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**Capital inflows, policy responses,
and their ill consequences: Thailand,
Malaysia, and Indonesia in the
decade before the crises**

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2004

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Abstract

Capital inflows, especially when volatile, denominated in foreign currencies and not properly hedged against exchange rate risks, may pose macroeconomic and financial problems in the recipient economy. In this paper we analyze the mechanisms through which those problems arise; and we assess the policies that national authorities may resort to in order to prevent them, under the assumption that capital inflows are the result of previous stabilization and liberalization packages. Also, we study the use and effectiveness of policy responses to capital inflows in Thailand, Malaysia, and Indonesia in the years prior to the 1997-98 financial crises. We conclude that policies that reinforce the stabilization and adjustment trends of the 1980s are more likely to be (at least partially) ineffective or even counterproductive, whereas the measures that depart from those trends appear to have a higher potential for effectiveness but face obstacles to implementation.

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1. Introduction

There is growing consensus that a large quantity of capital inflows, especially if they are in the form of volatile capital, denominated in a foreign currency, and not properly hedged against exchange rate risks, may pose macroeconomic and financial problems in the recipient economy¹. The macroeconomic problem here addressed is the overheating of the domestic economy (i.e. real appreciation of the currency); the financial problem is the escalation of diverse financial risks. There is not as much agreement on what national governments can do to prevent these ill consequences of capital inflows, the only shared conclusion being that the answer should rely on the particular country under study, that is, in aspects like its economic structure, or its government's goals². Here we present our choice of policies to prevent overheating and financial fragility under the particular circumstance that capital inflows are the consequence of previous policy decisions, in particular stabilization and liberalization measures. We complete the analysis with the case studies of Thailand, Malaysia, and Indonesia (also, Asia-3) in the decade before the 1997 financial crises³.

The question of what to do to prevent overheating and financial fragility is of great relevance, given that these problems have been systematically identified as the 'bad fundamentals' behind the financial crises of the 1990s in general, and behind the East Asian crises in particular⁴. Also, it is an important question as long as there are no regional or international answers to the problems imposed by capital movements. That is, as long as there is no new international financial architecture to prevent the deterioration of macroeconomic and financial fundamentals in emerging economies, the responsibility will rely on national governments almost exclusively.

It could be argued that, after the 1990s crises, there has been such a downsizing of capital inflows in developing economies that the issue of how to cope with capital inflows is no longer relevant. Nevertheless, it is likely that foreign investment in developing countries recovers, as it did from the 1980s debt crisis. Also, according to the 'original sin' hypothesis (Eichengreen and Hausmann, 1999) it

¹ See Montiel (1995 and 1999), McKinnon and Pill (1997 and 1999) and Mishkin (1998).

² Some studies on policy responses to capital inflows are Goldstein (1995), Lee (1996) and Montiel (1995 and 1999).

³ The empirical literature on the causes of capital inflows in developing economies is very extensive. Many authors highlight the importance of push (external) factors on the determination of inflows (Calvo *et al.*, 1992; Sarno and Taylor, 1997; Fernandez-Arias, 1996). But there is some agreement that in the case of East Asia in the 1990s, pull (internal) factors played an important role (Chuhan *et al.*, 1993; World Bank, 1997), these factors being mostly stabilization and liberalization policies.

⁴ On the links between loss of competitiveness and crises see Connolly and Taylor (1984) and Obstfeld (1994). On the relation between financial fragility and crises see Dooley (1997), Calvo (2000) and Chang and Velasco (1998). For the particular case of East Asia see the very diverse studies by Corbett and Vines (1999), Corsetti *et al.* (1998), IMF (1999), Islam (1998), Krugman (1998), Wade (1998) and World Bank (1998).

is likely that these investments will still be for the most part of short-term nature, denominated in foreign currencies and not appropriately hedged⁵.

In this paper we present some of the countless difficulties of trying to prevent the ill consequences of capital inflows, and we conclude that the answers rely mostly, not in implementing measures that reinforce the already existing policy stance (i.e. that reinforce stabilization and liberalization), but in using those that somehow move away from the pre-existing trend. That is, the answers would rely not upon using restrictive demand policies and more trade and financial liberalization, but on the implementation of inward capital controls, the management of the nominal exchange rate, and the strengthening of financial regulation and supervision. The basic underlying rationale is that if stabilization and liberalization act as pull factors for foreign capital, to resort to more of the same policies would reinforce the attraction of capital. The policies that depart from the previous policy stance, while potentially more effective, face obstacles to their implementation, mostly due to lack of support from the international financial community, or because they require institutional change.

The remainder of the paper is structured as follows. In the second section, we analyze how capital inflows can bring about trade-related and financial problems; and we describe capital inflows, overheating, and financial fragility in Asia-3. In the third section, we go through the policy options in response to capital inflows, and we review their potential downsides. Also, we study which policies were adopted in Thailand, Malaysia, and Indonesia and whether those potential downsides materialized in these particular cases. In the fourth section, we summarize and draw some conclusions.

2. Destabilizing effects of capital inflows

Some of the works which consider that domestic fundamentals were part of the explanation of the 1997 crises put more emphasis on financial risks than on overheating and the consequent loss of trade competitiveness (Krugman, 1998). Nevertheless, many others (IMF, 1999; Islam, 1998; World Bank, 1998) also recognize the existence of trade-related risks, derived from overheating as well as from external shocks. In this section we review the theoretical links between capital inflows and overheating on the one hand, and capital inflows and financial fragility on the other. We also study the characteristics of capital inflows in Asia-3 and the trade-related and financial risks that developed in those countries during the 1990s.

⁵ The original sin consists in that developing countries' currencies lack credibility, so that the capital which international investors are willing to lend to those countries is short-term and denominated in foreign currencies. Hence, the original sin hypothesis argues that currency and maturity mismatches are the consequence of a lack of credibility more than the result of moral hazard (as has been frequently hypothesized).

2. 1. Overheating and the deterioration of the current account balance

Overheating consists basically in the real appreciation of the domestic currency, which could ultimately lead to the weakening of the current account. Montiel (1995 and 1999) details the simple theoretical relationship between capital inflows and overheating. All else being equal, capital inflows, regardless their composition, imply a surplus in the financial account. In the absence of an equivalent deficit in other parts of the balance of payments, and under a fixed exchange rate regime⁶, the central bank would intervene in order to avoid the nominal appreciation of the currency. That intervention would bring about the accumulation of reserves. Given a simple equation of the central bank balance, $B=R+C$ ⁷, and holding C constant, more reserves lead to a higher monetary base. Again all things equal, this would bring about a higher monetary supply, which in turn would imply a higher domestic demand and ultimately overheating and the deterioration of the current account.

Figure 1. Overheating as a consequence of capital inflows

Capital inflows → Δ reserves → Δ monetary base → Δ M2 → Δ domestic demand → inflation & real appreciation

Thailand, Malaysia and (to a lesser extent) Indonesia suffered from overheating and a weakening current account prior to the outburst of the 1997-98 financial crises. Their origin can be traced back to the massive capital inflows received starting around 1988. External shocks also played a role, however, and further empirical analysis of the weight of either factor should be pursued. In any case, as we shall see, those external factors could only participate in the worsening of the current account via a certain economic policy context which was not modified on time.

As is widely known, net capital inflows increased significantly starting in 1988 or 1989, and particularly in the years closer to the 1997 financial crises (most notably in 1995). In Thailand, total net capital inflows (as reflected in the financial account balance of IMF's *International Financial Statistics*, IFS hereafter) were 20 times higher in 1995 than in 1987 (\$1.1 billion in 1987; \$21.9 billion in 1995). In Malaysia, they went from negative \$2 billion in 1988 to 10.9 billion in 1997. And in Indonesia, capital inflows were almost five times higher in 1996 than in 1988 (\$2.2 billion in 1988; \$10.8 billion in 1996). In all three cases, there was a brief period of easing of inflows around 1993 or 1994 (see figure A1 in the appendix).

International reserves also grew during the decade prior to the crisis. Between 1988 and 1996, they increased by 6.2 times in Thailand, 4.1 times in Malaysia and 3.6 times in Indonesia (see figure A2). This

⁶ Because in Thailand, Malaysia, and Indonesia there was, *de facto* or *de iure*, fixed exchange rate regimes (see below), the argumentation will proceed under this assumption.

⁷ B is the monetary base, R the international reserves and C the claims of the central bank to the public sector and the commercial banks.

was the result of the fact that a considerable proportion of the net capital received was turned into reserves: 32% in Thailand, 43% in Malaysia, and 24% in Indonesia (data also obtained from the IFS).

The monetary base (reserve money in the IFS) was quite higher in 1996 than in 1988 in all these countries: 3.4 times in Thailand, 3.2 in Indonesia, and as much as 6.2 times in Malaysia (see figure A3). As a percentage of GDP, the monetary base's growth was lower but still considerable: in Thailand it grew from around 8% of GDP to 10%; in Malaysia, from 12% to 27%; and in Indonesia, from around 5% to almost 7%.

M2 (addition of money and quasi-money from IFS) increased by around 4 times in all these countries between 1988 and 1996 (see figure A4). Relative to GDP, M2 growth was slower but nevertheless considerable: in Thailand it jumped from 61% in 1988 to 80% in 1996; in Malaysia from 65% to almost 92%; and in Indonesia from 28% to 52%.

Domestic demand (private and public consumption and investment) also rose in the decade prior to 1997: 3.1 times in Thailand and Malaysia and 2.6 times in Indonesia between 1988 and 1996 (see figure A5). Relative to GDP, internal demand in Thailand grew from 99% of GDP in 1988 to 105% in 1996; in Malaysia it jumped from 89% to 98%; and in Indonesia, it increased from 97% to 100%. In the three cases there were even higher points around 1991 and in 1995.

As a result, inflation presented an upward trend in the years when capital inflows and the internal demand relative to GDP were growing, reaching maximums in 1990 and 1996 in Thailand (around 6%), in 1992 and 1995 in Malaysia (about 5%), and in 1991 and 1995 in Indonesia (around 9%). Furthermore, the prices of certain assets, such as in real estate and financial assets, rose most notably, even at double-digit rates in 1996 in Bangkok and Jakarta (World Bank, 1998).

There is not much agreement on how much the currencies of these countries appreciated in real terms; but there certainly is agreement that they did. Following the study conducted by Radelet and Sachs (1998), from December 1990 until March 1997 both the Thai baht and the Indonesian rupee experienced a real appreciation of about 25%, whereas the Malaysian ringgit appreciated by 28%. According to Corsetti *et al.* (1998), who base their calculations on J.P. Morgan data, the upward change in the real value of these currencies between 1990 and the Spring of 1997 was lower, but still notable: 12%, 19% and 8%, respectively.

Finally, there was a deterioration of Asia-3 current account balances, which reached maximums in the years of particularly high growth or levels of capital inflows. In Thailand, the current account deficit reached peaks in 1990-91 (about \$7.5 billion each year or 8% of GDP) and again in 1995-96 (around \$14 billion each year or, again, 8% of GDP). In Malaysia, current account surpluses turned into considerable deficits, particularly in 1991 (about \$4 billion or 8.7% of GDP) and 1995 (around \$8.5 billion or 9.7% of GDP). In Indonesia, the deterioration of the current account balance was lower, but

it also peaked in periods of high inflows of capital: in 1991 (\$4 billion or 3.3% of GDP) and in 1996 (\$7.5 billion or, again, 3.3% of GDP) (see table 1).

Table 1. Current account balance in Thailand, Malaysia, and Indonesia, 1987-1997 (% of GDP)^a

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Thailand	-0.72	-2.86	-3.46	-8.53	-7.71	-5.66	-5.07	-5.59	-8.05	-7.94	-1.96
Malaysia	8.15	5.83	0.83	-2.03	-8.69	-3.72	-4.66	-6.23	-9.70	-4.63	-4.90
Indonesia	-2.68	-1.58	-1.09	-2.61	-3.32	-2.00	-1.33	-1.58	-3.18	-3.37	-2.27

Source: International Financial Statistics, IMF; and author's calculations.

a: A negative sign indicates a deficit.

It is necessary to note that there were external factors that contributed to these trade-related problems. Nevertheless, their impact was made possible by virtue of a policy context that was not modified on time. First, the real appreciation of the national currencies against the US dollar derived from rising inflation differentials. This, in turn, was the result not only of the upward trend of domestic inflation but also of a downward trend in US inflation. In particular, the inflation differential surge of 1991 and 1992 was aided by a fall in US inflation. Nonetheless, on other occasions (i.e. 1995) the inflation differentials grew in spite of the increase in US inflation and by virtue of the aforementioned inflationary pressures in Asia-3 (see table 2).

Table 2. Inflation rates in the United States and inflation differentials for Asia-3, 1988-1997

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
US	4.02	4.90	5.28	4.32	3.02	2.93	2.64	2.77	2.90	2.33
Diff. Thailand	-0.21	0.32	0.75	1.37	1.17	0.40	2.36	3.05	2.90	3.34
Diff. Malaysia	-1.34	-2.16	-2.62	0.01	1.72	0.69	1.07	2.49	0.60	0.28
Diff. Indonesia	4.15	1.43	2.65	5.02	4.54	6.70	5.91	6.63	5.10	4.33

Source: International Financial Statistics, IMF; and author's calculations.

Regarding the real appreciation of the currencies against other major trading partners, external factors also played a role. Between Spring 1995 and Summer 1997 the nominal yen/dollar exchange rate jumped from 80 to around 125. This appreciation fed the appreciation of the Asian currencies, which were pegged to the dollar (as we describe below). In any case, the appreciation of the dollar could only operate by virtue of the fact that these countries did not resort to the making their currency regimes more flexible; that is, the external shock was possible by virtue of a particular policy context that was not modified on time.

The deterioration of the current account balance also owed something to external shocks. First, in 1994 the Chinese currency depreciated by about 50%. Nevertheless, as Alba *et al.* (1998) point out, in the mid 1990s these countries and China were specialized in different products, so that the impact of the latter's currency depreciation was not so acute. Second, there was a fall in the terms of trade of Asia-3 around 1996, mostly because of decreases in the price of certain microchips and other electronic components. Thailand and Malaysia were especially affected by this shock, given that about 33% and

50% of their exports were, at that date, electronic products (World Bank, 1998). Third, in the years prior to the crises, industrialized countries were going through a phase of less import intensity given to slow growth: imports in industrialized countries increased by only 4.7% in 1996, having grown by 10.9% in 1994 and 7.5% in 1995. In any case, these shocks could only operate by virtue of the progressive openness of the current account and the deregulation of financial markets, which made it more difficult for these countries to promote a more diversified industrial structure.

Summing up, it is arguable that there were external shocks that impinged upon the trade-related weaknesses of Thailand, Malaysia, and Indonesia. Nevertheless, overheating also played a role, and the external factors could only participate in the worsening of the current account via a certain economic policy context which was not modified on time.

2.2. Financial fragility

‘Financial fragility’ is here understood as the aggravation of financial risks. We choose not to use the term ‘financial vulnerability’, since we understand that the latter refers to those problems (of *any* nature: trade-related, financial, political, etc.) that bring about a higher probability of financial crisis. Therefore, ‘financial fragility’ would be just one of the very diverse problems – overheating would be another – that increase ‘financial vulnerability’.

Capital inflows enhance the risks that banks normally face, or at least make it more difficult to manage those risks. That is, domestic financial systems suffer from higher risks when they intermediate not only domestic capital but also foreign capital⁸. In this paper we focus on three kinds of risks that are particularly sensitive to the inflow of capital: credit risks, market risks (in particular the exchange rate risk) and liquidity risks.

Credit risks are those deriving from the possibility of banks not getting their money back. Frequently these risks arise from the over-intermediation of borrowed funds into an excessive credit. As McKinnon and Pill (1997) and Mishkin (1998) argue, financial account openness and financial deregulation lead to excessive borrowing of foreign funds and their over-intermediation by the domestic financial system into a credit boom. This credit boom enhances the likelihood of default, given that the credit is directed to high-risk activities. The circumstances which incite that risky lending can be (1) institutional guarantees (either explicit or implicit, either real or perceived); (2) uncertainty; and/or (3) the absence of a sound financial regulatory and supervisory system (Calvo *et al.*, 1993,

⁸ Calvo *et al.* (1993) and Goldstein (1995) explain how even when non-financial agents borrow directly from foreign agents, the foreign capital is intermediated by the financial system, so that this ends up suffering risks from the entry of capital anyway.

Montiel and Reinhart, 2001, and McKinnon and Pill, 1997, argue in favor of one or more of these factors).

Market risks arise because of the possibility for banks to suffer losses as the consequence of changes in prices that affect the market value of their assets and liabilities. One such risk that becomes more serious in the context of liberalization and capital inflows is the exchange rate risk (the risk of suffering losses as the result of changes in the exchange rate). Banks are exposed to exchange rate risks when this is not adequately hedged, which is usually the case under the same circumstances that facilitate over-intermediation: institutional guarantees, uncertainty, and/or the absence of sufficient financial regulation and supervision. As Dooley (1999) argues, a fixed exchange rate regime functions as an institutional guarantee and, therefore, is one of the possible causes for borrowers to not protect themselves from eventual exchange rate movements.

Liquidity risks consist in the possibility that financial institutions are not capable of reducing their liabilities or increasing their assets at a reasonable cost. The higher the maturity mismatch between assets and liabilities, the higher the cost. Liquidity risks exist in the absence of capital inflows, given that transforming liquidities is precisely one of the functions of financial intermediation, but capital inflows enhance those risks by favoring financial over-intermediation.

Figure 2. Financial fragility as a consequence of capital inflows

Net capital inflows → Over-intermediation → Credit risk
In foreign currency → Currency mismatch → Exchange rate risk
Volatile → Maturity mismatch → Liquidity risk

We have already noted that the funds entering Thailand, Malaysia, and Indonesia started growing around 1988, therefore enhancing the possibility for financial risks to grow. But for these risks to increase, the composition of capital inflows matter as much as their quantity: capital inflows of a volatile nature imply a higher liquidity risk; whereas the denomination of inflows in foreign currencies brings along a higher exchange rate risk.

We thus turn to describe the composition of inflows in these countries. Foreign direct investment (FDI) inflows were higher in 1988-96 than in the prior decade, therefore explaining part of the surge of total inflows, but their growth in Thailand and Malaysia (not in Indonesia) started to decelerate around 1993. In Thailand and Indonesia, portfolio investments (PI) had a bigger presence since 1993, both in absolute terms and as a proportion of the total inflow of capital. In Thailand and Malaysia, what in the balance of payments appear as ‘other investments’ (OI) – which are mostly loans across countries – grew very rapidly in the first years of the decade and again around 1995 (periods in which the share of OI over the total net inflows also rose) (see figure A1). According to data of the Bank of International

Settlements (BIS)⁹, foreign loans denominated in any currency and domestic loans in foreign currency with a maturity of one year or less were a high proportion of total loans between the end of 1994 and the end of 1996: in Thailand, that proportion was between 65% and 74%; in Malaysia, between 47% and 59%, and in Indonesia between 60% and 62%.

It is usually agreed that both PI and short-term OI are volatile capital, since both kinds of funds can respond very quickly to a change in the investors' expectations. PI and/or foreign loans, as noted, increased in these three countries, both in absolute terms and as a proportion of total capital inflows; and the proportion of loans of a short-term nature was high in all three cases. Therefore, volatile capital was higher starting in the early 1990s, both in absolute terms and as a proportion of the total net capital inflows.

Finally, a high portion of the capital received was denominated in foreign currencies. Data of the composition of capital movements by denomination is scarce. Nevertheless, the study by Tang and Villafuerte (1995) shows that in 1993, 80% of the bonds issued in East Asian developing countries (Asia-3 among them) was denominated in dollars, 16% in yen and 3% in other currencies. Also, the Bangkok International Banking Facility (BIBF) and the Labuan International Offshore Financial Center (IOFC) channeled foreign loans denominated in foreign currencies (mostly dollars) into Thailand and Malaysia, respectively.

Did this inflow of capital in Asia-3 end up in over-intermediation? Was the channeling of foreign funds into the domestic economy excessive in the sense of enhancing credit risks? We have already noted that foreign funds flowed into these countries, most notably since the first years of the decade. This capital was intermediated into a credit boom, observable in the behavior of various parameters. First, M2, as a measure of liquidity, gives an idea of whether foreign funds are being channeled into the domestic economy; and, as we have already seen, M2 grew, both in absolute terms and as a percentage of GDP. Second, the credit given by financial institutions increased: in Thailand, deposit banks' credit to private borrowers jumped from 64% of GDP in 1990 to around 100% in 1996; in Malaysia, from 71% to about 90%; and in Indonesia, from 46% to more than 55% (data from the IFS)¹⁰. Regarding the credit channeled by non-deposit banking institutions and non-bank financial institutions (NBFIs), Corsetti *et al.* (1998) developed a credit index for all these other financial institutions jointly, concluding that in Thailand the growth of credit given by these institutions more than doubled the growth of credit given by deposit banks; in Malaysia and Indonesia, both rates of growth were similar.

⁹ Data extracted from various years of its publication *The Maturity, Sectoral and Nationality Distribution of International Bank Lending*.

¹⁰ These values are so much lower in Indonesia due to the fact that in this country non-financial companies were the ones that borrowed more heavily from abroad. Therefore, in Indonesia, over-intermediation did not happen through the financial system but directly through non-financial corporations. Thus M2 is a more significant indicator in Indonesia than any measure of bank credit.

This credit was excessive because it was too risky: growing proportions of the credit was not given for profitable projects but for consumption or, more frequently, investment in real estate or securities – that is, non-productive assets with highly volatile prices. In these three countries, between 25% and 40% of bank credit was channeled into real estate and securities in the years prior to the crises. In Thailand, whereas credit to the manufacturing sector increased by ten times between 1985 and 1996, the credit to the real estate sector grew by a factor of 22. In Malaysia, the growth of credit for manufacturing activities decreased from 31% in 1995 to 14% in 1996, while the growth of credit for the purchase of stocks increased from 4% in 1995 to 20% in 1996 (Makin, 1999; Islam, 1998; Corsetti *et al.*, 1998). The final symptom of over-intermediation was, therefore, a price bubble in both the real estate and the securities markets: in Thailand the stock market index grew 175% and real estate prices increased 395% between 1990 and 1993, deflating slowly thereafter; in Malaysia maximum prices were reached in 1993 and 1996, and growth was at 145% and 160% respectively; and in Indonesia, prices also hit peaks in 1993 and 1996, though overall growth was somewhat slower (see table 3).

Table 3. Stock market index and real estate index in Asia-3, 1990-1997

		1990	1991	1992	1993	1994	1995	1996	1997
Thailand	Stock market index	612	711	893	1,682	1,360	1,280	831	372
	Real estate index	74	82	168	367	232	192	99	7
Malaysia	Stock market index	505	556	643	1,275	971	995	1,237	594
	Real estate index	113	113	126	396	240	199	294	64
Indonesia	Stock market index	417	247	274	588	469	513	637	401
	Real estate index	--	119	66	214	140	112	143	40

Source: Corsetti *et al.* (1998), tables 10 and 11.

Two other indicators also demonstrate the risks that lending domestic institutions were facing due to over-intermediation: the incremental capital output ratio (ICOR) and non-performing loans as a proportion of total lending. ICOR measures the relation of the investment rate (investment as a proportion of GDP) and growth; it therefore accounts for the efficiency of investment. ICOR grew considerably from 1987-92 and 1993-96 in Thailand (3.4 and 5.1) and Malaysia (3.7 and 4.8), though not in Indonesia (4.0 and 3.8¹¹). Non-performing loans as a proportion of total lending in 1996 was 13% in Thailand and Indonesia, and 10% in Malaysia (Corsetti *et al.*, 1998).

Regarding currency mismatches, we have already commented on how a high proportion of bonds and loans were denominated in foreign currencies. At the same time, financial institutions and corporations channeled credit in national currencies. Furthermore, the fact that a growing proportion of credit was being devoted to financing real estate or stock market activities implied that a growing proportion of capital inflows was being lent, not only in local currency, but also to projects that could not generate foreign currency. Besides, there were incentives for the exchange rate risk not to be

¹¹ Data from J.P. Morgan and the author's calculations.

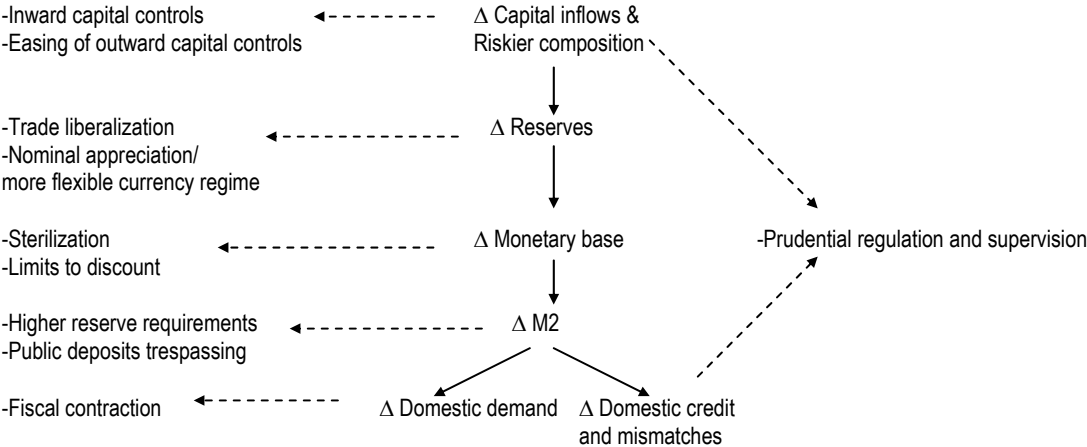
hedged: high interest rate differentials together with a low volatility of the exchange rate could make agents believe that exchange rate risk was low (Eichengreen and Hausmann, 1999; World Bank, 1999).

Finally, regarding liquidity risks, there was in fact a maturity mismatch between banks' assets and liabilities. We have already noted how BIS data show that capital inflows were increasingly short-term: foreign loans in any currency and domestic loans in foreign currencies with a maturity of one year or less amounted to 65% in Thailand, 50% in Malaysia and 62% in Indonesia in 1996. When analyzing credit risks we have also shown that this capital was being channeled into investments that were not profitable in such short term: real estate and securities, or else productive assets with returns in the long run¹². Besides, the ratio of short-term debt to reserves is typically used to measure liquidity risks. When this ratio is above 100%, the existing reserves are not sufficient to face obligations with lenders, even without counting long-term obligations and interests. In June 1997, this ratio was 145% in Thailand and 170% in Indonesia. Malaysia, meanwhile, had a ratio of only 61%. Just as Indonesia suffered fewer trade-related problems, Malaysia faced lower exchange rate and liquidity risks, given its somewhat more cautious financial liberalization (as argued in Jomo, 1998, Alba *et al.*, 1998, and Khor, 1999).

3. Economic policy responses

What were the choices for policymakers in these countries? Any policies meant to limit the growth of M2 could serve the purpose of limiting both overheating and financial fragility, given the quasi-equivalence of M2 with domestic credit (the former refers to banks' liabilities and the latter to their assets).

Figure 3. Policies to prevent overheating and financial fragility^a



a: The dotted lines indicate the possible policy responses; the solid lines indicate causal relations.

¹² The latter happened in Thailand, where some foreign capital was directed into steel, paper, cement and petrochemical industries (Lauridsen, 1998).

Specific to avoiding overheating would be measures aimed to limit the growth of internal demand; specific to preventing financial fragility would be measures implemented to limit over-intermediation, as well as maturity and currency mismatches. See figure 3 for a diagram of some policy responses to capital inflows.

3.1. Policies to reduce the net inflow of foreign capital and/or change its composition

The way to reduce the net inflow of foreign capital is to achieve a reduction in the gross inflow of capital and/or an increase in the gross outflow of capital. The instruments with which this can be done are basically restrictions to the entry of capital (inward capital controls) and the ease of restrictions on capital outflows (ease of outward capital controls). The former could also serve to limit the proportion of capital that is volatile and/or denominated in foreign currencies.

Critics frequently argue that **capital controls** eliminate the disciplinary effect on economic policy that capital mobility implies, therefore permitting governmental behaviors that may be risk-enhancing. Nevertheless, this argument seems to forget the risks implied by perfect capital mobility, or that this disciplinary effect may not be desirable as a way to limit trade or financial risks. On the one hand, what investors consider good economic policy need not be advantageous for the economy. On the other hand, investors' reactions are frequently disproportionate (due to information asymmetry), giving oversized 'prizes' and 'punishments' to what they consider to be 'right' or 'wrong' (this argument is also in Williamson, 1999). In sum, we do not consider that the disciplinary effect of mobility compensates for the risks that capital controls might prevent.

Also, according to critics, capital controls prevent the efficient allocation of financial resources. Nevertheless, there are many rationales against this argument, the most important being that capital controls may bring about a second-best situation, given previous distortions either in the recipient economy or in the way international financial markets operate (Montiel, 1995; Dooley, 1995; Cooper, 1999). When a domestic financial system does not allocate credit efficiently, as the result of, for instance, institutional guarantees, capital inflows reinforce the inefficiencies of credit allocation. Perhaps the ideal solution would be to remove all guarantees, but whenever this is not possible, capital controls bring about a second-best situation. Also, even when there is no distortion within the domestic financial system, the mere act of borrowing may be distortional, as is the case when capital inflows arise from behaviors, such as herding, not based on the availability or use of information. In such a case, capital controls would tax foreign indebtedness, generating a more efficient allocation of resources. Dooley (1995) considers that the frequency of these kinds of behaviors provides the most compelling argument in favor of capital inflows.

Perhaps the most controversial question surrounding capital controls is whether they are effective. The alleged reasons for their ineffectiveness are as follows. First, difficulties in design that makes it almost impossible to discriminate beneficial from damaging capital inflows; therefore, the imposition of controls would limit the reception of non-volatile and good-for-growth capital (Saxena and Wong, 1999). Second, some capital controls would not be effective unless most major financial centers imposed them (as is often argued about the Tobin tax), which may be not feasible given the obstacles to international coordination (Agüera and García-Arias, 2000). Third and foremost, capital controls can be evaded, via disguising the affected kind of capital as a non-affected kind, or via the use of derivatives (as explained in Garber, 1998). If capital controls were in fact ineffective they would not serve for preventing overheating and financial fragility. Furthermore, they could turn to feed financial fragility by diverting funds toward less regulated financial markets (Johnston and Ötoker-Robe, 1999).

Whether capital controls are effective or not is an empirical issue, and, as usual, the results of the many empirical studies do not always coincide, because of sampling and/or methodological differences. Johnston and Ryan (1994) exemplifies studies which conclude that capital controls are not effective in insulating the balance of payments or in modifying the composition of capital movements in developing countries. But the voices defending the effectiveness of controls are mounting, even among usual proponents of financial liberalization¹³. Dooley (1995) considers that controls facilitate monetary independence; Grilli and Milesi-Ferretti (1995) conclude that controls cannot be evaded without a cost and are therefore at least partially effective; Epstein *et al.* (2003) show seven case studies in which capital controls have achieved diverse objectives; Montiel and Reinhart (2001) and Ariyoshi *et al.* (2000) argue that controls yield a less risky composition of capital inflows. In sum, evidence from econometric analyses and case studies support the position that inward capital controls can be effective, though their effectiveness may on occasions be limited to the short run, and to altering the structure of capital inflows but not their total amount (therefore limiting financial risks but not trade-related risks).

A not-so-frequent critique of capital controls is the fact that they can trigger suspicions of international investors that the government is abandoning the policy stance which had initially attracted them. Therefore, given information asymmetries and the consequent overreactions of investors, the imposition of capital controls could spark a financial panic and perhaps a full-fledged financial crisis. Hence, it may be necessary that capital controls are built into the policies known to be available to economic authorities, so that international investors would not be surprised whenever they are used, rendering a financial panic less likely.

Having argued against the main critiques that capital inflows receive, we can add that this measure has important advantages. First, it is very flexible, and can be used dynamically (in response to changes in circumstances). Second, capital controls, by limiting capital mobility, permit the coexistence of an

¹³ Epstein *et al.* (2003).

independent monetary policy and a fixed exchange rate (given the Mundell-Fleming theory, explained below). Also, capital controls are a good companion for other policy responses when capital inflows are already happening; as we shall see, the downsides of sterilization could be minimized with inward controls. Third, the main advantage of capital controls as an instrument to prevent financial fragility is that they need not be effective in reducing the net inflow of capital, so long as they limit the proportion of capital inflows that are short-term and/or denominated in foreign currencies.

Another measure to limit the net inflow of capital is to **ease restrictions on capital outflows**. This policy can be said to have diverse advantages, such as facilitating lower risk of the residents' portfolios via diversification, and possibly an increase in the efficiency of the domestic financial market via higher competition (Bennett *et al.*, 1993; Lee, 1996). But it also has important drawbacks as a measure to prevent financial vulnerability. Countries cannot resort to easing restrictions on the outflow of capital when such restrictions are already very few. That is, if a country has undergone a process of financial liberalization, it may be the case that further liberalization is not feasible. More importantly, this measure is not necessarily effective. By reinforcing confidence and prospects of profitability, it may even attract more gross inflows than it provokes gross outflows, becoming counterproductive. Labán and Larraín (1993) and Bartolini and Drazen (1997) present theoretical models in which eased restrictions on the outflow of capital attract foreign capital, via the reduction of uncertainties over the possibility of repatriating that capital.

Of the three countries considered, Malaysia resorted most decisively to **inward capital controls**. It did so only temporarily, and with the aim of curbing the entry of volatile capital. In January and February 1994, Malaysian authorities established several controls, such as a ceiling in net indebtedness (excluding debts related to trade or FDI), the prohibition of selling to non-residents monetary instruments with a maturity shorter than a year, and the requirement that commercial banks transfer to the central bank the free-of-interest accounts of foreign banking institutions (ADB, 1995/96). But in August 1994 these measures began to be eliminated, and by the end of 1995 they had all been removed. In Thailand, the only capital control used was the re-implementation in 1990 of a tax that had been eliminated in 1988, consisting in the retention of 10% of interest payments to foreign lenders. The Indonesian authorities tried to curtail the entry of capital merely by eliminating the system through which they had been hedging the foreign exchange risk of commercial banks, therefore enhancing the risk assumed by those banks (Montiel, 1995; Lee, 1996).

The inward capital controls implemented by Malaysia were effective. Figure A1 illustrates how OI – the type of volatile capital entering the country – plummeted when capital controls were imposed and recovered when they were being removed. The works of Dunaway and Reinhart (1996), and Montiel (1999) agree in that capital controls in Malaysia altered both the volume and the composition of capital

inflows in the short run. Nevertheless, at the same time that capital controls were being used, the interest rate differential against the US shrunk, due in part to the easing of sterilization efforts (see below), making it difficult to separate the impact of these two actions. Whatever measure worked, it did so by departing from the neoliberal policy stance (via capital controls or monetary relaxation). Controls in the other two countries were not as purposeful as in Malaysia, rendering less effects, which were also mixed, in any case, with the impact of interest rates on volatile capital inflows. It is not easy to assess why capital controls were not used more intensively, the most reasonable assumption being that the economic authorities feared a lack of support from the international financial community.

Thailand, Malaysia, and Indonesia had entered the 1990s with an already relatively open financial account. Nevertheless, there remained space for further **liberalizing the outflow of capital**. Thailand, where financial openness was less advanced by the end of the 1980s, notably liberalized capital outflows between 1990 and 1994, for instance by allowing residents to invest abroad as much as \$5 million in concept of FDI, or by eliminating the requirement that the central bank approve the repatriation of capital placed in investment funds. Malaysia further opened its financial account, allowing more capital outflows (roughly between 1988 and 1994); whereas Indonesia, where financial liberalization had advanced notably in the 1980s, intensified capital outflow liberalization around 1994 (ADB, 1995/96).

Hence, with more or less intensity, the easing of restrictions on the outflow of capital occurred continuously from the beginning of financial liberalization at the end of the 1980s through the first half of the 1990s. As to whether this policy further attracted gross capital inflows, the aforementioned empirical studies suggest that financial liberalization *did* act as a pull factor for capital in East Asia. Whether easing of restrictions on outward capital had its own effect on capital inflows may merit further analysis. What is clear is that this measure did not generate an outflow of funds large enough to compensate for the increasing capital inflows. Indeed, the gross outflow of capital was negligible (as can be seen in the IFS). In Malaysia there were even several years in the mid-1990s in which the sign of the outward OI was positive, indicating the return of capital previously invested abroad.

3.2. Policies to restrict the growth of international reserves

Governments may try to counteract the effects of a surplus in the financial account on international reserves by generating (or broadening) a current account deficit. This could be attempted by deepening trade liberalization or resorting to the nominal appreciation of the domestic currency and/or to making the currency regime more flexible.

In a way, aiming to deteriorate the current account balance could be perceived as absurd when one of the ultimate goals of limiting the growth of reserves is precisely to avoid the real appreciation of the domestic currency and its ill effects on the current account balance. Nevertheless, these measures could

be considered by policymakers because they at least eliminate the inflationary pressures and financial fragility associated with an increase in the monetary supply.

The effects of **trade liberalization** on the current account balance are nonetheless ambiguous. Many factors interplay to yield a higher or lower current account balance as the result of increased openness, some of them being the relative weight of tradable goods, the factor intensity of each economic sector, labor market rigidities, and the tariff structure. But the improvement of the current account balance is clearly a possible outcome of trade liberalization: Montiel (1995) offers the example of a country where tradable goods are particularly intensive in intermediate and capital goods, and where liberalization especially affects those goods. In such a case – so frequent in developing countries – trade liberalization would lead to higher export competitiveness via access to cheaper intermediate and capital goods.

If trade liberalization led to a better current account balance, it would fuel the growth of international reserves, the opposite of what was intended. Furthermore, this growth of reserves could foster the confidence of international investors in the fixed exchange rate. And a trustworthy exchange rate is considered to be a pull factor for capital inflows, particularly those of a volatile nature (Reinhart and Reinhart, 1998; Dooley, 1999). Hence, trade liberalization can be not merely ineffective, but also counterproductive.

Finally, as we argued for the financial account, the current account could already be so open that to resort to trade liberalization becomes impossible. For all these reasons, trade openness is rarely used as a discretionary policy to counteract the effects of capital inflows, but more as part of wider structural adjustment programs (as the empirical study of Bennett *et al.*, 1993, shows).

The **nominal appreciation** of the domestic currency as the means to prevent the growth of reserves may have its downsides, too. First, it may not be possible without large political costs, as is the case when extreme fixed exchange rate regimes (such as currency boards) are in place. Second, it may bring about the distrust of international investors in the anti-inflationary stance of the government; while appreciation is an anti-inflationary measure, it may lead to the perception that the opposite measure is equally possible. The distrust of international investors could lead to a disruptive financial panic with dramatic consequences for the real economy. In any case, under a context of optimism about the health of the recipient economy, it is more likely that an appreciation still fosters a higher demand for the local currency instead of a run on it. Third, the use of nominal appreciations/devaluations as discretionary measures impose excessive costs in terms of the reallocation of productive resources in response to changes in the exchange rate (Bennett *et al.*, 1993; Montiel, 1995).

Besides, the **relaxation of the currency regime** would allow an appreciation of the nominal exchange rate, which is less costly than a real appreciation via inflation, and could bring about a deterioration of the current account that compensates for the strengthening of the financial account. Making the exchange rate more flexible could also discourage the inflow of more capital – especially

destabilizing capital – thus limiting financial risks (Montiel, 1999; Lee, 1996; Reinhart and Reinhart, 1998). But if this measure is implemented to the extreme, it would render a close-to-floating exchange rate regime, with all the downsides that this implies: monetary independence is not guaranteed by a floating exchange rate given what Calvo and Reinhart (2000) call ‘fear of floating’; a flexible rate may impose more difficulties to fight against inflation; exchange rate volatility imposes trade and debt management difficulties (UNCTAD, 2001); currency flexibility does not necessarily reduce currency and maturity mismatches, given the aforementioned original sin; and it does not eliminate the possibility of suffering a financial crisis, via the self-fulfillment of devaluation or default expectations.

In any case, nominal appreciations and more flexible exchange rate regimes are infrequent measures, probably because fixed exchange rate regimes rarely include an explicit escape clause (a clause explaining when and how can the peg be altered), and the political cost of modifying an exchange rate arrangement is much higher when the reasons for that modification have not been determined *a priori* (UNCTAD, 2001). The absence of explicit escape clauses could also imply that the modification of exchange rate regimes may scare international investors. In such cases, the desired reversal of the growth of capital inflows (and especially volatile capital inflows) may not happen in an orderly manner but through a financial panic, given information asymmetries and the consequent overreactions of investors.

This leads us to believe that it is recommendable that developing countries have pegged but flexible regimes (what sometimes is called ‘intermediate regimes’), which would allow them to maintain certain stability but also to manage the exchange rate in face of capital inflows and their negative effects. With a fixed exchange rate that incorporates some flexibility, *de iure* and *de facto*, governments could resort to nominal appreciation without the fear of investor overreaction¹⁴.

In Thailand, Malaysia and (to a lesser extent) Indonesia, the current account had traditionally been more open than in other developing countries (Sachs and Warner, 1995). Still, in the late 1980s and early 1990s there was room for further advances in **trade liberalization**. But this further opening in Asia-3 cannot easily be interpreted as the policy to achieve a deterioration in the current account, given that it was part of a broader policy package to promote export orientation, a policy package that was introduced or reinforced around the turn of the decade for distinct reasons in each of these countries (Felker and Jomo, 1999).

Imports did react to openness, increasing in 1987-1996. But exports also grew (see figure A6), limiting the effects of liberalization on the current account balance. Furthermore, the deterioration of the current account balance which occurred in the years immediately before the crises is attributable

¹⁴ See García (2003) for other reasons, related to the vulnerability to financial crisis, to choose an intermediate exchange rate regime.

more to the real appreciation of the currency and factors external to Asia-3 than to the mere opening of the current account.

These countries barely resorted to **nominal appreciation** or to making their **currency regimes more flexible**. Thailand had, since 1985 and until 1997, a fixed exchange rate against a basket of currencies. Malaysia and Indonesia had, *de iure*, more flexible regimes: Malaysia had a fixed regime in 1990-92, but then turned to controlled flotation; Indonesia meanwhile had maintained since the mid-1980s a controlled flotation within a band, and a devaluation trend in pace with the inflation differential against the US. In any case, even in Malaysia and Indonesia, where the official regimes were more flexible, the stability of the currency was *de facto* defended¹⁵. In Indonesia, even in those years when the flotation band was widened, this was not intended to generate a significant appreciation of the rupee, since measures to maintain its value were used. Furthermore, the dollar had a dominant weight in the rates defended, even when the parity was officially against a basket of currencies (Ohno, 1999; McKinnon, 2000). Table 4 shows the stability of these countries' currencies against the dollar and the absence of considerable nominal appreciations.

Table 4. Nominal exchange rates^a (units of domestic currency per US dollar) in Asia-3, 1987-1998

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Thailand	25.723	25.294	25.702	25.585	25.517	25.400	25.320	25.150	24.915	25.343	31.364	41.359
Malaysia	2.5196	2.6188	2.7088	2.7049	2.7501	2.5474	2.5741	2.6243	2.5044	2.5159	2.8132	3.9244
Indonesia	1,643.8	1,685.7	1,770.1	1,842.8	1,950.3	2,029.9	2,087.1	2,160.8	2,248.6	2,342.3	2,909.4	10,014.0

a: Period averages.

Source: *International Financial Statistics*, IMF.

In summary, more flexible currency regimes and/or nominal appreciations were scarcely used to prevent an excessive growth of foreign reserves. Again, it is not easy to determine why these countries did not choose implement these measures, the most reasonable hypothesis being the lack of sufficient flexibility in their currency regimes, as well as the export orientation of their industrialization paths.

3.3. Policies to restrict the growth of the monetary base

Sometimes all the policies aimed at preventing the effects of higher international reserves on the monetary base or on M2 are referred to as 'sterilization measures' (as in Bennett *et al.*, 1993, or Esaka and Takagi, 2001). In other cases, the term is used for those policies implemented in order to limit the growth of only the monetary base, and not M2. Given that open market operations are the most frequently used measures in the second group, 'sterilization' sometimes refers exclusively to such

¹⁵ Calvo and Reinhart (2000) argue in favor of the existence of 'fear of floating' in developing countries, as do Hernandez and Montiel (2001) for the cases here studied.

measures. Here we will use this last sense of the term. Apart from sterilization, another common policy used to prevent increases in the monetary base is the limiting of rediscount at the central bank.

Sterilization is basically an exchange of bonds for foreign currency: the government purchases foreign currency to avoid excess demand for national currency, simultaneously issuing bonds to eliminate the impact of growing reserves on the monetary base. This is a very flexible measure, easy and quick to use, which gains time while the specific features of capital inflows (their causes, their apparent duration, their composition, etc.) are evaluated, and while an *ad hoc* policy package is consequently designed and implemented (Calvo, 1990; Bennett *et al.*, 1993; Montiel, 1995 and 1999). In any case, the principal debate over sterilization is whether it is effective, given capital mobility and a fixed exchange rate. According to the Mundell-Fleming model (Mundell, 1963), it is not possible for monetary independence, capital mobility and a fixed exchange rate to coexist. When two of those elements are present, the third becomes unsustainable. With perfect capital mobility, $i = i^* + f^d$ (where i and i^* are, respectively, the domestic and foreign interest rates, and f^d is the forward discount exchange rate). Also, $f^d = [(e^f - e^s) / e^s]$ (where e^f and e^s are, respectively, forward and spot exchange rates). These simple equations let us see that if the foreign interest rate (i^*) and the forward exchange rate (e^f) are given, policymakers can determine either the national interest rate (i) or the spot exchange rate (e^s), but not both.

Sterilization is a form of monetary policy with an upward impact on interest rates¹⁶. Therefore, following Mundell-Fleming, it cannot coexist with a fixed exchange rate and perfect capital mobility: sterilization brings about higher interest rates (or at least a higher interest rate differential than otherwise) which, in turn and by virtue of capital mobility, attract more foreign capital. These new inflows of capital offset the impact of sterilization on the interest rates, rendering it ineffective. Of course, capital mobility might be imperfect, in which case sterilization would be partially effective, given that new capital inflows would not be so high as to completely offset the impact of sterilization on the interest rate.

When sterilization results in a higher interest rate than otherwise – that is, when sterilization is effective – it also brings along problems. On the one hand, the additional capital inflows add to the growth of international reserves, further enhancing the risk of overheating and/or financial fragility. On the other hand, the additional capital inflows are likely to be composed mostly of volatile capital (the kind most attracted by higher interest rate differentials), consequently feeding financial fragility. In sum, if sterilization is partially or totally effective, it can feed, rather than prevent, overheating and financial fragility.

¹⁶ It is not always the case that sterilization bring about higher interest rates (see Lee 1996 for details on what conditions permit this to happen). But even when there is no outright increase in interest rates, sterilization will at least counteract the downward pressure derived from capital inflows. Therefore, sterilization would always bring about a higher interest rate differential than that which would prevail without sterilization.

Limiting the access to rediscount at the central bank is another measure aimed at restricting the growth of the monetary base. It is not as flexible as sterilization, especially in those countries where the rediscount rate is used as a means to provide cheap credit to priority sectors. Also, the weakness of the link between the rediscount rate and other interest rates makes it a not very effective tool for controlling credit growth (Lee, 1996). Finally, if there was in fact a transmission from discount rates to other interest rates, this measure could turn counterproductive, just like sterilization, via the attraction of further volatile foreign capital.

Sterilization was used throughout Asia-3 soon after the beginning of the capital inflow episode and for several more years. Thailand sold bonds between 1987 and 1995, Malaysia between 1989 and 1993 and Indonesia mostly in 1990-93 and 1996 (Seng and Villanueva, 1999). These countries also resorted to **raising the rediscount rate**: Thailand in 1990, 1994 and 1995; Malaysia in 1988-91 and 1995-96; and Indonesia in 1990 and 1994-95.

Was capital mobility so perfect as to prevent these measures from working? If sterilization and other monetary measures were effective in raising interest rates, or interest rate differentials, did they attract additional (volatile) foreign capital? Furman and Stiglitz (1998) conclude that interest rate differentials did increase with sterilization. Conversely, the econometric study by Esaka and Takagi (2001) posits that sterilization and other measures of monetary control did *not* bring about higher monetary market interest rates. But the authors themselves admit that their results might have been different had they used interest rate differentials, and that it is likely that sterilization at least kept interest rates above the level to which they would have fallen with closer-to-perfect capital mobility. Finally, the maintenance of relatively high interest rate differentials did attract additional capital inflows, mostly loans: when sterilization was relaxed and interest rate differentials fell, the inflows of OI were lower (see econometric evidence in Montiel and Reinhart, 2001, and Esaka and Takagi, 2001). In sum, the growth of reserves did not translate into a proportional increase in the monetary base, thanks to the effectiveness of sterilization. But (1) this effectiveness was only partial, in view of the fact that the monetary base *did* grow during the capital inflow episode; and (2) this effectiveness led to higher and more volatile capital inflows, thus feeding the risks of overheating and financial fragility.

3.4. Policies to limit the growth of M2

Some of the most usual measures to prevent the growth of M2, and therefore domestic credit, include the increase of reserve requirements, trespassing public deposits from commercial banks to the central bank and quantitative restrictions to credit.

Reserve requirements intend to immobilize a higher proportion of financial institutions' liabilities, so that the growth of the monetary base does not transform into credit growth. As sterilization, this is a flexible measure: as Calvo *et al.* (1992) assert, the raising of reserve requirements is a faster measure than correctly pricing those institutional guarantees which foster over-intermediation. But this measure also presents several downsides. First, there could be obstacles to its implementation, as occurs when reserve requirements are already high. More interestingly, they can be perceived as reversing a trend towards deregulation, which may be supported by international financial institutions, the international financial markets or interest groups within countries themselves. Second, reserve requirements, when used in a discretionary fashion, make it more difficult for banks to manage their portfolios, thus enhancing financial fragility. Third – and this may be the most frequent critique – reserve requirements can be ineffective via disintermediation (Lee, 1996; Spiegel, 1995). Disintermediation not only makes reserve requirements ineffective but it also opens the door to higher financial fragility, given that NBFIs are usually less carefully regulated and supervised than banks (Calvo *et al.*, 1993).

Another tool for avoiding credit growth is to **trespass public funds** from commercial banks to the central bank. A problem associated with this measure (as with reserve requirements) is that it cannot be used discretionarily without increasing the difficulty for financial institutions to manage their portfolios. A second downside is that in many cases the trespassed funds are not purely public, but contributions to pension funds or other insurance plans, so that such trespassing becomes a case of financial repression, which may trigger suspicions among international investors about the commitment of the government to deregulation.

Thailand used several measures aimed at **limiting credit growth**. It increased reserve requirements in 1995 and 1996. Also, indicative and direct controls on bank credit were imposed or reinforced: in 1995 indicative plans were extended to the branches of foreign banks and BIBF offices; big financial corporations were made subject to credit plans; the Bank of Thailand imposed ceilings to the banks' ratio of loans to deposits; limits to bank loans for unproductive activities were established; and credit to public entities was cut substantially. In Malaysia, the economic authorities increased reserve requirements and extended them to non-residents' deposits and other forms of foreign capital, especially in 1989-92 and 1994-96. Also, they restricted the access to credit cards and to credit for the purchase of certain products, such as motor vehicles. Indonesia barely resorted to increased reserve requirements, and most credit control took place through moral suasion. The authorities of these three countries also trespassed public deposits to the central banks. The most significant case was that of Malaysia, where in 1992 the Employee Provident Fund (more than \$2.6 billion) was put into Bank Negara Malaysia (on all kinds of credit controls in Asia-3, see Corbo and Hernandez 1994, Lee, 1996, Alba *et al.*, 1998, and Seng and Villanueva, 1999).

Given the steady growth of M2 during the decade prior to the 1997 crises, it seems that these measures were not effective enough. The increase of reserve requirements and other forms of credit control can be considered part of prudential regulation; and, as we shall see, prudential regulation, in general, was strengthening but insufficient in all three countries.

3.5. Policies to limit the growth of domestic demand

Up to this point we have reviewed policies that could act against the surge of both overheating and financial fragility. Here we focus on the main policy particularly aimed at limiting overheating: **fiscal contraction**. This measure can prevent inflation via the reduction of internal demand (macroeconomic effect) and through a decrease in the relative demand of non-tradable goods, of which public consumption is mostly composed (composition effect). The effectiveness of fiscal contraction is quite assured, since it acts mechanically on domestic demand (the second-to-last piece of the causal chain described in figure 1); and it does so regardless of the causes of capital inflows, the degree of financial opening, or the prevailing exchange rate regime (Corbo and Hernandez, 1994). There is empirical evidence on the effectiveness of a restrictive fiscal policy: the econometric study by the World Bank (1997) shows that when the fiscal stance is contractionary, real appreciations are smaller.

The downsides of this measure are notable but frequently ignored. First, fiscal contraction faces obstacles to its implementation. For one, it is not a flexible policy tool; certainly not as flexible as capital movements across borders (Montiel, 1995). Also, once public budgets are more or less balanced, it becomes difficult to turn to fiscal contraction, both for technical and political reasons. Second, fiscal contraction, as the nominal appreciation of the currency, can bring about a distrust in the anti-inflationary stance of the government; though contraction is an anti-inflationary measure, it may lead to the perception that the opposite measure is equally possible. The distrust of international investors could lead to a sudden financial panic and a consequent financial crisis. In any case, during a period of confidence in the health of the recipient economy, it is more likely that a restrictive stance reinforces the confidence of investors, even attracting more foreign capital, instead of detonating a financial panic. Third, the most serious downside of relying on this measure is that it implies the substitution of public expenditure for consumption, investment, and/or imports, all of which financed with the incoming capital. This alteration of the composition of aggregate demand is not a problem *per se*. But it becomes one when certain public investments such as in infrastructure or human capital are much needed, as is frequently the case in developing countries. Also, when private agents use foreign capital in a less productive way than the government, as occurs when capital inflows are directed to consumption, over-investment in productive assets, or investment in real estate or financial assets – some of which, as seen above, is likely to happen in face of massive capital inflows.

For all these reasons, fiscal contraction is rarely used as the main response to capital inflows, but rather as a secondary response after sterilization has proved ineffective or counterproductive. Furthermore, fiscal contraction, as trade liberalization, is usually more closely linked to wider structural adjustment programs than to discretionary policy (Bennett *et al.*, 1993; Montiel, 1999).

Asia-3 had already been pursuing a prudent **fiscal stance** since the mid 1980s, mostly as part of a wider adjustment package. But, beginning around 1995, fiscal policy became either slightly expansionary or less restrictive (World Bank, 1998; Alba *et al.*, 1998). In Thailand, fiscal policy became expansionary in 1994. In Malaysia and Indonesia it did not turn expansionary, but it became less restrictive around 1995. The fiscal stance thus turned out to be pro-cyclical, given the context of rising domestic demand and GDP.

Therefore, these countries did not use fiscal contraction in a discretionary way, and even less so in the years preceding the crises. Given their fiscal health, there was not much room for restriction. Also, the long-run goals of these three countries (i.e. moving upward on the technological scale) depended on a higher public investment in secondary education and infrastructure (Stiglitz, 1999; Felker and Jomo, 1999).

3.6. Policies to restrict over-intermediation and currency and maturity mismatches

According to the aforementioned theories about financial risks as the effects of capital inflows, the circumstances under which these arise are: the lack of prudential regulation and supervision, the presence of institutional guarantees, and uncertainty. Therefore, correcting any of these three circumstances could help eliminate the impact of capital inflows on the health of the domestic financial system.

Nevertheless, there is great difficulty in tackling the last two of these three circumstances. Regarding institutional guarantees, these are difficult to remove altogether. Even when the most obvious guarantees are eliminated, such as the government acting as a lender of last resort, others may persist, as when there is a fixed exchange rate regime (Dooley, 1999). The simple fact that governments are always somehow damaged by financial crises demonstrate the existence of some form of guarantee. Furthermore, even if all guarantees were in fact removed, the mere perception of their existence boost excessive risk-taking. Therefore, governments would have to not only remove all explicit and implicit guarantees, but also convince private agents that they had done so. Furthermore, if Eichengreen and Hausmann (1999) are right and the original sin is a more powerful explanation of financial risks than moral hazard, the elimination of guarantees is not enough to prevent risks. Regarding uncertainty, it can be argued that this is an inherent feature of capital markets, and even more so if the markets are

international (Hermalin and Rose, 1999). Thus, there is little that governments can do to eliminate uncertainty.

Given the above, we now focus on **financial regulation and supervision**¹⁷. Regulation and supervision are composed of what are sometimes referred to as ‘external’ instruments (the set of rules and controls imposed by public institutions) and ‘complementary’ measures. Maybe the best known instrument of external regulation is the capital adequacy ratio, designed by the Bank of International Settlements (BIS). It consists in the requirement that the capital of financial institutions amount to at least 8% of their assets weighted by risk. Though highly recommendable, this measure is no panacea: unlike provision for default, it does not protect from losses; the measurement of the ratio is computed for a particular moment in time, so that it shows nothing about risky operations conducted between measurements; requirements can be evaded via international capital mobility; the cost imposed by the maintenance of capital may push banks into more profitable (and therefore risky) operations; the categories of risk proposed by BIS are too wide; etc. (for a more complete assessment of the downsides of the capital adequacy ratio see Caprio, 1996, Garber, 1996, and Mishkin, 2001).

Consequently, other external measures are also necessary. First, limits to internal credit, which would restrict the surge of credit risks more directly than the capital adequacy ratio. Such limits to credit expansion would be particularly useful if imposed on credit given for consumption, or for risky sectors (real estate or securities markets), and if they were directed to avoid an excessive concentration of credit. Second, restrictions can be placed on the total external indebtedness of banks, or on the proportion of liabilities denominated in foreign currencies and/or of short-term nature. This measure is also a form of inward capital control and would prevent the growth of not only credit risks but also liquidity and exchange rate risks. Third, measures can be taken to limit the problems imposed by too-big-to-fail financial institutions. There exist financial institutions that are so big that their failure could imply the collapse of the whole financial system. These institutions are thus frequently bailed out, or expected to be bailed out, feeding moral hazard. As a solution, some authors propose that the first bank that fails should not be bailed out, whereas the successive failing banks should, which would motivate big banks to avoid risky behaviors¹⁸.

Generally speaking there are some obstacles to external regulation, many of which could be more serious in developing countries: the usual lack of transparency of financial markets; the scarcity of

¹⁷ Prudential regulatory measures and capital controls cannot be separated neatly. Some regulatory measures *are* capital controls and vice-versa. The blurriness of the division is leading some authors (Epstein *et al.*, 2003) to analyze ‘capital management techniques’ instead of looking at capital controls and prudential regulation separately. Also, it should be noted that the regulation to which we refer in this section is *not* what is sometimes called ‘economic regulation’ (that is, regulation aimed at intervening in markets) but ‘prudential regulation’ (that is, regulation aimed at restricting financial fragility). The latter is thus the regulation resulting from re-regulating financial systems after deregulation.

¹⁸ On all these measures, see Bhattacharya and Stiglitz (1999) and Mishkin (2001).

human, technical, and financial resources to implement regulation and supervision; incentives for public authorities to incur in regulatory forbearance; and incentives for bank owners and managers to take too many risks (sometimes inherited from a previous system of economic regulation). Also, the complexity and interdependence of the many elements that compose effective regulatory systems make it particularly difficult for developing countries to design and implement them.

Complementary measures are usually recommended in order to dodge some of these problems, as well as to trespass part of the supervisory responsibility to the market itself. Some complementary measures are: higher standards of transparency, accountancy, and auditing (see Goldstein and Turner, 1996, for a proposal on these standards); educating public and private agents and devoting more resources to regulation and supervision; the creation of good incentives both for public and private agents; and participation of the market in supervision. All of these complementary measures have, in turn, their own difficulties of design and implementation¹⁹.

Overall, given political, social, and institutional rigidities, the design and implementation of a good regulatory and supervisory system takes time – much more time than it takes to open the financial account and receive massive capital inflows. Therefore, this measure should be gradually built, not as a discretionary response to capital inflows but as a permanent protection against financial fragility. Also, regulation and supervision takes human, financial, and technological resources, all of which are scarce and very much needed for other purposes, such as social and physical infrastructure, especially in developing countries (Caprio, 1996).

In spite of all these difficulties, regulation and supervision seem to among the most reasonable responses to capital inflows. The sooner the build-up of a regulatory and supervisory system, the better. First, because it implies a departure from the policy stance that acts as a pull factor for perilous capital inflows: re-regulation counteracts the deregulation of financial liberalization, even if the new regulations are so-called ‘prudential’ instead of ‘economic’. Second, regulation and supervision seem to be effective, according to empirical studies, even when imperfect. In particular, empirical evidence says that regulation and supervision diminish the risk of suffering a financial crisis (Mahar and Williamson, 1998; Rossi, 1999).

In Asia-3, some steps were taken during the 1980s in **re-regulating** their rapidly changing financial systems. In Thailand, the Commercial Banking Act of 1979 introduced the first formal controls over financial companies; the BPI capital adequacy standards were approached; and the central bank was given further power as a supervisory agency. In Malaysia, the BPI capital adequacy ratio was introduced

¹⁹ On the obstacles to external and complementary regulation and supervision see Caprio (1996), Llewellyn (2000), Brownbridge and Kirkpatrick (2000), and Mishkin (2001).

in 1988; the Banking and Financial Institutions Act of 1989 unified the regulatory systems of all financial institutions; and Bank Negara Malaysia was given supervisory and punitive powers. In Indonesia, in the late 1980s, some restrictions to credit were introduced; capital requirements were extended to all banks; the supervisory department of the central bank was reorganized and expanded; and the Bank Indonesia Supervisory Monitoring System was established to advise on banking practices (see more details in ADB, 1992, and Bank of Japan, 1990).

In any case, financial regulation and supervision was far from being sufficiently responsive to capital inflows. In the years prior to the crises, prudential regulation and supervision in Asia-3 was below even those standards achieved by other Asian or Latin American countries. Caprio (1998) developed a regulation and supervision index and applied it to twelve Asian and Latin American countries. The study concluded that Singapore ranked best with an index of 16 (the lower the index, the better the regulatory and supervisory system), followed by Argentina (21) and Hong Kong (21). Behind there lagged Chile (25), Brazil (30), and Peru (35). Even less well regulated were Malaysia (41), Colombia (44), South Korea (45), the Philippines (47), Thailand (52), and Indonesia (52).

Going into further detail about Asia-3: first, capital adequacy ratios were not enforced effectively, and the ratios were too low in relation to financial risks being taken. Second, rules about credit classification and required provisions were too indulgent. Also, there were no concrete restrictions to exchange rate risk exposure or to high-risk sectors exposure; and there were no limits to concentration of credit in a reduced number of borrowers or sectors. Third, the absence of accountancy standards made supervision more difficult, opening the door to evasion. Fourth, the public agencies in charge of regulation and supervision were slow or reluctant to react. Fifth, regulation and supervision for NBFIs were less strict than for banks, in spite of their growing presence, both in number and in spheres of activity, due to financial deregulation (Llewellyn, 2000; Brownbridge and Kikpatrick, 2000). There were, of course, differences among the three countries studied²⁰, the efforts undertaken by Malaysia being especially notable, though still insufficient.

3.7. Recapitulating on the policies used in Asia-3

Thailand, Malaysia, and Indonesia resorted to various policies in order to prevent the potential ill consequences of massive capital inflows, particularly volatile and denominated in foreign currencies – in order to prevent overheating and/or financial fragility. Also, it is important to note that these capital inflows were the result, *inter alia*, of other economic policies implemented in the 1980s, which acted as pull factors for foreign funds (García, 2002). Hence, policy responses were somehow meant to

²⁰ See some details in Jomo (1998), Corsetti *et al.* (1998) and Kawai *et al.* (2001).

counteract the effects of an initial neoliberal policy package. And, still, many of those responses reinforced that initial package.

- Regarding fiscal policies, fiscal restriction was not intensively used, probably because of the difficulty in resorting to contraction in a context of healthy public budgets, and given the needs of Asia-3 in infrastructure and education.

- Regarding monetary policies, restriction was exerted via sterilization and other policies of monetary base and credit control. Sterilization was not used simply as a momentary measure to gain time, but for several years beyond the advent of capital inflows. The stance which had been set in the 1980s was thus reinforced. This reinforcement attracted further volatile capital inflows and was, therefore, only partially effective and even counterproductive.

- Currency-related policies (nominal appreciation or a more flexible currency regime) were barely used, maintaining the currency regimes set in the mid- or late-1980s. Without further research, it is difficult to say why these measures were not taken. But it seems that the absence of flexibility in their currency regimes and the export-oriented growth strategies of these economies contributed to such decision.

- Trade liberalization was strengthened in the 1990s. This measure may not have been implemented with the aim of deteriorating the current account balance. In any case, it was not very effective in achieving that goal: exports grew at almost the same pace as imports, given the export-oriented strategy of these countries. Also, this measure reinforced the trend set prior to the massive inflow of capital, feeding the confidence of investors.

- Neither was financial opening reversed, inward capital controls being used very briefly. Again, the trend set in the 1980s was more or less maintained. As with making the currency regime more flexible, it is not easy to determine why these governments did not use capital controls more intensively. The main reason could be the clear bias against them prevailing among international investors and international financial institutions.

- Regulations to substitute those being removed by the process of financial deregulation were insufficient, both at the beginning of deregulation and in the face of capital inflows. Again, it is difficult to assess why these measures were not implemented more decisively. Most likely, because re-regulation of a financial system requires institutional change, which will always happen at a slow pace.

4. Concluding remarks

In this paper we have reviewed how overheating and financial risks can arise from the entry of massive foreign capital – particularly capital denominated in foreign currencies and of volatile nature.

We have seen that Thailand, Malaysia, and (to a lesser extent) Indonesia all suffered from trade-related problems, partly as a consequence of the overheating caused by capital inflows, and partly from external shocks occurring in the years prior to 1997. These countries (though Malaysia to a lesser extent) also presented financial fragility – in particular, over-intermediation and currency and maturity mismatches – deriving from the amount and composition of the incoming capital.

Next, we have reviewed the theoretical/logical downsides of many of the possible policy responses to capital inflows, as well as the use and results of these in Thailand, Malaysia, and Indonesia. Generally speaking, the policies in response to capital inflows did not have sufficiently positive results. Some (principally, sterilization and further trade and financial openness) reinforced the policy stances of the 1980s, further giving confidence to international investors and/or feeding the profitability of domestic investments. Other policy responses were barely tried (capital controls and a more flexible currency regime) or were implemented too slowly (prudential regulation and supervision).

These other measures – those that depart from stabilization or liberalization – are increasingly considered to be most likely to succeed in the prevention of excessively risky capital inflows and their effects. But in order for such measures to be most effective and minimize the likelihood of investors' overreactions in face of their implementation, they should be built progressively into the policy system of developing countries, without waiting for capital inflows to become excessive. That is, in order not to create too much uneasiness among international investors, capital controls should not imply a radical reversal of a previous policy trend, but rather the dynamic fine-tuning of a permanent capital management system. To avoid excessive political and economic costs, making the currency regime more flexible or adjusting the nominal exchange rate should not represent an outright departure from a previous policy stance, but rather the discretionary management of an intermediate regime. Finally, it must be noted that the implementation of regulatory and supervisory systems takes time, and should therefore be progressively established in all developing countries, rather than the too-late reaction to capital inflows. Without these measures in place, any discretionary response to capital inflows that reinforces stabilization or liberalization runs the risk of being ineffective, or even counterproductive.

Further research is needed to understand why capital controls, currency-management-related measures and prudential regulation are not frequently resorted to – as well as how to promote their more frequent use or their more rapid implementation.

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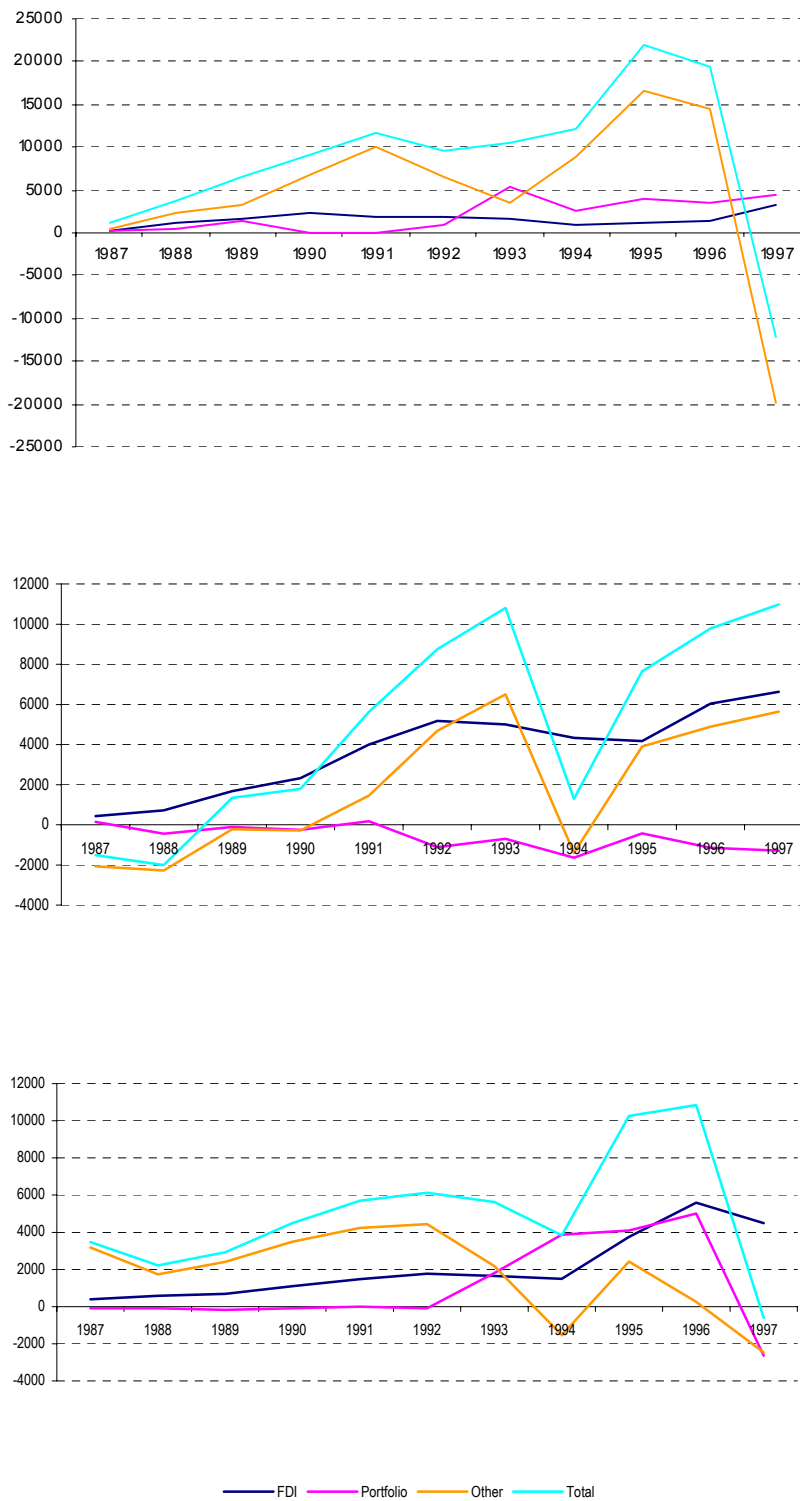
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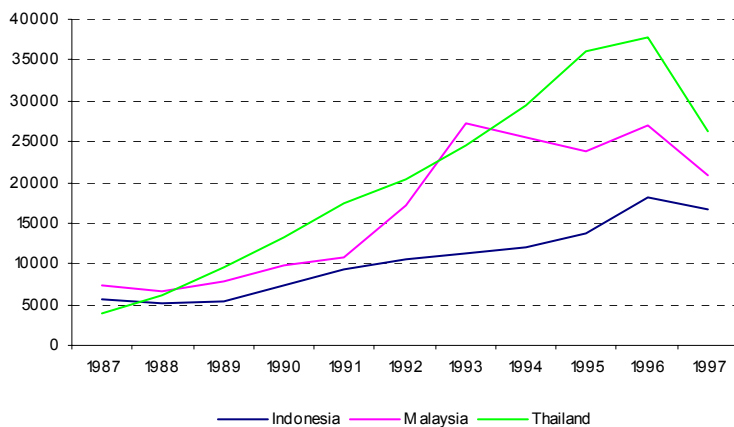
Appendix

Figure A1. Capital inflows in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



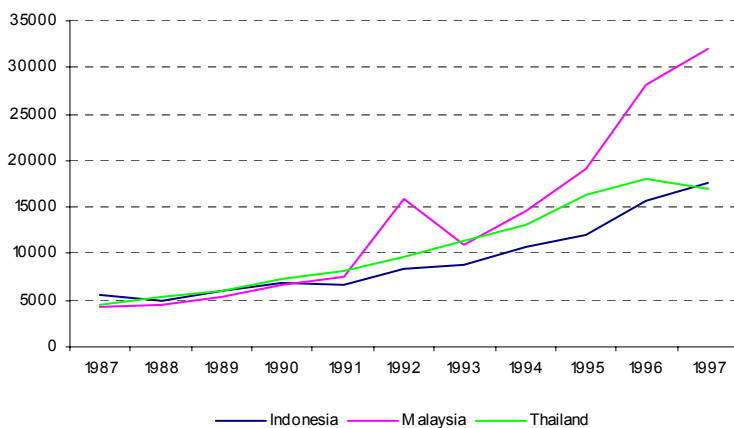
Source: International Financial Statistics, IMF.

Figure A2. Reserves in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



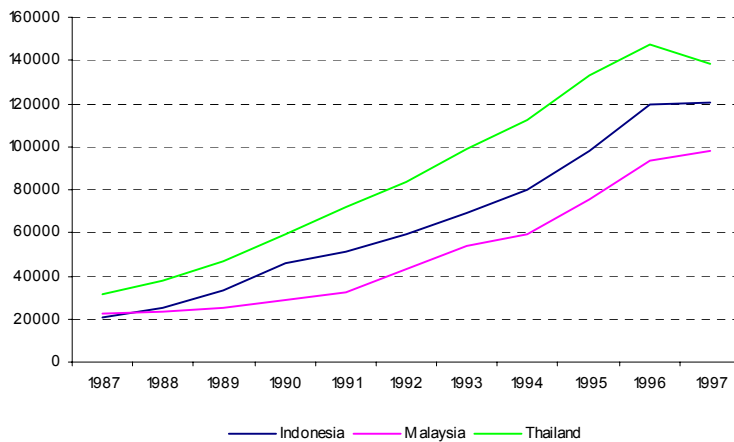
Source: International Financial Statistics, IMF.

Figure A3. Monetary base in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



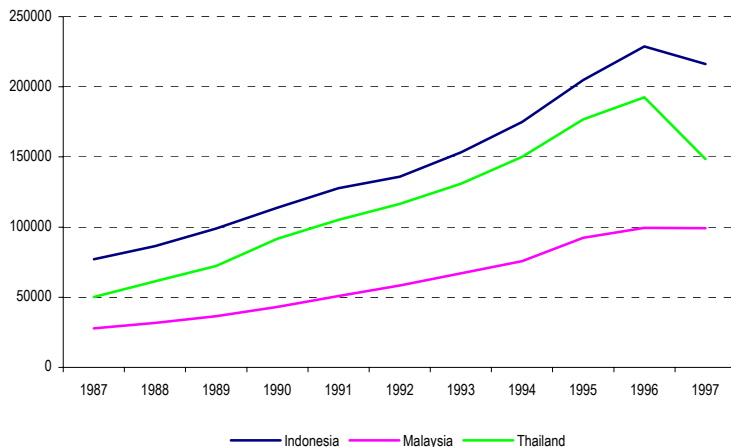
Source: International Financial Statistics, IMF.

Figure A4. M2 in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



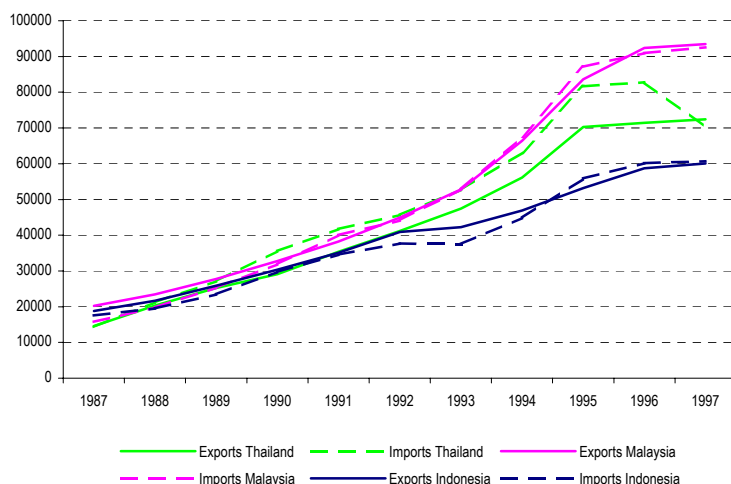
Source: International Financial Statistics, IMF; and author's calculations.

Figure A5. Domestic demand in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



Source: International Financial Statistics, IMF; and author's calculations.

Figure A6. Exports and imports in Thailand, Malaysia and Indonesia, 1987-1997 (millions of dollars)



Source: International Financial Statistics, IMF.

Table A1. Policy responses to capital inflows in Thailand, Malaysia and Indonesia (1988-1996)

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Inward capital controls			T ^a	I	M		M		
Easing of outward capital controls	M	M	T M	T M	T M	T M	T M I		
Trade liberalization	M	M	T M I	M I	M I	M I	M I	I	I
Nominal appreciation or flexibilization						M	I	I	I
Sterilization	T	T M	T M I	T M I	T M I	T M I	T	T	I
Higher discount rate		T M	T M					M	M
Higher reserve requirements		M	M	M	M	M	M	T M	T M I
Restrictive fiscal policy	T	T	T I	T I	M I	I	I		

Source: author's elaboration from Table A1 in Montiel (1999) and other sources referred to in this section.

a: T refers to Thailand, M to Malaysia, and I to Indonesia.