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CAPITAL FLOWS IN THAILAND: TRENDS, DETERMINANTS, AND IMPLICATIONS FOR CENTRAL BANK POLICIES

By

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1. Introduction

Thailand has undergone dramatic changes over the last two decades. As one of the most successful of the newly industrializing countries in Asia, its economy made significant strides throughout most of the 1980s and 1990s, with an exception of the crisis years in 1997-98. Since the crisis, important improvement in the Thai economic fundamentals together with increased strengthening of the financial system has contributed to impressive growth thereafter. The path of economic development of Thailand has been outward-oriented, as reflected in the openness towards current and capital accounts as well as government policies promoting Thai exports and inward foreign investment. Unquestionably, greater real and financial integration into the global markets have brought many benefits and helped facilitate growth and development of the Thai economy. At the same time, however, increased integration leaves the country susceptible to external shocks. The procyclicality and volatility of capital flows can also create macroeconomic imbalances and, hence, important challenges for policymakers in the conduct of monetary policy.

This paper aims to shed light on Thailand's experience with capital flows over 1985-present, with a focus on their implications on economic and monetary variables as well as policy responses to manage these flows. We begin by providing in Section 2 background on the evolution of Thailand's current and capital account liberalization. Section 3 presents the trend of capital flows during the 1985-2008Q3, followed by an empirical examination of their determinants in Section 4. Section 5 assesses risks associated with large capital flows. Sections 6 and 7 discuss implications of large and volatile capital flows on monetary policy and on financial stability, respectively. Section 8 concludes.

[1] This paper is part of the South East Asian Central Banks (SEACEN)'s 2008 project on capital flows: "Capital Flows and their Implications for Central Bank Policies in the SEACEN Countries". Khatharit Sitthikul is a Senior Economist, the Balance of Payments Analysis Team, Monetary Policy Group of the Bank of Thailand and Nasha Ananchotkul is an Economist in the Capital Account and Balance of Payments Policy Team, Monetary Policy Group. We are grateful to Dr. Duangmanee Vongpradhip, Dr. Ammara Sriphayak, Dr. Pichit Patrawimonpon, Dr. Titanun Mallikamas, Dr. Somsajee Siksamat, Prasong Werakarnjanapongs, Siripan Nakornthab, and Dr. especially Dr. Yunyong Thaicharoen for their help comments and guidance. We also thank Angsupalee Wacharakiat for providing data. The views expressed in the paper are those of the authors and do not necessarily reflect those of the Bank of Thailand.

2. General framework and major capital flows management policies

Thailand has long been relatively open to trade and financial flows with current account convertibility and liberal treatment of inward foreign direct and portfolio investments. Foreign direct investment, in particular, had played an important role in various stages of the country's industrialization, especially following the shift of Thailand's general economic policy from import-substitution in the 1960s to the promotion of export-oriented growth since the 1970s. Over the period 1985-1997, foreign exchange controls on current and capital account transactions were substantially relaxed. Inflows were further promoted through a number of measures including tax and institutional reforms. There were times, however, when measures to slow down excessive inflows were necessary to maintain or restore economic and financial stability. Overall, Thailand has continued to move towards a freer regime for capital flows, with a vision to promote market-based mechanisms in driving sustainable economic growth.

2.1 Current account and capital account liberalization

Thailand's exchange control practice had been in conformity with the IMF's Article VIII requirements even before the acceptance of the Article. There were no restrictions on foreign exchange involving payments for and receipts of current account transactions. Between 1985-1990, some foreign exchange controls were loosened including raising the limits on the amounts of foreign exchange that could be purchased or brought in or taken out of the country for various purposes and permitting the uses of foreign exchange deposits for transit passengers and non-resident baht accounts for foreign-borrowing settlements, stock transactions, and foreign investment.

Yet, the acceptance of the Article VIII in May 1990 signified as an important milestone by marking the beginning of systematic financial reforms and capital flow liberalization in Thailand. Three phases of foreign exchange control liberalization were implemented. The aim was to keep the foreign exchange regime in line with growing globalization of economic and financial systems and greater mobility of international capital funds. The regulatory relaxation was to allow market force to play a more active role in the utilization and allocation of capital flows.

The **first phase** of exchange control deregulation (May 1990) allowed commercial banks to authorize foreign exchange transactions in trade-related activities without prior approval from the Bank of Thailand (BOT), and further increased the limit on foreign exchange purchase to facility transfers and traveling expenses. The **second phase** (April 1991) lifted most controls related to capital account-related inflows. Non-residents, for the first time, can open foreign currency accounts provided that funds were originated from abroad. Foreign exchange earners were allowed to accept payments in baht from non-resident baht accounts without approval from the BOT and to use their foreign currency proceeds from abroad to service external obligations. The **third phase** (February 1994) included raising the limit on outward transfer of direct investment by residents, abolishing limit on traveling expenses, and permitting authorized banks to lend to nonresidents in foreign currency without limit. In

essence, these relaxations of foreign exchange controls were targeted at letting market force to play a more active role in determining cross-border capital flows and encouraging utilization of baht in regional trade.

To facilitate continued economic growth and development of the financial system, beginning from 1992 the authorities progressively deregulated financial institutions' operations and expanded their scope of operation. The ceilings on all deposits and lending rates were removed by 1992. A number of reforms were designed to support and promote the stock market. The centerpiece of new financial facilities was the Bangkok International Banking Facilities (BIBF) established in March 1993. The BIBF was meant to serve as groundwork for international financial services and mobilizing capital from abroad to support regional economic growth and development. Some BIBF transactions received tax privileges, encouraging more uses of foreign capital. Following the commencement of the BIBF, capital inflows into Thailand, especially short-term loans, increased at an unprecedented rate (see more details in Section 2) leading up to the financial crisis in 1997.

Post-crisis liberalization

Since the crisis, the authorities have adopted a liberalization scheme in which sequencing and prudential regulations are the key. On the inflow, the major change was the relaxation of foreign ownership limit of Thai banks and finance companies as well as certain non-bank businesses.[2] This has considerably changed the landscape of financial institutions in the country by strengthening the system through recapitalization. Foreign ownership in real estate, previously severely restricted, was also eased to allow for greater investment flexibility and to attract a wider market. Moreover, to promote foreign investment in companies listed in the Stock Exchange of Thailand (SET), the Thai Non-Voting Depository Receipt (NDVR) Company Limited was established in 2001 as a subsidiary of the SET. Under this arrangement, the NVDR Company acts as domestic nominee for foreign investors and is not subject to foreign ownership limit.[3] This creates more room for foreign participation in the Thai stock market, encouraging inward portfolio investment.

Controls on capital outflows, which were liberalized only gradually throughout the pre-crisis period, have been increasingly loosened since the second half of 2003, partly as a result of the improvement in the country's foreign reserve adequacy. This regulatory relaxation on outflows not only enhances greater international diversification, but also helps create more balanced flows and correct foreign asset-liability mismatch in the private sector's balance sheet. Residents are now allowed to invest abroad through mutual funds and other institutional investors. Since July 2003, authorized institutional investors have been allowed to invest

[2] Since 1997, foreign banks with sound financial status and high potential to help improve productivity in management and operation of Thai financial institutions have been allowed to hold more than 49% of total shares in Thai financial institutions for 10 years. Beyond 10 years, if foreign owners still end up holding more 49% of total shares, they will not be forced to sell off their shares but they will not be allowed to acquire additional shares.

[3] The NVDR Company issues NVDRs to foreign investors who want to invest in underlying stocks, warrants, and Transferable Subscription Rights (TRS). By investing in NVDRs, foreign investors are entitled to all financial benefits (i.e. dividends, right issues or warrants, capital gains) of underlying stocks, except for voting right.

abroad; and the asset classes and investment quota were gradually expanded. The authorities also raised the limit on direct investments abroad by Thai residents, with an aim to encourage Thai companies to gain from greater investment opportunities in the global markets.

2.2 Policies implemented to manage capital flows

In general, Thailand has been very open to foreign capital flows, with virtually no restrictions on non-resident inflows and outflows related to genuine trade and investment. Administrative measures might sometimes be used as anti-speculative policy tools to manage capital flows. Direct controls would be the last resort and would be implemented only in situations where excessive and volatile capital flows—especially those of short-term and speculative nature—appeared to threaten the economic and financial stability. In additional to temporary direct controls, Thailand also retains prudential measures on residents' short-term external borrowing and investment abroad to limit the private sector's foreign short-term liabilities and foreign currency risk exposure. However, these measures, especially on outward investments, have gradually been relaxed since 2003.

The situations leading up to the use of capital controls during 1995-97 and another one during 2006-07, as well as the specifics of these controls, are described below:

2.2.1 Managing capital inflows and outflows during 1995-97

The reforms to promote investments in the Thai stock markets and the establishment of the BIBF during the first half of the 1990s, together with the large positive interest rate differential and the fixed exchange rate regime, induced large capital inflows to Thailand by providing attractive returns and low currency risk. A growing proportion of net inflows were short-term in nature, reaching 60 percent of the total in 1995. This alarming level of short-term inflows led the Thai authorities to start restricting short-term capital inflows in 1995 by imposing 7 percent reserve requirement on banks' non-resident baht accounts. These restrictions were extended in 1996 to cover new foreign borrowing of less than one year by commercial banks, BIBFs, and finance companies.

In 1997 Thailand began to experience net capital outflows due to non-residents' liquidation of baht-denominated assets and debt repayment induced by lower confidence of creditors. Rising interest rates to counteract outflows aggravated the solvency and liquidity position of many banks and finance companies. In July 1997, faced with a currency and banking crisis, the authorities floated the baht and a managed floating exchange rate was adopted. Baht transfers to non-residents in all cases were temporarily restricted except for those transactions associated with exports and imports of goods and services, and direct and portfolio investment. In January 1998, this measure was abolished and replaced by the 50 million baht lending limit to non-residents to prevent internationalization of the baht.

2.2.2 Managing capital inflows during 2006-08

After the crisis in 1997, there has emerged a new wave of capital inflows to the country from 2002 onward. Surging inflows both in the form of direct and portfolio investments,

accompanied by declining outflows of debt repayment, resulted in large capital account surpluses in 2005 and 2006. This, together with the current account surpluses due to strong exports performance, exerted considerable upward pressure on the baht. Of the total inflows, large and increasing sum of foreign capital flowed into short-term fixed income instruments with the objective of gaining from attractive yields and anticipated baht appreciation. To discourage such speculative activities, the BOT implemented a number of anti-speculation measures such as imposing a cap on the daily outstanding balance of non-resident baht account, prohibiting transactions comparable to Thai baht lending or selling to non-residents without underlying trade or investment in Thailand with holding period of more than 3 months.

However, the effectiveness of these measures combined with increased foreign exchange intervention proved to be limited as foreign investors could find other ways to speculate on the baht. As the baht continued to be highly volatile and strengthened at an accelerating pace, the BOT decided to implement the Unremunerated Reserve Requirement (URR) measure on December 18, 2006, to serve as a price-based friction on the types of inflows that are more likely to be used by currency speculators. These included new inward investments in the form of foreign loans, fixed income instruments, mutual funds, property funds, currency swaps, and non-resident baht accounts without proofs of genuine trade and long-term investment underlying. These incoming funds were subject to 30 percent withholding at the banks without interests and would get the full amount of reserve back after one year. If the funds have remained in Thailand for at least 1 year, the customer will be refunded in full amount of the reserve withheld. A penalty would apply to funds remaining in Thailand for less than 1 year, in which case the customer will be refunded only two-thirds of the reserve withheld. Inflows below $20,000 as well as inflows related to trades in goods and services, foreign direct investment, and equity investment in the stock market were exempted from the URR measure.

The BOT gradually relaxed the URR measure over the subsequent period by providing a full-hedging requirement as an alternative to the URR for some types of inflows. The measure proved to be able to stabilize the baht and reduce the size of inflows to a more manageable level. However, aware of potential adverse effects of the URR measure on domestic businesses and its ineffectiveness in the long run, after a careful consideration of changes in the environment and other relevant factors, the BOT decided to lift of the URR measure on March 3, 2008.

3. Trends of capital flows in Thailand since 1985

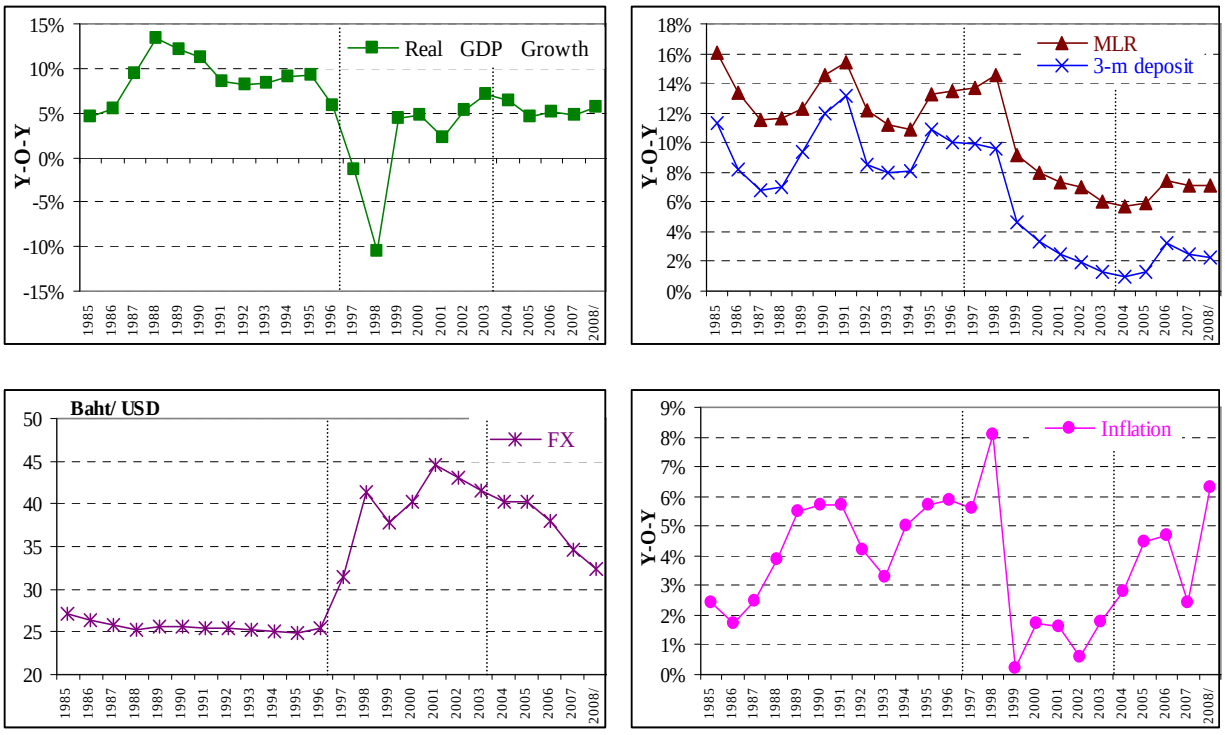
The chronology of economic conditions and capital flows to Thailand during the past two decades can be roughly divided into three periods: before the crisis (1985-1996), during and after the crisis (1997-2002), and the recent years (2003-2008Q3).

3.1 Key economic indicators

Pre-crisis period (1985-1996) The Thai economy exhibited an impressive growth during the decade beginning with the year 1985 with the average annual growth close to 9%. This remarkable pace of economic growth was considerably influenced by waves of financial liberalization implemented over this period. After the abolition of interest rate ceilings on time deposits in 1989 and all other deposits and loans in 1992, the domestic interest rates subsequently increased—3-month deposit rate averaged 9.4 % per annum while the MLR averaged 13% per annum. The differences between domestic and foreign interest rates were also reduced, though still existed. Dismantlement of foreign exchange controls, competitive interest rates, together with the pegged exchange rate regime, led to greater flows of foreign funds into the country. The rapid economic expansion also brought about relatively high inflation at 4.3% per annum on average.

On the external stability, as more and more Thai businesses financed their investment from foreign sources in stead of from domestic finances—owing to the negative saving-investment gap, persisting current account deficits, and the promotion of the BIBF, Thailand's external debt became roughly doubled from $ 43.6 billion in 1992 to $108.7 billion in 1996, equivalent to 66 % of GDP. Since these loans tended to be denominated in foreign currency and to be on a short-term basis while the investment horizons were long term, this created large currency and maturity mismatches which in turn raised the degree of balance of payments vulnerability. The large volume of imported capital funds also adversely contributed to stock and property price bubbles and the country's current account deficits during this period (average 5.1% of GDP).

Figure 1: Key macroeconomic indicators



Note: For year 2008, data are from the first half of the year.

During and after the crisis (1997-2002) The crisis brought about the devaluation of the baht and the adoption of the managed-float exchange rate regime on July 2, 1997 to replace the pegged

exchange rate regime. The baht subsequently lost more than half of its value to reach its lowest point of 56 baht to one US dollar in January 1998. The economy contracted markedly by 10.5% in 1998. Yet it was able to bounce back quickly and to expand at 4.2 percent annual average in 1999-2002, thanks to the robust growth of the export sector (accounted for 36 percent of GDP in 1997 and 55 percent of GDP in 2000) spurred by the baht depreciation. The current account recorded surpluses. This export-led growth was also reflected in the rise in the degree of economic openness (the sum of export and import values to GDP) which increased from 61% of GDP before the crisis to 93% of GDP in the post-crisis period.

As for the rate of inflation, after its peak at over 8% in 1998, it had been brought down substantially in subsequent years in line with a low-inflation phenomenon in the major countries and peer economies. The inflation rate in Thailand during 2000-2002 averaged at merely 1.3% per year. It should be noted that this low inflation was concurrent with the adoption of the inflation-targeting monetary policy framework in Thailand in May 2000.

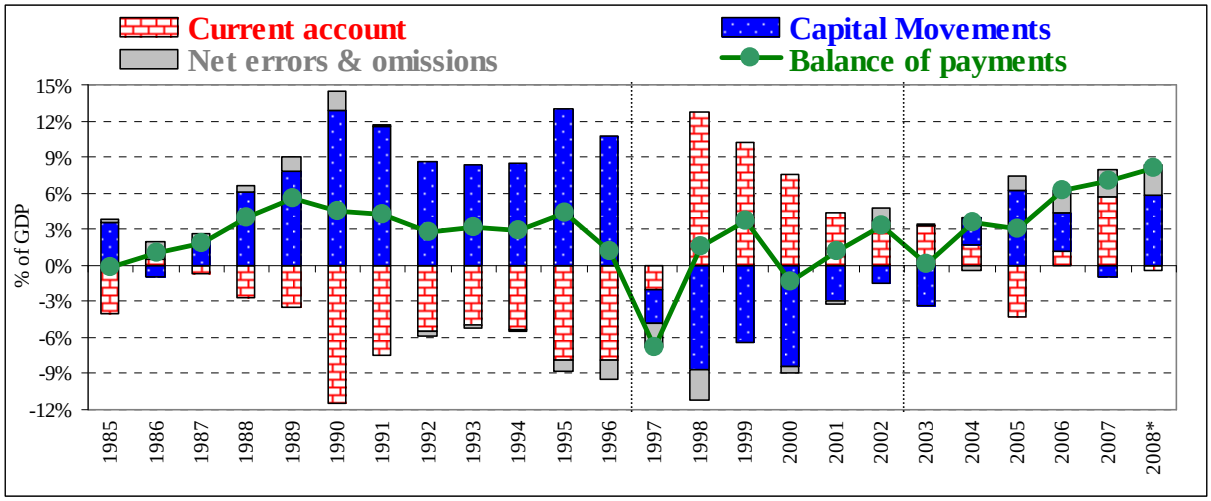
The last five years (2003-2007) After fully recovered from the crisis, the Thai economy exhibited outstanding performance with an annual growth rate of around 7% in 2003 and 2004, the highest level since 1995. The overall economic growth was mainly driven by growing domestic demand and partially by booming exports benefiting from competitive exchange rate as well as healthy global economy. The overall balance of payments recorded increasing surpluses throughout this period, exerting upward pressure on the baht, especially in 2006 when both the current and the capital account registered surpluses. The only year during this period in which the current account turned deficit was 2005; this sudden turnaround was caused chiefly by the Thai government's decision to terminate the oil price subsidy program.[4,5]

Despite overall robust export performance, during the past three years the economy turned to grow at a relatively lower rate due largely to shrinking domestic demand. Key factors responsible for this domestic economic slack include continued political uncertainties, which deteriorated investor confidence, and higher oil prices, which lowered domestic consumption and investment and spurred the rate of inflation. A slower growth is expected in 2008 and 2009 with extraordinarily weak outlook of the world economy caused by the on-going global financial crisis.

[4] Thailand's diesel subsidy since January 2004 came about after it was foreseen at the time that global oil price would skyrocket. While the subsidy has assisted Thai economic growth to continue its momentum but the prolonged effect of oil price hike has caused growing fiscal burden on the government budget. By having underestimated the time frame of the soaring oil price, the oil subsidy became unsustainable. The government, led at the time by Thaksin Shinawatra, finally took the action to lift the cap on the diesel price. This end of subsidy program edged the producers towards the real market price and allowed the producers to become more prudent about their oil consumption.

[5] Interestingly, China's entry to the World Trade Organization (WTO) in 2001 contributed to boosting, not damaging, Thailand's export growth: Thai exports to China increased more than five folds in value between 2000 and 2007, with exports share doubled from 4.1% of total exports in 2000 to 9.7% in 2007. This can be explained by the *triangular* international trade pattern arising from Chinese integration into the world production network: East Asian countries export intermediate goods to China for processing, and China, in turn, exports final products to the United States and Europe.

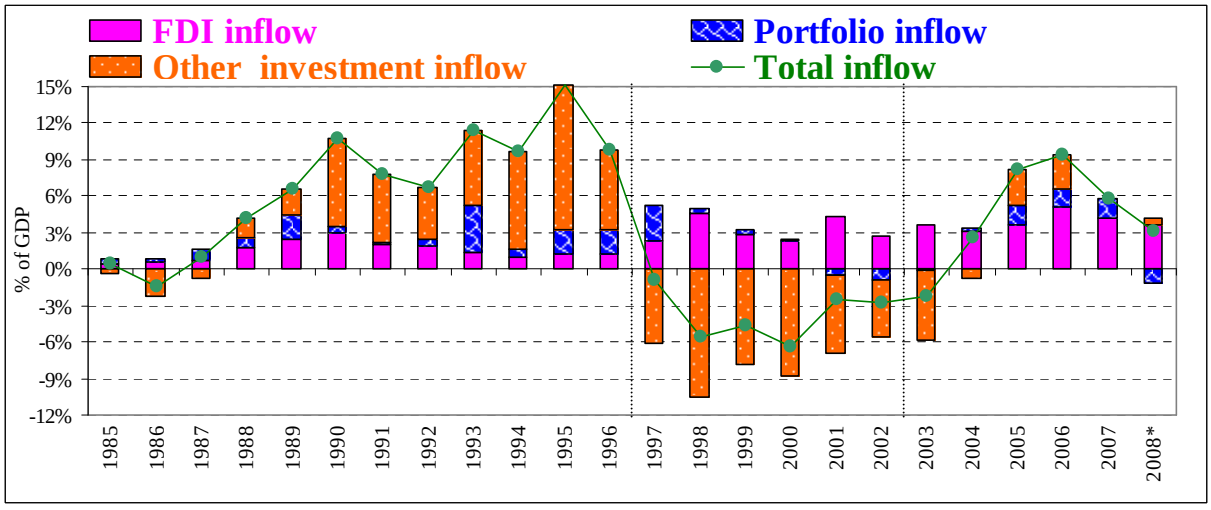
Figure 2: Evolution of overall balance of payment (% of GDP)



3.2 Capital flows

Pre-crisis period (1985-1996) During this period, gross capital inflow recorded at 7.8% of GDP per year on average with its peak at 15% of GDP in 1995. FDI inflow started to pick up since 1985 after the Plaza Accord that resulted in a surge in value of yen, leading to Japanese business relocating and expanding its production bases in Southeast Asian countries including Thailand. At the same time, portfolio investment inflow was steadily increasing owing to strong macroeconomic performance, attractive returns on investment, and the capital market liberalization. This flood of inflows into the stock market drove the stock price growth to achieve an average of 27% per annum.

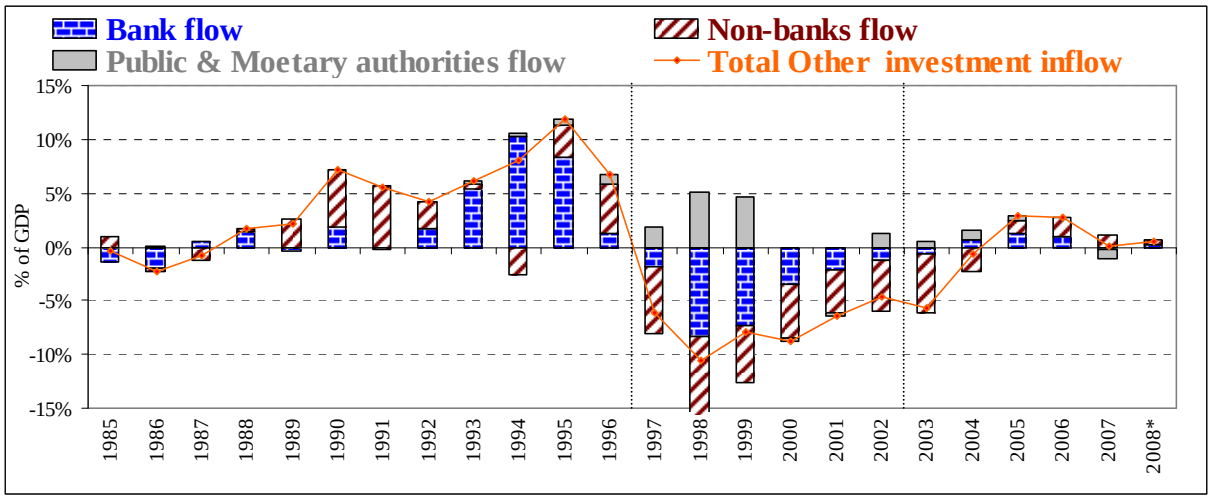
Figure 3: Evolution of capital inflows (% of GDP)



After 1990, the role of FDI and portfolio investments in the Thai financial development began to subside as the "other investment" (comprised mostly of bank loan and non-bank private loan) had grown in its importance, with bank loan alone accounted for 66% of the net capital flow. Inflow under the other investment category reached its peak at 12% of GDP in

1995. Because of the lower cost of financing and the lower risk of exchange rate, non bank private loan from abroad was on a rise since the late 1980s while bank-related inflow spiked up after the establishment of the BIBF in 1993. One major attraction of BIBF loans was tax privileges—even over domestic borrowings—given to BIBF borrowers including those on juristic income tax, special business tax, and interest income tax. Consequently, Thai businesses shifted from domestic loans as well as external non-bank loans to the BIBF. Over-borrowing through the BIBF was one of the key factors that led to the financial crisis in 1997.

Figure 4: Composition of other investments -- Inflows (% of GDP)



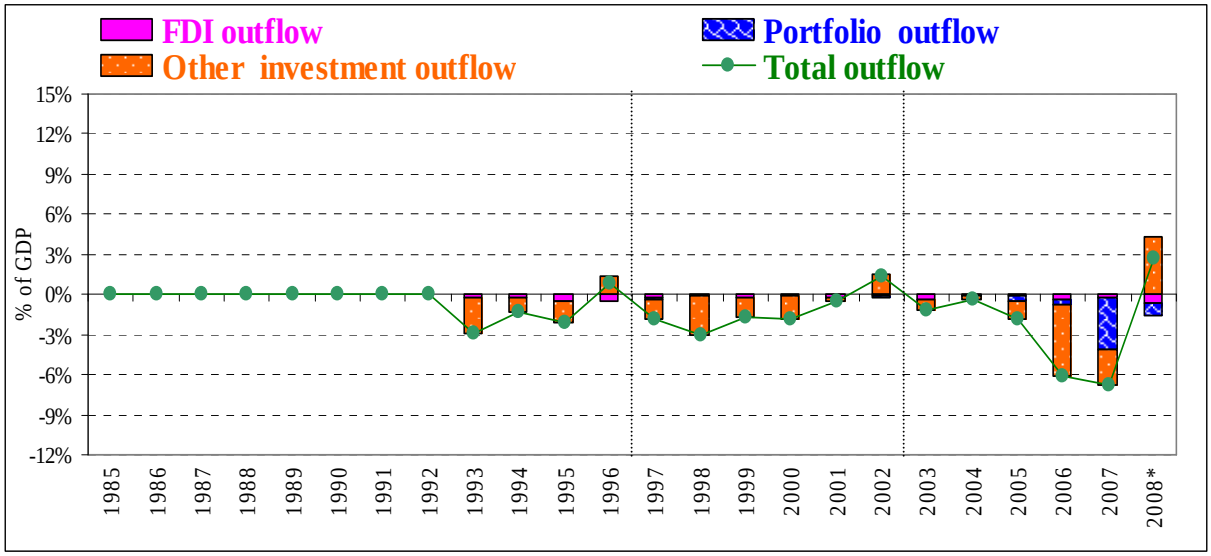
During and after the crisis (1997-2002) The gross capital inflow during the five years following the onset of the crisis registered large negative numbers—averaging at -3.8% of GDP per annum in 1997-2002—indicating substantial capital reversal during this period. Most of the reversal was in form of the repayment of external debts—BIBF and non-bank loans—made during the economic boom prior to the crisis. The largest reversal at -5.6% of GDP occurred in 1998 largely due to gloomy economic outlook and the loss of confidence in Thai borrowers' ability to repay debt.

FDI inflow, however, was generally not affected by the crisis. To the contrary, large FDI flows flooded into Thailand in the aftermath of the crisis to take advantage of the baht depreciation which translated into cheaper assets and production costs for foreign businesses. The increase in FDI inflows played a key role in offsetting severe effects of sudden stops and reversal of foreign loans and other investments on the Thai economy.

The dramatic bath depreciation also directly caused the price of Thai stocks to be cheaper in dollar term, making them attractive to international portfolio investors. The resulting large inflows in terms of portfolio investment in the third quarter of 1997 also helped cushion the privates sector's net outward capital flows. However, the continued baht depreciation in 1998 brought capital loss to the investors as well as deteriorated investors' confidence. This, together with the September 11 terrorist effects in the U.S., brought about the net withdrawal of portfolio investment in 2001-2002.

On the resident outflows, after the floating of the baht, the higher currency risk has led to higher foreign exchange hedging demand by Thai businesses. This in turn has resulted in an increase in cross-border bank activity, as recorded under the "other investment" category, since banks had to square foreign asset position in order to meet the net foreign exchange exposure requirement. However, the gross outflow by residents was still at a relatively low level during this period partly due to the existing controls on outward investments.

Figure 5: Evolution of capital outflows (% of GDP))



The last five years (2003-2007) Inflows to Thailand have increasingly shifted from being dominated by bank loans during the pre-crisis period to deriving more from FDI and portfolio investment over recent years. Foreign bank loans have declined significantly as both official and private sectors paid down the external debt and sought alternative financing via domestic financial markets. This waning importance of bank loans manifested in the outstanding level of external debt, which has declined substantially from 48.8% of GDP in 2002 to 29.4% in 2007.[6] Moreover, of the total outstanding external debt, the share of baht-denominated debt has continued to increase. This, together with higher hedging ratio by Thai exporters/importers, implies a substantial reduction of Thailand's vulnerability to currency exposure compared to the pre-crisis period.

FDI has become the most important component accounting around 80 percent of gross capital inflow over the last five years. This is due to a significant shrinkage of cross-border bank loans mentioned above as well as promising growth prospects of the Thai economy that attracted increasing inward investment. Portfolio investment inflow has also been on an increasing trend owing to several factors such as the increase of international institutional investors, the recent lack of confidence in the U.S. economy, further financial liberalization, innovative trading instruments in the stock market such as non-voting depository receipt (NVDR) as well as the higher yields and local currency appreciation. However, being of short-

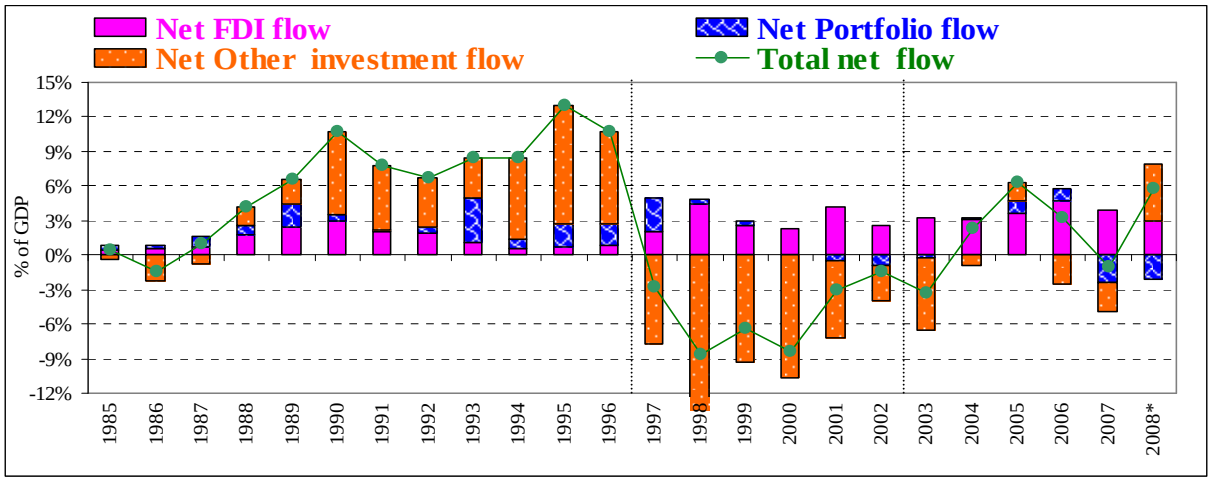
[6] The denominator here has been adjusted to be compliant with the World Bank method; i.e. calculated as a 3-year moving average GDP.

term nature, portfolio flows are highly sensitive to news and investor sentiment and hence appear unstable.

Since 2003, the Thai authorities have further relaxed restrictions on capital outflows by residents both in forms of direct and portfolio investment. This was aimed to promote greater acquisition of foreign assets so as to bring overall benefits to the economy through more balanced capital flows and improved wealth diversification.

Gross capital outflow has surged considerably from 2005 onward, reaching 6.8% of GDP in 2007. While FDI outflow has not been very responsive to the policy stimulation, outward portfolio investment, on the other hand, has increased quite impressively following the further liberalization of portfolio investment through institutional investors. The major component of the gross outflow remains in form of foreign currency deposits by banking sectors as appeared under the other investment flows. This type of outflows reflects largely the increase in foreign asset holding by the banking sector to square their foreign asset positions as a result of being the counterparty to the BOT's swap agreements and clients' foreign exchange derivative agreements. It is important to note that, rising demand—may it be from exporters, importers, or other market participants—for foreign exchange hedging against exchange rate appreciation or depreciation has potentially induced volatility of the net capital flow in the recent years.

Figure 6: Evolution of net capital flows (% of GDP)



Note: * For the year 2008, flows are cumulated over the first 9 months of the year.

To summarize, after the crisis the Thai economy has come to rely more on FDI as a major source of foreign funds. Reduced reliance on foreign bank loans helps improve Thailand's external balance sheet position by making it much less sensitive to exchange rate changes and less exposed to the risk of capital reversal compared to the past. Moreover, the adoption of a managed-float exchange rate regime was a key to reduce vulnerability to crises as well as promote microeconomic efficiency as businesses need to learn to price in and manage FX risks. On the current account side, international trade has grown significantly in terms of its importance relative to Thailand's overall economic structure, as confirmed by an increase in the degree of trade openness from pre-crisis average of 61% of GDP to 106% of GDP over the last five years.

The continued robust performance of the export sector has supported the Thai economic growth at times of falling domestic demand. In addition, resilience of the Thai economy to potential volatility of capital flows and exchange rate has been further improved through more balanced capital flows as a result of gradual liberalization of resident outflow, as well as through more efficient risk management practice by the private sector and large accumulation of foreign exchange reserves during the recent years which will be discussed later on in this paper.

Since gross capital flows have been increasingly large and volatile over the years, to make the picture more complete, we shall next examine what are the key drivers of capital flows to Thailand, so as to assess the potential risks of a shift in these factors.

4. Determinants of capital flows

This section aims to identify key determinants of capital flows in the case of Thailand. The focus is on the "push" and the "pull" factors in influencing different types of inflows, especially those of short-term nature. The results of this exercise will help us understand better the nature of capital flows and aware of potential vulnerability related to these flows. Being able to identify the determinants of large flows will also help the authorities in designing an effective capital flow monitoring system.

4.1 Analytical framework

The relevance of pull (internal) and push (external) factors has been at the heart of the economic debate and empirical studies on what drives capital flows into emerging market economies. Pull factors may include domestic variables such as robust economic performance, financing needs, expectations of exchange rate appreciation, high expected returns relative to the rest of the world as well as improved governance institution, credit rating, economic and financial reforms, and political stability. Push factors often discussed in the literature include slow growth and lack of investment opportunities in major economies, excess global liquidity, and international investors' view on risk in the market, among others.

Although in practice it is difficult to assess the relative importance of these two sets of variables, such a judgment would help determine whether capital inflows are likely to be permanent or temporary. For instance, if capital inflows were motivated primarily by strong macroeconomic performance and improved governance of the domestic economy, then such inflows would tend to be more stable and productive. On the other hand, inflows driven by excess liquidity of the global financial market and low-risk environment based on the market view tend to be temporary and volatile, pouring into emerging markets to make speculative profits from relatively more attractive yields and expected local currency appreciation. This latter case heightens the risk of a sudden reversal of the inflows if global liquidity dries up or there is a sudden change in investor's attitude towards risk.

We consider the following pull and push factors in determining capital inflows in Thailand during 1993Q1-2008Q3[7]: 1) Thailand's real GDP growth, 2) current account balance to GDP, 3) world real GDP growth, 4) market view on risk, 5) real interest rate differential between Thailand and the major economies, 6) growth of global liquidity, 7) exchange rate appreciation, and 8) stock return differential.[8] Table 1 introduces short-hand notations and provides description of the variables.

Based on economic reasoning, the prospect of economic prosperity should be a positive factor that draws foreign capitals into the host country. Current account balance measures the extent to which the country needs to finance current account deficits: in a relatively flexible exchange rate regime, current account deficits should in principle coincide with capital account surpluses. Slower growth of advance economies as well as low-risk investment environment causes investors based in these countries to look overseas in the search for better yields elsewhere, especially in emerging markets. Along the same line, relatively high interest rates, strong stock market performance as well as expectations of local currency appreciation in emerging markets make investments in those economies appealing. Lastly, high growth of global liquidity means international capital is more abundant, readily available for investing where expected returns are above average.

Graphical illustration of the relationships between aggregate capital inflows and the above potential factors is shown in Figure 7 below. An observation by simply eye-balling of these time series plots shows that Thailand's economic growth seems to predict capital flows quite well before and during the crisis but not in the subsequent period. Current account balance is more or less a mirror image of capital inflows around the zero line, but this relationship seems to break since early 2006. Most strikingly in this graphical analysis is the relationship of investors' view on risk and the inflows: the (inverse of) VIX index closely synchronizes with the dynamic of capital inflows in Thailand throughout the whole sample period. Similar pattern is observed for the global liquidity factor. However, the relationship evidently breaks down at the end of the sample period, coinciding with the onset of the global financial crisis of 2008. This may be caused by the way the global liquidity index is constructed—as a growth of U.S. monetary base plus reserves held at the Federal Reserves in custody for foreign central banks. The fact that the U.S. government unconventionally made several rounds of rate cuts and extensive liquidity injections in attempt to prevent a crisis could have caused U.S. money base to expand substantially, inflating the measure of "global liquidity" under this definition. Notwithstanding these apparent bivariate relationships, in the next subsection we conduct a formal econometric test in order to reach empirically sound conclusions.

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[7] Thailand began to record *quarterly* GDP data from 1993Q1 onwards. Observations in the regression models include quarterly data in 1993 regardless of the year-on-year growth variables that require 1992 data. The quarterly 1992 data are approximated by the method of extrapolation using annual 1992 figure and average quarterly distribution during 1993-1995.

[8] Although political instability in Thailand during the recent years is likely an important factor that discourages part of the capital inflows, it is not included in the regression model due to the lack of a quantitative measure on political conditions.

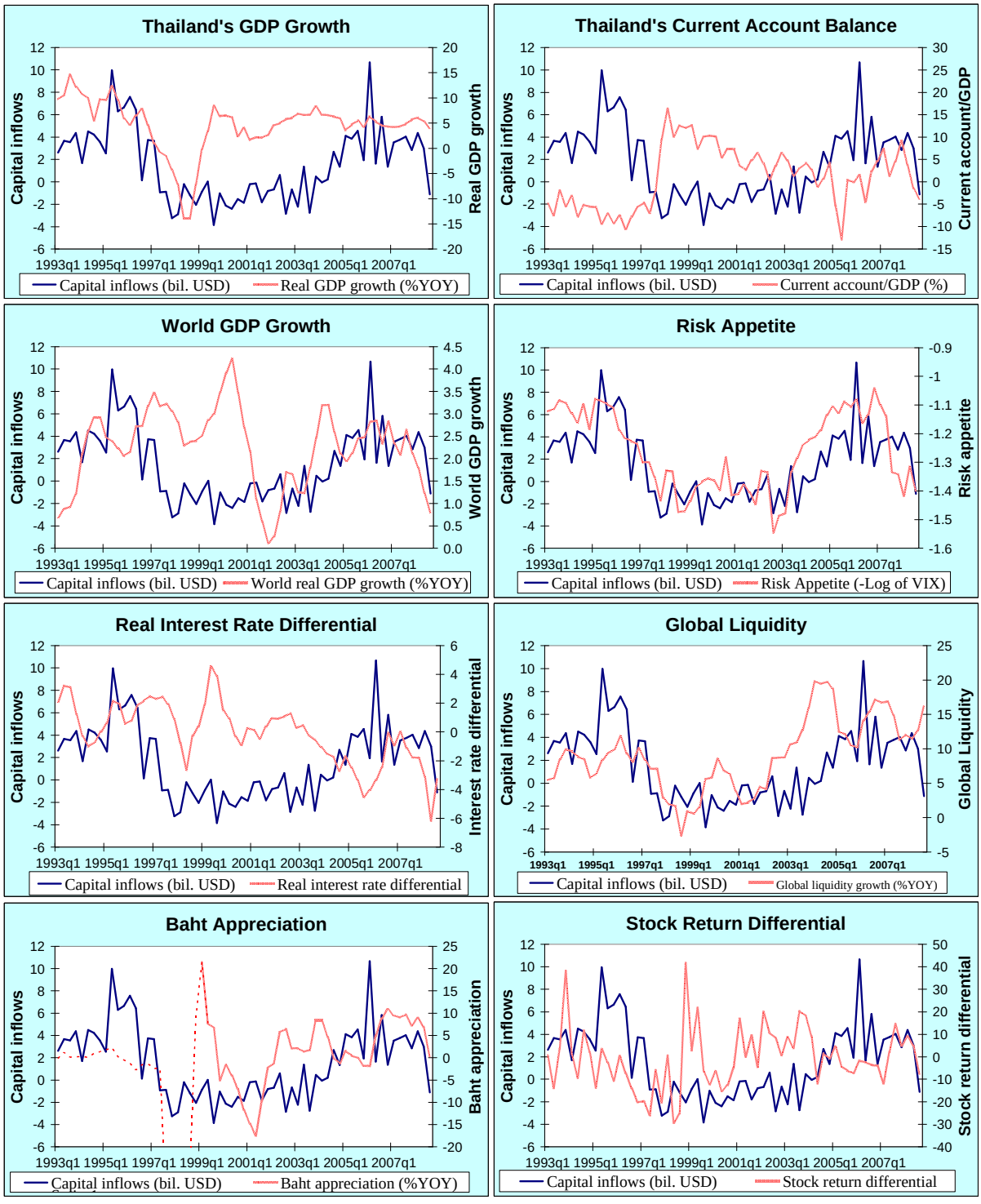
Table 1: Description of variables

Variable	Notation	Description
Capital flows		
Total capital inflow	CF_TOT	Log of total capital inflow
FDI inflow	CF_FDI	Log of FDI inflow
Portfolio investment inflow	CF_PORT	Log of portfolio investment inflow
Other investment inflow	CF_OTH	Log of other investment inflow
Pull factors		
Real GDP growth	GDP	Real year-on-year GDP growth rate (%)
Current account to GDP	CA	Current account surplus to GDP ratio (%)
Real interest rate differential	INTDIF	The difference between real 12-month deposit rate in Thailand and the GDP-weighted average of 12-month LIBOR rates of the currencies of the G3 economies
Exchange rate appreciation	BAHTAPP	Year-on-year rate of change of USD/Baht (%) *(Positive = appreciation of Baht relative to USD)*
Stock return differential	STOCKDIF	Thailand's total stock return subtracted by the overall total stock returns (GDP-weighted) averaged for the G3 countries
Push factors		
World real GDP growth	WGDP	GDP-weighted average of real year-on-year GDP growth of the G3 countries (%)
Market view on risk	VIX	Log of VIX index[9] *(Increases in VIX = investors perceive higher risk)*
Global liquidity	GLOLIQ	Year-on-year growth (%) of U.S. monetary base plus reserves held at the Federal Reserves in custody for foreign central banks

Note: * G3 = The U.S., Japan, and the euro area.

[9] VIX is a symbol for the Chicago Board Options Exchange Volatility Index which is a measure of implied volatility of S&P500 index options. This index is often viewed as a proxy for market view on risk and uncertainty. The higher the VIX index, the riskier is the investment environment perceived by investors. It is sometimes referred to as a *fear* index.

Figure 7: Capital inflows and potential determinants



4.2 Econometric Investigation

Based on the discussion of potential determinants of capital flows above, we employ econometric methods to test the importance of each factor in influencing capital inflows to Thailand. A basic regression model would be specified as:

$$CF = \alpha + \beta X + \delta Z + \varepsilon \quad (1)$$

where *CF* is one of the capital flow variables specified in Table 1; *X* is a vector of the pull factors, *Z* push factors; α denotes a constant term; β and δ are a vector of coefficients on *X* and *Z*, respectively; finally, ε represents a disturbance term.

The time-series variables used in all regression models in this paper are quarterly data running from 1993Q1 to 2008Q3. Since most time-series economic variables tend to establish strong trends and thus are non-stationary, running simple OLS regressions on these variables can give rise to misleading or spurious values of R^2 and t-statistics. Therefore, we will first test for non-stationarity due to the presence of a unit root for each variable in the model, before proceeding with an appropriate estimation model based on the test results.

Unit root tests

We use the Augmented Dickey-Fuller test to determine whether the variables in question contain a unit root. For a sequence y_t, the test is carried out in the context of the model:

$$\Delta y_t = \mu + \gamma y_{t-1} + \sum_{i=2}^{p} \phi_i \Delta y_{t-i} + \nu_t \quad (2)$$

The parameter of interest is γ. Under the null hypothesis of a unit root, γ = 0, i.e. the y_t contains a unit root. The test-statistic is compared with the critical values in the Dickey-Fuller table. The optimal number of lags is determined using the Schwarz's Bayesian information criterion (SBIC). The results of the unit root tests on the levels and the first differences of the variables are summarized in Table 2

Table 2: Augmented Dickey-Fuller Tests

	Level				First difference		
Variable	**Test statistics**	**5% critical value**	**Lag length**	**Presence of unit root**	**Test statistics**	**5% critical value**	**Lag length**
CF_TOT	-2.113	-2.910	1	Yes	-14.861	-2.910	0
CF_FDI	-1.398	-2.910	1	Yes	-13.486	-2.910	0
CF_PORT	-2.273	-2.910	1	Yes	-13.832	-2.910	0
CF_OTH	-2.195	-2.910	1	Yes	-13.284	-2.910	0
GDP	-2.771	-2.910	1	Yes	-5.774	-2.910	0
CA	-2.329	-2.913	4	Yes	-6.56	-2.912	3
WGDP	-2.063	-2.909	0	Yes	-4.623	-2.910	0
VIX	-2.031	-2.909	0	Yes	-8.997	-2.910	0
INTDIF	-2.114	-2.909	0	Yes	-6.514	-2.910	0
GLOLIQ	-1.417	-2.909	0	Yes	-5.617	-2.913	6
BAHTAPP	-5.195	-2.910	1	No	-7.032	-2.912	2
STOCKDIF	-6.130	-2.909	0	No	-12.286	-2.910	0

Based on the test results, all the variables can be treated as non-stationary and integrated of order I(1), except for exchange rate appreciation and stock return differential which appear to be stationary.

Cointegration tests

To test for cointegration of the *I*(1) variables, we employ the Johansen (1995) maximum likelihood method. Since, in order to employ the Johansen's method, all the included variables must be integrated of the same order, we have to leave out the exchange rate appreciation and stock return differential from the regression model. Moreover, when we investigate the correlations among the independent variables, it appears that the VIX index and the global liquidity measure are strongly and significantly correlated (correlation = -0.598, prob. = 0.001), thus we also drop the latter from the model to avoid multicolinearity problem.

Under this approach, all the variables in the model are viewed as endogenous, with each expressed as a linear function of lagged values of itself and all other variables. This set of equations can be represented in the form of a vector autoregressive equation, a VAR. Manipulation of this vector equation produces a vector error correction model (VECM) of which the parameters are then estimated simultaneously via maximum likelihood. This VECM takes into account the fact that there is an equilibrium or the long-run relationship between the non-stationary variables

The first step of the Johansen method is to determine the number of cointegrating vectors in this system, which is equal to the rank of the matrix of coefficients associated with the variables in the VECM equation. The test results for the case of total capital inflows are shown in Table 3 (Rank test results for the case of individual components of inflows are omitted here).

Table 3: Cointegration Rank Test

Vectors: CF_TOT, GDP, CA, WGDP, RISKAPP, INTDIF

Max rank	Eigenvalue	Trace Statistic	5% Critical Value	Prob.
r = 0*	0.458	129.817	95.754	0.000
r = 1*	0.421	93.092	69.819	0.000
r = 2*	0.405	60.294	47.856	0.002
r = 3	0.260	29.183	29.797	0.059
r = 4	0.122	11.109	15.495	0.205
r = 5	0.054	3.333	3.841	0.068

Note: * denotes rejection of the hypothesis at the 5% level

The rank test based on trace statistics indicates that 3 cointegrating equations at the 5% level for the case of total capital inflow. The test for each of the three components of capital flows consistently rejects the null hypothesis of no cointegration, but the results are omitted here to save space.

VECM Estimation.

We now estimate the parameters of multivariate cointegrating VECM under the Johansen (1995) procedure with the number of cointegrating equations suggested by the rank test above. The lag length of the variables is selected by SBIC. By normalizing the co-integrating vector with respect to the capital flow variable, the model estimation can be expressed in a single equation, which represents a long-run relationship between the capital flow variable and the other variables, as follows:

$$CF_t = \hat{\beta}_0 + \hat{\beta}_1 GDP_t + \hat{\beta}_2 CA_t + \hat{\beta}_3 WGDP_t + \hat{\beta}_4 VIX_t + \hat{\beta}_5 INTDIF_t \quad (3)$$

The short-run dynamics of the long-run equation above can be expressed in the form of error correction representation as:

$$\Delta CF_t = \hat{\lambda}_0 + \hat{\alpha}(ECM_{t-1}) + \sum_{i=1}^{p} \hat{\gamma}_{1i} \Delta CF_{t-1} + \sum_{i=1}^{p} \hat{\gamma}_{2i} \Delta GDP_{t-1} + \sum_{i=1}^{p} \hat{\gamma}_{3i} \Delta CA_{t-1} + \sum_{i=1}^{p} \hat{\gamma}_{4i} \Delta WGDP_{t-1} \quad (4)$$
$$+ \sum_{i=1}^{p} \hat{\gamma}_{5i} \Delta VIX_{t-1} + \sum_{i=1}^{p} \hat{\gamma}_{6i} \Delta INTDIF_{t-1}$$

where *ECM* represents the error correction term:

$$ECM_t = CF_t - \hat{\beta}_0 - \hat{\beta}_1 GDP_t - \hat{\beta}_2 CA_t - \hat{\beta}_3 WGDP_t - \hat{\beta}_4 VIX_t - \hat{\beta}_5 INTDIF_t \quad (5)$$

The short-run dynamics (equation 4) describe the way in which the system adjusts or corrects back to the long-run equilibrium, where the point at which $ECM_t = 0$ can be thought of as an equilibrium of the system. The coefficient on the ECM_{t-1} in equation 4, α, is the speed of adjustment. Table 4 presents the estimated coefficients of the long-run relationship between capital flows and the other variables as in equation 3, and the estimates for α in equation 4.

Discussion of results

Based on the estimated results for the whole sample period (Columns 1-4), domestic economic growth appears to be one of the important drivers of overall capital flows to Thailand. The results suggest that a 1 percentage point increase in Thai GDP growth leads to a 1.9% increase in FDI inflow and a 7.3% increase in other investment inflow. But it causes portfolio inflow to decrease by 0.9%. However, when we consider the results over the more recent period, that is, 2000 onwards (Column 7), portfolio inflow is also positively determined by growth in domestic GDP. Overall, the results strongly suggest procyclicality of capital flows to Thailand.

As expected, current account balance relative to GDP has a negative relationship with capital inflow. When the CA/GDP ratio is 1 percentage point lower, total capital inflow tends to increase by 4.9% (Column 1). This is consistent with the balance of payments concept for a relatively flexible exchange rate regime in which capital inflows are needed to finance current account deficits. Interestingly, however, for the latter half of the sample period, FDI inflow seems to be positively associated with current account surplus (Column 6). A plausible explanation is that strong current account performance coincides with robust economic growth

during this period, which in turn leads to expansion of foreign direct investments either in terms of new investments or increases in direct loans from parent to subsidiary companies.

The world real GDP growth also establishes interesting results. The impact of world economic growth on FDI is *positive* and significant both for the whole sample period (Column 2) and for the recent period. On the contrary, its effects on portfolio and other investment inflows are statistically significant only for the latter period and signify *negative* relations (Columns 7-8). In light of these results, FDI expansion to emerging markets appear to be driven by healthy economic growth of the countries of the parent companies, while lack of investment opportunities in mature economies due to their slow growth seems to be a stronger motivation for portfolio and other investment flows.[10]

Interest rate differential factor produces mixed results on different forms of inflows. The estimates suggest that an increase in real interest rate differential between domestic interest rate and the world interest rate induces portfolio investment inflow, but this is offset by its effect on FDI and other investment inflows in the opposite direction.

Worth highlighting is the importance of the measure of market view on risk as a determinant of capital inflows. Focusing on the latter period, this measure is significantly and negatively correlated with inflows across all types. A 10% decrease in the VIX index causes FDI, portfolio investment, and other investment inflows to rise by 3.9%, 3.2%, and 13.9%, respectively. Moreover, based on Granger causality tests (Table 5), while causality is not detected between most of the other potential determinants and capital flow variables, the test results support the causation from the VIX index to portfolio and other investment flows, albeit not to FDI flow. Similarly, when this measure is replaced by the global liquidity index, the main results remain unchanged, implying that global liquidity is another important capital flow determinant. Interestingly, when the VIX index and the global liquidity index are both present in the model, the global liquidity becomes insignificant, suggesting relative less relevance of the global liquidity index than the VIX.

As for the speed of adjustment, which is captured by the alpha coefficient, short-term inflows appear to have strong negative feedback in the short-run dynamic, possibly reflecting the volatile nature of this type of flows. On the other hand, the system of FDI inflows produces an alpha coefficient that is small (Column 2) or is not statistically different from zero (Column 6), which is consistent with the fact that FDI flows are generally regarded as a persistent type of flows that tend not to fluctuate in the short-run. All the above results stress the need to distinguish among different types of investment when analyzing capital flows as they are driven by different factors, possess different characteristics, and evolve differently through time.

[10] The results from this exercise in the case of FDI should be taken with caution. This is because other, more conventional, determinants of FDI are not included in this model. For example, according to the Eclectic (OLI) Paradigm by John Dunning, FDI is motivated by *ownership advantages* (firm-specific advantages), *location advantages* (country-specific advantages), and *internationalization advantages*. Absence of these factors as explanatory variables could be a reason for the low R^2 of the FDI regressions.

In sum, the surge of short-term capital flows to Thailand in the recent years has been both pulled by domestic economic performance and pushed by external factors, including global liquidity, investors' view on risk, and economic conditions of major economies, with the external factors appear to play relatively more important role. How development of capital flows has complicated the conduct of monetary and exchange rate policies will be discussed in the following section.

Table 4: Vector Error Correction Estimates

Dependent Variables: Log of capital inflow

	Whole Sample (1993Q4-2008Q3)				**2000Q1-2008Q3**			
	Total	**FDI**	**Portfolio**	**Other**	**Total**	**FDI**	**Portfolio**	**Other**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Real GDP growth (%)	**0.0760**	**0.0192**	**-0.0093**	**0.0735**	**0.0557**	0.0113	**0.0319**	0.0114
	[3.437]	[3.666]	[5.347]	[5.210]	[2.199]	[0.833]	[2.358]	[0.236]
Current account to GDP (%)	**-0.0493**	0.0010	**-0.0038**	**-0.0549**	-0.0201	**0.0623**	**-0.0503**	0.0392
	[2.371]	[0.220]	[2.419]	[3.977]	[1.585]	[9.394]	[7.509]	[1.616]
World real GDP growth (%)	**0.3947**	**0.0898**	0.0137	0.0634	**0.1899**	**0.2130**	**-0.0829**	**-0.7000**
	[3.892]	[3.751]	[1.716]	[0.971]	[4.193]	[9.029]	[3.621]	[7.938]
VIX (Log)	0.6114	**0.3655**	**-0.2724**	-0.2385	**-1.0679**	**-0.3938**	**-0.3195**	**-1.3866**
	[1.426]	[3.698]	[8.282]	[0.856]	[7.450]	[5.428]	[4.402]	[5.080]
Real interest rate differential	**-0.1987**	**-0.0955**	**0.0142**	-0.0612	-0.0433	**-0.0993**	**0.1234**	**-0.1493**
	[4.143]	[8.397]	[3.766]	[2.001]	[1.662]	[7.217]	[8.898]	[2.950]
Constant	5.6560	7.3526	9.3997	8.5499	11.0757	10.0543	9.4352	13.5376
Alpha	-0.1873	**-0.1915**	**-1.5624**	-0.5106	**-0.6814**	-0.0029	**-0.7858**	-0.1217
	[1.516]	[2.963]	[4.728]	[1.685]	[3.379]	[0.021]	[6.366]	[0.459]
Observations	60	60	60	60	35	35	35	35
Adjusted R^2	0.37	0.41	0.62	0.25	0.67	0.34	0.84	0.40

Note: Coefficients are obtained from normalizing the cointegrating vector with respect to the corresponding capital flow variable.
t-statistics in brackets. Significant coefficients at 5% level are highlighted in bold face.

Table 5: Granger Causality Tests

H_0: X Granger-causes Y		Y							
		CF_FDI	CF_PORT	CF_OTH	GDP	CA	WGDP	VIX	INTDIF
X	CF_FDI				0.0737	0.273	0.256	0.29215	1.368
					(0.929)	(0.762)	(0.775)	(0.7478)	(0.263)
	CF_PORT				0.508	1.321	2.474	0.7243	1.855
					(0.604)	(0.275)	(0.093)	(0.489)	(0.166)
	CF_OTH				**4.806**	**8.884**	0.169	0.2449	1.449
					(0.012)	(0.000)	(0.845)	(0.7836)	(0.244)
	GDP	1.132	0.511	1.807					
		(0.330)	(0.603)	(0.174)					
	CA	0.895	2.576	0.079					
		(0.415)	(0.085)	(0.924)					
	WGDP	1.278	0.404	0.179					
		(0.287)	(0.670)	(0.836)					
	VIX	0.426	**5.779**	**3.406**					
		(0.655)	(0.005)	(0.040)					
	INTDIF	2.688	**6.866**	2.529					
		(0.077)	(0.002)	(0.089)					

Note: F-statistics and probability (in parentheses) shown in the table. Significant at 5% level highlighted in bold face.

5. Capital flows and associated risks

This section assesses potential vulnerability of Thailand to risks associated with large capital flow movements in recent years including macroeconomic risks, financial stability risks, and risk of sudden capital reversal. Overall, large macroeconomic imbalances such as asset price bubbles and financial mismatches have not been observed in Thailand. It also appears that Thailand has established relatively strong resiliency to various types of risks potentially caused by capital movements.

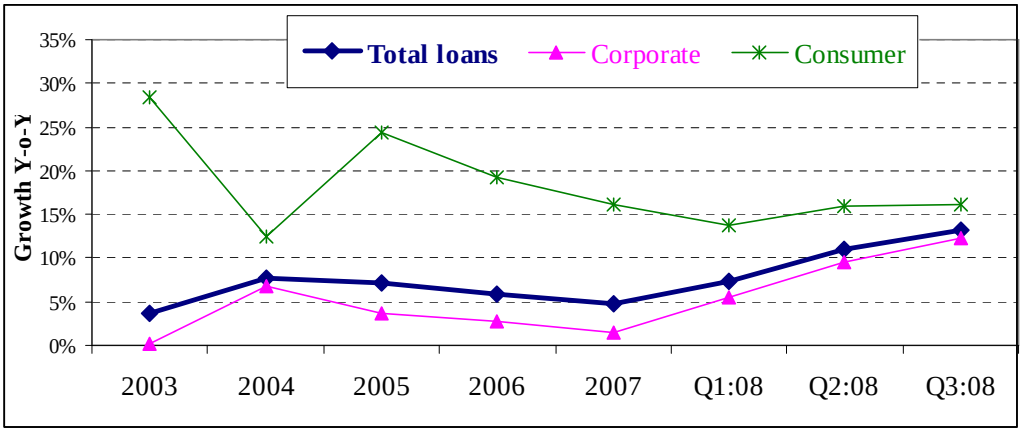
5.1 Macroeconomic risks

5.1.1 Domestic credit growth

The impact of capital inflows on credit growth would depend on the extent to which these inflows go into financing domestic credit, which in turn depends on the cost of funding of foreign relative to the domestic market. During the last five years, interest rates in Thailand have not been substantially higher than the world interest rates or interest rates in the region. This is partly due to ample liquidity in the banking sector as a result of softening demand for investment and capital market development. The cost of domestic funding is thus not too high to drive Thai businesses to seek foreign funding. As aforementioned, after the crisis Thai banks and business turned to favor domestic borrowing to limit their FX and external exposure. Therefore, capital inflows and domestic credit have not been closely correlated in Thailand in

recent years. Moreover, since the crisis Thai commercial banks have moved away from collateral-based lending to a risk-based approach as well as improved credit analysis, risk management and good corporate governance, all of which help harness excessive domestic credit growth and limiting credit risks in the banking system.

Figure 8: Loan growth and components of loans



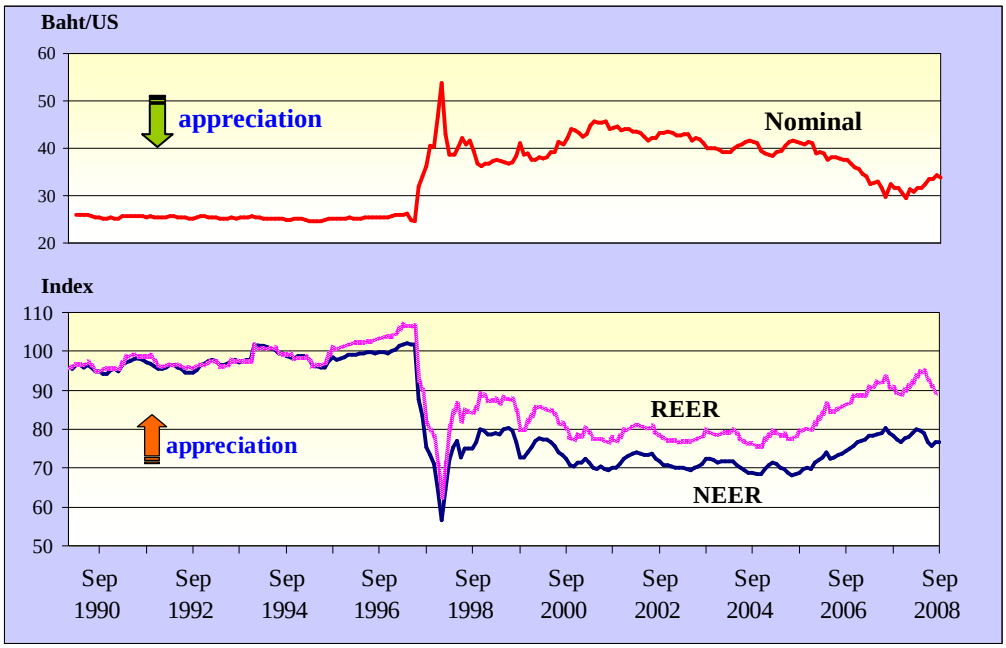
5.1.2 Exchange rate appreciation

As shown in Figure 9, the baht began to strengthen gradually starting from 2001. At the beginning, this was largely due to current account surplus which was to some extent offset by the capital account deficits as a result of debt repayments made both the public and the private sectors. After 2005, however, the upward pressure on the baht intensified owing to the surpluses in *both* of the current account and the capital account. On the current account, while exports continued to expand satisfactorily, imports growth declined sharply, following the abolishment of the government's oil price subsidy program as well as softened domestic demand due mainly to rising concerns over political uncertainties. Yet, most of the upward pressure on the baht in 2006 came from the capital account.[11] The sharp increase in balance of payments surpluses from $ 5.4 billion in 2005 to $12.7 billion in 2006, with most of the surpluses coming from the capital account, led to a rapid baht appreciation of more than 16% against the US dollar, making the baht one of the world's most rapidly appreciating currency in 2006. The real effective exchange rate (REER) also established the same rapid appreciating trend during this period, implying deteriorating export competitiveness which could damage

[11] It is worth nothing that the outflows in the bank sector mainly reflected the increase in bank's holding of foreign currency deposits or short term instruments to square its foreign exchange position as a result of being the counterparty to the BOT's swap agreements, which is one of the channels the BOT uses to sterilize its FX intervention. Therefore, the overall capital account position will underestimate the upward pressure on the baht in this case. If the outflows associated with the swap agreements between the BOT and the banking sector were taken out, the adjusted figure for the capital account in 2006 would be much higher, comparable to the figure in 2005.

the overall economic growth if left unchecked. The URR was thus carried out to suppress this threat to the economy.[12]

Figure 9: Nominal exchange rate, NEER, and REER

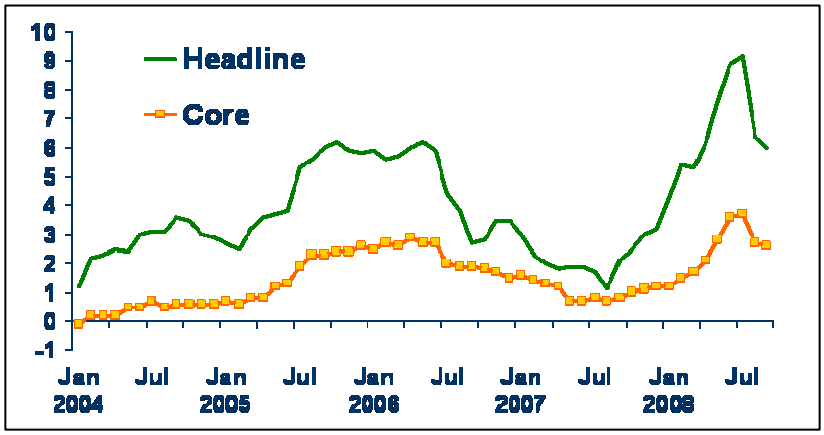


5.1.3 Inflation

Large capital inflows may create important pressure on domestic prices, but this has not been the case for Thailand. This is because soften domestic demand and exchange rate adjustments during the time of large inflows, together with a credible inflation-targeting monetary policy regime, have contributed to anchoring price stability in large part. As discussed in Section 3, the rate of inflation in the recent years has been driven largely by increases in the oil price that pass-through to production costs. Recently, however, since the oil price has continued to fall dramatically after peaking in July of 2008, the rate of inflation has also eased off.

[12] However, in the third quarter of 2007, the baht turned around and depreciated moderately due mainly to capital outflow by non-residents at the first signs of the U.S. subprime problem, before starting to appreciate again until the first quarter of 2008. The depreciation resumed in March 2008 and continued thereafter as the U.S. credit market turmoil turned out to be a worldwide financial crisis.

Figure 10: Headline and core inflation



5.1.4 Volatility of capital flows

As discussed in Section 3, capital inflows have picked up sharply during the last five years. FDI, which is often perceived as long-term, stable foreign investments, has become the most important source of foreign financing for Thailand (Table 6), while reliance on cross-border bank loans has declined substantially compared to the pre-crisis period.

Table 6: Private non-bank capital flows

(million USD)	Average 1993-1996	Average 2004-2007
Non-resident net flows (Inflow)	**7,549**	**11,195**
Foreign direct investment	1,833	7,235
Portfolio investment	3,224	2,706
Other investments	2,492	1,253
Resident net flows (Outflow)	**-636**	**-4,861**
Thai direct investment	-592	-557
Portfolio investment	-6	-3,073
Other investments	-38	-1,232

This should not be a cause for complacency, however. Although the country may have less exposure to a sudden stop or reversal of short-term foreign borrowings (more details below), other forms of risks may arise as a result of increasing financial integration. First, portfolio investments, another type of short-term capital flows, have been even more volatile during the recent years (Table 7). Increases in portfolio investment flows likely reflect the movement of funds away from developed countries to seek higher potential yields in emerging markets including Thailand to speculate in the local equity and bond markets as well as on the local currency. Our empirical investigation also finds that supportive global conditions such as excess liquidity, economic growth slowdown in the U.S. economy, and investors' view on risk are also responsible for the recent surge in short-term capital inflows. Since these investments have no long-term commitment, they are ready to flow out anytime when the opportunity for making profits or global liquidity begins to dry up and investors perceive higher risk. Figure 11

shows that foreign participation, measured by the buy-sell volume, in the Stock Exchange of Thailand (SET) has increased substantially from 2003-2007.

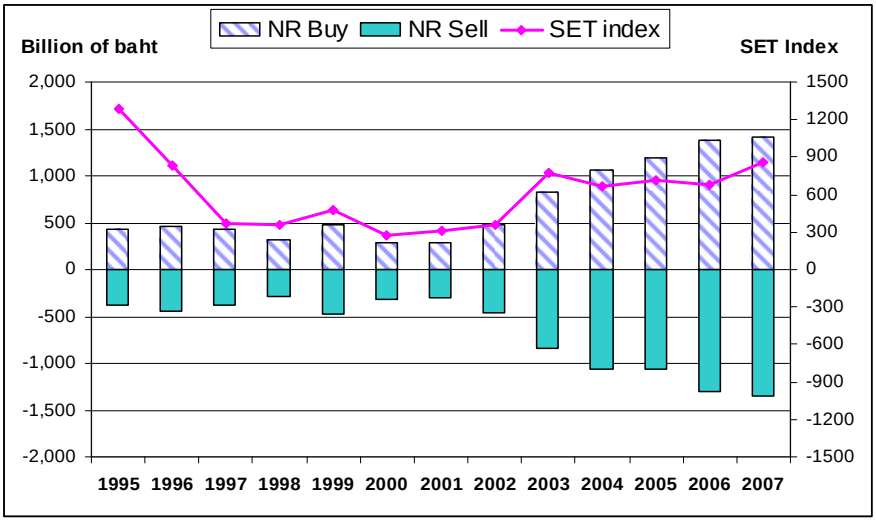
Second, while somewhat more stable, the volatility of FDI flows has also increased. This could reflect large but sporadic flows of FDI in terms of equity investment, direct loans, and recapitalization between parent and subsidiary companies in a more recent period. Third, other forms of long-term capital inflows may no longer be considered stable balance of payments items. In this changing world, trading of innovative financial instruments that are derived upon long-term contracts effectively add volatility to the overall capital flows. For example, creditors or debtors can change their FX hedging ratio on long-term loans depending on the direction of exchange rate changes. Furthermore, long-term liability holders themselves rarely remain passive when balance of payments problems arise. They can quickly build up hedges which in effect result in immediate cross-border capital movements in the banking sector as well as pressure on the local currency. (Further discussion on hedging-related flows is in Section 5).

Table 7: Volatility of capital flows

Volatility of non-resident flows		1993-1999	2000-2007
Direct investment	Inward	0.46	2.12
	Outward	0.50	3.50
	Net	0.63	1.93
Portfolio investment	Inward	0.73	6.44
	Outward	0.77	7.24
	Net	1.37	1.42
Other investment	Inward	0.25	0.67
	Outward	0.19	0.72
	Net	2.91	8.26

Note: Volatility is measured by coefficient of variation of monthly capital flow data. Other investment includes bank loans, trade credits, currency and deposits, and others.

Figure 11: Foreign participation in the Stock Exchange of Thailand (SET)



5.2 Financial stability risks

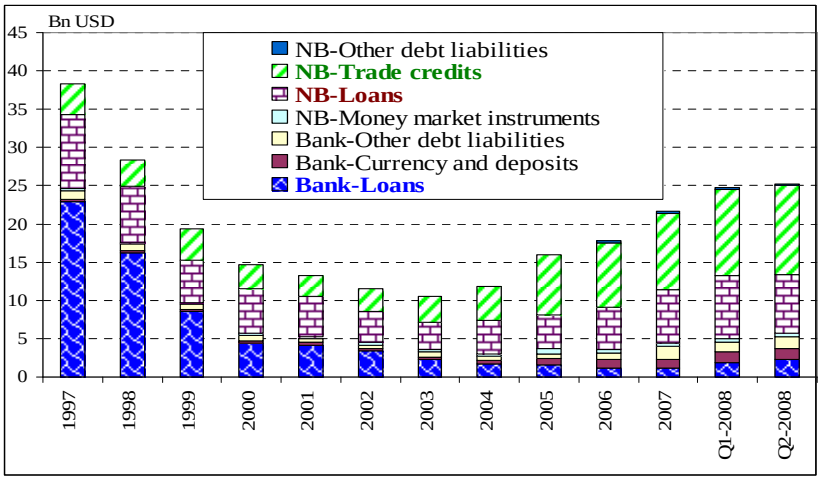
5.2.1 Maturity and currency mismatches

The substantial reduction in inflows in terms of banks loans is reflected in the external debt profile of Thailand at end-2007 compared to end-1996. Not only that the overall external debts declined markedly from 60% of GDP at end 2006 to stand at 24% of GDP at end-2007 (Table 8), but also the proportion of short-term to the overall external debt outstanding also decreased especially in the banking sector. Moreover, increasing proportion of the new foreign borrowings is denominated in Thai baht which curtails currency mismatches in Thailand's asset-liability position. (Baht-denominated external debt accounted for 15% of total external debt in the public sector and 27% in the private sector at end-2008Q1.) These could imply that the country's vulnerability to currency and maturity mismatches of the 1997 crisis nature has been considerably reduced. Moreover, the composition of short-term external debt has also increasingly shifted to trade credits (Figure 12)—reflecting increasing imports—which are considered relatively less sensitive to a shift in investor confidence at times of a crisis.

Table 8: External Debt

	End 1996			End 2007		
	Total amount (mil. USD)	% of Gross external debt	% GDP	Total amount (mil. USD)	% of Gross external debt	*% GDP*
Gross external debt	**108,742**	**100.0%**	**59.8%**	**61,738**	**100.0%**	**23.6%**
Short-term	47,743	43.9%	26.2%	21,641	35.1%	8.3%
Official	34	0.0%	0.0%	20	0.0%	0.0%
Bank	28,858	26.5%	15.9%	3,960	6.4%	1.5%
Non-bank	18,851	17.3%	10.4%	17,661	28.6%	6.7%
Long-term	60,999	56.1%	33.5%	40,097	64.9%	15.3%
Official	5,118	4.7%	2.8%	2,644	4.3%	1.0%
Bank	13,011	12.0%	7.2%	2,401	3.9%	0.9%
Non-bank	42,870	39.4%	23.6%	35,052	56.8%	13.4%

Figure 12: Composition of Private Short-term External Debt: By Instrument



5.2.2 Asset prices

Given the relatively large share of foreign ownership in the Stock Exchange of Thailand (SET) compared to other domestic asset markets, inflows and net buy/sell position of foreign investors over a short time span have been very influential to the movement of equity prices, both through direct impact and through signaling effects as many retail domestic investors tend to take cue from foreign investors' decisions. As of the end of 2007, foreign ownership share of total market capitalization in the SET was around 35%. The share of transactions attributed to foreign investors is similarly high. In fact, overall the past years, the investment decisions by foreign investors—especially those in response to the URR announcements in Thailand and the concerns over the subprime crisis in the global market—have been particularly important in explaining the volatility of equity prices in Thailand.

Figure 15: Portfolio equity inflow and stock performance

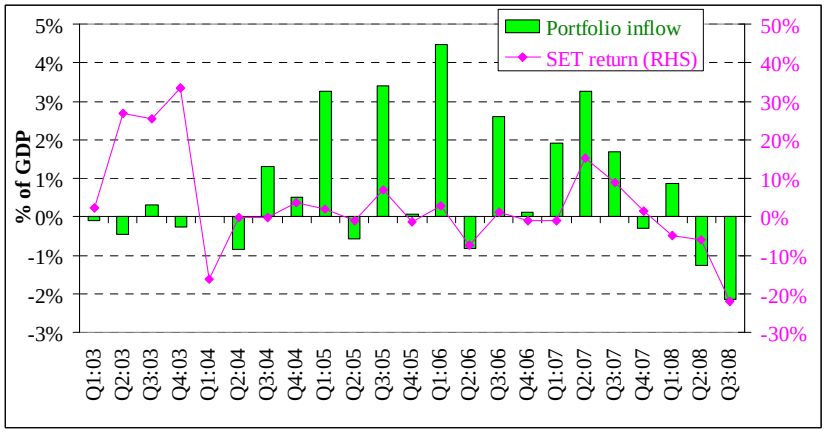
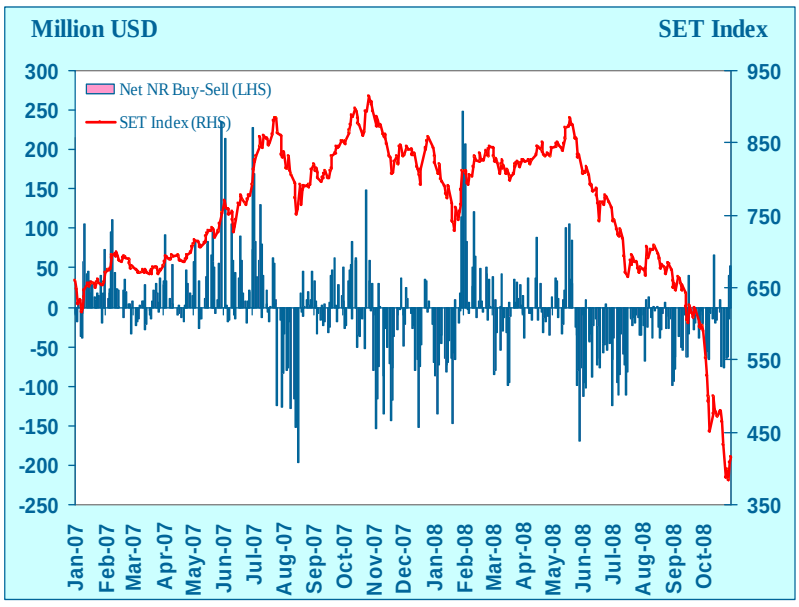


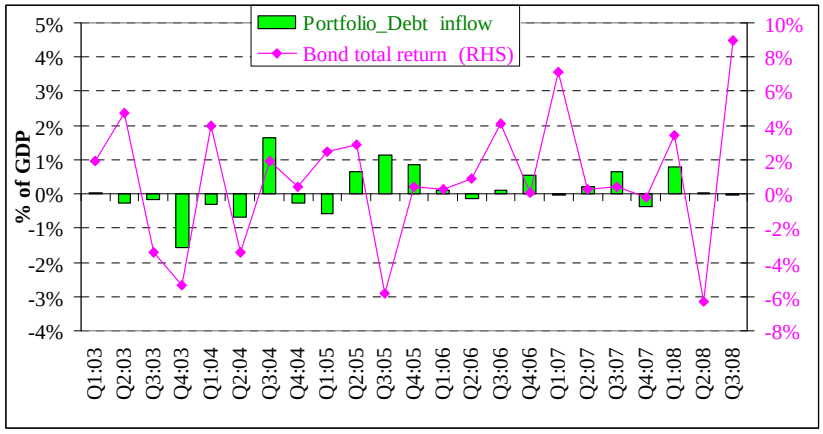
Figure 16: Net foreign buy-sell and the SET index



As for the bond market, since the share of foreign holdings of Thailand's public bonds are relatively small, foreign investors' influence on the price of bond has not been as significant compared to their role in the stock market. Moreover, the share of foreign ownership has continued

to decline since the implementation of the capital control in December 2006 despite the introduction of a full hedge requirement as an alternative to the URR.

Figure 17: Portfolio debt inflow and bond performance

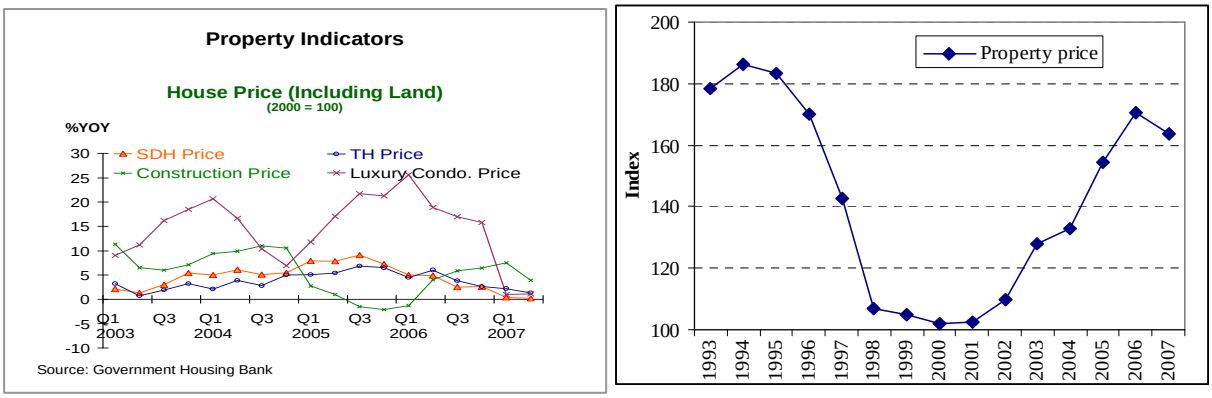


The property prices in Thailand have risen steadily since 2002 in line with the pick up of activities in the property sector. However, this is not necessarily indicative of house price bubbles since most part of the rise in prices was accounted by the increase in costs of construction materials. Moreover, as the experience from the last crisis remains vivid, all the stakeholders are more cautious about their strategies and decisions regarding housing businesses: banks become more prudent in making mortgage and land development loans; land developers become aware that good reputation is the most important selling factor in a competitive housing market; customers become more selective and tend to buy houses that are built before sale. Foreign investors, however, do play significant role in relatively rapid price increases of luxury condominium in the central business district as well as the housing projects in many popular report towns such as Phuket and Samui.[13] But the overall pace of price increases has been moderate. A recent study also finds that there is no obvious housing price bubble in most East Asian countries including Thailand.[14] However, the Thai authorities continue to keep close monitoring on this sector as imbalances.

[13] Foreigners are not allowed to purchase land, except when they invest at least 40 million baht in a Board of Investment (BOI)-approved project. The BOT also prohibits mortgage lending to foreigners. They are, however, allowed to buy condominium units provided that they do not make up more than 40 percent of the condominium's unit-owners. In addition, under the law on property leasing, foreigners doing business in Thailand were allowed to lease real property primarily for commercial or industrial purposes as well as to lease land for at least 30 years but not exceeding 50 years, renewable for another 50 years.

[14] Glindro, et al (2008).

Figure 18: Property price indicators

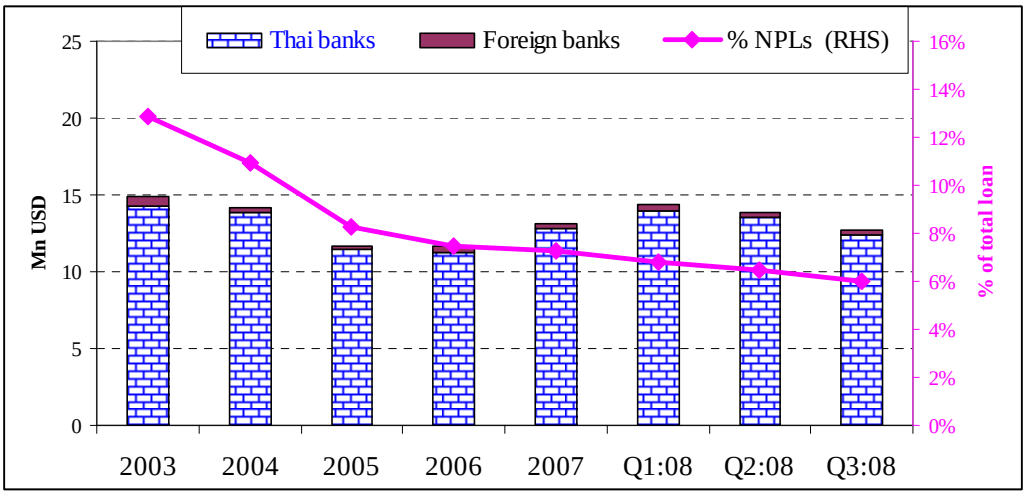


Note: SDH Price = Single, detached house price; TH Price = Townhouse price

5.2.3 Quality of loans

A widely-used indicator of loan quality is the ratio of non-performing loan (NPL) to total loans in the system. After the crisis, NPLs peaked at $73.7 billion or 48 % of total loans in May 1999 as a result of severe economic contraction, while also reflecting low quality of the loans made during the pre-crisis period largely due to easy bank access to relatively cheap foreign loans through BIBFs. Although several measures had been implemented to resolve the NPL problem, the NPL was still considered high in the post-crisis period. As a result, the Thai Asset Management Corporation (TAMC) was established with the objectives to resolve the NPL problem in financial institutions by transferring part of NPLs from state-owned financial institutions and asset management companies. Since then, the financial sector has continued to strengthen its risk management and loan provisioning framework. Consequently, NPLs decline substantially to stand at $12.7 billion or equivalent to 6 % of total loans as of the third quarter of 2008.

Figure 19: Total loans and NPLs



5.3 Risk of a sudden reversal

The risk of sudden reversal of financial flows can be measured by the size of mobile capital relative international foreign reserve. This "vulnerability indicators" is calculated as the sum of short-term foreign currency debts and foreign holdings of local equities and debt securities, divided by the existing stock of foreign exchange reserves (Sim, 2008).

According to an analysis by Sim (2008), Thailand's vulnerability indicator appears considerably low (54% of international foreign reserves) compared to its peer group (for example, Indonesia 230%, Korea 208%). This indicates Thailand's relatively strong resilience to the risk of capital fight.

Table 9: Vulnerability indicator

	Short-Term Debt	NR Holding of stocks	NR Holding of Bonds	External Mobile Capital	Total international Reserve	Vulnerability index
Indonesia	39,054	79,000	13,300	**131,354**	**57,108**	**230**
Korea	260,446	194,000	49,900	**504,346**	**242,215**	**208**
Philippines	17,497	18,500	0	**35,997**	**37,093**	**97**
Taiwan	85,223	162,000	1,480	**248,703**	**282,087**	**88**
Malaysia	25,427	39,000	32,100	**96,527**	**136,453**	**71**
India	36,617	140,000	5,000	**181,617**	**307,219**	**59**
Thailand	26,363	35,000	1,500	**62,863**	**117,050**	**54**
Vietnam	2,000	6,000		**8,000**	**23,872**	**34**
China	269,572	2,000		**289,572**	**1,808,828**	**16**
Singapore				**n.a.**	**252,180**	**n.a.**
Hong kong				**n.a.**	**158,100**	**n.a.**

Source: CitiBank Research

6. Capital flows and monetary policy

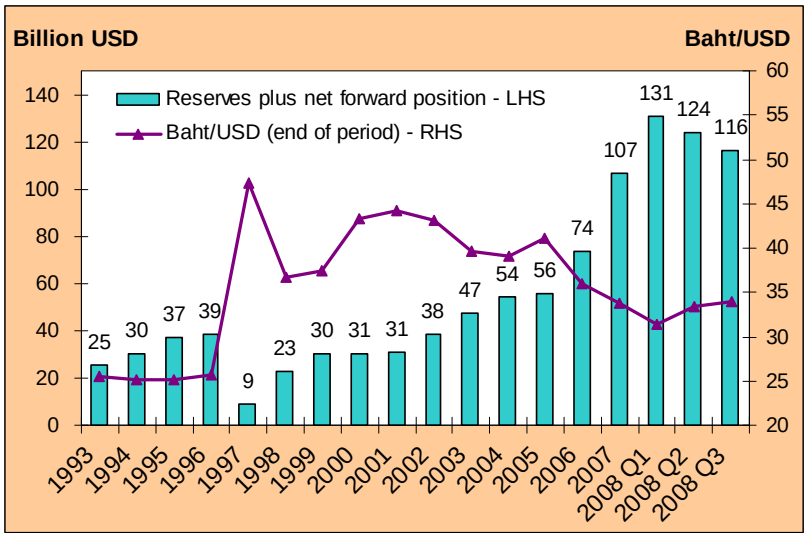
As it is well-known by the theory of "trilemma," under floating exchange rate regime capital mobility complicates the conduct of monetary policies by affecting monetary variables such as exchange rate and domestic liquidity and by creating a tradeoff between internal and external imbalances. The fact that capital flows these days are so large, so rapid, and so volatile, tends to add to the perception of policy complexity. In the wake of the crisis in 1997, policymakers have grown wary of international capital flows and tend to take preemptive measures to correct the imbalances brought about by large inflows to reduce the possibility of a sudden reversal. Available policy tools to manage capital flows include greater exchange rate flexibility, FX intervention, interest rate policy, fiscal policy, capital outflow relaxation, and capital controls.

In the case of Thailand, under the managed float regime, the BOT has largely allowed the overall direction of the baht to adjust to changes flexibly to changes in market

fundamentals. This helps facilitate macroeconomic real adjustment as well as promote microeconomic efficiency and risk management. Over the recent years, however, the BOT had to implement a series of measures to slowdown the pace of exchange rate appreciation since massive capital inflows, especially those of short-term and speculative nature, led the baht to appreciate more rapidly than economic fundamentals would support. Because the export sector has been the major economic growth engine for Thailand (accounting for 56% of GDP in 2006) especially at the times when domestic demand were weakened due to political uncertainties, prompt policy reactions to the surge in capital inflows were warranted before it would lead to a significant slowdown in the overall economic growth through excessive exchange rate appreciation. The measures employed by the BOT included FX interventions, capital outflow liberalization, anti-speculative measures, and capital controls. (As an inflating targeting central bank, the BOT has chose to reserve interest rate policy for dealing primarily with inflation and domestic economic growth, not to use it as a main policy tool to manage capital flows.)

In response to the strong and persistent baht appreciation in 2006, the BOT stepped up the conduct of FX purchase operations which resulted in a marked increase of net reserves (gross reverses plus net forward positions) of roughly USD41 billion from the end of 2005 through the end of 2007, or equivalent to 35% average annual growth. This rapid accumulation of reserves, though helps strengthen the economy's resiliency to external shocks, does complicate the operation of monetary policy.[15]

Figure 20: Thailand's Foreign Exchange Reserves, 1993-2008Q3



[15] Coinciding with the recent baht depreciation as a result of the global financial crisis, foreign exchange reserves has been depleting since the second quarter of 2008 after peaking at $131 billion in March. Thanks to the earlier accumulation of reserves, the high level of foreign exchange reserves provides sufficient cushion for a potential sudden stop or reversal caused by the global financial meltdown.

As mentioned earlier, FX interventions to reduce the speed of baht appreciation resulted in the rapid accumulation of FX reserves. It also simultaneously caused a rise in domestic liquidity which poses an additional policy challenge in terms of liquidity management. The BOT normally sterilizes the monetary impact of intervention in order to avoid inflationary effects as well as to maintain the policy rate at the level set by the monetary policy committee. However, in theory, sterilization can entail substantial costs. First, sterilization that is designed to prevent a decline in domestic interest rates at the same time maintains the incentives for continuing capital inflows, thus perpetuating the problem. Moreover, sterilization often implies quasi-fiscal costs because it generally involves the central bank exchanging high-yield domestic assets for low-yield reserves. The BOT has mainly sought to sterilize excess liquidity through issuing BOT bonds, for its relative efficiency in absorbing liquidity on a large scale and with longer maturities. However, the direct cost arising from interest rate differentials on assets and liability of the BOT's balance sheet has not been a big concern so far, since Thai domestic interest rates are on average comparable to foreign interest rates. But indirect costs, including the cost arising from FX revaluation loss on the BOT's balance sheet and the impact of large bond issuances on the yield curve, would prove continuation of FX interventions to be too costly to carry out if capital inflows were to persist.

The BOT also adopted a series of measures aimed at discouraging short-term speculative capital inflows such as posing quantitative restrictions on short-term borrowing (maturity not over 3 months) of Thai baht from non-residents, limiting the daily outstanding balance of non-resident baht account (NRBA) to the maximum amount of 300 million baht per non-resident. On December 4, 2006, as the baht continued to appreciate rapidly, the BOT required non-residents to hold securities for longer than 3 months and allowed domestic financial institutions to borrow baht from non-residents without underlying trades or investments in Thailand only for a maturity of longer than 6 months.

As described in Section 2, regulatory restrictions on outward investments by Thai residents have been relaxed substantially, which could potentially help mitigate the upward pressure on the baht—a side benefit in addition to benefits of better investment diversification, more balanced capital flows, and greater investment opportunities for Thai investors.

Nevertheless, these measures combined with increased FX interventions proved to have limited effectiveness partly because foreign investors can find other alternative instruments to speculate on the baht. The baht continued to be highly volatile and strengthened with an accelerating pace. On December 18, 2006, the BOT announced the implementation of the 30% URR measure on short-term capital inflows which required them to be deposited with the central bank for one year with no interest. Capital flows with an amount below USD 20,000 and those related to trade in goods and services, foreign direct investments, and foreign investments in the stock market were exempted from such measure. To alleviate the burden of the URR measure on the business sector, the BOT has gradually relaxed the measure over the subsequent period by providing a full hedging requirement as an alternative to the URR for selected types of inflows and exempting loans with an amount not exceeding USD 1 million and with maturity over one year from both the URR and the full hedge requirement. Businesses

having a natural hedge may be considered for an exemption from both measures on a case-by-case basis.

The URR measure proved to break the momentum of the baht appreciation and was crucial in ensuring the baht stability. However, aware of the adverse effects on the capital control on domestic market development, investor confidence, as well as its ineffectiveness in the long run, the BOT intended to use this measure only temporarily. After careful consideration of changes in the environment and factors on February 29, 2008, the BOT announced the lifting of the URR measure. To facilitate the adjustment process after the lifting of the URR, the Thai authorities continued to relax capital outflow regulations as well as supported the SME businesses by announcing a soft loan program for SMEs through financial institutions for a period of three years and a facility to purchase foreign currency that SMEs sold forward to financial institutions for a period of 6 months.

7. Capital flows and financial stability

During the 1997 crisis, Thailand had experienced sudden and massive reversal of foreign capital mostly in the form of debt callback and sudden stop of short-term loans in the banking sector (mainly through BIBFs) and withdrawal of portfolio investments in the capital markets. The occurrence and consequences of the crisis have shown that international capital flows, when they support the buildup of imbalances and disequilibrium in economic and financial sectors, can greatly destabilize the economy once growing financial weaknesses cause external as well as domestic investors to reassess their willingness to finance a country. This section focuses on the evolution of capital flows in the banking sector and policy implemented to deal with potential risks to financial stability.

7.1 Capital flows in banking sector in the last five years

Capital flows in the banking sector can be less comprehensible than capital flows in the other sectors because they sometimes involve unobvious capital movements. They reflect the change in the external position on banks' balance sheet: inflow (outflow) to the banking sector is captured by a decrease (increase) in banks' foreign asset or an increase (decrease) in banks' foreign liability. We divide our analysis of bank flows according to their maturity, i.e. short-term and long-term flows.

Figure 21: Capital flows in banking sector

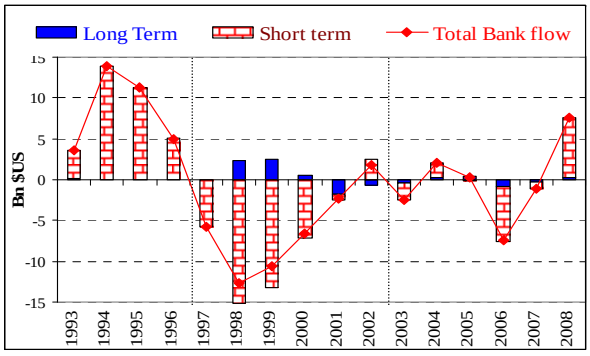
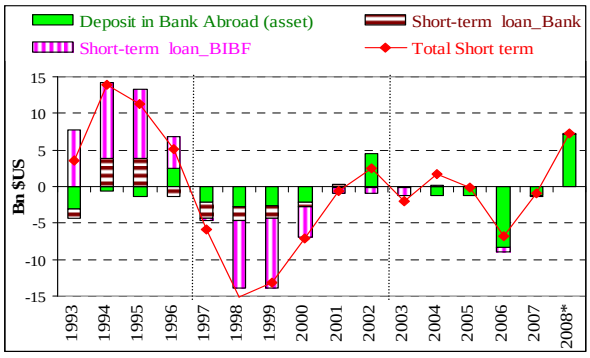


Figure 22: Composition of short term banking flow



Long-term bank flows

As illustrated in Figure 21, long-term capital flows have played relatively insignificant role in the Thai banking sector throughout the financial history of Thailand. The jump during 1998-99 was due to FDI into the banking sector in the form of recapitalization and mergers and acquisitions of several domestic banks in the aftermath of the crisis. The 49-percent foreign ownership limit was relaxed for banks and domestic banks were encouraged to find foreign strategic partners to help improve productivity, capital base, and overall financial strength. As a result, four domestic banks have become majority-owned by foreign banks.[16] Additional four Thai banks were merged with foreign partners during 2006-07 to strengthen their strategic and financial positions in the domestic market.[17]

Short-term bank flows

The overall movement of bank flows has been dominated almost exclusively by the short-term component. In the pre-crisis period, most of the short-term bank flows were channeled through the BIBFs and commercial banks. These foreign-currency-denominated funds, by way of rolling over the short-term loans, were then used to finance long-term domestic projects that yielded long-term baht returns. The implied stability of the exchange rate promised by the peg exchange rate regime made FX hedging deem unnecessary. This created both currency and maturity mismatches that on both the banks' and Thai corporations' balance sheets. As the imbalances became more obvious, foreign investors started to doubt the sustainability of the fixed exchange rate and the ability of Thai borrowers to continue servicing external debts. Short-term bank flows stopped to flow in and existing foreign loans were called back. Unlike portfolio flows, for debt flows there was no price mechanism—i.e. that prices drop as large sum of money exits the security exchanges and hence make the securities attractive as expected returns become higher–that would otherwise have counteracted the disincentive of remaining in the country.

The expensive lessons learned from the crisis have led Thai banks and businesses to be wary of relying heavily on external debt. Most of them have switched to domestic sources for financing. Foreign creditors have also become more prudent in making loans. These resulted in substantially reduced inflows in form of foreign debt. Moreover, at the beginning of 2004, the BOT developed the Financial Sector Master Plan (FSMP) in order to carry out a major reform of the Thai financial system. The FSMP eliminated the tax distortion and regulatory arbitrage problems of the BIBFs, which partly contributed to the diminishing role of short-term external loans in the bank flow in Thailand.

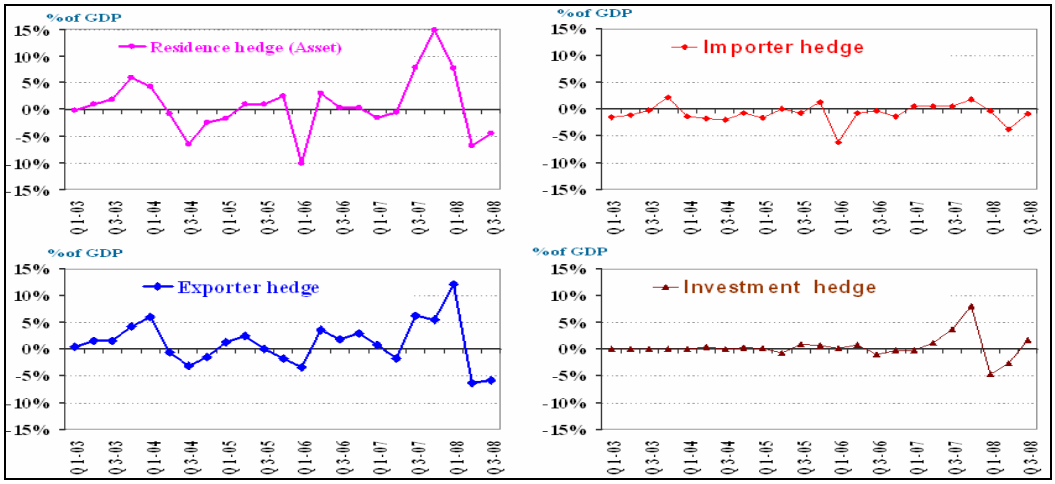
[16] These included Ratanasin Bank acquired by United Overseas Bank (Singapore), Nakonthon Bank by Standard Chartered Bank (United Kingdom), Bank of Asia by ABN Amro (Netherlands), and Thai-Danu Bank by DBS Bank (Singapore).

[17] They were Bank of Ayudhaya partnered with GE Capital International Holdings Corporation (United Sates), Bank Thai with Newbridge (Netherlands), Thai Military Bank with ING Bank (United States), and Thanachart Bank with Bank of Novascotia (Netherlands).

Residents hedging

During the last five years, deposits in bank abroad (Nostro accounts) by Thai banks have become the most important component of Thai bank flow. An increase (decrease) in banks' deposit in Nostro accounts are recorded as bank outflow (inflow) from the perspective of Thailand. A Thai domestic bank increases or decreases its deposits abroad mainly to manage their FX position, inclusive of all foreign currencies, to remain below 20% of the bank' capital to comply with the prudential regulation under the BOT's risk-based supervisory framework. Under this FX position limit, if customers buy or sell FX derivatives with a bank, the bank almost always squares its net FX position by increasing or decreasing its deposit abroad at the end of the day regardless of the maturity of the derivatives.[18] As a result, capital flows occur almost immediately in the banking sector even though there has not been any delivery of the foreign exchange between banks and customers.

Figure 23: Residence hedge-related bank flows (% of GDP)



A sharp increase in demand of Thai exporters for FX hedging, by selling outright forwards on their future export receipts, was one of the factors driving capital inflows to Thailand in the past years through the banking sector, from the fact that Thai banks have to decrease their foreign asset holdings abroad to square their net FX positions in response to increased FX forward obligations. However, beginning from the second half of 2007, after further regulatory relaxation on outward investments, investment hedging has been another important component in Thai bank flow. Nonetheless, investment hedges does not have significant effect on the exchange rate since most of the FX hedges by institutional investors are in the form of swap contracts which involve buy or sell FX today with an agreement to reverse the transaction with an equal amount on a specified future date, hence leaving the

[18] Even though the bank's net FX position is much below 20% of capital, the bank usually squares its additional FX exposure imposed by FX derivative transactions with exporters/importers. This is because what banks expect to gain from agreeing to be the counterparty of FX transactions is mainly from transaction fees and not so much from FX speculation be leaving their FX positions open.

bank's net FX position unaffected. Since banks do not need to adjust their FX position in this case, this does not generate either capital inflow of outflow via banks.

7.2 Central bank policy related to capital flows and financial stability in recent years

A root cause of the banking crisis was also poor corporate governance and risk management in financial institutions. Lending practices with collateral-based lending did not involve proper credit assessment. Collateral based lending was also highly risky given the asset price bubble leading up to the crisis, particularly in property markets. Moreover, financial liberalization allowed domestic corporations greater access to external funding through banking sector, particularly in form of shorter-term loans without exchange rate hedge. The crisis provided important lessons which led to a concerted effort on the part of banks and regulators to improve corporate governance and risk management. The BOT implemented two major policy approaches to improve financial stability: the Financial Sector Master Plan (FSMP) and the risk- based supervision with international standards.

1) Risk- Based Supervision

Thailand's supervisory system is moving towards risk-based supervision which covers three key areas: capital adequacy, risk management and good corporate governance**.** The BOT places great emphasis on the management's roles and responsibilities in providing a robust risk management system that corresponds to their business operations and strategies and is in line with international standards. Proper risk management must include using the appropriate tools to manage five key risks, namely strategic risk, credit risk, market risk, liquidity risk and operational risk.

At present, the BOT is in the course of moving from the capital adequacy framework under Basel I to the New Basel Capital Accord (Basel II), applicable to all financial institutions in 2008. The new guideline for regulatory capital will not only cover all the major risks faced by financial institutions, but will also be more responsive to the increasing risks of financial institutions and the more complex financial market conditions.

2) Financial Sector Master Plan (FSMP)

In order to further address structural weaknesses and develop a stable and efficient financial sector, the BOT developed the Financial Sector Master Plan (FSMP) as the medium-term (5-10 years) development plan for Thai financial sector. The master plan seeks to ensure a financial landscape which is sound and free from such structural weakness, while providing a transition path to strengthen financial institutions, via merger and upgrading or orderly exit. The key measures to increase efficiency in the financial sector, by reducing the number of small players and eliminating regulatory arbitrage, are the licensing rationalization scheme and the "one presence" policy.[19] Under the new licensing scheme, by reducing the number of

[19] Licensing rationalization created a new deposit-taking regime occupied by only four types of financial institutions, namely commercial banks, retail banks, foreign bank branches and subsidiaries of foreign banks.

licenses and allowing commercial banks to better take advantage of the economy of scope and scale, authorities have removed the overlapping scopes of business that posed regulatory arbitrage problems among financial institutions. This effort is reinforced by the "one presence" policy which requires financial conglomerates with more than one type of deposit-taking financial institution within their group to merge their holdings, further reducing regulatory arbitrage in the system.

The FSMP began to be implemented at the beginning of 2004. Following the merging and upgrading of the finance companies and credit fonciers to commercial or retail bank status, discontinuation of IBFs and consolidation under the "one presence" policy, the number of financial institutions under the supervision of the BOT is expected to decline from 83 to about 37.

3) Deposit Insurance System

The Deposit Insurance Act has been approved the Nation Legislation on 19 December 2007 and announced in the Government Gazette on February 13, 2008. This move will pave the way for the removal of a blanket deposit guarantee, a legacy of the crisis. It is aimed to address moral hazard and promote risk management in the financial sector. The Act allows for a one million baht per person per bank guarantee limit. The guarantee is expected to cover 98% of depositors. However, the implementation of the Act has been delayed due to the global financial crisis, as the Thai authorities deem the postponement necessary to safeguard confidence in the Thai banking sector amid the global turmoil.

8. Conclusion and policy recommendations

Financial liberalization and a consequent growing integration into the global markets have spurred the growth as well as volatility of gross capital flows in Thailand during the past two decades. Thailand experienced strong increases in gross inflows in the early 1990s and in mid-2000s. What is special about the more recent wave of inflows to Thailand, compared to the previous one, is that it was taking place against the background of much stronger external currency account positions and a substantial acceleration in foreign exchange reserves accumulation. In addition, the composition of the capital inflows has also altered—from being dominated by bank loans to having FDI as a major component, while portfolio inflows also increased considerably. Although Thailand's vulnerability to the old types of capital flow-related risks has been much reduced, this should not be a cause for complacency to the Thai authorities since new form of risks may be underway, especially those stemming from the (mis)use of increasingly more complex financial instruments.

Based on our empirical investigation, the pick-up in capital flows to Thailand in 2005-2006 reflected, for the most part, the country's improved macroeconomic fundamentals as well as external investment environment, particularly weak outlook on economic growth of major

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Licenses for International Banking Facilities (IBFs) have been discontinued to eliminate tax distortion. Qualified finance companies, credit fonciers, and stand-alone IBFs are allowed to be upgraded to either commercial or retail banks.

economies, ample global liquidity and international investors' perception of market risk. The facts that 1) capital flows are procyclical and 2) the external determinants are beyond the control of domestic policy, forewarn policy makers of plausible channels of risks through imbalances and external financial linkages. This may call for counter-cyclical policy to correct any economic imbalance before it evolves into a catastrophe, as well as proactive safeguards against the volatility and the risk of a sudden reversal that could arise from external shocks.

In Thailand, the risk to financial stability in terms of overheating, asset price bubbles, and rapid credit growth were limited, thanks to developments in the domestic capital markets and improvement in prudential measures. Albeit, there were two key macroeconomic challenges faced by the Thai policymakers in the recent years—namely, the rapid real exchange rate appreciation and domestic liquidity management. Sterilized FX interventions and temporary capital controls were used to manage the excessive capital inflows and their impact. However, these policy measures do not come without a cost and could be ineffective, especially when the inflows persist for a long time.

A long-run approach to managing capital flows would be to create economic and investment environment conducive to more long-term and productive types of capital flows and to increase the economy's capacity to absorb foreign investments through improvements in market infrastructure, structural reforms, labor productivity, and product competitiveness. Other policy tools such as financial supervision and regulation to reduce the risk inherent with large capital flows—including their role in accentuate business cycles, their destabilizing impact on financial prices, and the upshot of a sudden stop—should also be strengthened to prevent a potential crisis caused by a shift in capital flows. The fact that, so far, Thailand has proved quite resilient to the current global financial crisis that has greatly decelerated capital inflows into the country, should not be a cause for complacency. As long as the country is still part of this financially integrated world, consistent and properly-designed policies to manage capital flows aimed at promoting long-term stability and economic growth are a must, while potential vulnerabilities need to be closely monitored.

Regarding capital outflows, remaining regulations on capital outflows by residents should be relaxed gradually to bring more balance to the net flows and to encourage international risk sharing. The *gradual* approach towards outflow liberalization should be emphasized, especially in light of the current global crisis originated in the major economies. Spillovers from the turmoil in U.S. and European credit markets have so far been limited in Thailand due to low exposure of domestic investors to these markets, thanks partly to some limitations on residents' outward investment and the conservative investment strategy and risk management of Thai banks and institutional investors. Going forward, a stepped liberalization towards a free capital flow regime should be taken cautiously, and concurrently with continued improvement in financial literacy and risk management in all economic sectors including non-financial businesses and households.

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