

Financial Liberalization and the Capital Account

Thailand, 1988–97

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Thailand's economic crisis in 1997 was fundamentally one of private sector debt, rooted in private behavior that affected the magnitude and composition of investment and how it was financed. Thailand's crisis provides further evidence that financial liberalization must be carefully managed because, by increasing competition, it lowers the franchise value of existing financial institutions and creates incentives for unsound banking practices.

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Summary findings

Alba, Hernandez, and Klingebiel examine Thailand's macroeconomy and microeconomy for the period 1988–97 to assess the extent to which the country's mix of macroeconomic and financial sector policies contributed to its economic crisis in 1997.

They conclude that the crisis was fundamentally one of private sector debt, rooted in private behavior that affected the magnitude and composition of investment and how it was financed.

Unlike the Latin American debt crisis, the Thai crisis was not caused by excessive sovereign borrowing.

Financial sector weaknesses — including inadequate regulation and supervision, implicit deposit insurance,

concentrated ownership structures, and poor accounting and disclosure — combined with liberalization of the financial sector and capital accounts, increased vulnerability by creating incentives for risk-taking by financial institutions.

Many macroeconomic fundamentals were strong, but the combination of tight monetary policy and an inflexible exchange rate created strong incentives for residents to expose themselves to excessive foreign exchange and liquidity risks.

Weak corporate governance, including close corporate links to the banking sector, encouraged risky investments and overdiversification in the corporate sector.

This paper — a joint product of the Economic Policy Division, Poverty Reduction and Economic Management Network, and the Financial Sector Strategy and Policy Department — is part of a collaborative effort with the Asian Development Bank to understand the management of private capital flows in Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room MC9-624, telephone 202-473-3722, fax 202-522-2031, Internet address hvo1@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/html/dec/Publications/Workpapers/home.html>. The authors may be contacted at palba@worldbank.org, lhernand@condor.bcentral.cl, or dklingebiel@worldbank.org. September 1999. (61 pages)

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**Financial Liberalization and the Capital Account:
Thailand 1988–1997**

by

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I. Introduction

The 1980s and 1990s have been critical periods for Thailand's development. After an initial period of instability in the early 1980s, Thailand's economy expanded at an average pace of 9 percent p.a. during 1987–96, while the number of households below the poverty line dropped from 32.6 percent in 1988 to 16.3 percent in 1996.¹ During this period, Thailand's economy also underwent deep structural changes, including the liberalization of its financial sector and the integration of its economy with global financial and product markets. For example, trade as a ratio to GDP increased from 54 percent in 1980 to 76 percent in 1990, and further to 84 percent in 1996.² With regard to financial integration, according to the World Bank (1997), Thailand went from being a country only partially integrated in 1985–87 to one of the most integrated emerging market economies in 1992–94. Indeed, this period was also one during which Thailand received very large and sustained inflows of foreign capital, averaging some 9.4 percent of GDP p.a. during 1988–96.

The management of the economy during this period of rapid structural change and large capital flows that started in 1988 was a major challenge for the Thai authorities. Overall, the key economic objective remained to achieve rapid growth and poverty reduction through an export based growth strategy that required maintaining competitiveness through a flexible exchange rate policy, and improvements in technology, human capital and infrastructure. In order to attain this objective, the authorities faced, among others, two macro policy and institutional challenges during the period 1988–96:

- Avoiding macroeconomic overheating in the face of massive capital inflows and growing financial integration that reduced the effectiveness of monetary policy; and
- Reducing the vulnerability of the financial sector (which had just emerged from crisis) to domestic and external shocks while liberalizing the sector and opening up to potentially volatile capital flows.

The purpose of this paper is to document these challenges and the policy response of the Thai authorities, in particular those that regard macroeconomic management and the financial sector in the context of growing financial integration and liberalization. Given the ongoing deep financial and economic crisis in Thailand, it is obvious—with the benefit of hindsight—that the policies and institutional improvements implemented by the Thai authorities during the 1980s and early 1990s were insufficient.³ Hence, this paper also tries to distill lessons on how developing countries can best deal with these challenges and avoid similar crises. The paper will not, therefore, focus on the

¹ According to the poverty index compiled by the NESDB.

² By trade we mean the sum of imports and exports of goods and nonfactor services as a ratio to GDP.

³ The magnitude and duration of the crisis in Thailand is unprecedented in recent Thai economic history. GDP is estimated to have declined by 0.5 percent in 1997, and is estimated to have declined by another 8 percent in 1998, with recovery only expected to begin in 1999.

management of the crisis, which has been the object of several recent contributions; the period of analysis in the paper is 1987–96, and in only limited instances 1997, and does not include 1998.⁴

The paper concludes that the crisis was fundamentally a private sector debt crisis, rooted in private behavior regarding the magnitude of investment, its composition and how it was financed. Indeed, unlike the Latin American debt crisis, the Thai crisis was not caused by excessive sovereign borrowings. Liberalization of both financial markets and the capital account of the balance of payments, starting with weak initial conditions (in particular in the financial sector), and not accompanied by a strengthening of the institutional and regulatory framework, led to a rapid build-up of fragility in both the financial and corporate sectors. Coupled with a deficient macro-policy mix, this process of liberalization led to a rapid build-up of currency and maturity mismatches that rendered Thailand vulnerable to a reversal in capital flows and culminated in the crisis in 1997.

The remainder of the paper is organized as follows. Section II examines the initial conditions of the macro- and micro-economy at the outset of the capital inflow period in 1987/88. It assesses whether macro and micro conditions were favorable to opening up to foreign capital flows, and analyzes the institutional environment and incentive framework for financial institutions and corporates at the onset of the capital inflow period. Section III briefly describes how the financial sector and capital account were liberalized during the late 1980s and early 1990s. Section IV explores the consequences of capital account and financial sector liberalization, both the macroeconomic effects — large private capital inflows and the built up of macro-financial vulnerabilities—and the micro effects increased vulnerability in the financial and corporate sector. Based on this analysis, section V assesses whether and to what extent the macro-policy mix and financial sector policy measures, pursued by the government during the capital inflow period, avoided overheating of the economy and strengthened the institutional and incentive framework for financial institutions and corporates. Finally, the concluding section summarizes the results of the analysis and provides some lessons for the future.

⁴ For example, Radelet and Sachs (1998).

II. Initial Conditions

This section analyzes the initial macro conditions under which the liberalization of the financial sector and the opening of the capital account took place, to assess whether the overall macro-economy was benign. It also analyzes the weaknesses in the institutional and incentive framework of financial institutions and corporates at the onset of the capital inflow period. In particular, it will explore:

- existence of imbalances at the macro level;
- structure, conditions, and incentive framework of financial institutions; and
- corporate governance, monitoring and performance in the real sector.

1. The Macro Environment

Following trends evident since 1975, the early 1980s were characterized by large macro imbalances fueled by rapid domestic credit expansion and loose fiscal policy. Domestic demand pressures and an inflexible exchange rate policy led to an appreciation of the real effective exchange rate, a faltering export performance and a large current account deficit over 7 percent of GDP in the late 1970s and early 1980s. In addition, the Thai economy was negatively affected by several external shocks in the late 1970s and early 1980s. These included the second oil shock in 1979, and a decline in Thai export commodity prices that, combined, resulted in a large deterioration in the TOT equivalent to 8 percent of GDP (Kochhar and others, 1996).

Table 1. Macro Adjustment during the 1980s

		1980	1981	1982	1983	1984	1985	1986	1987	1988
GDP	(real % change)	5.2%	5.9%	5.4%	5.6%	5.8%	4.6%	5.5%	9.5%	13.3%
Exports (GNFS)	(% change in USD)	26.6%	7.2%	0.4%	-4.7%	14.1%	-2.2%	22.0%	32.1%	39.3%
Investments	(% of GDP)	29.1%	29.7%	26.5%	30.0%	29.5%	28.2%	25.9%	27.9%	32.6%
National Savings	(% of GDP)	22.1%	21.8%	23.3%	22.1%	24.0%	23.9%	25.9%	26.7%	29.6%
Current Account	(% of GDP)	-6.4%	-7.4%	-2.7%	-7.2%	-5.0%	-4.0%	0.6%	-0.7%	-2.7%
Fiscal Balance	(% of GDP - cy basis)	-4.7%	-4.2%	-5.9%	-3.9%	-3.9%	-5.1%	-3.8%	-1.5%	1.3%
M2	(% change)	22.4%	-4.2%	24.1%	23.3%	20.2%	10.3%	13.2%	20.4%	18.2%
Domestic Credit	(% change)	18.1%	-4.2%	21.5%	26.3%	17.8%	8.4%	6.0%	17.8%	15.6%
REER	(1980=100)	100.0	102.8	105.9	108.7	107.3	95.3	85.0	79.9	77.4
Inflation	(% change in CPI)	19.7%	12.7%	5.3%	3.7%	0.9%	2.4%	1.8%	2.5%	3.8%

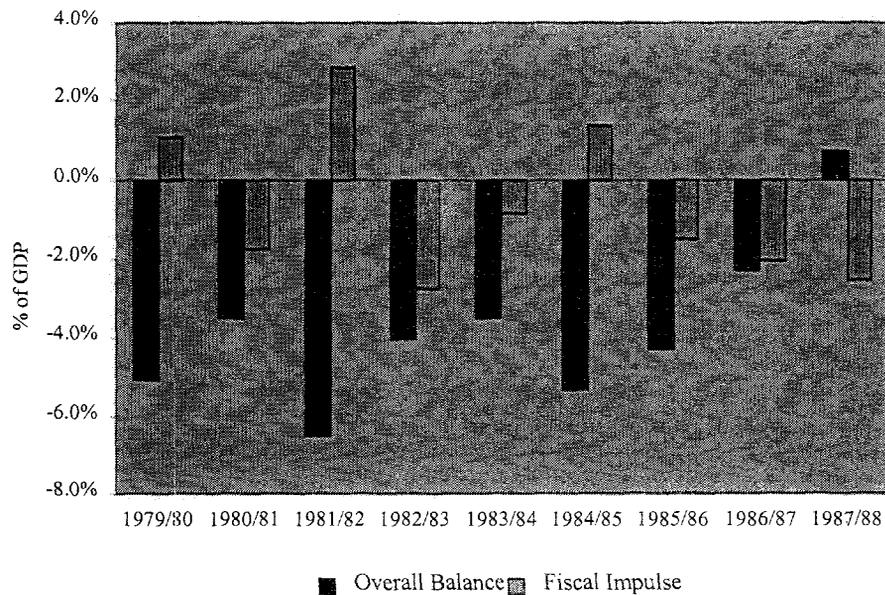
Source: World Bank Data Base

a. The Stabilization Program of 1984–1987

In response, Thailand implemented a macro stabilization program during the period 1984–87. The program combined a large devaluation of the nominal exchange rate in late 1984 with tighter financial policies. Its main features were as follows:

- The Baht was devalued by nearly 15 percent in nominal effective terms and then pegged against an undisclosed basket that weighted heavily the US Dollar. As the Dollar lost value vs. the Yen during the second half of the 1980s, the Baht, in turn, continued to depreciate in nominal terms vs. other East Asian currencies. These changes, in combination with the tight financial policies, reversed the appreciating trend of the REER during the early 1980s and led to a lasting real depreciation of the Baht, which by 1987 had depreciated by 25.5 percent compared to its level in 1984.
- Monetary policy was tightened significantly starting in 1985. Real credit growth declined significantly in 1985 and 1986 as compared to the previous three years,⁵ while real interest rates increased to their highest levels in the 1980s (Kochhar and others, 1996).
- Fiscal policy, however, was adjusted only with a one-year lag with the adoption of the 1985/86 budget in late 1985. Following a period of large deficits and no clear trend for the fiscal stance, between 1985/86 and 1987/88 the central government's fiscal balance went from a deficit of 5.3 percent of GDP to a surplus of 0.7 percent (Figure 1). Hence, fiscal policy became sharply contractionary starting in 1986 as illustrated by the large and negative estimates for the fiscal impulse.

Figure 1. The Stance of Fiscal Policy: 1980–87



Source: IMF: GFS. Authors' estimates.

⁵ It is difficult, however, to disentangle the extent to which the decline in credit growth reflects tight supply conditions or a decline in the demand for credit, in turn, reflecting the downturn in aggregate demand.

b. Structural Reforms

While limited progress was achieved in implementing structural reforms in Thailand during the 1980s, the overall structural context was benign relative to other middle income countries. In the areas of trade, investment and competition policies, and the state enterprise sector, micro distortions were not large to start with and hence did not represent a major impediment to growth during this time period. In Thailand, the private sector has traditionally been the main actor in economic activity and government policy has generally been supportive of the business environment.⁶

With regard to trade policy, despite early intentions already announced in 1981 to promote exports rather than import substitution, progress was rather mixed. While export taxes were largely eliminated during the 1980s, efforts to reduce import tariffs were frustrated by the need to strengthen fiscal revenues, leaving the average effective protection levels broadly constant at about 60 percent (Kochhar and others, 1996). While moderate on average as compared to other developing countries, effective protection varied widely across industries favoring final and manufactured goods over intermediate, capital and agricultural products. Some import substituting sectors such as automobiles benefited significantly from tariff and nontariff barriers (NTBs). Battacharya and Linn (1988) found, however, that NTBs were less widespread in Thailand than in many other East Asian economies, but that they were not reduced during the 1980s. The anti-export bias of the trade regime was also reduced by the introduction of investment incentives aimed at export promotion. In addition, during this time period the authorities successfully strengthened the operations of the various duty drawback schemes and VAT refunds available to exporters (Robinson and others, 1991).

The Thai economic reform program was perceived to be successful: the strong macro adjustment combined with relatively benign structural policies led to a sharp correction in external imbalances and a strong recovery in growth. The program initially had a negative impact on investment and growth as a result of rising interest rates; the output gap peaked in 1996 at about 9 percent of GDP. By 1987, however, the investment rate was increasing and real growth had recovered to an unprecedented 9.5 percent, while inflation had quickly declined to low single digit levels. On the external side, as a result of the initial contraction in income growth combined with the sustained real depreciation, exports boomed and there was a large adjustment in the current account of almost 8 percentage points of GDP between 1983 and 1986.

2. The Financial System

At end 1987, with financial assets to GDP at 98.9 percent, Thailand's financial system was deep compared to other emerging market economies with similar per capita income. Much of this monetization took place at the beginning of the 1980s and was mainly due to the fact that an increasingly large share of private savings was channeled

⁶ See for example, Robinson, Byeon and Teja (1991) and Kochhar and others (1996).

into accumulation of financial assets.⁷ The monetization of the economy led to a complementary rise in credit. Credit to the private sector stood at 59 percent of GDP at the end of 1987, up from 41 percent in 1980. The Thai system was also bank-oriented, with more than 67.5 percent of financial assets in banks, and with limited financial intermediation through mutual funds and other type of institutional investors. Bond and stock markets remained relatively underdeveloped, with outstanding bond market issues accounting for only 11.5 percent of GDP at end 1989, and stock market capitalization amounting to 35.5 percent.⁸

a. Structure of the Financial System

As of 1987 Thailand's formal financial system consisted of commercial banks, finance companies, credit foncier companies, Government Savings Banks, private and government insurance companies, and a number of sectorally and functionally specialized financial institutions. Commercial banks were the central players in the system absorbing 80.9 percent of deposits and accounting for 73.1 percent of total financial system assets⁹. Finance and securities companies accounted for 9.5 percent of total system deposits and 12.7 percent of total financial system assets. Specialized government banks had captured 9.5 percent of total financial system deposits and 14.2 percent of total financial system assets.¹⁰

Commercial Banks. At the beginning of 1988, the Baht 943 billion of commercial banks assets (equivalent to 72.5 percent of GDP) were held by 15 domestic commercial banks and 14 foreign banks. Although the number of foreign banks was almost equal to the number of domestic banks, they together accounted for around only 5 percent of commercial banking assets.¹¹ Their small market share was the result of tight government restrictions, which severely limited their activities and hampered their ability to compete with domestic banks.¹² Thailand's banking industry was concentrated and characterized by an oligopolistic market structure. The largest bank in the market, Bangkok Bank, had a market share of 28 percent at end 1988. The bulk of the commercial banking system

7 World Bank (1990). However, savers in Thailand had traditionally few alternatives to investments in bank or finco accounts and direct investment in the equity market. More recently, the deregulation of the mutual funds industry has opened up alternative avenues for investments, e. g., in 1992, licenses were granted to seven fund management companies.

8 The World Bank, 1995.

9 Excluding insurance companies and credit foncier institutions.

10 As the specialized banks are of minor importance for the analysis performed in the paper, the following sections will only focus on commercial banks and finance companies.

11 Bank of Thailand, Monthly Bulletin, and World Bank (1990).

12 Foreign banks faced the following three main restrictions: (i) foreign banks were hampered in their deposit mobilization activities as they suffered from a prohibition of branches (only two grandfathered sub-branches exist); (ii) they faced a 35 percent income tax which is higher than the tax rate domestic banks are subject to (as they can be listed on the SET, their income tax rate is 30 percent); and (iii) they paid a 16.5 percent withholding tax on dividends transferred overseas. Thus, foreign banks mainly focussed on financing of international trade transactions; while they are active in the foreign exchange market, most of their business relates to trade transactions of their own clients. See for more detail World Bank (1990).

assets was accounted for by four banks, one of which is government-owned (Krung Thai Bank). Their combined market share amounted to 63 percent of total banking system assets (end 1988 figures).¹³ These four banks also dominated the interbank loan market since they were the main supplier of liquidity for smaller and foreign banks. In addition, they were the leading players in foreign exchange transactions and thus could exert a degree of control on the supply of foreign exchange. The oligopolistic structure and the lack of the threat of new entry (the last time a domestic banking license was granted was in 1965) hampered innovation and diversification in the financial system.

Commercial banks financed their activities mostly via time deposits, which at end 1987 commanded an average share of about 70 percent of total banking system deposits, followed by savings deposits that accounted for about 30 percent of total banking system deposits. At end 1987 commercial banks were relatively independent from foreign funding: borrowings from abroad accounted for only 3.9 percent of total liabilities.

Commercial banks focussed their activities on straight out lending activities: noninterest income only amounted to 18 percent of the net operating income in 1987.¹⁴ As a result, at end 1987 loans to total assets amounted to 73 percent, and were dominated by overdrafts, which accounted for an average of around 65 percent of bank credit. In their lending activities commercial banks tended to rely more on collateral rather than on evaluation of project viability, borrower creditworthiness, or cash flows. Regarding the scope of permissible activities, banks were not allowed to engage in any securities activities including brokerage of bonds and equities.

Finance Companies. Finance companies constituted the second largest segment of the financial system and were the most important nonbank financial institutions. At the end of 1987, this segment was characterized by a large number of companies with a wide size range. Of the 93 institutions 26 were affiliated with private Thai commercial banks, and a further 12 with the government-owned Krung Thai Bank.¹⁵ These affiliated companies were created to provide specialized services that banks were not allowed to provide (e.g., securities business) or as specialized and innovative providers of high-margin high-risk consumer finance. In contrast to banks, finance companies faced stiff competition not only from other finance companies but also from banks, that once services proved successful at the finance company level started to introduce similar services. Moreover, finance companies faced a credible threat to entry as, in contrast to the banking sector, new institutions entered the market. While finance companies were

13 Figures according to Bank of Asia cited in World Bank (1990). The Herfindahl index, a measure commonly used to measure concentration in an industry, also suggests that the Thai banking system was highly concentrated. If the index is adjusted for market size, among 15 developing countries Thai's banking system had the third highest concentration in the late 1980s. World Bank (1990).

14 World Bank (1990).

15 While a single shareholder of a finance company cannot hold more than 10 percent of total shares legally, in practice, banks have complete control over their affiliated company. The legal restriction on the extent of ownership by one financial institution in another have only resulted in a complex network of multiple and cross ownership between commercial banks and securities and finance companies, and the ownership structures have become highly opaque. World Bank (1990).

typically smaller and more efficient than banks, given the number of players involved in the thin market, and the propensity of banks to introduce competing services, finance companies' margins were constantly under pressure.

Unlike commercial banks, finance and securities companies were not allowed to take direct deposits from the public, and funded their operations primarily through the issuance of large-denomination promissory notes¹⁶ (52 percent of total liabilities at the end of 1987), as well as credit from commercial banks (19 percent) and funding from other financial institutions (9.2 percent). At the end of 1987 foreign lending funds were only of marginal importance as they only comprised 1.4 percent of total liabilities.¹⁷

Similar to commercial banks, finance companies derived the largest share of their income (58 percent in 1988) from lending activities, while 13 percent came from hire purchase business, 12 percent from securities trading, 10 percent from dividends on investments, and 7 percent from other sources. While securities and finance companies could engage in securities business, they were not allowed to offer overdraft facilities, credit cards and credit facilities related to trade finance, provide foreign exchange services, and set up branches. Due to commercial banks' (funding) cost and other regulatory advantages, finance companies tended to seek profits by allocating a major share of their portfolio into high(er) risk areas, including construction and real estate (18.3 percent), margin loans and hire purchase (9.1 percent) and personal consumption (25.5 percent).¹⁸

b. Regulatory and Incentive Framework of Financial Institutions

Interest rate controls and requirements for lending to priority sectors. Because of the dominant role of the banking sector, bank interest rates were the most important indicators of the cost and price of capital. At end 1987, the two most important rates—the deposit and lending rates—were subject to ceilings imposed by the Bank of Thailand (BoT). BoT also attempted to affect the allocation of bank credit across sectors via three policy measures: (i) the requirement that commercial banks had to lend 20 percent of their previous years deposits to the agricultural sector—any shortfall had to be deposited at the Bank for Agriculture and Agricultural Cooperative at a rate that was below the interbank rate; (ii) the exemption of lending to priority sectors from capital requirements; and (iii) access to preferential refinancing at BoT for lending such as promotion of exports, small scale industry, and agricultural production.

¹⁶ Where these notes are payable in small denomination, they have the liquidity characteristics of demand deposits. At the end of 1987 this type of promissory notes were of relative little importance as their share of total promissory notes was only 10 percent.

¹⁷ While finance companies as banks came under the supervisory authority of BoT, they were subject to a separate legal framework and were prohibited from foreign exchange transactions, from offering checking accounts, and from opening branches.

¹⁸ Numbers according to the Bank of Thailand. These figures are, however, likely to be understated because of existing loopholes in the categorization of loans as loans are categorized according to the business of the borrower not by purpose.

The External Incentive Framework. The regulatory and supervisory framework, along with accounting rules, disclosure requirements, and the existence of a deposit insurance scheme, play a crucial role in defining the incentive framework in which financial institutions operate. In particular, the extent to which excessive risk taking is curbed by regulation, or penalized by the supervisory authority as well as by the market, greatly influence the behavior of financial institutions. There are three potential groups that can monitor bank managers, namely the owners, the market, and supervisors.

At end 1987, the incentive framework of banks and finance companies appeared relatively weak and may have been ineffective in aligning owners/managers incentives with prudent banking. For example, the disciplinary effect of capital to asset requirements were limited due to the level and definition of capital adequacy requirements. While eight percent appears to be in line with the capital adequacy ratio imposed on banks in developed markets, it appears low relative to the high risk operating environment in which Thai financial institutions were. Moreover, despite the fact that the minimum level for capital is based on a narrow definition for capital, BoT permitted 31 exemptions for different classes of assets, including certain categories of risky, priority sector loans. In 1989, total exemptions from capital adequacy computation accounted for approximately 40 percent of total assets. By permitting these exemptions BoT used capital adequacy as a tool of economic regulation to encourage directed credit rather than as a buffer to absorb unusual losses.¹⁹ These capital adequacy guidelines were further weakened by prudential norms on asset quality which effectively led to an overstatement of capital.²⁰ Furthermore, financial institutions were allowed to accrue uncollected interest income for up to twelve months, thereby overstating income and capital. Finally, regulations aimed at limiting excessive exposure to a single related entity or connected group of entities were weak and ceilings on exposure to particular "risky" sectors (to sector which are prone to boom and bust cycles: i. e., real estate) were nonexistent.

Table 2 contains a summary of prudential regulations that Thai banks and finance companies were subject to. It illustrates one important point: in spite of the fact that finance companies tended to engage in riskier activities due to their regulatory constraints, finance companies were subject to less stringent prudential requirements than banks. For example, while commercial banks' capital to asset ratio was set at eight percent, finance companies had to hold only six percent of capital against their risky assets.

19 World Bank (1990).

20 Moreover, the tax treatment of provisions acted as a disincentive to adequate provisioning since an institution had to have exhausted nearly all legal remedies before the tax authorities would consider the loss as a deductible expense. World Bank (1990).

Table 2. Prudential Regulatory Requirements for Commercial Banks and Finance Companies, 1990

	Commercial Banks	Finance Companies
Limits on ownership	<ul style="list-style-type: none"> • Shareholding to one person limited to 5 percent but nominee shareholding is permitted. 	<ul style="list-style-type: none"> • Shareholdings limited to 10 percent of shares outstanding.
Level of minimum capital adequacy requirements	<ul style="list-style-type: none"> • 8 percent of risk assets for on-balance sheet items; however number of exemptions apply which effectively reduce minimum capital adequacy ratio considerably. • 20 percent in relation to amount of avals, acceptance bills, and loan guarantees outstanding. 	<ul style="list-style-type: none"> • 6 percent of risk assets for balance sheet risks. • 25 percent for off-balance sheet contingent liabilities.
Loan classification requirements (number of days before loan is classified as nonperforming)	<ul style="list-style-type: none"> • 180 (uncollateralized). • 360 (collateralized). 	<ul style="list-style-type: none"> • 180 (uncollateralized). • 360 (collateralized).
Provisioning requirements for loans classified as nonperforming	<ul style="list-style-type: none"> • 50 percent on doubtful. • 0 on substandard. 	<ul style="list-style-type: none"> • 50 percent on doubtful. • 0 on substandard.
Limit on Risk Exposure:		
- Liquidity Requirement	<ul style="list-style-type: none"> • 7 percent of deposits. 	<ul style="list-style-type: none"> • NA
- Foreign Exposure Limit	<ul style="list-style-type: none"> • Open foreign exchange position limited to 20 percent of capital. 	<ul style="list-style-type: none"> • NA
- Single Exposure Limit	<ul style="list-style-type: none"> • .25 percent of bank's capital fund. • 50 percent for contingent exposures. 	<ul style="list-style-type: none"> • 30 percent of finance company's capital fund. • 40 percent including contingent liabilities.
- Loans to Insiders	<ul style="list-style-type: none"> • Loans to directors prohibited. 	<ul style="list-style-type: none"> • NA

Market Discipline. In Thailand, market discipline was not only hampered by a partial implicit guarantee on financial system deposits—a legacy of the resolution of the 1983–87 financial crisis (see below)—but also by loose financial accounting and disclosure. Furthermore, the role of a limited number of families in the ownership of both financial and nonfinancial institutions limited the scope for market oversight. Indeed, each of the major banks was associated, through cross ownership and control, with a variety of nonfinancial companies as well as with at least one, and usually more than one, finance company. It has been estimated that ten families as of end 1987 controlled 46.2 percent of the market capitalization of all listed firms, of which 39.6 percent were in financial institutions, 60.9 percent in nonfinancial companies.²¹ Weaknesses in the governance of financial institutions may encourage lending to risky sectors or unviable projects. Moreover, a bank's relationship with enterprises which are part of its industrial financial group may not be conducted at arms-length and fair market prices.

²¹ Figures cited after Claessens et al (1999).

Enforcement through Supervision/Regulatory Forbearance. The Bank of Thailand had inadequate powers to intervene and close weak and insolvent institutions. This severely curtailed enforcement of the prudential regulatory framework as the ultimate sanction for non-compliance—intervention and closure of an institution—was not a credible threat. Enforcement actions were also hampered by the fact that the authority to license banks lay with the Ministry of Finance while the BoT was the supervisory authority. Any action related to the withdrawal of a license thus needed to be approved and coordinated with the Ministry of Finance. And finally, banks closure had been a very rare occurrence in Thailand. The last time supervisors forced a bank to close its door was in 1965.

c. Performance and Condition of Financial Institutions

Table 3 summarizes selected performance indicators for commercial banks and finance companies prior to financial sector liberalization and the opening of the capital account. As the table shows, the financial sector was still recovering from the 1983–87 crisis as reflected in relatively weak returns on assets and equity. Since financial institutions were subject to lenient interest accrual norms—they were allowed to accrue interest for up to 12 month (6 months) for secured (unsecured) loans—these performance indicators most probably overstate profits. Moreover, the financial sector continued to experience portfolio problems as mirrored in a relatively high ratio of nonperforming loans to total loans which amounted to 7 percent for commercial. Similarly, a number of finance companies and several banks were still supported by the BoT via various measures.²²

**Table 3. Performance Indicators of
Commercial Banks and Finance Companies (%)**

	Commercial Banks		Fincos	
	1987	1988	1987	1988
ROAE	14.5	15.5	9.25	8.537
ROAA	0.8	0.9	0.51	0.7
NPL/ Total Loans	7			
Provision for Loan losses/Total Loans	0.7	0.8		
Capital/Asset Ratio	5.6	5.9		
Loan/Deposit Ratio	96.2	94.2	116.6	115.7

Source: World Bank 1990.

²² The World Bank (1990).

d. Resolution of the 1983–87 Banking Crisis ²³

As it has been implicit in the analysis above, to a great extent the weaknesses of Thailand's financial system lay in the 1983–87 crisis and its resolution. In this section we briefly summarize the main features of this crisis, its causes and the way it was resolved.

Causes and Scope of the Financial Crisis. In 1983–87, Thailand experienced a financial crisis that was associated with a slowdown in the economy, globally high interest rates, and fraud and mismanagement on the part of several finance companies and banks. The crisis originated in the finance companies segment of the financial system, which was poorly supervised and had engaged in heavy speculations in shares and real estate and affected institutions that together accounted for 25 percent of total financial system assets. A total of 24 finance companies were subsequently closed, and nine others merged into two new companies. The crisis led the Bank of Thailand to create the Financial Institutions Development Fund (FIDF) in 1985—a separate legal entity under the BoT with a mandate to provide liquidity support to financial institutions. The FIDF established a special support scheme—the “April 4 Lifeboat Scheme”—which provided soft loans to 13 finance companies and 8 commercial banks in exchange for an equity stake.

Treatment of Depositors. Depositors of commercial banks were largely bailed out, thus creating—reinforcing—expectations of an implicit insurance guarantee for that market segment. Depositors of 25 finance companies that participated in the “life-boat-scheme” were also bailed out. The only depositors to suffer any losses (in the form of foregone interest and illiquidity) were the creditors of the 24 finance companies that were closed. Thus, despite the lack of an explicit deposit insurance scheme, the resolution of the mid-80s crisis reinforced the belief that depositors and banks would be bailed out if their investments proved unprofitable.

Treatment of Financial Institutions' Shareholders and Management. Shareholders of insolvent financial institutions did see a (temporary) dilution of their investments, but they were not completely eliminated as shareholders.²⁴ While the chief executive officers of the failed and restructured institutions were removed, senior management was left in place. This allowed the weak banking culture to remain intact, and made the overall rehabilitation of the financial sector more difficult. Moreover, despite the fact that the financial crisis of the mid 1980s was caused by poor risk management and lending practices, relatively low average operating expenses in the aftermath of the crisis seem to suggest that financial institutions invested insufficiently into upgrading the skill base of their staff and their risk management practices.²⁵

²³ See for a detailed account of 1983 crisis: Johnston (1991) and Caprio and Klingebiel (1996a & b).

²⁴ Existing shareholders had a buyback option at a predetermined price and under a five-year time horizon.

²⁵ While the comparability of cross country data is limited because of differences in accounting conventions regarding the valuation of assets and loan loss provisioning, and interest rate accrual norms and tax regimes differ across countries, with an average of 1.9 percent operating expenses over average assets over 1990-1997,

3. The Corporate Sector

Corporate Governance.²⁶ At the end of the 1980s, both corporate governance and disclosure systems were weak, and capital markets played a limited role in the governance of firms and exhibiting at least three interrelated problems: (i) concentrated ownership; (ii) weak information standards; and (iii) poor protection of minority shareholders.

Concentrated Ownership. One of the salient features of the corporate sector in Thailand is the dominance of family control over business operations. Thai firms were (are) generally closely held and managed by majority—often family—interests, while a relatively limited number of families controlled many of the corporations listed on the stock exchange. The concentration of ownership can be largely attributed to the relative youth of Thailand's corporates as ownership concentration is common in emerging market economies. Nevertheless, while ownership concentration can have advantages,²⁷ empirical evidence suggest that concentrated ownership structures may impede the development of professional managers that are required as firms mature and become more complex, and may lead to increase risk taking by firms (in particular if ownership links between financial and nonfinancial firms exist) as other stakeholders (creditors and employees) share in the downside risk. Moreover, in order not to loose control, large shareholders have incentives to dilute market pressures for improved disclosure and protection for minority shareholders.

Weak Information Standards. In Thailand in the late 1980s, the scope for market monitoring was limited as disclosure was weak and accounting standards and practices were not up to international practice, thus limiting investors' ability to monitor corporate performance.²⁸ Standards for financial statement disclosures, asset classification, marketable securities, loss recognition and debt restructuring needed improvement. As (large) firms—at the individual firm level as well as at the country level—had easy access to financing, firms and insiders had little to gain from improving disclosure and corporate governance.

Protecting Minority Shareholders. An important factor influencing external financing patterns is the degree of protection from abuse by corporate insiders that is provided by legal and regulatory mechanisms to outside investors. There is growing international evidence that the quality and efficacy of these protection mechanisms influence whether and at what costs outside investors are willing to fund corporations. La Porta et al. (1997) suggest that poor protection mechanisms will limit the availability of

Thai banks' operating ratios were lower than those of other East Asian economies (Philippines 4.2 percent, Indonesia 2.9 percent, Korea 2.8 percent). World Bank (1999).

26 See for an extended discussion Alba, Claessens, Djankov (1998).

27 It solves the agency problem since large shareholders are able to more easily assert control over a firm and limit management inefficiency and abuse.

28 Alba, Claessens, Djankov (1998).

external finance for firms, as well as raise the cost of funds to compensate for increased level of expropriation. The quality of protection mechanisms depends on a variety of factors such as the treatment of investor rights in company, bankruptcy and securities legislation, the efficacy of legal enforcement, and the content and enforcement of capital market regulation, including listing rules and disclosure. While shareholders in Thailand appear better protected than shareholders in Latin America, the enforcement of minority shareholder right was undermined by a weak judicial system. According to one of the legal sub-indices reported by La Porta et al. (1998), the efficiency of the financial system in Thailand is the second worst among the 49 countries in their sample.²⁹

Performance. In 1988, Thai corporates, which were listed on the stock exchange, showed high profitability as their real return on assets (ROA) amounted to about 11 percent. It was significantly higher than ROAs that German (4.3 percent) or US companies (4.7 percent) were reporting. Moreover, operational margins and real sales growth, two alternative measures of profitability, seem to support the notion that Thai corporates were quite profitable at the end of the 1980s. In 1988, (listed) Thai companies also had—relative to companies in developed countries—high operational margins (22 percent versus 14.1 percent for US companies and 13.2 for German companies) and saw their real sales grow by 12 percent, the highest for East Asian companies and twice as fast as German or US companies.³⁰

4. Conclusion

As outlined above, initial conditions in the macro- and structural environment were benign in Thailand at the onset of the capital inflow period. In contrast, conditions in the financial and the corporate sectors were less favorable. Not only was the financial sector still weakened from the crisis (in terms of profitability and capital position of individual institutions) earlier in the decade, but the overall incentive framework in which financial institutions operated remained deficient, and the regulatory and supervisory framework was not considerably strengthened in the aftermath of the crisis. Moreover, the scope for moral hazard on the side of financial institutions was significant since the potential for market oversight was limited due to poor disclosure and quality of financial information, a concentrated ownership structure and cross-ownership links between financial and nonfinancial entities. In addition, incentives for market oversight were reduced because depositors were bailed out in the last financial sector crisis. On the corporate sector side, while profitability remained strong, the governance of corporates was weak creating incentives for risky investment and overdiversification.

²⁹ La Porta et al (1998).

³⁰ Claessens, Djankov, Lang (1998).

III. Liberalization of the Capital Account and Financial Sector in the early 1990s

Against the macro and micro background analyzed in the previous section, the Thai government embarked on a program to further open the capital account and liberalize financial markets in the late 1980s and early 1990s. The main policy measures in these two areas are presented below.

1. Liberalization of the Capital Account

Thailand already in 1985 maintained relatively open current and capital accounts, with liberal treatment of foreign direct and portfolio investments, although exchange controls still applied to the repatriation of interest, dividends and principal of portfolio investment. Foreign borrowing by Thai residents was allowed but subject to registration at the BoT. Starting in 1985, both current and capital account transaction were significantly liberalized. By end 1994, Thailand was free of foreign exchange restrictions on current account transactions, and had a very open and favorable regime for foreign investment. Foreign investors were still subject to some restrictions on foreign ownership, in particular with regard to companies listed on the Stock Exchange of Thailand (SET), and to severe restrictions on real estate. Thai investment overseas, in particular by financial intermediaries and banks, was also restricted. Per Johnston and others (1997), major milestones in the liberalization process between 1985–96 were the following:

- *Current Account Transactions.* IMF article VIII obligations were assumed in May 1990.
- *Portfolio Investment.* With regard to tax treatment, during 1986 the authorities reduced tax impediments to portfolio inflows, in particular for purchasing Thai mutual funds. This was followed in 1991 and 1992 by improvements in the tax treatment of dividends, royalty payments, capital gains, and interest payments on foreign debentures. In 1990, three mutual funds were created to attract foreign investment, and in 1991 repatriation of investment funds, interest and loan repayments by foreign investors was fully liberalized.
- *Foreign Direct Investment.* In 1991, in addition to amendments in the Investment Promotion Act to promote more foreign investment, the government authorized 100 percent foreign ownership of firms that export all their output. Also, direct investment by Thai residents overseas was also gradually liberalized in 1991 and 1994.
- *Foreign Exchange System.* The most important change was the establishment in 1993 of the Bangkok International Banking Facility (BIBF) an offshore financial market which enjoyed tax and regulatory advantages aimed at fostering the development of Bangkok as a regional financial center (see Box 1). Other liberalization measures adopted during the 1985–96 period included, subjecting nonresident Baht accounts at domestic commercial banks to lower reserve requirements and eliminating gradually restrictions of purchases of foreign exchange by residents, and transfers of Baht overseas.

Box 1. The BIBF

The Bangkok International Banking Facility (BIBF) was established in March 1993 to facilitate the growth of international banking business in Thailand. As of the third quarter of 1996, 49 banks had been granted BIBF licenses, including Thai commercial banks and foreign banks with and without local branches in Thailand. The main operations of BIBF banks on the liability side are deposits or borrowing in foreign exchange from abroad, mainly through foreign inter-bank transactions and inter-office borrowings. On the asset side, their main activities are lending in foreign currency to Thai residents (out-in) and non-residents (out-out). BIBF institutions also engage in other standard off-shore banking activities such as loan syndication and foreign exchange transactions in third country currencies, and are also authorized to undertake investment banking activities.

BIBF banks are treated as residents by the Bank of Thailand for purposes of the BOP. As result, BIBF funding activities are counted as capital inflows under the BOP. While this should not affect the volume of inflows since normally the two sides are matched, it can affect the maturity structure of Thailand's external debt. To the extent that BIBF out-in lending to Thai firms is replacing other sources of short- and *long-term* foreign capital, the maturity structure of Thailand's external debt will shorten since most BIBF funding is short-term. And by reducing borrowing costs and indirectly easing access to foreign capital markets for smaller and less well-known Thai firms, the establishment of the BIBF may have increased the magnitude of short-term capital flows.

BIBF institutions benefited from several important tax advantages. Among the most important are a reduced corporate income tax (10 percent rather than 30 percent) and exemption from several sales taxes (3.3 percent of turnover), stamp duties, and the permanent establishment tax. With regard to withholding taxes, all out-out transactions were exempt, while for out-in transactions the rate is 10 percent, compared to 15 percent for countries that do not have a double taxation agreement with Thailand. And importantly, cross border borrowings within the same institution were exempt from withholding taxes. Finally, unlike other deposit or deposit type instruments, short-term (under 12 months) BIBF monetary instruments were not subject to the seven percent cash reserve requirements favoring a short-term maturity structure.

Source: Bank of Thailand: "Analyzing Thailand's Short-term Debt." *Bank of Thailand Economic Focus*, Vol. 1, Number 3; July-September 1996.

2. Liberalization of the Financial System

In 1990, the Thai government promulgated a comprehensive financial reform plan with the stated objectives of "coordinating, synchronizing several aspects of the reform with the ultimate objectives to enhance competitiveness, flexibility, efficiency, and stability of the financial sector."³¹ The main components of the reform program are summarized in Table 4.

Dismantling of Interest Rate Controls. Among the most important actions included in the reform program were the dismantling of interest rate controls over the period 1989 to 1992. Ceilings on commercial bank deposit rates were removed during 1989-91. In June 1992, ceilings on finance and credit foncier companies' deposit and lending rates, and on commercial banks' lending rates were removed. However, on October 1993, given the gap in interest rates (and spreads) between prime and non-prime

³¹ See Wibulswadi (1995).

borrowers, BoT began to require banks to declare their minimum lending rate (MLR)—the rate on term credits to large customers—, its minimum retail rate (MRR)—the rate on small prime customers—, and the widest margins charged above these rates. The initial “formula” for the MRR was set so as to reflect commercial banks’ total cost of funds given the deposit rates plus the banks’ operating costs. Deposits banks also had to declare the rates for general and large deposits.³²

Relaxation of Portfolio Restrictions and Expanding the Scope of Activities. Also important in the reform program were those measures that eliminated restrictions on the scope of activity and portfolio of financial institutions. First, prior requirements on portfolio composition of commercial banks were relaxed (by expanding the definition of agricultural credits in which commercial banks are expected to lend no less than 20 percent of their deposits). Second, to bolster the competitive position of domestic financial institutions, finance companies were authorized at end 1991 to conduct leasing business. In March 1992, finance companies were authorized to act as selling agents for government bonds, to provide economic, financial, and investment information services, and to advise companies seeking listing on the SET. Third, in 1992, commercial banks were allowed to expand their areas of operation to include issuance, underwriting, and distribution of debt securities, to act as supervisors as well as selling agents for mutual funds, and to become securities registrars. Finally, reserve requirements were converted into liquid asset requirements allowing banks to invest up to 3 percent in government paper.

³² See World Bank, Shadow Financial Sector Report (1997).

Table 4. Overview of Financial Sector Liberalization Measures

Date	Interest Rate Controls
1987	Removal of separate interest rate ceiling for lending to priority sectors.
1989	Removal of interest rate ceiling on time deposits of commercial banks with maturity > 1 year.
1990	Removal of interest rate ceiling on time deposits of commercial banks with maturity < 1 year.
1991/January	Removal of interest rate ceiling on savings deposits at commercial banks.
1991/June	Removal of interest rate ceiling on finance companies' and credit foncier companies' borrowing, deposits and lending.
1991/June	Removal of interest rate ceiling on commercial bank lending.
1993/Oct	Commercial Banks required to announce Minimum Retail Rate calculated from actual costs of deposits and operating costs as reference lending rates for retail prime borrower.
	Controls on Finance Companies' Funding Side
1990	Removal of requirement on minimum denomination of promissory notes that finance companies can issue.
1992	Receive permission to issue certificates of deposits.
1995	Receive permission to issue bills of exchange or certificates of deposits denominated in foreign currencies, with maturity of over one year, to overseas investors or commercial banks authorized to undertake foreign exchange transactions.
	Controls on Portfolio Composition
1991	Broadening definition of "targeted rural credits" under the rural credit requirement to include credits for crop wholesaling and industrial estates in rural areas.
1992/Jan	Further relaxation of rural credit requirement via: <ul style="list-style-type: none"> i. broadening definition to include credits for farmers' secondary occupation, and credits for agricultural product wholesaling and exporting; ii. changing small industry definition from 5 million Baht net assets outstanding to 10 million Baht; iii. excluding interbank deposits from deposit base under rural credit.
	Expanding the Scope of Activities of Finance Companies/Commercial Banks
1987	List of authorized business for commercial banks and finance companies was broadened to include: <ul style="list-style-type: none"> i. custodial services; ii. loan syndication; iii. advisory services regarding mergers and acquisition; iv. feasibility studies.
1992/March	<ul style="list-style-type: none"> - <i>Commercial banks</i> allowed to operate as: <ul style="list-style-type: none"> i. selling agents for debt instruments issued by the government and state enterprises; ii. information service; iii. financial consulting service. - <i>Finance companies</i> allowed to operate as: <ul style="list-style-type: none"> i. selling agents for debt instruments issued by the government and state enterprises; ii. information services; iii. sponsoring services, preparing necessary documents for companies applying for listing on SET. - <i>Securities companies</i> allowed to operate: <ul style="list-style-type: none"> i. custodial service; ii. registrar and paying agents for securities; iii. information service; iv. sponsoring service.
1992/June	Allowing commercial banks to operate the following business: <ul style="list-style-type: none"> i. arranging, underwriting and dealing in debt instruments; ii. secured debenture holder representative; iii. trustee of mutual funds; iv. securities registrar; v. selling agents for investment units.
1994/Sept	Allowing commercial banks to invest in any business, or in its shares, of not more than 10 percent of the total amount of shares sold.

Source: Bank of Thailand, Financial Institutions and Markets in Thailand, 1998.

IV. Consequences of the Liberalization of the Capital Account and the Financial Sector

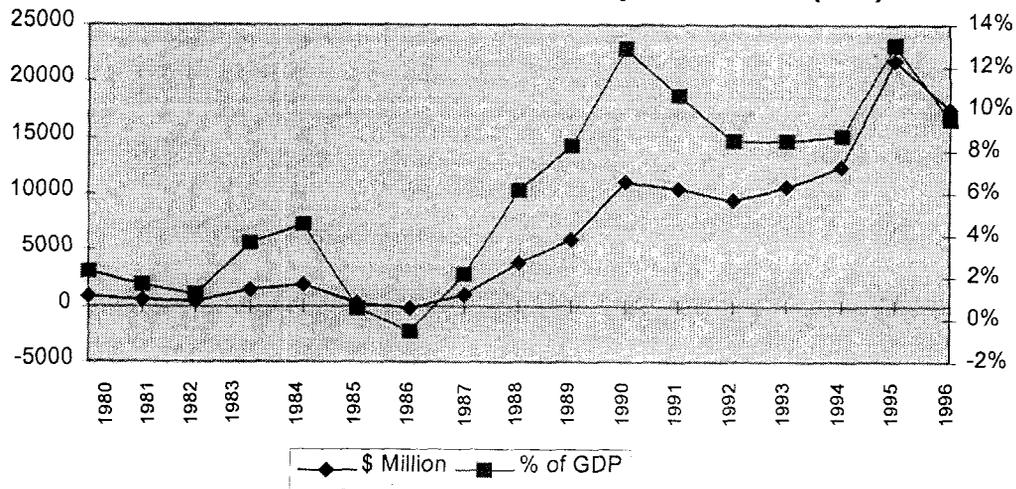
The liberalization of the capital account and the financial sector resulted in rapid build-up of vulnerability, a vulnerability with both macro and micro manifestations. On the macro side, the liberalization program resulted in a surge in private capital inflows and rapid credit growth. The increased foreign borrowing and rapid credit growth resulted in high leverage at the economy wide level as well as an asset price bubble.³³ In turn, this led to a rapid increase in foreign exchange exposure and a shortening of the maturity structure, rendering the economy vulnerable to reversals in capital inflows and downturns in economic activity. One micro manifestation of the economy wide borrowing binge is the rapid build-up of leverage and the increased foreign exchange exposure of the corporate sector. Similarly, as a result of the lending boom and coupled with the practice of collateral based lending, banks and finance companies became more vulnerable to economic shocks in the 1990s by: (i) lending excessively to sectors or firms whose debt service capacity was particularly susceptible to shocks; and (ii) reducing their own capacity to absorb negative shocks, especially by exacerbating currency and maturity mismatches, by mispricing loans, and by underprovisioning for future potential losses. This build-up of vulnerability is analyzed in greater detail below.

1. Surge in Capital Inflows, Increased Reliance on Foreign Capital, and the Shortening of the Maturity Structure

Surge in Capital Inflows. Together with Malaysia, Thailand is one of the countries that received the largest capital inflows in the East Asia region, indeed in the world, relative to GDP. Between 1988–96, according to data from the Bank of Thailand, Thailand received a staggering cumulative amount of US\$ 100.3 billion, about 55 percent of 1996 GDP, or 9.4 percent of GDP on average p.a. (excluding errors and omissions). As can be seen from Figure 7, private capital flows to Thailand surged in 1988, when there is a clear structural break in the data. Between 1987 and 1990, inflows increased to some US\$11.1 billion, where they stabilized until 1993. In 1994 and especially 1995, inflows surged once again, surpassing US\$21 billion in 1995, but declining sharply in 1996. As a ratio to GDP the story is somewhat different (see Figure 2 below).

³³ At the microlevel, rapid credit growth strained financial institutions credit assessments' and monitoring capacity. See Section IV2b.

Figure 2. Total Private Capital Flows (net)



Source: Bank of Thailand.

Private capital flows were already significant in the early 1980s, but declined in 1985 and 1986 as a result of the uncertainties surrounding the macro adjustment. Again, the data seem to suggest a structural break in 1988, when flows increased rapidly until 1990 to about 13 percent of GDP, a local maxima. After stabilizing at about 8 percent of GDP in 1992–94, there was a second local maxima in 1995 when flows again surpassed 12 percent of GDP.

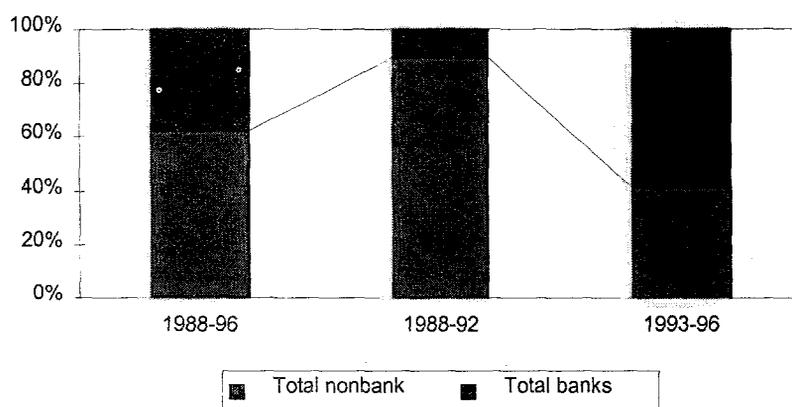
Main Components of Capital Inflows. The Bank of Thailand classifies capital flows into nonbank and bank flows. The latter are resident banks borrowing from overseas sources (either from financial institutions or by issuing debt instruments), and, starting in 1993, a separate category for borrowing by BIBF banks (see Box 1). The nonbank categories are the following:

- Foreign Direct Investment: including both net FDI inflows and outflows (Thai direct investment overseas);
- Portfolio Capital: distinguishing between fixed income and equity flows, and including direct investments by foreign residents in domestic instruments and Thai sovereign and corporate issues overseas (e.g., eurobonds, ADRs);
- Nonresident Baht Accounts: capital inflows deposited by nonresidents in domestic currency accounts in local banks mainly for investing in domestic securities;
- Trade credits: a minor component; and
- Other Borrowing: presumably mostly composed of syndicated borrowing by domestic corporates from overseas financial institutions.

Bank Intermediation. Banks and finance companies played a key role in intermediating capital inflows in Thailand as shown in Figure 3. Their net foreign liabilities rose from 6 percent of domestic deposit liabilities in 1990, to one third by 1996. During the full inflow period 1988–96, bank borrowing accounted for 37 percent of total inflows. But this average number hides a large difference between the initial phase of the

inflow period and the final four years, 1993–96. Bank borrowing played a relatively minor role during 1988–92, accounting for only 10 percent of total flows, but increased sharply to 60 percent during 1993–96. This occurred as a result of the establishment of the BIBF and was due mainly to two reasons: first, as outlined above, BIBF institutions were granted considerable tax advantages; and second, many Thai firms who could not directly access overseas capital markets were able to borrow from BIBF Thai banks. As a result, foreign bank loans through the Bangkok International Banking Facility soared from US\$ 8 billion in 1993, its first year in operation, to US\$ 50 billion in 1996, US\$ 30 billion of out-in transactions and 20 billion of out-out transactions.³⁴

Figure 3. Composition of Capital Flows



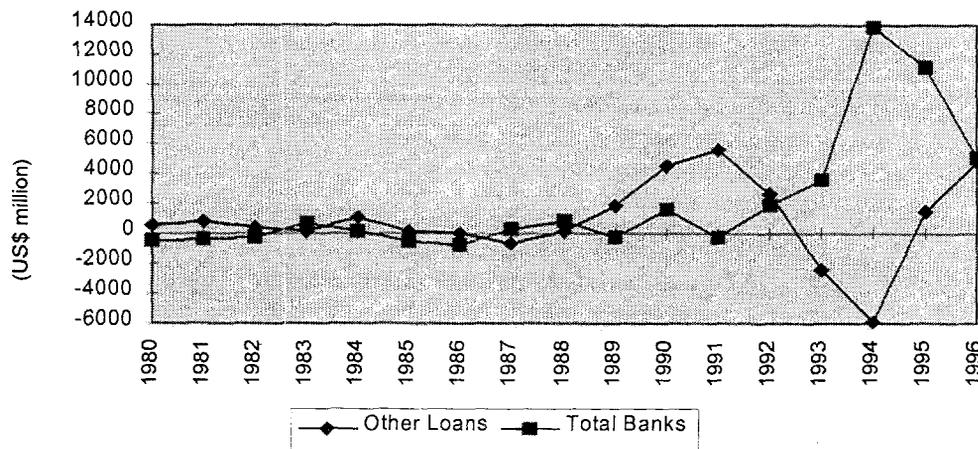
Source: Bank of Thailand

Nonbank Capital Inflows. There are three salient facts regarding the composition and trends of nonbank net capital inflows:

- The composition of nonbank capital flows to Thailand over the full period 1988–96 has been relatively balanced. Net foreign direct investment (22 percent), portfolio flows (25 percent), nonresident Baht deposits (29 percent) and other loans (20 percent) all account for similar amounts.
- Again, however, the averages hide significant changes over time. Most importantly, other borrowing accounted for some 41 percent of nonbank inflows over the initial period 1988–92, but during 1993–94, there was a net *outflow* of capital under this category. The data suggest that Thai firms used bank lending to refinance their direct borrowings from foreign financial institutions, especially since the establishment of the BIBF (Figure 4). In 1995–96, however, as explained below, the authorities implemented several measures to reduce the magnitude of bank, in particular short-term, inflows and net direct external borrowing by firms became again positive.

³⁴ Kawai (1997).

Figure 4. Intermediation of Corporate Foreign Borrowings



Source: Bank of Thailand.

- The average numbers also hide changes in the relative importance of the other nonbank capital inflow categories during the 1990s. First, during 1988–92 foreign direct investment accounted for a much larger proportion (42 percent) of nonbank capital inflows (excluding other borrowing) than during 1993–96 (17.5 percent). The Bank of Thailand believes that part of this decline was due to a “significant rebooking of FDI through BIBF” (i.e., the refinancing and new borrowings of overseas affiliates of FDI companies, previously classified as FDI, through BIBF). Second, the relative importance of portfolio flows, especially debt instruments, increased from 14 percent to 44 percent between the two periods.

Increased Reliance on Foreign Capital and the Shortening of the Maturity Structure. During the 1990s, the Thai economy increased its reliance on foreign capital which is reflected in an increase of the share of foreign debt to total debt from 59.1 percent in 1988 to 94.1 percent at the end of 1997. At the same time, changes in the composition of capital inflows during the 1990s have increased the proportion of short-term and potentially more volatile inflows in total private capital. Important aspects of this were the large increase in BIBF inflows, the decline in FDI both in absolute and relative terms, and the increase in portfolio flows. Funds intermediated through N/R Baht accounts, believed to be mainly invested in short-term liquid domestic debt instruments, as well as in the stock market, have remained important throughout the whole period.

Similarly, these trends also led to a rapid build-up of private short-term debt. The Bank of Thailand estimates that short-term external debt quadrupled between 1990 and 1995, from US\$ 10 billion to US\$ 41 billion (Table 8), and doubled as a ratio to GDP to 24 percent. The increasing importance of bank intermediation of capital inflows in Thailand and the role played by banks in the short-term debt build-up, in particular since the establishment of the BIBF in 1993, are also evident: commercial bank debt as a share of total private external debt rose sharply from 23 percent to 63 percent between 1990 and 1995, while the US\$ 30 billion increase in short-term debt is fully explained by bank borrowing. The financial system increased its reliance on foreign funding for their

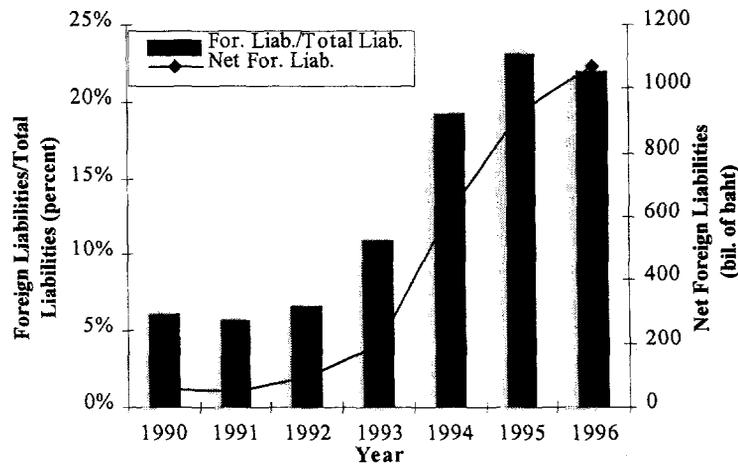
activities which is reflected in the rise in share of foreign liabilities to total liabilities: foreign liabilities as a percentage of total liabilities rose from 5.4 percent (1988) to 6.45 percent (1992) to 17.4 percent (1996) (see Figure 5).³⁵

Table 5. Private External Debt
(end of period - billion US\$)

	1990	1993	1994	1995	1996
Medium and Long-Term	7.4	15.4	20.2	25.1	36.2
Non-Bank	7.3	12.7	13.7	16.9	23.2
Bank Debt	0.1	2.7	6.5	8.2	13.0
BIBF	0.0	1.4	3.0	3.8	na
Other	0.1	1.3	3.5	4.4	na
Short-Term	10.1	22.7	28.9	41.0	37.6
Non-Bank	6.2	12.3	7.4	7.3	8.7
Bank Debt	3.9	10.4	21.5	33.7	28.9
BIBF	0.0	6.4	15.1	23.7	na
Other	3.9	4.0	6.4	10.0	na
Total Private	17.5	38.1	49.1	66.1	73.8
as % of GDP	21%	30%	34%	39%	41%
Bank (% of total)	23%	34%	57%	63%	57%
Short-Term (% of GDP)	12%	18%	20%	24%	21%
Short-Term (% of total)	58%	60%	59%	62%	51%

Source: BOT

Figure 5. The Share of Foreign Liabilities and Net Foreign Liabilities of Commercial Banks



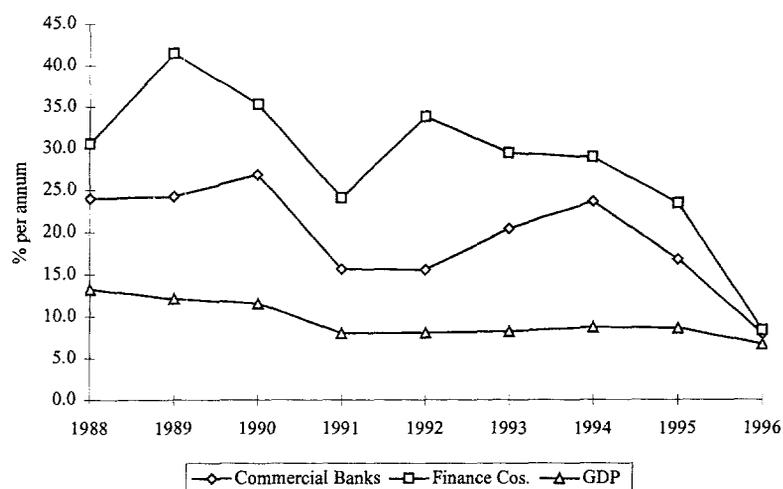
Source: Bank of Thailand, Quarterly Bulletin.

³⁵ The data also illustrate that measures taken in 1995–96 by the government to curb short-term capital inflows (via BIBFs) seem to have had some effects (See Section V.2). In 1996, short-term, in particular bank, debt declined both in absolute terms and in relative terms, and as noted above, firms increased their direct external borrowing. However, according to World Bank DRS data, the average maturity of private debt continued to decline in 1996.

2. Rapid Growth of Credit

The Credit Boom. The liberalization of the capital account coupled with the liberalization of interest rates (after 1992), led to a lending boom (see Figure 12) in the first half of the 1990s. Total credit outstanding grew on average 22 percent p.a. in real terms over 1988 to 1995. The loan portfolio of finance companies grew at an even faster pace—on average 30 percent in real terms p.a. during these years compared to 20 percent for commercial banks (see Figure 6 below). Overall, loan growth on average outpaced the growth of GDP 1.8 times (or 2.3 times in the case of finance companies).³⁶ Finance companies' credit grew fastest in 1992, with loans growing three times faster than GDP, but the rate of growth has been declining since. Compared to commercial banks, finance companies had a stronger incentive to lend because of a signal of the Bank of Thailand suggesting that the size of their credit portfolio would be an important determining factor for the award of a much coveted banking license, i.e., the bigger they are (in terms of asset size) the higher the chances to receive a banking license.

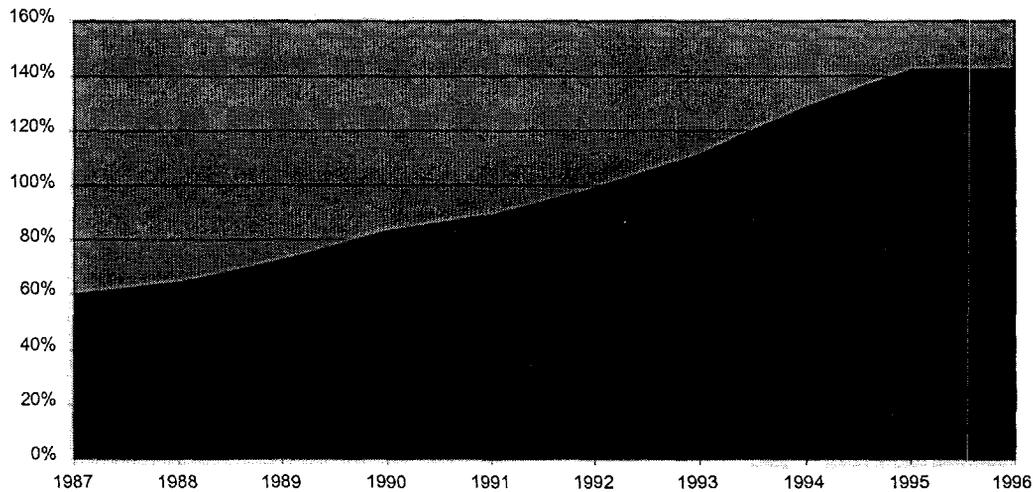
Figure 6. Credit and GDP Growth in Thailand



Source: Bank of Thailand Bulletin.

³⁶ World Bank, Shadow Financial Sector Review (1997).

Figure 7. Credit to GDP ratio, 1987-96



Rising Leverage Ratios. The rapid growth of credit was reflected in a rising credit to GDP ratio, which increased from 64 percent in 1987 to 142 percent in 1996 (see Figure 7). The expansion of credit relative to GDP implied two problematic domestic trends. First, the gearing of the economy increased by an average of 20 percent per year over 1990–97. Secondly, an increasing share of loans from the financial sector was for the accumulation of nonproductive assets, which is reflected in decreasing returns on capital investment. One measure of return on capital investment is the incremental capital output ratio (ICOR), which compares the increases in investment relative to the increases in GDP. A rising ratio implies that investment is becoming less productive, or of lower quality. The ICOR rose steadily in Thailand from 2.8 in 1988, to almost 5 in 1991, to reach 6.2 in 1996.³⁷ Also, The rising domestic debt level created an environment of declining liquidity, as interest expenses consumed greater amounts of income (see Tables 6 & 7 below). Between 1988 and 1996, average interest expenses of the business sector increased 2.5 times as a proportion of GDP, reaching 19 percent (See Section IV.2.a.).

³⁷ See Armstrong, Garber, Spencer (1998).

Table 6. Thailand Goes on a Borrowing Binge

	Billion Baht	as % of GDP
Commercial bank loans, Dec. 1996	4,907	110
Ex-BIBF	4,103	92
BIBF	804	18
Fincos, Sept. 1996	1,514	34
Total financial sector loans, Dec. 1996	6,421	144
Cross-border comparisons (1995 yearend)		
Japan		210
Hong Kong		130
Malaysia		133
Indonesia		58
Philippines		45

Note: GDP 1996 estimate used: 4,445 billion Baht

Table 7. Which Raises the Interest Burden Dramatically

	billion Baht	Interest rate (%)	Interest Exp.	As % of GDP
Baht-denominated loans	5,617	14.0	786	17.7
BIBF loans	804	7.0	56	1.3
Total	6,421	13.1	843	19.0
Cross-border comparisons (1995 yearend)				
Japan, 1991 peak				15.3
Japan, 1995				7.1
Malaysia				10.6
Indonesia				11.2
Philippines				10.6

Source: Goldman/Sachs.

3. Increased Leverage of the Thai Corporate Sector

Firms in Thailand expanded quickly between 1988 and 1996 (as reflected in a rapid increase in fixed assets), in particular in the years immediately prior to the crisis. During 1994 to 1996, the fixed assets of Thai firms grew at 30 percent p.a.³⁸ The asset expansion resulted in severely unbalanced liability structures for many firms and much of these new assets were financed through bank debt. As outlined above, from the late 1980s onward, (financial and) nonfinancial corporations built up risky forms of leverage in the form of short-term foreign currency debt. The large rate differentials between domestic and international interest rates created incentives for unhedged foreign currency borrowing, especially at short maturity, which carried the lowest rates (the spread between local and international rates was on average 4.1 percent in Thailand).³⁹ The stability of the Baht and the perceived low risk of devaluation encouraged an open position and ignoring the associated risk of exchange rate depreciation (see Section V.1.c.)

³⁸ Alba, Bhattacharya, Claessens, Gosh, Hernandez (1998).

³⁹ The World Bank, 1998.

During the 1990s, debt to equity ratios of Thai corporates increased significantly: the median value rose from 1.6 in 1988 to 2.3 in 1996. During the same period, the maturity structure of debt shortened considerably. The share of long-term debt almost halved, decreasing from 58 to 31 percent over that period of time. At the same time, foreign indebtedness increased considerably. By 1996, the median value of foreign debt amounted to 80 percent in Thailand, and 42 percent (median value) of the Thai corporations' total debt was denominated in foreign currency, the bulk of which carried short maturities (30 percent).⁴⁰

Moreover, Alba et al 1998 show that firms with more concentrated ownership tended to have higher leverage ratios. These authors find that firms recording the highest increase in leverage—an average of 53 percent—between 1992 and 1996, were those where the top-five owners' concentration was 60 to 80 percent. In contrast, firms with more dispersed ownership (below 40 percent of shares belonging to the top five owners) show an increase in leverage of only 19 percent, on average. Furthermore, the authors find some support for their hypothesis that “firms with relatively worse performance got a disproportionately large share of financing in the period immediately preceding the crisis.”

By end 1996, hence, Thailand's firms were highly susceptible to liquidity and interest rate shocks. As a result of high leverage, small shocks to interest rates, the exchange rate or operational cash flow would greatly affect the ability of these companies to service their debt. The high share of short-term liabilities made them further vulnerable to sudden swings in international investors' confidence and to the possibility of being unable to borrow from international capital markets to roll over short-term debt or meet other current debt service obligation.

4. The Deterioration in the Risk Profile of Financial Institutions

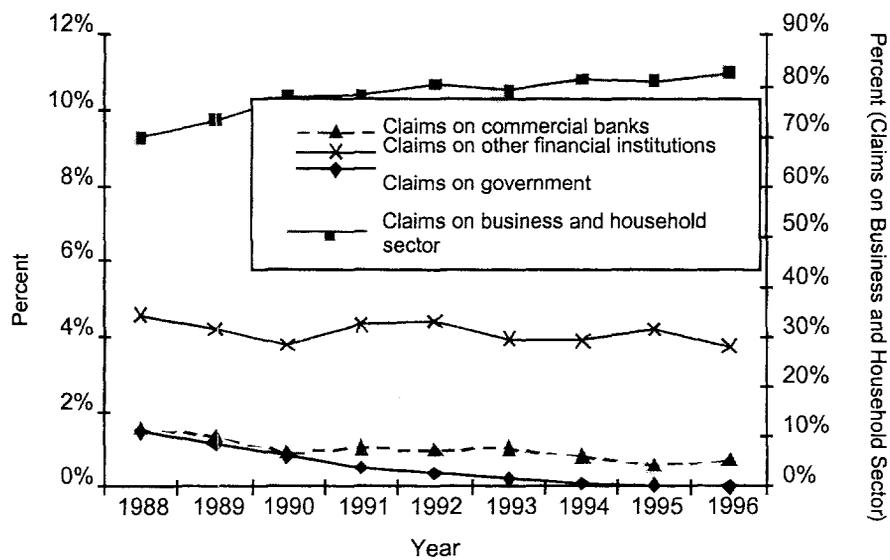
The risk profile of Thai financial institutions deteriorated significantly during the period 1990–96. In particular, Thai banks and finance companies became more exposed to credit risk as the quality of their portfolios deteriorated, in part because the lending boom and enhanced competition in the financial sector led to lending to riskier firms and without proper credit assessments. Credit risk also increased because of increased lending to risky sectors, and because borrowers became more exposed to foreign exchange and interest rate risks. Banks and finance companies also became more exposed to maturity mismatches. In more detail, this deterioration in the risk profile is explained below.

Impact of the Lending Boom. The rapid credit growth that took place in the early 1990s strained the expertise of financial institutions in screening, selecting and monitoring loans. As is common in many recently liberalized systems, the skills required to evaluate risky investment projects and monitor the borrower during the life of the loan may have been in short supply in a banking system in which directed and collateral based

⁴⁰ Figures cited from Claessens, Djankov, Lang (1998).

lending were the primary activities for many years. Moreover, as deposit growth did not keep pace with loan growth, the already high loan to deposit ratio for finance companies and commercial banks increased further: Commercial banks' loan to deposit ratio increased from 96 percent in 1988 to 112 percent in 1995 and from 116 percent to 138 for finance companies respectively.⁴¹ The increase in this ratio also reflected the fact that the financial system (especially commercial banks) substituted higher yielding loans assets with low margin cash or government bonds which was reflected in rising loan to deposit ratios. Loan to deposit ration well above 100 percent made banks and finance companies susceptible to a sudden change in investor confidence and depositor withdrawals.

Figure 8. Composition of Commercial Banks Assets (1988–1996)



Source: Bank of Thailand, Quarterly Bulletin.

⁴¹ World Bank, Shadow Financial Sector Review, 1997.

Table 8. Sectoral Breakdown of Lending Activities

(percentage of total lending)

	1988		1996	
	Comm. Banks	Fincos	Comm. Banks	Fincos
Agriculture, Forestry, and Mining	7.1%	1.3%	3.9%	0.9%
Manufacturing	25.8%	21.8%	26.8%	15.3%
Construction	4.3%	3.5%	4.6%	3.7%
Real estate business	6.3%	14.8%	9.1%	24.3%
Imports	5.3%	2.8%	3.2%	1.7%
Exports	8.3%	1.3%	4.2%	0.8%
Wholesale and retail trade	18.9%	12.7%	17.8%	7.8%
Public utilities and services	7.3%	7.3%	10.6%	7.6%
Banking and other financial business	6.3%	9.1%	7.5%	11.0%
Personal consumption	10.3%	25.5%	12.3%	27.0%
Total	100.0%	100.0%	100.0%	100.0%

Source: Bank of Thailand.

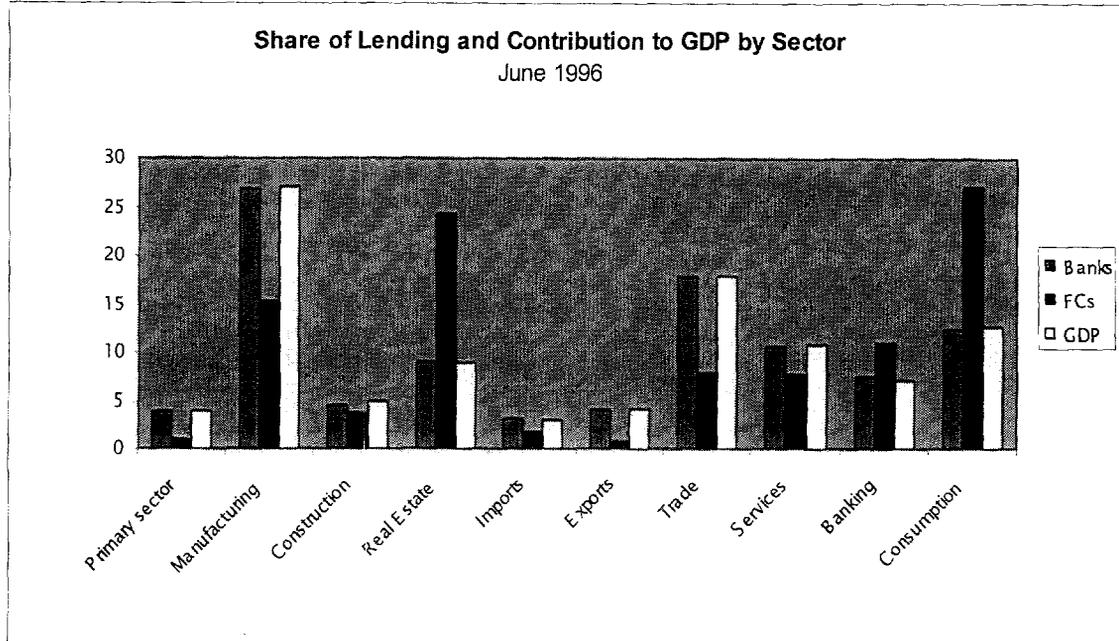
Lending to Risky Sectors. Commercial banks and finance companies did not only increase their share of risky assets on their balance sheets but also expanded their exposure to “higher risk” and the non-tradable sectors of the economy (compare Table 8 and Figure 9). This was even more the case for finance companies which expanded rapidly their lending activities in the real estate sector (from an average 15 percent in 1988 to 24 percent in 1996 with some finance companies real estate exposure exceeding 40 percent) and to loans to consumers.⁴² These “official” figures, however, are likely to be understated because of existing loopholes in the categorization of loans.⁴³ Market estimates have put the overall exposure of Thai financials in the real estate sector at 30 to 40 percent.⁴⁴

⁴² 47 percent of Financial Restructuring Agency’s assets consisted of loans to real estate and construction business, which absorbed the loan portfolio of defunct finance companies.

⁴³ Loans are categorized according to business of the borrower not the purpose.

⁴⁴ J. P. Morgan (1998).

Figure 9.



Source: Bank of Thailand.

Competition and the Customer Base. Under the BIBF umbrella, 19 new licenses were granted to 19 foreign banks in 1993. The increasing possibilities for AAA companies to borrow off-shore and the establishment of BIBFs increased the competitive pressure in the Thai financial marketplace, especially in the prime borrower and multinationals segments. As a result, finance companies and commercial banks (although to a lesser extent) lost their “good” customers as these now had more funding alternatives. Nevertheless due to their aggressive lending practices, finance companies managed to increase their overall market-share quite substantially from 12.7 percent to 21.8 percent of total financial system assets over 1988 to 1996.

Increase in Market Risk for Finance Companies. Most commercial banks limited their interest rate risk exposure by extending floating rate loans to their customers, hence transforming interest rate risk into credit risk. Finance companies, typically extended fixed rate loans to their customers and increased the maturity mismatch between their assets and liabilities considerably after 1992. Although the bulk of loans extended by finance companies were short-term (less than one year), the average maturity of their liabilities was much shorter than that of their assets (about 56 percent of their borrowings had a maturity of less than three months in 1996, up from 30 percent prior to 1992).

Figure 10.

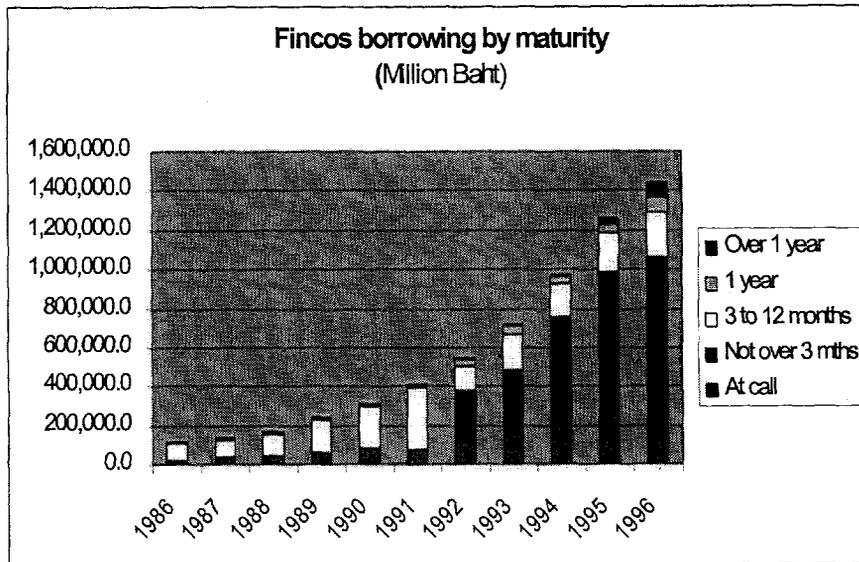
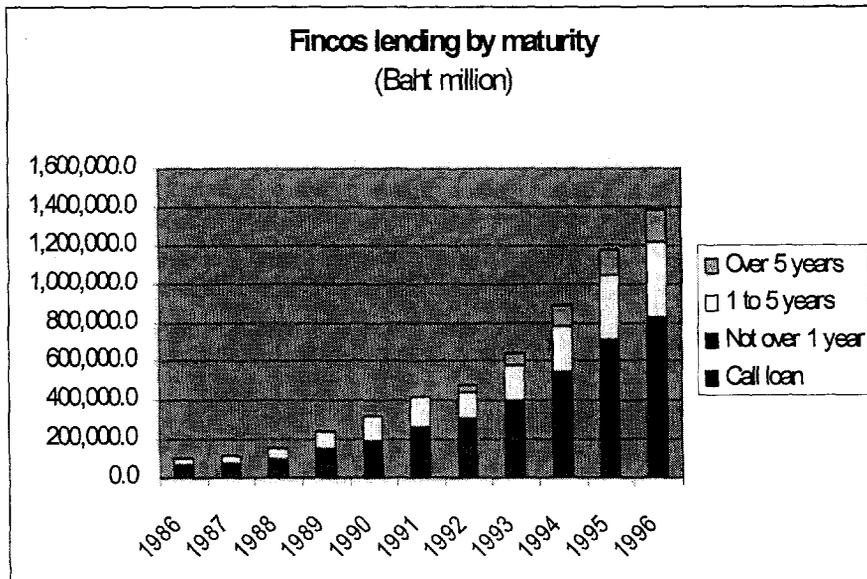


Figure 11.



Source: Bank of Thailand.

Performance of Banks' and Finance Companies. Commercial banks outgrew their weak performance of the 1980s during 1988 to 1995. Profitability as measured in return on assets and equity (See Table 9) increased considerably in the early 1990s because: (i) of a restructuring of the typical balance sheet (as a ratio to total assets, earning assets increased from 79 percent in 1988 to 85 percent by 1995), (ii) lower effective tax rates (BIBF loans were taxed at 10 percent instead of 30 percent), and (iii)

an increase in other income (mainly earnings from securities business).⁴⁵ The increase in interest margins can largely be attributed to the liberalization of interest rates in 1992. A slowing of the economy along with a sharply increased off-shore borrowing by banks and new issues of bank capital filled the banks with liquidity. Meanwhile, the abolition of interest rate ceilings allowed banks to increase their lending rates and decouple them from the deposit rates. Nevertheless, as mentioned before, interest income may be overstated as a result of the lenient interest accrual norms. Moreover, despite the increase, net interest rate margins of banks during this period appear quite low compared to other countries. While net interest rate margins are a rough index of bank (in)efficiency, low margins do not necessarily imply that banks are operating efficiently. For example, low margins may reflect a higher loan to default ratio or may indicate that banks are mispricing credit risk by setting margins too low.⁴⁶

While (accounting) earnings and profits improved during the 1990s, banks never managed to reduce non-performing loans (NPLs). As a ratio of total loans, NPLs remained around seven percent, despite the rapid loan growth during the same period indicating that portfolio problems continued to persist. From 1994 on, accrued interest receivables, often a leading indicator of problem loans, started to rise considerably to 25 percent in 1994 and 27 percent in 1995. This increase also suggests that the rapid credit growth did indeed strain assessment and monitoring skills at banks and made them vulnerable to an economic downturn.⁴⁷ Due to weak loan provisioning guidelines, banks also inadequately provisioned against specific and general loan losses.⁴⁸

Finance companies' profitability also improved during the early 1990s due to (i) an increase in net interest rate margins, (ii) a higher share of risk assets, and (iii) an increase in income from trading and brokerage activities. From 1993 to 1996, however, profitability of finance companies decreased quite markedly. Most of this decline was due to a fall in noninterest income from securities trading (which fell 77 percent during 1993-96) and brokerage fees (which decreased by 47 percent over the same period).⁴⁹

45 ROE in the 90s are most probably overstated as financial institutions were subject to lenient interest accrual and loan loss provisioning guidelines. By the same token their capital is most likely overstated.

46 Compared to banks operating in more stable economies such as the UK and Germany (where banks recorded average net interest margins of 2.9 and 3.1 percent respectively over 1990-1997), Thai net interest rate margins (2.8 percent) appear out of line in terms of risk profile. Data Source: Worldscope.

47 However, the quality of the loan portfolio differed across banking institutions. Big banks still showed moderate levels of nonperforming loans and a smaller increase in accrued interest while smaller banks were more adversely affected by the slowdown in the economy and the collapse of the real estate sector.

48 The tax treatment of provisions also did not provide adequate incentives for commercial banks to provision. Thailand does not allow deductions from taxes that are greater than the lower of .25 percent of loans each year or 20 percent of interest income.

49 The stock market peaked in December 1993 and started to decline thereafter.

Table 9. Performance Indicators of Commercial Banks and Finance Companies⁵⁰

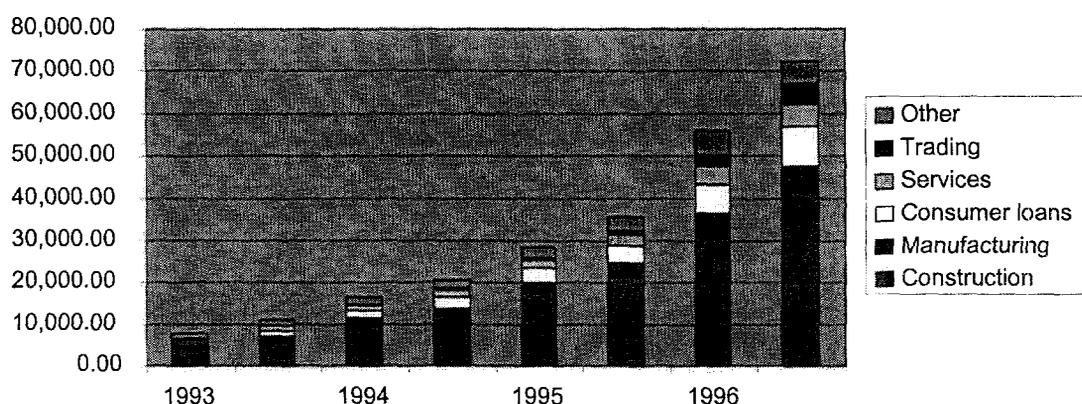
	Commercial Banks		Fincos	
	1995	1996	1995	1996
ROAE	30.6	21.0	20.9	16.7
ROAA	2.4	1.7	2.0	1.4
NPL/ Total Loans			3.5	5.9
Provision for Loan losses/Total Loans	2.1	2.8	6.2	9.0
Increase in accrued interest receivable/pre-tax profit	10.0	16.9	14.6	23.5
Capital/Asset Ratio	8.0	8.3	11.3	10.5
Loan/Deposit Ratio*	108.7	110.8	137.1	138.2

Source: Bank of Thailand.

* Gross loans/notes payable for finance companies. Gross loans to total borrowing (which included overdrafts, rediscounts and other borrowings) reached 117.4 in 1995 and 116.5 percent in 1996.

While finance companies showed strong profits in the early nineties, the quality of their loan book continued to be problematic (Figure 12). The portfolio deteriorated sharply in 1995 with rising NPLs and a significant increase in interest accrued. This deterioration can mainly be attributed to three factors: (i) the collapse of the property market with its repercussion on the construction sector and the slump in the stock market; (ii) a slowdown in the economy and high and rising interest rates that adversely affected both the consumer portfolio and interest rates margins since finance companies were highly exposed to interest rate risk (see above); and (iii) deficient risk and liquidity management practices coupled with poor prudential regulation, deficient supervision and weak enforcement.

Figure 12. Finance companies NPLs (Baht million)



⁵⁰ Data for finance companies reported refer to 30 largest companies in the market. Data cited after World Bank, The Finance Company Sector, World Bank Mimeo, 1998.

In sum, the high growth in credit strained banks and finance companies in their capacity to screen and assess credit risk, and led to weaker portfolios. In addition, banks and finance companies increased their exposure to riskier (i. e., more volatile) sectors of the economy. Hence, as a result of the lending boom and coupled with the practice of collateral based lending, banks and finance companies became more vulnerable to economic shocks in the 1990s, mainly because of two factors: (i) by lending excessively to sectors or firms whose debt service capacity was particularly susceptible to shocks; and (ii) by reducing their own capacity to absorb negative shocks, especially by exacerbating currency and maturity mismatches, by mispricing loans, and by underprovisioning for future potential losses.

V. Policy Response

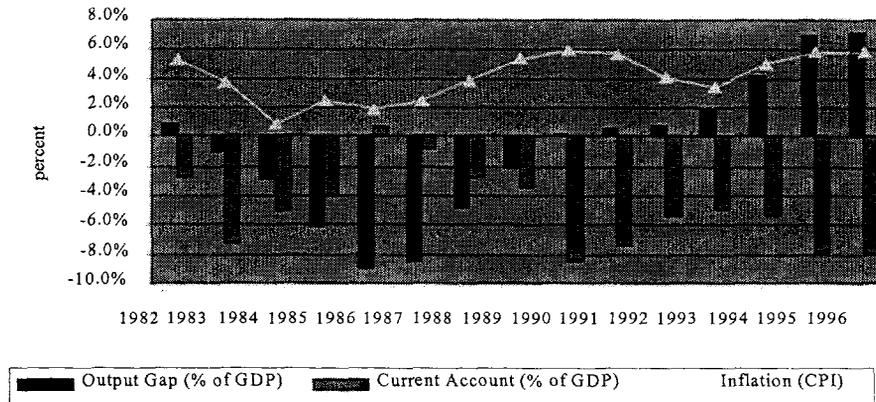
This section analyzes the policy measures implemented by the government in the macro- and financial sector areas to: (i) control overheating pressures in the face of massive capital inflows, (ii) create an incentive compatible environment for market participants to minimize excessive risk taking, and (iii) strengthen the regulatory and supervisory framework of financial institutions and corporates. With the benefit of hindsight, it is now obvious that these policies were insufficient. However, they did to some extent contain the most extreme manifestations of overheating such as rapid inflation and the appreciation of the exchange rate, in particular during the early years of the boom in capital inflows and credit. But overheating pressures built up quickly again starting in 1993 and, as discussed in the previous section, the economy at both the micro and macro levels became increasingly vulnerable to external shocks. This section, hence, will analyze why the macro and financial sector policies failed to contain overheating and vulnerability, and indeed why they may have even contributed to the build-up of macrofinancial vulnerabilities and fragility in the banking and corporate sectors.

1. Macro Policies

Capital flows can be procyclical for several reasons. First, private capital flows can accommodate excess demand pressures as domestic residents borrow overseas to fund their expansion plans. Second, capital flows, attracted by high potential returns, can generate domestic cycles by contributing to domestic investment. Finally, capital flows may exacerbate asset price inflation and indirectly contribute to consumption and investment booms. In all three cases, excess demand will be manifested by increases in the current account if there is excess demand in tradables, and in rising inflation if there is excess demand in nontradables. Excess demand for nontradables will also lead to a deterioration in the current account as the real exchange appreciates.

In Thailand, the demand pressures were manifested primarily in a widening of the current account deficit, although there was also an increase in inflation. As measured by both the current account and inflation, both 1990–91 and 1994–96 are the periods when overheating is most evident (see Figure 13) coinciding also with the two peak capital inflow periods. During most of the capital inflow period domestic demand, in particular investment, was the major contributor to GDP growth. The contribution of the external sector to GDP growth was negative in Thailand during 1990–96, except for 1991 and 1992 when the current account deficit improved.

Figure 13. Overheating Symptoms



There are important differences between the two periods when overheating pressures were most evident. First, while during the period 1988–92 output recovered quickly and grew at about 11 percent p.a. on average, it remained below or close to its potential level. This implies that the growth in investment was driving GDP, and also that the increase in the current account deficit was creating productive capacity. During the latter period, 1993–96, output growth quickly surpassed capacity, reflecting the increasing importance of consumption as a source of growth as well as the decline in investment efficiency. For example, while the average incremental capital output ratio during the period 1988–92 was 3.5, it increased to 5.4 for the period 1993–96. As mentioned before, recent studies on growth performance in Thailand also suggest that productivity growth (TFP) was declining during this period.⁵¹ Second, as shown above, short term debt intermediated by domestic banks dominated the composition of capital inflows during the second overheating period, compared to a more balanced composition of equity (including FDI) and debt during the initial period. We believe that the macroeconomic policy mix is an important albeit partial explanation of these differences. This hypothesis is explored further below after analyzing the determinants of capital inflows.

a. Determinants of Capital Flows.

Both *push* and *pull* factors have played a role in determining private capital flows to Thailand. The analysis focuses on the determinants of shorter term flows (net of FDI), since as these inflows are more volatile and the primary cause of vulnerability.⁵² As described in more detail in Annex 1, bank and nonbank flows are analyzed separately

⁵¹ For example, Tinakorn, Pranee and Chalongphob Sussangorn: *Total Factor Productivity Growth in Thailand: 1980-95*. Thailand Development Research Institute, July 1998.

⁵² As a general observation, longer term FDI flows should be analyzed as a separate category since they respond to a different set of *push* and *pull* factors than the more shorter term (portfolio) flows (Hernández and Rudolph, 1997). Given their longer gestation and implementation period, FDI should be sensitive to longer term trends rather than short-term variations.

since they may respond differently both in terms of magnitude and speed to changes in push and pull factors. Following the literature, the factors included in the empirical analysis are the differential between foreign and domestic interest rates, a measure of country creditworthiness, a variable measuring domestic output that serves to capture the demand for financing (as well as prospects for the economy), and four dummy variables to capture changes in tax adjusted rates of return and administrative controls.

The empirical analysis (see Annex 1) illustrates that high domestic interest rates were a major factor in attracting short-term capital in Thailand during 1988 to 1992, and that nonbank flows were slower in reacting to the interest rate differential. The faster adjustment of bank flows to changes in interest rate may reflect easier access of financial institutions to short term lines of credit overseas which in turn allows them to quickly take advantage of opportunities for interest arbitrage. Similarly, both bank and nonbank flows are sensitive to country risk. In other words, as country risk declined over the 1990s, the same interest rate differential would lead to larger inflows of private capital.

Administrative measures regarding capital account transactions were also important in Thailand, but seemingly more in changing the composition of flows rather than their total magnitude. The empirical analysis confirms that the establishment of the BIBF led to a large increase in bank flows. It also confirms that the 7 percent reserve requirement imposed by the BoT on foreign short-term borrowings by banks and finance companies had a large negative impact on short-term bank inflows. Given that bank and nonbank flows are strong substitutes, however, the impact on total flows of such measures is significantly reduced although not totally offset. For example, while the establishment of the BIBF strongly encouraged the intermediation of foreign capital by banks, it also led to a decline in inflows intermediated through other channels. These results have strong implications for the effectiveness of monetary policy.

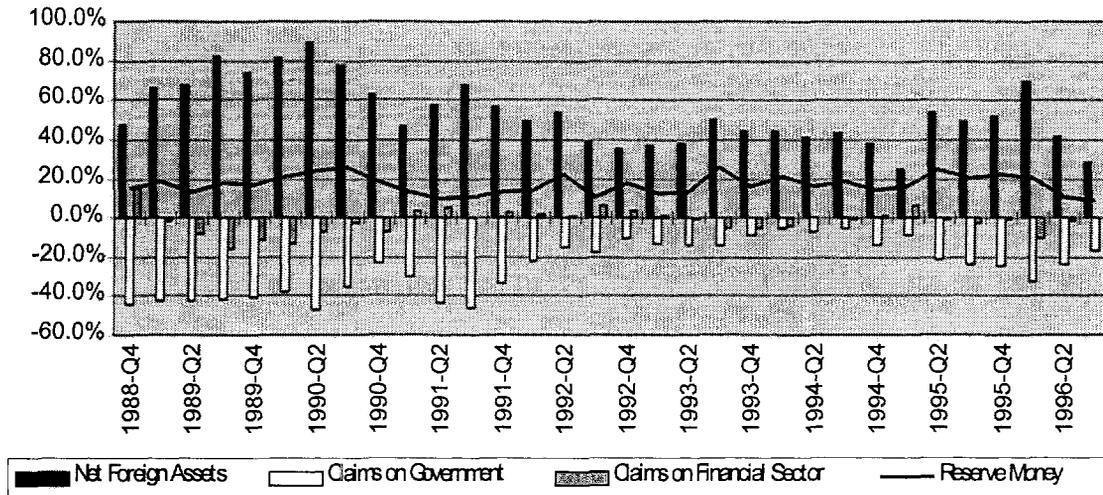
b. Monetary Policy

Starting in 1988, the Bank of Thailand began sterilizing the surge in capital inflows by accumulating foreign assets and receiving deposits from the public sector. Despite very substantial increases in net foreign assets—net foreign assets grew on average by about 54 percent per annum, and in some periods skyrocketed to as high as 89 percent—BoT succeeded in containing reserve money growth to an average of 17 percent during the entire period (1988:Q4—1996:Q3) (Figure 14).

Thailand relied primarily on monetary tightening and the sterilization of capital inflows to deal with overheating pressures resulting from an upturn in domestic demand and capital inflows (see Annex 2). Nevertheless, in raising interest rates, Thailand was simply providing an impetus for further capital inflows, since the latter were very responsive to interest arbitrage opportunities. Indeed, as investor perceptions regarding Thailand strengthened during this period, capital inflows became more sensitive to the measured interest rate differential. Structural factors such as the progressive liberalization of the capital account during this period and the increasing familiarity of investors with emerging markets also worked in the same direction. Hence, monetary

policy during 1993–96 was becoming less effective as an instrument to deal with overheating and capital inflows (for example, the offset coefficient was increasing, see Annex 2), and was in fact encouraging further inflows and the accumulation of external short-term liabilities.

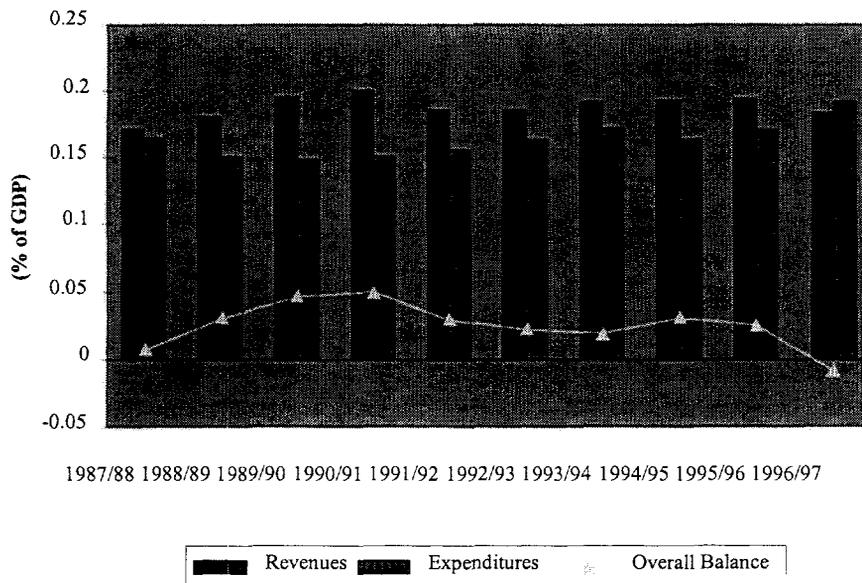
Figure 14. Thailand: Growth in Reserve Money and Its Components



Note: Annual growth measured as the percentage changed from the same quarter one year before.

c. Fiscal Policy

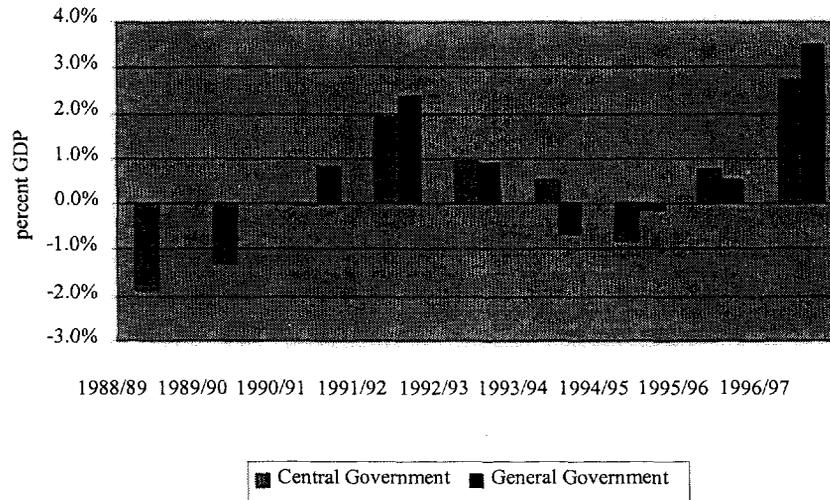
Figure 15. The Central Government's Fiscal Position



1987/88 1988/89 1989/90 1990/91 1991/92 1992/93 1993/94 1994/95 1995/96 1996/97

Despite the decreasing effectiveness of monetary policy, fiscal policy was not used to contain overheating during the period 1993–96, and indeed may have added to demand pressures. As discussed above, Thailand had succeeded in eliminating fiscal deficits following the fiscal consolidation of the mid-1980s. The underlying fiscal policy position remained strong in Thailand during 1988–1996, and Thailand recorded surpluses every year except 1996/97. Although fiscal surpluses declined during the period 1992–96—as the focus of fiscal policy shifted towards addressing infrastructure bottlenecks—they remained around 2 percent of GDP during 1992–94. In 1995, the fiscal surplus rose to 2.5 percent of GDP. However, the fiscal stance which had been expansionary in 1994 (and hence had been counter-cyclical given that the economy was not experiencing overheating pressures) turned slightly more expansionary in 1995 (so that the fiscal impulse was expansionary) when excess demand pressures emerged. In 1996, the fiscal surplus declined to 1.6 percent of GDP, entailing a strong expansionary impulse—although the growth of the economy had only slowed slightly and demand pressures remained very high as measured by the output gap and the current account deficit. In both years, therefore, fiscal policy was procyclical. The procyclical nature of fiscal policy during this period is also reflected in the correlation between the fiscal impulse and excess demand pressures in Thailand which turned positive over 1993 to 1996. In sum, while the fiscal stance remained conservative in Thailand over 1988–1996, fiscal policy imparted a positive impulse to the domestic pressures in the critical 1993–96 period, thereby aggravating the pressure on interest rates (Figure 16).

Figure 16. Fiscal Impulse



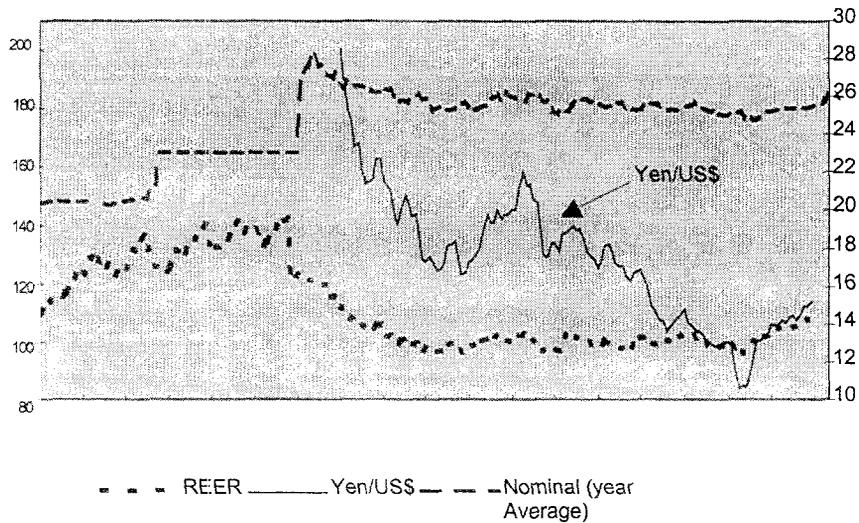
d. Exchange Rate Policy

From 1985 to mid-1997, the nominal exchange rate in Thailand remained fairly constant. Indeed, after a 10 percent devaluation in mid-1981, and another 18 percent

devaluation in late 1984, the Baht stabilized at about Bt25 per dollar, showing only small changes around this value—the average monthly variation during this period was an appreciation of 0.82 cents of a Baht per month, while the coefficient of variation of the exchange rate was only 0.02⁵³ (see Box 2).

The inflation rate in Thailand during this period also remained stable at about 0.38 percent per month, on average, with a standard deviation of about 0.45 percent. In this domestic environment, with an average international inflation rate at about 0.18 percent per month—measured by the US WPI—and a depreciating dollar *vis-à-vis* other major currencies, the real effective exchange rate in Thailand depreciated steadily until the first quarter of 1995. The latter trend reversed when the US dollar began appreciating *vis-à-vis* the yen and other major currencies in international markets in the second quarter of 1995 (see Figure 17).

Figure 17. Real Effective and Nominal Exchange Rate



International market conditions during 1985–95 facilitated achieving high economic growth in Thailand—based on a sustained development of exports—by maintaining a stable nominal exchange rate, despite domestic inflation being higher than the relevant international one (U.S.). Indeed, the strategy adopted by the monetary authorities in Thailand until the devaluation of the Baht in July 1997, was to maintain a stable nominal exchange rate, although they systematically implemented small changes to its value whenever there were signals that the differential between the domestic and foreign inflation rates was widening and that the real sector was growing too fast—which could lead to potential overheating. These results are obtained by estimating the BoT exchange rate reaction function: i.e., by regressing the change in the exchange rate parity (dependent variable) on the domestic inflation rate, the external (U.S.) inflation rate, and

⁵³ Average values are calculated between January 1985 and May 1997.

a proxy variable measuring the gap between actual output and its long-term trend (independent variables). The estimated model is specified in equation 1 below,

$$(1) \Delta FX_t = \beta_0 + \beta_1 \pi_{t-1}^d + \beta_2 \pi_{t-1}^{us} + \beta_3 \gamma_{t-1}^{gap} + \varepsilon_t,$$

where ΔFX stands for the absolute change in the exchange rate, π^d stands for domestic inflation, π^{us} stands for the international (US) inflation rate, γ^{gap} is the proxy used for overheating,⁵⁴ and ε is an error term. The estimation results using monthly data under alternative specifications of the model are reported in Annex 3. The important result drawn from this exercise, as discussed in Annex 3 is that, starting in early 1992, the authorities partly abandoned the policy of correcting the exchange rate for changes in inflation differentials and excessive output growth. In other words, during 1992–96 the policy of keeping an almost constant nominal exchange rate was strengthened, further decreasing the perceived exchange risk and therefore giving more incentives to borrow short-term from abroad.

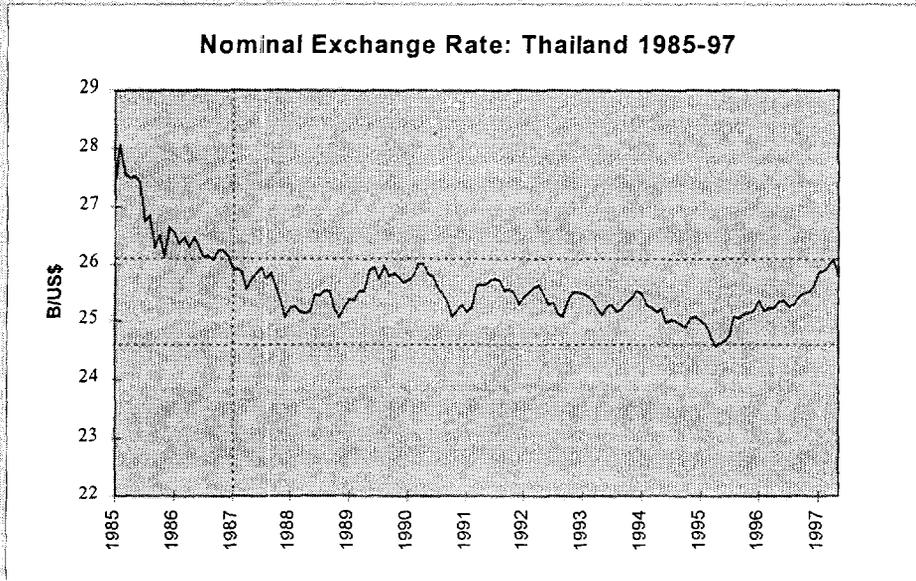
In sum, the Thai authorities, concerned with preventing an appreciation of the real exchange rate to retain Thailand's export competitiveness, maintained a pegged exchange rate system and intervened in the foreign exchange market to maintain the peg in the face of the large capital inflows. By preventing the nominal exchange rate from departing significantly from the central peg (in particular, by preventing the exchange rate from appreciating), the policy resulted in a fairly predictable nominal exchange rate, which reduced foreign exchange risk faced by investors and increased the incentives of domestic residents to incur in unhedged, short-term foreign debt. Hence, a more flexible exchange rate policy could have reduced capital inflows and thus overheating pressures, obviating the need to tighten monetary policy in the first place and avoiding the perverse cycle of tight monetary policy, resulting in an increase in interest rates, attracting additional inflows, which result in further tightening of monetary policy.⁵⁵

⁵⁴ The proxy variable for *overheating* is based on the consumption of electricity in the Bangkok metropolitan area, and is measured as the seasonally adjusted deviation from its long-term trend. The long-term trend is estimated using a simple regression of consumption of electricity on time and time square. The results of this estimation are as follows: $elect = c + 10553 \text{ time} + 32.34 \text{ time}^2$, where both estimated coefficients resulted significant at 1 percent levels and both R^2 and $\text{adj-}R^2$ were about 96 percent.

⁵⁵ A wider band would have reduced the incentives for short-term borrowing since these flows are more sensitive than longer term flows to fluctuations around the central parity. Long-term flows are determined by perceptions regarding the medium- to long-term sustainability of the central parity.

Box 2. Targeting a nominal band for the Baht

A closer examination to the evolution of the nominal exchange rate in Thailand gives some additional light regarding the policy followed by the authorities during 1985–1997. Although still showing little variation for the whole 1985–97 period, an even narrower band appears to have been targeted by the authorities starting in 1987. Indeed, as shown in the figure below, after an appreciation of about 8 percent between early 1985 and late 1986, the Baht fluctuated within a very narrow band of ± 3 percent around its mean—of B/US\$ 25.4—for the entire period 1987–mid-97 (in absolute value the Baht fluctuated by ± 0.08 around its mean, with a minimum and a maximum of 24.6 and 26.1, respectively).



2. Policy Response in the Financial System

Policy measures that the government implemented in the financial system can be grouped into two different categories: (i) (delayed) measures that were aimed at deterring short-term capital flows through the banking system; and (ii) measures aimed at strengthening the broader incentive framework of financial institutions.

a. Measures aimed at Deterring (Short-term) Foreign Capital Flows

As outlined above, the government promoted BIBF operations by granting bank tax incentives on their BIBF operations and excluding them from reserve requirements, which effectively lowered funding costs (of foreign instruments) even further. Starting in 1995, BoT implemented measures aimed at curbing (short-term) capital flows mostly by aligning the treatment of BIBF transactions with other bank transactions and thus reducing banks' incentives to engage in BIBF transactions. The measures included the following:

- Increasing the minimum credit level for credit extended through BIBF from \$500,000 to \$ 2 million (to ensure that loans were granted to larger size business).

- Raising the reserve requirement for nonresident Baht accounts from 2 to 7 percent in late 1995.
- Implementing a 7 percent cash reserve requirement on short-term monetary instruments under 12 months for both banking and finance companies effective on June 23, 1996.
- Lowering the credit tax for BIBF business from 30 to 10 percent.

As described above, while these measures were successful in reducing incentives for BIBF operations (see Annex 1), they were of limited effectiveness in curtailing total short-term foreign borrowing. As BIBF operations became more expensive, domestic firms increased their direct foreign borrowings since they continued to remain attracted to the differential between domestic and international interest rates. Banks and corporations, assuming that the currency peg credible piled on more short-term foreign debt as it represented (a supposedly) low cost and low risk financing option. And importantly, the measures were too late in that banks and corporates had, by end 1995–mid-1996 when these measures were implemented, highly vulnerable balance sheets.

b. Changes to the Regulatory Regime in the Aftermath of the Liberalization of the Financial System and the Capital Account

Financial sector liberalization and the opening of the capital account changed the business of banking in Thailand. For example, risky projects were usually priced out of the market, since lending rates were subject to ceilings and banks could not charge appropriate risk premia. When ceilings were lifted during 1992, and lending requirements to priority sectors were relaxed, it became possible for financial institutions to finance riskier ventures. Moreover, the removal of currency controls and the set up of BIBF operations allowed financial institutions to take on foreign exchange risk by raising foreign currency funds on international markets and lending them to local borrowers—in other words, transforming currency risk into credit risk by lending foreign currency to unhedged domestic borrowers.

While liberalization increased the opportunities for financial institutions to take on risk, financial institutions' incentives to evaluate and manage the downside risks of their activities were not strengthened—for instance, by increasing the capital to asset ratio and imposing stricter loan classification and loan loss provisioning guidelines—and the relatively weak regulatory and supervisory framework was not improved upon. This was compounded by the fact that the resolution of the crisis in the 80s appeared to have signaled to depositors that deposits were (implicitly) guaranteed, thus reducing incentives for market monitoring and increasing the scope for moral hazard. Moreover, as emphasized by Caprio and Summers (1993) and Hellman, Murdock, and Stiglitz (1994), another factor that may have contributed to moral hazard was the reduction in franchise value as competition increased and ceilings on interest rates were eliminated.

During the mid 1990s, attempts were made to strengthen the prudential regulatory framework. Starting in 1993, the BoT took several measures to strengthen the prudential

regulatory framework, albeit as Table 10 illustrates, BoT failed to bring it closer in line with global best practice (especially in the area of loan classification and loan loss provision guidelines, concentration and exposure ratios and limits on connected lending). Moreover, the finance company sector remained more lightly regulated than commercial banks despite the fact that these companies engaged in similar activities (but in riskier market segments) as banks.

Table 10. Changes to the Regulatory and Supervisory Framework

Date	Measures
1993/January	<ul style="list-style-type: none"> Imposing BIS capital adequacy standards on commercial banks. Initially minimum capital-to-risk-asset ratio set at 7 percent for domestic banks and 6 percent for foreign banks.
1993/December	<ul style="list-style-type: none"> Increasing minimum capital-to-risk ratio to 7.5 percent for domestic banks and to 6.5 percent for foreign banks.
1994/June	<ul style="list-style-type: none"> Imposing net foreign exchange position limits on finance companies (25 percent on overbought side and 20 percent of tier 1 capital on oversold side) Increasing minimum reserve for doubtful debts of commercial banks from 50 to 75 percent.
1995/March	<ul style="list-style-type: none"> Commercial banks have to submit details of their risk management to BoT.
1995/December	<ul style="list-style-type: none"> Increasing minimum reserve for doubtful debts of commercial banks from 75 to 100 percent.
1996/May	<ul style="list-style-type: none"> Imposition of 100 percent provisioning requirement against doubtful loans for finance companies, finance and securities companies, and credit foncier companies.
1996/October	<ul style="list-style-type: none"> Increasing the first tier capital fund to risk asset ratio of commercial banks from 5.5 percent to 6 percent. Increasing the overall capital-to-risk asset ratio of finance companies to 7.5 percent (equivalent to commercial banks).
1997/March	<ul style="list-style-type: none"> Further strengthening of the loan loss provisioning requirements.

Source: Bank of Thailand, Financial Institutions and Markets in Thailand, 1998.

3. Conclusions

Private capital flows validated and exacerbated the domestic macro cycle in Thailand, and despite efforts to the contrary, led in several instances to overheating pressures as manifested by the growing current account deficit and rising inflation. More importantly with regard to vulnerability, however, was that the policy mix created incentives for large current account deficits to be financed through the rapid build-up of short-term, unhedged, external liabilities. The macro policies that jointly contributed to vulnerability in Thailand were:

- Monetary policy stance.** Monetary policy during 1993–96 was becoming less effective as an instrument to deal with overheating and capital inflows, and was in fact encouraging further inflows, by raising domestic interest rates, and the accumulation of short-term liabilities.
- Exchange rate policy.** By allowing the nominal exchange rate to only fluctuate in a narrow band and by not permitting it to appreciate, Thailand's exchange rate policy contributed to vulnerability most importantly by encouraging both short-term and unhedged borrowing by reducing the perceived exchange rate risk. If authorities had been more flexible and had permitted the nominal exchange rate to appreciate,

incentives to borrow abroad would decline if the rise in the value of the Baht leads to expectations of a future depreciation. A more flexible exchange rate could have reduced capital inflows and overheating pressures, obviating the need to tighten monetary policy and thus avoiding or reducing the perverse cycle of tight monetary policy—additional capital inflows and further tightening of monetary policy.

- ***Fiscal policy.*** Despite the fact that the underlying fiscal policy remained conservative throughout 1987–96, fiscal policy became procyclical during 1993–96 and imparted a positive impulse to domestic demand pressures, thereby aggravating pressures on interest rates.

In the financial sector, administrative measures to curb capital inflows and dismantle tax and other advantages were too little, too late. Moreover, the incentive and regulatory as well as supervisory framework which were weak at the onset of the liberalization were not strengthened sufficiently to align incentives of bank owners, managers and supervisors with prudent banking. Finally, market discipline continued to remain severely curtailed as disclosure and accounting were not improved substantially and the government failed to curtail the safety net (or implicit deposit insurance), which was implemented during the resolution of the 1983–87 crisis.

VI. Conclusions

In summary, the analysis above suggests that the interaction between macro-policies and the institutional framework under which Thai financial institutions operated created many vulnerabilities, which came home to roost in July 1997. The main elements of our conclusions are that: (a) the build-up in vulnerability was rooted in private behavior, in particular, regarding the magnitude of investment, its composition and how it was financed, rather than in the public sector; (b) financial sector weaknesses—including the inadequate regulatory and supervisory system, (implicit) deposit insurance, concentrated ownership structures, poor accounting and disclosures—combined with financial sector and capital account liberalization, contributed significantly to the build-up of vulnerabilities by creating incentives for excessive risk taking for financial institutions; (c) weaknesses in the governance of corporations, including close links with the banking sector, induced risky investment and over-diversification in the corporate sector; (d) while many aspects of the macro fundamentals were strong, the macro policy mix that combined a tight monetary policy with an inflexible exchange rate created strong incentives for residents to expose themselves to excessive foreign exchange and liquidity risks.

Inadequate macro-economic policies increased vulnerabilities. Regime shifts in macro-financial regulation (liberalization of the capital account and financial sector in the late 1980s and early 1990s), without an adequate upgrading of the regulatory and supervisory framework led to rapid credit growth. In parallel, attracted by Thailand's rapid growth rate and improving creditworthiness, starting in 1988 there was a large surge in net private capital inflows. Both, in turn, fueled over-investment in unprofitable industrial capacity and in the real estate sector, creating an asset price boom-and-bust cycle and macroeconomic overheating pressures. Loans were committed on inflated collateral values and often funded through (mostly short-term) foreign currency liabilities without appropriate hedging strategies. Monetary and exchange rate policy encouraged off-shore short-term funding. The macro policy mix maintained domestic interest rates above international comparable levels, while foreign currency risk appeared minimal against the background of stable nominal exchange rates. Rapid accumulation of domestic and foreign currency credit rendered the corporate sector increasingly leveraged and vulnerable to financial shocks.

And micro-deficiencies led to poor resource allocation and added risks. The institutional framework affecting financial institutions was not conducive for prudent behavior. The resolution of the crisis in 1983–84 did not lead to a renewal and upgrade of managerial capabilities in Thai financial institutions. Moreover, deregulation had increased competition, resulting in a decrease in franchise value of financial institutions, which further reduced their incentives for prudent behavior. This was compounded by lax supervision and regulators, which had weak problem recognition capacity and engaged in forbearance. Market oversight was limited due to the poor disclosure and quality of financial information, a concentrated ownership structure and cross ownership links between financial and nonfinancial entities. Moreover, incentives for market

oversight were possibly reduced with a bailout of depositors following the mid-1980s crisis.

Weak governance of financial institutions (due to a lack of market for corporate control and nontransparent, cross ownership) allowed for bank lending to and investment in unviable projects. Financial institutions relied more on collateral rather than on evaluation of project viability, or borrower creditworthiness, or cash flows, which encouraged the build-up of real estate and equity market exposure and increased vulnerabilities. In addition, the lending boom strained credit assessment and monitoring capacity of financial institutions and, coupled with insufficient internal risk control mechanisms and risk management practices, rendered financial institutions vulnerable. Similarly, weaknesses in the governance of corporations induced risky investments and over-diversification, with low returns on investment.

While some of these policy distortions and institutional weaknesses had been festering for some time, the vulnerability build-up was particularly quick and severe during 1994–96. On the macro side, fiscal policy on a cyclically adjusted basis was expansionary during this time period and monetary policy bore most of the burden in managing the large overheating pressures. Combined with nominal exchange rate stability, the macro policy mix, by increasing the risk adjusted interest rate differential, is an important factor explaining the surge in short-term private capital inflows that peaked in 1995. On the financial sector policy side, the establishment of the BIBF in late 1993 is another significant factor in explaining the rapid accumulation of short-term foreign exchange liabilities. The tax and reserve treatment of BIBF institutions acted like the Chilean capital controls used in the 1990s but in reverse, increasing instead of deterring short-term debt inflows.

Thailand is not the first country to experience a financial sector crisis after financial sector liberalization. Indeed, many financial liberalization episodes in the past have led to a lending boom, increased financial fragility, and a crisis. Examples of this are the U.S. in the mid-1980s, Sweden, Finland and Norway in the late 1980s and early 1990s, and Mexico in 1994–95. Nevertheless, Thailand's crisis illustrates—like Chile's in the early 1980s—that opening the capital account and integrating with global financial markets while liberalizing the domestic financial sector, should be contingent on adequate domestic institutional development. The benefits of an open system have to be weighted against the risk of financial crisis, especially in countries with not only fragile financial systems but also weak regulatory and supervisory frameworks and (implicit) government guarantees on deposits. Moreover, the liberalization of the financial sector needs to be carefully managed as it increases competition and thus lowers the franchise value of (existing) financial institutions, creating incentives for unsound banking practices.

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Annex 1. Determinants of Short-term Private Capital Flows

Following the literature, factors that may affect both bank (*FBNKS*) and nonbank flows (*FNBNK*), net of FDI, are the following:

- *Interest Rate Differential (IDIF)*: the differential between domestic (the interbank rate) and foreign interest rates (dollar overnight LIBOR). This captures both push and pull factors. Given the stability of the Baht/Dollar rate and the credibility of the exchange rate policy during the period of analysis and the lack of a complete data set on exchange rate expectations, the rate differential is not adjusted for the depreciation premium. The data that is available on exchange rate expectations of selected institutional investors and banks supports this unorthodox approach.⁵⁶ If 1995–96 is a representative period, investors expected the Baht/Dollar rate to hover around 25 as shown in Figure A1-1, and the exchange rate plays only a minor role as a determinant of expected returns and risks.
- *The Institutional Investor Country Rating (IIRAT)*: a measure of creditworthiness. Since this country rating measures country risk, it complements the interest rate differential variable to the extent that the latter does not fully capture changes in country risk. (It was not possible to directly account for country risk for lack of good data on spreads demanded by the market for holding Thai sovereign dollar bonds.)
- *A Proxy for GDP (GE)*: the 12 months growth in electricity consumption.
- Since bank and nonbank flows are strong substitutes as discussed above, it seems plausible to include the contemporaneous value of their counterparts in the respective equations.
- Four dummy variables to capture changes in tax adjusted rates of return and administrative controls on capital inflows:
 - *A dummy (DUMBIBF)* to capture the impact of the establishment of the BIBF starting in March 1993.
 - *A dummy (DUMNRBCON1)* to capture the impact of the change in how commercial banks hold the 7 percent reserve requirements on NR Baht deposits. Effective August 8, 1995, banks were required to hold all 7 percent reserve requirements at the BoT (with no interest) rather than the previous minimum 2 percent.
 - *A dummy (DUMNRBCON2)* to capture the impact of the BoT requirement, effective April 4, 1996, for fincos to deposit at the BoT 7 percent of their short-term (< 1 year) Baht currency borrowings from nonresidents. This measure would indirectly discourage NR deposits since these accounts serve several purposes, including the purchase of short-term finco paper.
 - *A dummy (DUMBBORCON)* to capture the impact of the BoT measure, effective June 23, 1996, that extended the 7 percent reserve requirement to all new short-term foreign borrowings of commercial banks, BIBFs and Fincos. This measure is designed to discourage capital inflows, especially short-term.

⁵⁶ The data are from a repeated survey of investors for the period 1995–1996 on their expectations for the level of the Baht/Dollar exchange rate.

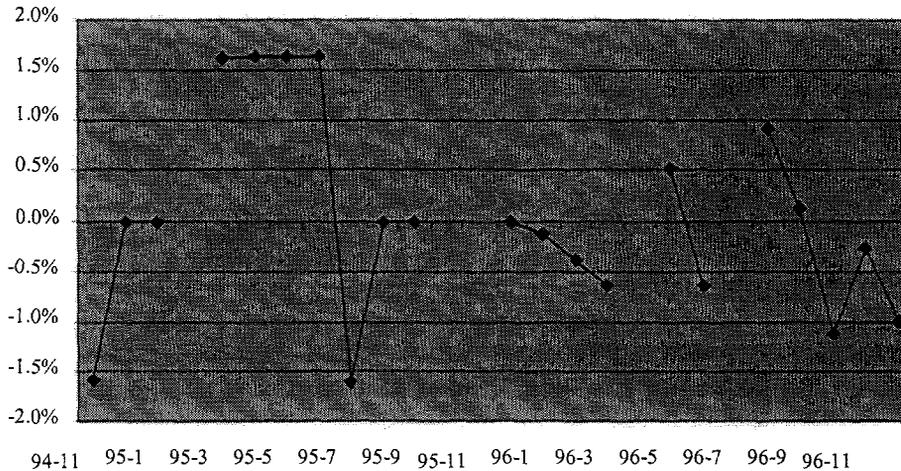
Table A1-1 below shows the surprisingly strong result. To avoid simultaneity biases, the equations have been estimated by two stage least squares using all the exogenous variables of both equations and lagged endogenous variables as instruments in both equations. Both equations were estimated in levels with monthly data starting in January 1992 as both capital inflow variables were found to be stationary. As expected, the two types of flows are strong substitutes during the sample period. In both equations, the coefficients for the values of the other type of flows are large in absolute terms but negative, and very significant. These results show further that private capital flows, however, are not sensitive to growth performance, at least as measured by electricity consumption.

Table A1-1

Determinants of Bank Intermediated Net Capital Flows (FBNKS) (US\$ millions, monthly, 1992-96)			Determinants of Non-Bank Net Capital Flows (FNBNK) (US\$ millions, monthly, 1992-96)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Constant	-12329.71	-3.65	Constant	-9278.90	-2.19
GE(-1)	1635.82	0.84	IDIF(-1)	100.31	2.58
IDIF	108.98	3.60	FBNKS	-0.32	-1.87
DUMBIBF	678.31	5.07	IIRAT	151.73	2.18
DUMBBORCON	-976.63	-2.91	FNBNK(-1)	0.38	2.81
IIRAT	196.83	3.51	DUMNRBCON2	57.38	0.21
FNBNK	-0.75	-5.67			
R-square	0.75		R-square	0.61	
S.E. of regression	415.45		S.E. of regression	559.56	
No. of observations	55		No. of observation	55	
			Excludes FDI.		

Source: Financial Times Currency Forecaster

Figure A1-1. Investor Expectations (annualized expected change in the Dollar/Bhat rate two months forward)



The empirical analysis illustrates that high interest rates were a major factor in attracting short-term capital in Thailand during 1988–1992. Moreover, the significance of the lagged endogenous variable in the nonbank equation suggests that nonbank flows were slower in reacting to the interest rate differential. The faster adjustment of bank flows to changes in interest rate may reflect easier access of financial institutions to short term lines of credit overseas which, in turn, allows them to quickly take advantage of opportunities for interest arbitrage. Similarly, both bank and nonbank flows are sensitive to country risk (the coefficients are positive and significant), with a one point increase (improvement) in the Institutional Investor rating leading to an increase in nonbank flows of US\$ 150 million, and in bank flows of US\$ 200 million. In other words, as country risk declined over the 1990s, the same interest rate differential would lead to larger inflows of private capital.

Administrative measures regarding capital account transactions were also important in Thailand, but seemingly more in changing the composition of flows rather than their total magnitude. That such measures had an impact is indicated by the large and highly significant coefficients for two of the dummy variables. That is, the establishment of the BIBF led to a large increase in bank flows, while the imposition of the 7 percent reserve requirement on foreign short-term borrowings by banks and finance companies had a large negative impact on bank inflows.⁵⁷ Given that bank and nonbank flows are strong substitutes, however, the impact on total flows of such measures is significantly reduced although not totally offset. For example, while the establishment of the BIBF strongly

⁵⁷ The controls on NR deposits do not seem to have been as significant.

encouraged the intermediation of foreign capital by banks, it also led to a decline in inflows intermediated through other channels.

Annex 2. Sterilizing Private Capital Flows

To confirm that the BoT attempted to sterilize the surge in capital inflows, this annex estimates the monetary policy reaction function of the central bank. The policy variable determined by the authorities is the stock of domestic assets—claims on government plus claims on the financial sector—which is assumed to be affected by the stock of foreign assets held by the central bank, the real exchange rate, and output growth. The equation to be estimated is specified as follows:

$$\Delta MP_t = \alpha + \beta \Delta FA_t + \chi p_{t-1} + \delta \ln(Y_{t-1} / Y_{t-2}) + \mu_t,$$

where ΔMP is the change in central bank's net domestic assets, ΔFA is the change in central bank's net foreign assets, and p and Y stand for the real exchange rate and aggregate output, respectively. The first two policy related coefficients, β and χ , are expected to be negative, while the third, δ , is expected to be positive. In other words, the authorities are expected to tighten monetary policy to compensate for larger capital inflows (and current account surpluses) and an appreciating real exchange rate, while they are expected to accommodate the increases in money demand that are due to increases in aggregate output. The results of estimating equation using monthly data during 1986–96 are reported in Table A2-1 below.

The empirical findings confirm that the Thai monetary authorities attempted to sterilize the inflows of foreign capital, and that they intensified their efforts starting in late 1992 (β was the only coefficient that resulted significantly different from zero). This finding is consistent with the fact that in 1993 the BIBF was launched and pace of inflows accelerated. It is also consistent with the fact that the sterilization policy turned less effective as the Thai economy became financially more integrated with the rest of the world. In other words, in order to achieve a pre-specified target for monetary growth, during 1993–96 the authorities had to intervene by sterilizing larger volumes of funds. Indeed, estimations based on a structural model of the off-set coefficient for the Thai economy—the degree in which a reduction in domestic credit by the central bank is off-set by an additional inflow of foreign capital—shows that during 1993–96 a decrease in domestic credit by the central bank of US\$ 100 was off-set within the same month by an additional inflow of US\$ 54. For the entire sample period, 1986–96, the off-set coefficient was only 0.38, implying an additional inflow of US\$ 38 for each US\$ 100 reduction in domestic credit.

Table A2-1. Regression Results

	Sample Period					
	1986:1	1996:11	1986:1	1991:12	1992:9	1996:11
β	- 1.09**		- 0.55*		- 1.04**	
χ	- 166.2		- 0.01		+ 0.01	
δ	- 941.6		- 459.7		- 3038	

* significant at 10% , ** significant at 5%

Note: Due to simultaneous equations bias the estimation results are obtained using instrumental variables techniques. Instruments used were lagged ΔMP , lagged ΔFA , foreign interest rates, and monthly dummies.

Annex 3. The Exchange Rate Reaction Function

The results discussed in section IV are based on a regression between the change in the exchange rate parity (dependent variable), and the domestic inflation rate, the external (U.S.) inflation rate, and a proxy variable measuring the gap between actual output and its long-term trend (independent variables). The estimated model is specified in equation below,

$$\Delta FX_t = \beta_0 + \beta_1 \pi_{t-1}^d + \beta_2 \pi_{t-1}^{us} + \beta_3 \gamma_{t-1}^{gap} + \varepsilon_t,$$

where ΔFX stands for the absolute change in the exchange rate, π^d stands for domestic inflation, π^{us} stands for the international (U.S.) inflation rate, γ^{gap} is the proxy used for overheating⁵⁸, and ε is an error term. The estimation results using monthly data under alternative specifications of the model are reported in Table A3-1 below.

Table A3-1

	1986-96	1986-96	1986-91	1992-96
Dependent Variable	Monthly ΔFX	3-month moving average ΔFX	3-month moving average ΔFX	3-month moving average ΔFX
β_0	- 0.012	- 0.008	- 0.017	0.003
β_1	0.041 *	0.011 *	0.019 **	0.002
β_2	- 0.047 **	- 0.015 ***	- 0.013 **	- 0.020
β_3	- 4.91 E-07 ***	- 1.10 E-07 **	- 2.49 E-07 ***	- 5.27 E-09
AR(1)	0.379 ***	1.224 ***	1.292 ***	1.165 ***
AR(2)	- 0.189 **	- 0.613 ***	- 0.663 ***	- 0.602 ***
N	128	126	60	60
R ²	0.183	0.746	0.789	0.714
Adj. R ²	0.149	0.735	0.769	0.687

Notes: * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

The results in the first column of the table show that an increase in domestic inflation of one percentage point (monthly) led to a depreciation of about Bt 0.04 per dollar the next month, while an increase in external (U.S.) inflation of one percentage

⁵⁸ The proxy variable for *overheating* is based on the consumption of electricity in the Bangkok metropolitan area, and is measured as the seasonally adjusted deviation from its long-term trend. The long-term trend is estimated using a simple regression of consumption of electricity on time and time square. The results of this estimation are as follows: $elect = c + 10553 \text{ time} + 32.34 \text{ time}^2$, where both estimated coefficients resulted significant at 1 percent levels and both R² and adj-R² were about 96 percent.

point led the authorities to appreciate the currency by a slightly higher magnitude. In the long run the same changes in domestic and foreign inflation led the authorities to depreciate the Baht by about Bt 0.05 and to appreciate it by about Bt 0.06 *vis-à-vis* the dollar, respectively. Also, excessive growth in output led the authorities to appreciate the currency by about Bt 0.5 *vis-à-vis* the dollar, for each MM 1 Megawatts of electricity consumed above its trend and seasonal components. This is consistent with the view that economic growth during this period was export driven and, therefore, an appreciation was needed to slowdown the economy.⁵⁹ The same excess increase in output led the authorities to induce an appreciation of the Baht in the long run of about 60 cents per dollar.

Changes in the exchange rate during this period were highly volatile, however, which leads to poor overall results (measured by the adj. R^2). The second column in the table tries to minimize this problem by taking a 3-month moving average of the dependent variable (see Figure A3-1).⁶⁰ The results are qualitatively identical to the ones reported in the first column of the table, although the coefficients are smaller in absolute value. Indeed, according to these estimates an increase in domestic inflation of one percent per month led to a depreciation by the authorities of only Bt0.01 in the short-run (about Bt0.03 in the long-run), while an increase in external inflation of one percent led to an appreciation of the Baht of about Bt0.015 in the short-run (about Bt0.04 in the long-run). Similarly, increases in output beyond its trend led to an appreciation of the Baht of about 11 cents per dollar in the short-run and about 28 cents in the long-run.

More importantly, the evidence suggests that starting in early 1992 the authorities partly abandoned the policy of correcting the exchange rate for changes in inflation differentials and excessive output growth. Indeed, the third and fourth columns in the table show the results of breaking down the sample into two sub-periods, 1986–91 and 1992–96. In general, the results show smaller and insignificant coefficients during the second half of the sample, which suggests that the results for the overall 1986–96 period are driven by those during the first half of the sample.⁶¹ This change in policy may have been partly motivated by the steeper depreciation of the dollar *vis-à-vis* the yen during 1991–95, which probably made less important correcting for differences between domestic and foreign inflation.⁶² This finding is robust to using the change in the exchange rate (instead of the 3-month moving average) as the dependent variable.⁶³

⁵⁹ An increase in the use of electricity signals an acceleration in output growth when electricity is seen as an input in the production function.

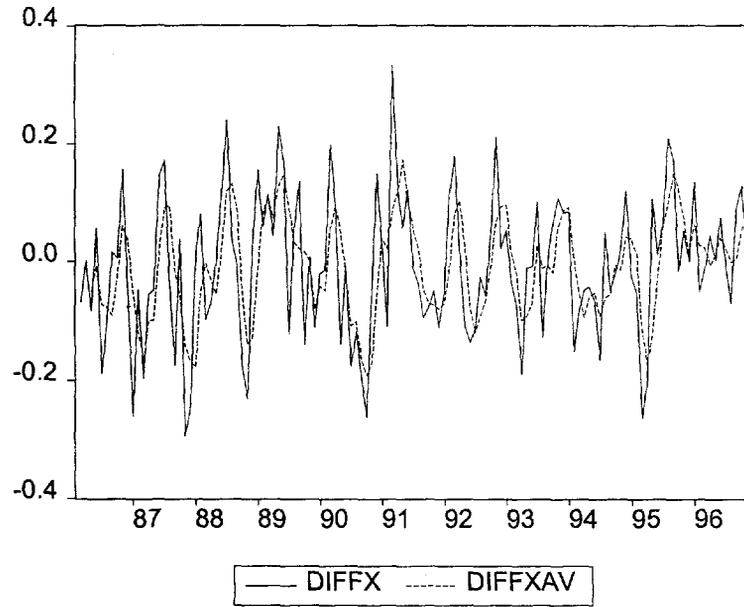
⁶⁰ The correlation of the original series with its moving average is 0.64.

⁶¹ Simple descriptive statistics show that the exchange rate was slightly more volatile during the first half of the sample than during the second half: during 1986-91 the difference between the maximum and minimum values was Bt1.42 and the standard deviation 0.36, while during 1992-96 the same measures were only 1.06 and 0.23, respectively.

⁶² The results do not improve when using the inflation differential between the U.S. and Thailand (imposing the restriction $\beta_1 = -\beta_2$) instead of each inflation rate separately during the second half of the sample.

⁶³ When using the change in the exchange rate instead of the 3-month moving average, the coefficient for domestic inflation, β_1 , not only becomes insignificant (like all the other coefficients) but also turns out to have the wrong sign.

Figure A3-1



Note: DIFFX = absolute change in the exchange rate; DIFFXAV = 3 month moving average of DIFFX.

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