed to be short-term and speculative – has risen sharply.

To reduce the inflow of short-term capital, Bank Indonesia began lowering the discount rates of SBIs in 1992 and continued to maintain nominal depreciation of the rupiah. Nonetheless, Indonesia's effective rate of return (domestic interest rate minus depreciation rate of the rupiah) remained high relative to returns available in industrial economies. In addition, international institutional investors' world-wide rush into emerging markets contributed to a flood of foreign portfolio investment, especially after mid 1993. Accordingly, the economy became vulnerable to a sudden outflow of foreign capital.

The Mexican crisis in December 1994 shook Indonesia's foreign exchange and capital markets. Rumors of rupiah devaluation linked to the size of Indonesia's large foreign debt triggered a withdrawal of funds. On December 22, 1994, 2 days after the Mexican government devalued its currency by 15.3 percent, strong demand for the US

dollar caused the rupiah to depreciate rapidly against the dollar in the interbank market. To restore exchange rate stability, Bank Indonesia intervened by selling $580 million through spot, forward, and squaring transactions. Simultaneously, it raised its official discount rate by 50 basis points. These measures helped restore confidence that the rupiah would not be devalued more significantly than it had been, so demand for the dollar subsided.

In the first half of 1997, Indonesia continued to attract foreign investment flows. In response the central bank took measures to restrict the related credit growth including through partial sterilization from sales of central bank certificates, increase in reserve requirements, and reduction in subsidized credit to public enterprises. Initially, Indonesia managed the regional currency crises that began in June 1997, better than its neighbors. This was attributed to stronger fundamentals, including a relatively smaller external current account deficit. As recently as June 1997 the country was still winning praise from the IMF for 'prudent macroeconomic policies, high investment and savings rates, and reforms to liberalize markets (Wessel 1997).

The first real signs of danger appeared in early August 1997 with pressure on the rupiah. On July 11, 1997, to protect against speculation Indonesia widened the trading band for the exchange rate against the U.S. dollar to 12 percent from 8 percent. Subsequently, concerns also emerged about the stability of the banking system and the Indonesian rupiah came under speculative pressure, and was allowed to float.

2.5 SUMMARY

Most East Asian countries adopted an exchange rate regime oriented toward enhanced competitiveness. This policy was implemented through step devaluations during the mid-1980s and it seems to have been relatively successful in avoiding currency overvaluation from the mid-1980s to the mid-1990s. Plus, overall public sector budgets in the region, which had exhibited deficits not out of line with those of other middle-income developing countries at that time, moved steadily into surplus after the mid-1980s. By the late 1980s, several countries in the region had achieved sizable fiscal surpluses. As the economies of these countries grew and the tight fiscal stance restrained the growth of public sector debt, public sector debt/GDP ratios fell throughout the region. As a result, by the mid-1990s several countries in East Asia had achieved ratios of debt/GDP substantially below those of many industrial countries. This fiscal stance also promoted the depreciation of the real exchange rate, and helped prevent the emergence of exchange rate misalignment. Once the sizable fiscal surpluses were achieved in the early 1990s, countries began to rely more on monetary policy to prevent overheating. Countries began to rely more on monetary policy as a short-run stabilization instrument, varying the intensity of sterilized intervention in the foreign exchange market in accordance with domestic macroeconomic needs. This mix of structural and macroeconomic policies proved attractive to foreign capital and, in combination with tight fiscal policy, was largely successful in preventing macroeconomic over-heating, at least early in the inflow period.

How capital flows affect the economy depends on the exchange rate regime. According to Mundell-Fleming model, any countries selecting the fixed exchange rate regime are more likely to have limited monetary policy under free capital movement. This idea is known as the "Unholy Trinity" theorem. Under fixed exchange rate regime, the capital inflows increase money supply in the circulation. As a result of that, the interest rate tends to decrease, meaning that people will be happy to spend more money. The price level will be getting higher and it will eventually lead to the appreciation of the real exchange rate. Even though the government attempts to cut the fiscal expenditure at the time of capital inflows in order to weaken the extent of real exchange rate appreciation, they are not able to control simultaneously. Plus the central bank needs to buy the increasing foreign currency in an effort to keep the exchange rate from changing and it eventually ends up having more foreign exchange reserves. Therefore, it is impossible to control separately the exchange rate, the interest rate, and the fiscal policy.

Although macroeconomic policies generally remained prudent throughout this period and the government behaved responsibly with transparency (according Alba 1999, transparency comprises the following : (a) consistent and accurate accounting standards, (b) satisfactory standards for financial reporting and (c) timely disclosure of information) , there was the absence of transparency in the financial sector. Financial sector weakness – including implicit guarantees, weak institutional capacity and lending practices – combined with inappropriate financial sector liberalization and ineffective regulation, led to excessive and risky lending and generally poor management of balance sheet risks by both banks and non-bank financial intermediaries. Moreover, poor governance and

disclosure on the part of corporate, and implicit and explicit guarantees of private and public enterprises on the part of governments, fuelled excessive borrowing and lending. These domestic factors were abetted by inadequate due diligence and risk pricing by foreign lenders, and investor-herding during the boom period. All of these factors reinforced each other through macro-financial linkages, and cumulatively added to growing macroeconomic and financial vulnerability. Unfortunately, these weaknesses were inadequately recognized prior to the loss of investor confidence and those countries were eventually prone to crisis.

CHAPTER 3

LITERATURE REVIEW

The contents of this chapter consist of two parts, first a review of theoretical literature and second a summary of previous studies. The first section addresses the question of what determines exchange rates, and how capital movements can affect exchange rates. Also the study includes the argument of how government spending/taxing can affect exchange rate. Even though capital movement depends on many factors such as rate of return, growth rate of country and policy implementation in each country to assure and attract investors, the theoretical literature in the following section will mainly focus on rate of return of investment. It will also provide some ideas of how the real exchange rate responds to the capital inflows according to the theories of monetary economics. The rest of the chapter reviews the empirical studies related to this thesis.

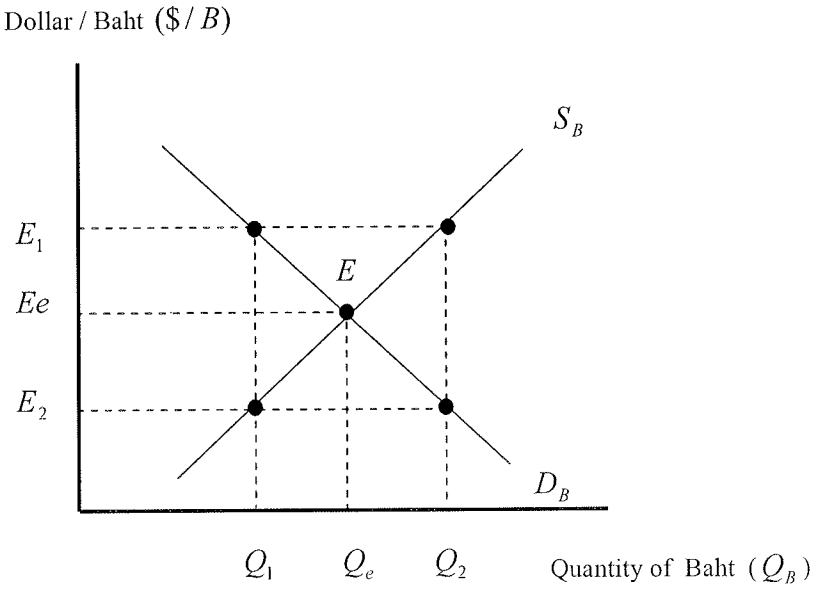
3.1 Theoretical Literature

This part begins from the simple idea of how exchange rate is determined by demand and supply of currency, following by some other relevant theories where price levels and relative prices between two countries will be introduced to explain real exchange rate. After that, more complex theories in monetary economics will be introduced. The short-run and long-run effect of capital flows on real exchange rate will be discussed according to the theory of asset demand. The end of this part contains an argument of how much appreciation/depreciation of currency can reflect when government decides to spend or tax. This argument from Monetarists against Keynesians involves the idea of crowding-out effect which will be discussed as well.

3.1.1 Basic Theory for Demand and Supply of Currency

Investors or speculators basically consider the expected rate of return they obtain from holding one currency compared to another one. If one currency is expected to be depreciated – loses its value relative to other currencies, investors will be more likely to hold some other currencies. By using a simple supply and demand model and assuming that there are no obstructions or controls on foreign exchange transactions, and governments do not buy or sell currencies in order to manipulate their values, market forces of supply and demand determine the value of a currency. Demand for a domestic currency can be derived from the demand for the goods, services, and assets that people(or/and foreign people) use the currency to purchase. A country's supply of foreign exchange results from its imports of goods and services. As a country purchases foreign

Figure 3.1 Equilibrium in the foreign exchange market



goods and services, it pays for these purchases with foreign exchange. Hence, it supplies foreign exchange when it imports foreign goods and services. Like other goods or assets, currencies are also seen as a kind of good which have their own price in terms of another currency. Instead of market for commodities, foreign exchange market is the market used when we are considering the equilibrium of currency market. The figure 3.1 showed the equilibrium in the foreign exchange market.

3.1.2 Purchasing Power Parity (PPP) and Real Exchange Rate

A dynamic theory which attempts to explain the trend of equilibrium nominal exchange rates over time is the "Purchasing Power Parity (PPP)". Traded homogeneous goods and services should have the same price in two countries after converting their prices into a common currency. Thus, purchasing power parity is often called the law of one price. This theory holds only under the assumption of no obstructions or controls on foreign exchange transactions. However, the nominal exchange rate does not reflect changes in price levels in the two countries. The real exchange rate adjusts the nominal exchange rate for changes in countries' price levels and thereby measures the purchasing power of domestic goods and services in exchange for foreign goods and services.

$$REX = EX \cdot \left(\frac{P^*}{P} \right) \qquad (3.1)$$

REX	=	Real Exchange Rate (Baht/Dollar)[1]
EX	=	Nominal Exchange Rate
P^*	=	Foreign Price Level (price level in the US)
P	=	Domestic Price Level (price level in Thailand)

[1] *REX* here in this equation is explained in Baht/Dollar which is different from $/baht in the figure 3.2.

3.1.3 Balassa-Samuelson (B-S) Theory

There is another theory, called the Balassa-Samuelson (B-S) theory, describes fluctuations in real exchange rates, and it has been tested in empirical studies. According to the theory, if a country has a higher productivity growth rate than its trading partner, then the country's real exchange rate will appreciate. While the prices of the two countries' tradable goods are equalized, the prices of some items such as services are not, since they are not internationally traded. Consequently, the real exchange rate depends upon the relative prices of tradable to non-tradable goods in the two countries. This relative price in turn may be determined by productivity levels in the tradable and non-tradable goods sectors. From the historical evidence in East Asia, the volume of capital inflows during the pre-financial crisis period had an enormous impact on the macroeconomy. The most obvious consequence is excess aggregate demand. Within the tradable sector, this excess demand found an outlet in an expression of the current account deficit. Among the non-tradable goods, the excess demand led to a rapid increase in their prices relative to the prices of tradable goods or an appreciation in the real exchange rate (Siamwalla 1999).

3.1.4 Short-run and Long-run Effect of Capital Flows on Exchange Rate

First, the key to understanding the effect of capital flows on exchange rate is to reorganize that an exchange rate is the price of domestic bank deposits(those denominated in the domestic currency) in terms of foreign bank deposits (those denominated in the foreign currency). According to the theory of asset demand, the most

important factor affecting the demand for domestic (say, baht) deposits and foreign (say, dollar) deposits is the expected return on these assets relative to each other.

By assuming that there is capital mobility without barriers and the deposits are perfect substitutes, foreigners can easily purchase Thai assets, and Thais can easily purchase foreign assets. For existing supplies of both Thai deposits and foreign deposits to be held, it must therefore be true that in equilibrium there is no difference in their expected returns. This condition can be rewritten as

$$i^{B} = i^{\$} - \frac{E^{e}_{t+1} - E_{t}}{E_{t}} \qquad (3.2)$$

i^{B} = Thai (domestic) interest rate or expected return payable in baht
$i^{\$}$ = foreign interest rate or expected return payable in dollar
E_{t} = currency exchange rate or spot exchange rate
E^{e}_{t+1} = expected exchange rate for the next period

This equation is called the interest parity condition, and it states that the domestic interest rate equals the foreign interest minus the expected appreciation of the domestic currency.

3.1.4.1 Short-run Effect of Capital Flows on Real Exchange Rate

According to Dornbusch (1997), while product markets adjust only slowly, financial markets appear to adjust far more rapidly – virtually instantaneously, in fact. When there are changes in the money supply (from capital inflows/outflows) within a country, it will immediately affect the exchange rate in the short-run at the same time that price level, and markets for labor and goods remain constant.

The expected return on baht deposits in terms of baht, RET^B is always the interest rate on baht deposits i^B no mater what the exchange rate is. However, the expected return in terms of baht on foreign deposits, $RET^\$$ is the foreign interest rate minus the expected appreciation of domestic currency: $i^\$ - (E^e_{t+1} - E_t)/E_t$ and it slopes upward (see figure 3.2). As the exchange rate E_t ($/baht) rises, the expected return on foreign (dollar) deposits (i^B, expected return in terms of baht) rises[2]. The intersection of the schedules for the expected return on baht deposits RET^B and the expected return on dollar deposits $RET^\$$ is where equilibrium occurs in the foreign exchange market.

When capital inflows increase, foreign reserves and level of money supply will exceed the level of domestic money demand. The higher money supply will lead to a higher Thai price level in the long run and hence to a lower expected future exchange rate ($/baht), in other words people expect a depreciation of baht in the future. As a result it increases the expected return on foreign($) deposits at any given current exchange rate and so shifts the $RET^\$$ schedule rightward from $RET^\$_1$ to $RET^\$_2$ in figure 3.2. In addition, the higher money supply will lead to a higher real money supply M/P because the price level does not immediately increase in the short run. The resulting rise in the real money supply causes the domestic interest rate to fall from i^B_1 to i^B_2, which lowers the expected return on domestic (baht) deposits, shifting the RET^B schedule in from RET^B_1 to RET^B_2. As seen in figure 3.2, the result is a decline in the exchange rate from E_1 to E_2. Figure 3.3

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[2] See Mishkin (1994) for more details, The Economics of Money, Banking, and Financial Markets, chapter 8, The Foreign Exchange Market, p.186-191.

Figure 3.2 Effect of a Rise in the Money Supply

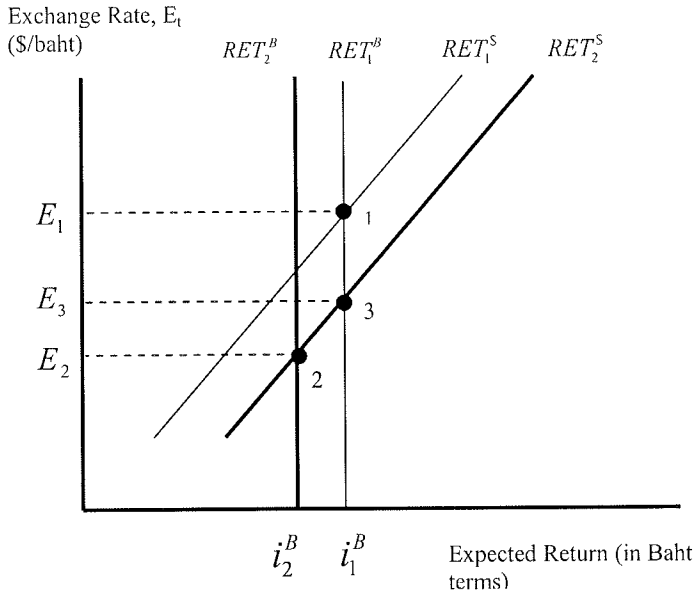
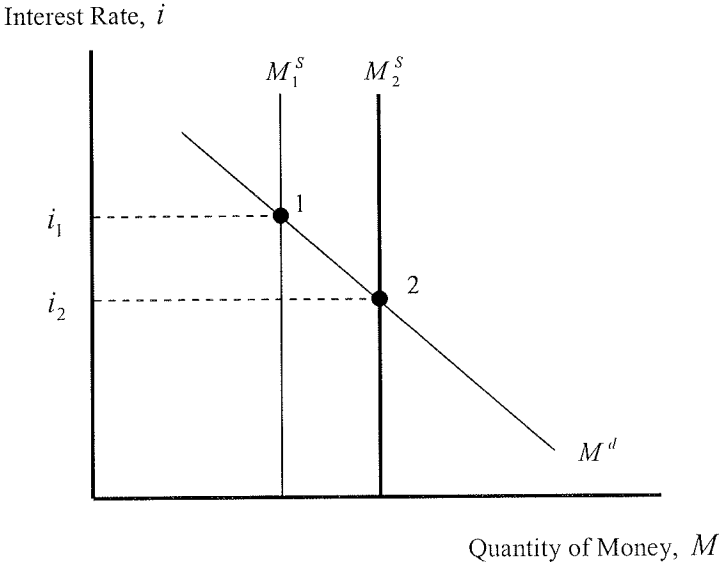


Figure 3.3 Response to a Change in the Money Supply



also shows the effect of an increase of money supply on domestic interest rate. As the money supply rises, the interest rate decrease from i_1 to i_2.

3.1.4.2 Long-run Effect of Capital Flows on Exchange Rate

According to a basic proposition in monetary theory, called monetary neutrality, in the long run, a one-time percentage rise in the money supply is matched by the same one-time percentage rise in the price level, leaving unchanged the real money supply and all other economic variables such as interest rates (Mishkin 1994). When the price level is not fixed in the long-run, the increase in money supply will lead to a higher price level and the real money supply M/P will gradually decrease until the domestic interest rate is back to the same level. The interest rate returns to i_1^B and RET^B returns to RET_1^B. The exchange rate thus rises from E_2 to E_3 in the long run. This E_2 to E_3 process is consistent with the definition of real exchange rate in equation (3.1). Once the price level in Thailand rises, real exchange rate will decrease. In other words, Thai baht will appreciate.

3.1.5 Keynesians, Monetarists, and Crowding-Out Effect

Keynesian analysis analyzes aggregate demand in terms of its four component parts: consumer expenditure, planned investment spending, government spending and net exports.

$$Y^{ad} = C + I + G + NX \qquad (3.3)$$

They believe that government economic (manipulation of government spending and taxes, changes in net exports, and shifts in consumer and business spending) are also

important causes of shifts in the aggregate demand curve. Keynesians argue that a fiscal policy change such as a rise in government spending would necessarily shift the aggregate demand curve.

Monetarists agree that an increase in government spending will raise aggregate demand if the other components of aggregate demand, *C, I*, and *NX,* remained unchanged after the government spending rise. They contend, however, that the increase in government spending will crowd out private spending (*C, I,* and *NX*), which will fall by exactly the amount of the government spending increase. This phenomenon of an exactly offsetting movement of private spending to an expansionary fiscal policy, such as a rise in government spending, is called complete crowding out. It occurs because when government spending increases $(G \uparrow)$, the government has to finance this spending by competing with private borrowers for funds in the credit market, or taxing consumers. Interest rates will rise, increasing the cost of financing purchases of both physical capital and consumer goods and lowering net exports. The result is that private spending will fall $(C \downarrow, I \downarrow, NX \downarrow)$, and so aggregate demand may remain unchanged or even worse in the long run. That means it will eventually reflect the currency devaluation. In contrast, a reduction in government spending or a tax increase, holding other factors constant, generates a decline in the equilibrium interest rate, thereby stimulating private investment. If the investment sector is very strong, the aggregate demand will considerably increase then it will reflect an appreciation of currency in the long run.

3.2 Past Empirical Studies

A part of Calvo's study (1993) indicated that since there has been a substantial degree of central bank intervention in the face of capital inflows, there is an important degree of co-movement between official reserves and capital inflows. Besides, real exchange rate has been closely associated with the capital inflows in the study too. Calvo (1993) also mentions that if the direct data on capital inflows are not available, changes in reserves are a reasonable proxy for these inflows. They studied 10 Latin America countries (Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Mexico, Peru, Uruguay and Venezuela) and analyze those countries for the period from January 1988 to December 1991 in which they compare two sub-periods: the capital inflow episode of 1988-89 and 1990-91.

They found that the co-movement in official reserves during the high capital inflow period of 1990-1991 is considerable higher than in the preceding two years. Also the degree of co-movement in real exchange rates across countries in the region has increased in the recent capital inflow episode. The reasons why the degree of co-movement of official reserves is higher than of real exchange rates are the cross-country differences in exchange rate regimes and in the degrees of wage and price flexibility. In addition, this study also shows that massive capital inflows can lead to the fluctuation of official reserves and real exchange rates in 8 out of 10 Latin America countries.

Most the studies of the effect of capital flows on real exchange rate explain that massive capital inflows cause the real exchange rate appreciated, as well as leading to the higher domestic price level. Once the domestic currency appreciates, people tend to