

**The Capital Account and The Exchange Rate  
In Monetary Policy Decision-Making**

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# The Capital Account and the Exchange Rate in Monetary Policy Decision-Making: An Overview

## 1. Introduction

1. The recent literature on exchange rate regimes makes clear that the appropriate monetary regime choice for a country depends on its underlying characteristics and circumstances. In other words, it is not as though the choice of regime can be made in isolation from other considerations, such as the openness of the capital account, the flexibility of the economy in response to external shocks, the stage of development and strength of the domestic financial system, and the degree of political commitment to maintaining a nominal monetary anchor.<sup>1</sup> At the same time, it seems clear that for most – indeed probably all – countries, the policy choices must be made against the background of increasing economic and financial integration with the world. As a consequence of this integration, capital and current account flows are becoming increasingly important for most countries.
2. This study is focused on the issues that arise for “small open economy” monetary policy-makers, particularly those whose economies are open with respect to the capital as well as the current account.
3. The structure of the study is as follows. Section two outlines the core idea that lies behind our analysis of the issues. That idea is the “impossible trinity”, which holds that it is not possible simultaneously to maintain an open capital account, target the exchange rate, and maintain an independent monetary policy targeted at domestic economic objectives. In section two, we sketch the underpinnings for this idea, in a stylised manner.
4. Section three provides brief overviews of three case studies, drawn from the experiences of Indonesia, New Zealand and Thailand. (The full case studies are attached as appendices 1 – 3.<sup>2</sup>)
5. In section four we consider some of the applied issues that monetary policy-makers actually face. Our analysis focuses less on the big regime choices (fixed or floating exchange rates, closed or open capital account) and more on the practical issues capital flows and exchange rate pressure create within the alternative regimes. We draw from the experiences of the three case study countries, with particular points cross-referenced to the case studies where appropriate.
6. Section five concludes. One broad conclusion that is worth foreshadowing is that monetary policy-makers in small open economies cannot escape the issues that arise from openness. To be sure, countries can adopt different strategies for managing them, and the different regime choices have, at least in some respects, different implications for the form that the issues take.

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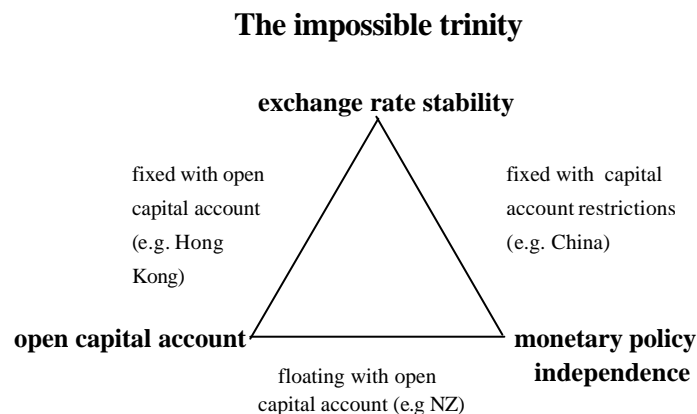
<sup>1</sup> See for example Frankel (1999), Grenville (2000) and Fischer (2001).

<sup>2</sup> For the sake of efficiency, the case studies are denoted: Bank Indonesia (BI), Reserve Bank of New Zealand (RBNZ) and Bank of Thailand (BOT).

But there is no “silver bullet” that enables the issues to be avoided: an economy cannot be open to the rest of the world, and capture the gains from trade, in capital as well as in goods and services, without also being exposed to the demands and possible stresses that can come from that openness. The challenge for policy-makers is to address those issues in a way that enables the benefits of openness to be captured while mitigating the potential pitfalls and costs.

## 2. The core framework

1. The framework most commonly used for considering the relationships between exchange rates, capital flows and monetary policy is the so-called “impossible trinity”. This holds that there is little – some might say no – scope simultaneously to maintain an open capital account, an independent monetary policy, and an exchange rate target. This proposition suggests that, in a stylised sense at least, the key decision to be made by monetary policy-makers concerns whether to (1) accept exchange rate fluctuations as a corollary to operating an independent monetary policy or (2) to target the exchange rate and forgo an independent monetary policy. A third choice is to restrict capital flows, with a view to sustaining independent monetary policy and exchange rate objectives.



2. This “impossible trinity” proposition is well established in the literature, to a degree that its underpinnings tend, perhaps, to be taken for granted, or even as an “article of faith”. To assist our analysis of the practical issues that face monetary policy-makers, we elaborate in this section on those underpinnings.
3. Consider a country with a fixed exchange rate. Suppose there has been a negative external shock, and suppose that the central bank seeks to buffer the economy against that shock by reducing interest rates so as to stimulate domestic demand. When the capital account is open and local financial markets are integrated with global markets, investors can be expected to move capital to the places in the world where yields are now higher (all other things being equal). That is, there will be a capital outflow. In a fixed exchange rate regime, this means that the central bank sells foreign currency, and buys domestic currency, at the rate it has fixed. But there is a limit to the sustainability of such outflows.
4. If the central bank does not offset – or “sterilise” (which we discuss shortly) – the effect on the local cash market of its purchases of domestic currency (the counterpart to its sales of foreign exchange), the consequential withdrawal of liquidity from the local market will put upward

pressure on local-currency interest rates. These pressures will tend to take interest rates back toward their original level and, at the same time, curtail the capital outflow. But they also mean that the central bank's endeavour to reduce the local currency interest rate below the "world" rate will have been thwarted (BOT, para 2.15-16). To be sure, the central bank may find it possible to lower interest rates for a period, but eventually – however long "eventually" may be – the fixed exchange rate precludes the central bank from maintaining an independent monetary policy. Thus, in this case, the scope for monetary policy to buffer shocks is limited. Instead, adjustment, eventually, is forced more directly through the real economy.

5. Conversely, when the central bank seeks to raise interest rates above the world rate, say, because of domestic inflation pressures, there will be capital inflows. In the absence of countervailing transactions by the central bank to offset the domestic currency injection that occurs as it accumulates foreign exchange reserves, domestic liquidity conditions ease and downward pressure is placed on domestic interest rates. Again, the central bank is thwarted in achieving its interest rate objective.
6. What if the central bank chooses to offset, or "sterilise", the purchases (sales) of local currency arising from it intervening in the exchange market? Can it in this way insulate monetary policy from those exchange market interventions? The central bank may attempt to do this by buying (selling) other assets, such as government bonds, so as to offset the withdrawal (injection) of local currency. Alternatively, it may simply fix an interest rate at which it is willing to borrow/lend cash, and stand in the market at that rate (as do those central banks that implement monetary policy by setting an official cash rate). In these ways it may seem that the central bank can insulate domestic monetary conditions, and thus domestic interest rates, from the effects of the intervention in the exchange market required to maintain the fixed exchange rate.
7. But, once again, it turns out that the central bank's ability to sustain an independent monetary policy is limited. When it holds the local currency interest rate down in the face of a capital outflow, its ability to sustain the interest rate reduction is obviously constrained by the (finite) amount of foreign exchange reserves it has available, or can borrow. Capital outflows can rapidly deplete foreign exchange reserves, and the central bank may quickly reach a point where it has to raise interest rates or abandon the fixed exchange rate<sup>3</sup>.
8. Conversely, a country that seeks to hold its interest rate above the world rate while maintaining a fixed exchange rate also faces a constraint, albeit of a different nature. In this case, the central bank accumulates foreign exchange reserves and finances those reserves by raising local currency funds in the local market at the (elevated) local currency interest rate. This means, virtually by definition, that the central bank bears a net financing cost, that is, the cost of the local currency financing is higher than the returns it earns on its foreign currency assets. Beyond some level, this financing cost causes the policy of holding local interest rates above the world rate to become prohibitively expensive (BI, para 12)<sup>4</sup>

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<sup>3</sup> Though, as discussed later, at some point raising interest rates may actually further undermine the credibility of the peg and leave abandoning it as the only option.

<sup>4</sup> Even if the central bank can hold local interest rates above the "world rate" – albeit at a growing fiscal cost – it may still not be able to maintain the monetary control it is seeking. This is because local financial institutions' balance sheets will become over-weighted with holdings of the sterilisation instruments. In

9. The upshot of this analysis is that a country with a pegged exchange rate is unable to sustain independent interest rate settings. In other words, it cannot maintain an independent monetary policy and, thus, cannot independently pursue an inflation objective. Thus, while it may be able to fix a nominal exchange rate, it cannot fix the real exchange rate, other than in the short run (I, para 1)<sup>5</sup>.
10. One obvious way to deal with this constraint on the independence of monetary policy is to close the capital account, or at least to place some impediments in the way of the free flow of capital. But that, of course, would amount to trading off one element of the “trinity” in order to secure the other two. Moreover, the subject of this study concerns managing monetary policy in the face of capital flows, which implies, essentially, an open capital account. Also, few, if any, countries, have a completely closed capital account. Virtually all countries are subject to the influence of “capital” flows, to the extent that the leads and lags in trade payments can vary with changes in capital market conditions (BOT, para 2.12) and to the extent that most countries are relatively open to FDI flows.
11. The other possibility is to adopt a flexible exchange rate regime. But again there are issues to be grappled with. These centre on whether, and if so how, to take the exchange rate into account in making monetary policy (interest rate) decisions. Few if any countries, including those with floating exchange rates, find it possible, or appropriate, to direct monetary policy to a domestic, say inflation, objective without factoring the exchange rate into their policy assessment processes.

### 3. Three experiences in the region: Indonesia, New Zealand and Thailand

1. Indonesia, New Zealand and Thailand all experienced upsurges in net capital inflows in the early to mid 1990s. This is attributed to both international capital looking for attractive yields at a time when yields in industrial countries were relatively low (BI, para 1; BOT, para 2.2; RBNZ, para 5) and, in the cases of Indonesia and Thailand, local borrowers being attracted to low interest rate foreign currency borrowing opportunities, facilitated in the case of Thailand, in a major way, by the establishment of the Bangkok International Banking Facility in 1993 (BOT, para 2.4). The latter factor was not present in New Zealand in the 1990s, something that the RBNZ attributes to the NZD having been floated some years earlier (in 1985), and New Zealand borrowers mostly having already learned that unhedged foreign currency borrowing is risky and can turn out to be very expensive (RBNZ, para 14).
2. In the cases of Indonesia and Thailand, with essentially fixed exchange rates, the result of the capital inflow was an influx of liquidity into the domestic financial system, rapid credit expansion and resulting substantial escalation in asset (property and share) prices, real exchange rate appreciation and (for Thailand) the emergence of a large current account deficit.

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these circumstances, the local institutions may come to see themselves, in terms of balance sheet structure, as “under-lent”, and look to expand their lending, something that likely will be associated with a lowering of the prudential standards they apply to their lending activities.

<sup>5</sup> Of course, neither can a country with a floating exchange rate determine its real exchange rate. The difference in this case is that the country controls its inflation rate, but not the nominal exchange rate. (A fixed exchange rate country controls its exchange rate but not its inflation rate.) Control of the real exchange rate would require control of both the nominal exchange rate and of the inflation rate, which the impossible trinity proposition suggests is not possible in any sustainable sense.

This was at a time when the financial systems were being liberalised and before a strong (exchange rate and credit) risk management environment had been developed, which meant that prudential constraints on financial expansion were lacking. Therein lay the Achilles heel for these two economies (BOT, para 2.1.4 and 3.7). When capital market sentiment became less favourable in the first half of 1997, financial system vulnerabilities were exposed, and capital inflows turned to large outflows. These culminated in Thailand being forced to float the baht in July 1997, and Indonesia the rupiah in August 1997, and thereafter spirals of exchange rate depreciation, foreign currency borrowing losses, credit losses, bank failures, and further exchange rate depreciation.

3. The monetary policy challenge facing Thailand and Indonesia in the wake of this experience has been to re-establish a nominal anchor, to replace the anchor previously provided by a pegged exchange rate. A looming risk was spillover of “imported” inflation, from the massive exchange rate depreciations, into a domestic inflation dynamic. The chosen framework for responding to the new challenges, in both countries, has been inflation targeting (BOT, paras 4.1-25; BI paras 13-15). Commencing inflation targeting from such a starting point has presented a number of challenges: how to balance the risk to inflation from exchange rate depreciation against the deflationary influence of a credit crunch; how wide to set the inflation target range when the tradable sector represents a very large share of the economy (80 percent in Thailand) and thus the price level is sensitive to the landed local currency cost of imports; how to judge the output gap in economies that have exhibited sustained and impressive growth in potential output over a long period, but have experienced significant temporary knock-backs; how to forecast inflation in economies that are undergoing rapid structural change; and how to implement monetary policy when financial markets are still under development, and vulnerabilities (such as from large government debt overhangs and banking sector weaknesses) remain (BOT, paras 4.17 and 5.1-5.3).
4. For all that, in both countries inflation targeting appears to have provided a useful framework for grappling with the considerable challenges facing monetary policy. Inflation in both countries, after initially spiking up (particularly in the case of Indonesia), is now back well within single digit levels.
5. New Zealand, with inflation targeting and floating exchange rate regimes already established by the early 1990s, faced a different set of monetary policy challenges. Like Indonesia and Thailand, New Zealand experienced substantial capital inflows during the 1990s up until about 1997, in part because it, too, was seen internationally at the time as an attractive destination for investment capital, and in part because interest rates were high as the result of monetary policy being directed at containing strong domestic inflation pressures. But with a floating exchange rate, the strong capital inflows resulted mainly in exchange rate appreciation, rather than in easy domestic liquidity conditions. This enabled excessive credit expansion and an asset price bubble largely to be avoided, but at the cost of the tradables (exporting and import competing) sector of the economy being placed under considerable pressure (RBNZ, paras 7-9).
6. One result of this pressure was increased cognisance of the role of the real exchange rate in the transmission of monetary policy, as reflected in the adoption of a monetary conditions index (MCI) framework from early 1997. Within this framework, the RBNZ regarded a one per cent movement in the exchange rate as imparting about as much of an

expansionary/contractionary – and hence, in the medium term, inflationary or dis-inflationary – influence on the economy as a 50 basis point movement in the interest rate. This framework for taking account of the exchange rate in monetary policy, however, proved to be too narrow. In the second half of 1997 and early 1998, ie, at the time of the Asian crisis, capital flows turned negative and the exchange rate depreciated quite sharply. Although monetary policy was eased in MCI terms, the extent of the exchange rate depreciation resulted in interest rates still being increased. This turned out to be an insufficiently accommodative response to the effect of the Asian crisis on the New Zealand economy.

7. The Asian crisis for the New Zealand economy represented a negative shock that, in the absence of exchange rate depreciation, would have imparted a deflationary influence. In these circumstances, the more appropriate monetary policy response would have been to accommodate the easing in monetary conditions delivered by the exchange rate depreciation, a stance that was adopted in the second half of 1998, when interest rates were allowed to fall sharply. Meanwhile, though, monetary policy, for a period, had been held tighter than was warranted, with the result that the negative impact of the crisis on GDP growth was not buffered quite as much as it could have been. Inflation fell to year-on-year rates of around 1 per cent, perhaps somewhat lower than could have been justified, given the need for the exchange rate to fall to buffer the negative impact of the external shock on inflation and growth (RBNZ, para 12-13). This experience underscores that under a floating exchange rate regime, there is no one-to-one relationship between exchange rate movements and inflation. Sometimes movements in the exchange rate will be inflationary/deflationary and sometimes not, depending on the circumstances. Accordingly, “indicators” like monetary conditions indices, if they are to be used, need to be used with some flexibility, and in a way that takes account of the circumstances.
8. Apart from the problem that arose from the way in which the MCI framework was applied, New Zealand’s monetary and financial arrangements stood the test of the Asian crisis relatively well. Because of the relative absence of unhedged foreign currency borrowing, and because of generally sound credit practices in the New Zealand banking system – in part the result of lessons learned in the second half of the 1980s when the New Zealand financial system was deregulated – New Zealand avoided banking system stresses.
9. Nonetheless, the extent of the cycle in the value of the NZD – substantial appreciation in the years running up to 1997, followed by substantial depreciation, such that by end 2000 the NZD was at historic lows – has left questions about whether such large exchange rate cycles may cause damage to medium-term growth prospects of the tradable sector of the economy, and whether they are avoidable. These issues, doubtless amongst others, lie behind discussion in New Zealand about whether New Zealand should seek to form a currency union with Australia, or “dollarise”, as a means of achieving greater exchange rate stability.<sup>6</sup>

#### **4. Issues for monetary policy arising from capital flows**

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<sup>6</sup> Although this questioning tends to overlook that if the NZD had been pegged to the AUD or USD through the 1990s, most of the tradables sector would still have faced a sizeable exchange rate cycle. No more than about 20-25 percent of New Zealand’s trade is with either of these trading partners and each of the AUD and the USD during the 1990s experienced large cycles of their own.



### *Under a floating exchange rate regime*

1. Perhaps the most acute issue faced by central banks with floating exchange rates concerns how monetary policy, and capital flows, can have a disproportionate effect on the tradables, or externally exposed, sectors of the economy. This issue arises from the exchange rate being an “asset price” determined in flexible and efficient financial markets, and hence being responsive to interest rate differentials. By contrast, inflation in goods and services prices typically responds only sluggishly to monetary policy, such that where a higher than “world” interest rate is needed to restrain inflation, much of the restraint is concentrated on the exchange rate sensitive, “tradables” sectors of the economy. Thus, there are two sides to the buffering role played by flexible exchange rates (RBNZ, paras 7-9).
2. Most often focussed on is the beneficial role that a flexible, or floating currency, can play in buffering external shocks. For example, where a country faces a sharp fall in its terms of trade and the exchange rate is floating, the exchange rate can fall so as to help absorb, and facilitate adjustment to, the shock. Exchange rate adjustment, of course, does not offset the effect of the shock on aggregate income, but it does cause the local currency price of tradables relative to non-tradables to shift in a way that encourages the necessary shift of resources. A floating exchange rate also broadens the adjustment process across the economy as a whole more quickly than would otherwise be the case.
3. Less commonly focussed on is how a floating exchange rate/independent monetary policy regime buffers internal shocks. In this case, monetary policy causes internal shocks to be transmitted to the externally-exposed sectors of the economy. For example, when a central bank responds to a surge in domestic demand by raising interest rates, it will also likely cause the exchange rate to appreciate, potentially substantially so where capital flows are sensitive to interest rate differentials. In this event the central bank can be faced with a dilemma, since the restraint on aggregate demand growth applied by monetary policy will be felt mostly by the tradables sector of the economy – that is, by net exports – rather than domestic absorption. The dilemma, essentially, is that the central bank has no way of applying monetary policy in a way that is even across the economy as a whole, let alone directed at the source of the expansion. Rather, where the capital account is open and the exchange rate is floating, the “mix” of monetary policy, in terms of the configuration of interest and exchange rates, is determined in the capital markets.<sup>7</sup>
4. In one sense, this is as it should be. It is not obvious that it is the task of monetary policy-makers to determine how capital is best allocated amongst economies, or between the tradable and non-tradable sectors within an economy (and hence the structure of the balance of payments). Rather, according to this view, the task of monetary policy is to manage aggregate demand and leave it to the financial markets to determine the allocation of resources, both globally and within each economy.
5. But, in practice, it is not quite as simple as that. In an ideal world resources would move freely, and costlessly between the tradables and non-tradables sectors of the economy. But that is not the world we live in. Resources are not so mobile and “overvalued exchange rates

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<sup>7</sup> This also means the current account cannot be an objective of monetary policy.

cause sub-optimal investments which are costly to reverse (and) undermine trade promotion” (BOT, para 2.18; RBNZ, para 8).

6. Hence, if pursuit of an overall inflation stabilisation objective means that one sector of the economy (the tradables sector) is thrown around disproportionately, questions arise about how much inflation stabilisation should be sought, and over how short or long a horizon. The established wisdom now is that “flexible” inflation targeting is to be preferred to “strict” inflation targeting (Svensson (2001)), in part so as to moderate, or at least not accentuate, swings in capital flows and the exchange rate, and the costs associated with that.
7. Another, in many respects related, issue concerns how an inflation-targeting central bank should factor exchange rate movements into its monetary policy assessments. A movement in the exchange rate affects CPI inflation through two channels: one being direct and relatively quick acting (ie, the direct effect on the price of imported and exportable items<sup>8</sup>) and the other being indirect and slower acting (ie, the effect of changed external competitiveness on foreign demand for locally-produced output, and thus the effect on inflation via the output gap). In a flexible inflation targeting regime, where monetary policy is directed toward achieving an inflation objective in the (one to two year) medium term, judgements need to be made about how these two channels of influence will play out over that sort of horizon (BOT, para 4.11; RBNZ paras 16-17).
8. Exchange rate movements that buffer real shocks tend to have a temporary direct effect on inflation, but may have less of an on-going indirect effect (in the sense that the latter is cancelled out by the effect of the shock on demand and hence inflation pressure). While the direct effect may appear in inflation measures relatively quickly and, for that reason, might be thought of as a useful indicator for an inflation-targeting central bank, it may not be a good guide to the likely inflation pressures over the medium-term. Much depends on what lies behind the exchange rate change and the surrounding circumstances.
9. For example, a capital outflow, and associated exchange rate depreciation, triggered by a terms of trade decline may have little implication for medium-term inflation, if the improved competitiveness from the lower exchange rate merely compensates for the effect on demand of the terms of trade shock. The appropriate monetary policy in this case typically will be to look through the short-term, direct, effect on the CPI.
10. But if, for example, the capital outflow and exchange rate depreciation occurs at a time when the outlook is already for output to be running up against capacity constraints, then we have a different situation. In this situation, the capital markets are essentially contracting access to resources (from net imports) and, in the absence of a tightening monetary policy response, inflation pressures are likely to emerge. In this case, it may be appropriate for monetary policy to respond sooner rather than later, given the lags in monetary policy taking effect. In

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<sup>8</sup> Though across many countries, the recent evidence suggests that the direct pass-through from exchange rate changes to the retail price of imported goods and services has waned. (See BOT para 4.14, and RBNZ para 17). There are a number of possible explanations for this development, including, amongst possibly others, more “pricing to market” by exporters, more hedging of foreign exchange exposure by importers, more competitive pressures on firms in a more open global economy, and, in a world of flexible exchange rates, more “looking through” of exchange rate cycles by both exporters and importers.

other words, it may be appropriate, in this case, for monetary policy to react more directly to the exchange rate depreciation and its near-term direct effect on inflation.

11. Hence, in flexible/floating exchange rate regime countries, exchange rate movements still call for difficult judgements to be made. Some of these relate to the design of the monetary policy regime to provide a nominal anchor (in the absence of a fixed exchange rate) – for example, in the case of an inflation-targeting regime, the width of the inflation target range, the inflation target measure and the policy horizon over which the inflation target is to be pursued. Other judgements relate to the management of monetary policy within the chosen regime. Inflation targeting has been characterised, in the rules versus discretion debate, as a form of “constrained discretion”. In some respects, the quality of the overall outcomes will be determined by how well the discretion is exercised. The above discussion suggests that policy-makers in floating exchange rate economies should not ignore capital flows and the exchange rate pressures they can create. For monetary policy in an open economy to be most effective in delivering price stability in a way that also helps to stabilise the economy, or at least does not accentuate the shocks it inevitably faces, policy decisions need to be informed by an understanding of the factors that are driving nominal demand, capital flows and the exchange rate, and the interplay amongst them.
12. In summary, the exchange rate in an inflation-targeting regime is not only a variable through which monetary policy can help to stabilise the economy, but also a channel through which disturbances (for example, exogenous capital flows, or domestic real economy shocks) can be transmitted to the economy. As a consequence, it is necessary for monetary policy-makers to always think about why the exchange rate is moving when determining whether or not monetary policy should respond.
13. One remaining question concerns whether that response necessarily should always take the form of using the interest rate instrument. The other possibility, where a policy response is judged to be appropriate, is to intervene in the exchange market. However, the limits on the extent to which exchange market intervention can be effective in any sustainable sense, without interest rates also adjusting, or an inflation objective being compromised, need to be underscored. The basic theory, as embedded in the “impossible trinity”, is that unsterilised intervention in the exchange market will move interest rates, in essentially the same way that an adjustment to the interest rate will move the exchange rate. (Mundell (2000)). And sterilised intervention is unlikely to be effective in achieving an independent exchange rate objective; that is, one that is at variance with monetary policy.
14. For this reason, central banks pursuing an independent monetary policy within the context of a flexible exchange rate regime generally see the scope for exchange market intervention as being limited to where there exists an opportunity to exploit – or as more typically viewed, remedy – a temporary “disconnection” between the exchange market and local currency money market. This might include, for example, where the exchange market is thin and is “looking for direction”, or where extrapolative behaviour might be modified by a large party, like the central bank, entering the market on the other side (BOT, para 3.11; BI). But the scope to influence the rate in a more fundamental sense, without other policies – notably monetary policy – also being aligned to support the exchange rate objective is generally regarded as limited. In particular, for countries fully integrated with global capital markets, such that the exchange market and the local money market are both deep and closely

connected, small-scale interventions will generally be unable to shift the exchange rate against the “weight of money” driven by interest differentials or fundamentals.

### *Issues facing (fixed) exchange rate targeting central banks*

15. The issues facing a central bank that has adopted a “fixed” exchange rate tend to swing between dealing with (“mopping up”) the excess liquidity in local currency markets that results from capital inflows, and withstanding the liquidity pressures, and maintaining the credibility of the peg, in the face of capital outflows.
16. Traditionally, maintaining credibility has been seen in terms of maintaining economic policies, or “fundamentals”, consistent with the desired peg. This includes maintaining monetary discipline or, in other words, not attempting to pursue a monetary policy that is at odds with that of the central bank whose currency has been chosen as the peg.
17. But increasingly, at least for fixed exchange rate countries whose capital markets are integrated with global capital markets, it is questionable whether this alone is sufficient, or whether a stronger institutional structure is also required to buttress the credibility of the regime. The institutional structure for this purpose is a currency board. Under a currency board arrangement, the central bank commits to maintaining the convertibility of its own currency on issue at the fixed rate of exchange. For this commitment to be credible, it needs to hold foreign exchange reserves in an amount that at least covers the amount of its own currency on issue.
18. However, even more than that may be required. It is possible for a fixed exchange rate backed by a currency board to still lack credibility, if it is thought the central bank might lack the policy commitment to eschew sterilisation of capital outflows, i.e., to eschew issuing more of its own liabilities to maintain liquidity in the market for its own currency. This can be a difficult commitment to sustain in the face of capital outflows, given that it implies accepting consequential upward pressures, possibly severe upward pressure, on interest rates. In such circumstances a fixed exchange rate – even if supported by a currency board or similar institutional arrangements with sufficient foreign exchange reserves – can come under considerable stress.
19. For countries with capital markets that are not yet so deep and open, the conditions for maintaining a managed (if not fixed) exchange rate may not be quite so demanding,<sup>9</sup> and the central bank may be able to achieve a degree of monetary policy independence while simultaneously “managing” the exchange rate (Mussa et al (2000)). For example, where investors have a 'home preference' in making portfolio allocation decisions, and inward capital flows are moderate, some, albeit limited, management of the exchange rate may still be compatible with maintaining monetary policy independence. It is also possible for countries to take more active steps to limit, or at least slow the pace of, integration of local capital markets with global markets.

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<sup>9</sup> Bayoumi (1997) shows in a number of ways that financial integration appears incomplete. One example is the violation of the so-called "Feldstein-Horioka" hypothesis: if capital was perfectly mobile, domestic investment and savings should be uncorrelated, but in actual fact they show strong positive correlation in most countries.

20. The use of taxes or other regulatory interventions designed to create a wedge between the effective interest rate facing domestic and foreign investors is one such approach. (Unremunerated reserve deposit requirements as applied by Chile in the 1990s are perhaps the most commonly cited example of this sort of intervention.) Similarly, reserve requirements on banks might be adjusted as a means of adjusting monetary policy without causing interest rate movements, although, in well-developed financial markets, the scope for adjusting monetary quantities without generating corresponding movements in interest rates is probably limited. Another example is the restrictions applied by Indonesia on local currency transactions with non-residents (BOT, para 3.20; BI para 11).
21. Measures such as these are often justified (as well as more likely to be effective) where the financial intermediaries and markets are not well-developed. The rationale here is that fragile financial systems can result in accentuated propagation of adverse shocks, that is losses of financial confidence and exchange rate “over-reaction” (relative to what real sector fundamentals might imply). This is reflected in the coincidence, in some cases, of banking, balance of payments, and currency crises.
22. In this context prudential requirements, such as restrictions on banks’ net open positions in foreign exchange, and appropriate bank capital adequacy requirements, are often seen as an important complement to well-designed open-economy monetary arrangements. These sorts of measure, however, can be differentiated from those just mentioned to the extent that they are warranted on prudential policy grounds, quite apart from any monetary policy motivation (BI, para 11).
23. But even where the institutions and markets through which capital is intermediated are robust, it remains that very few “pegged” exchange rates remain “fixed for all time”. When an economy badly needs independent monetary policy to counteract a recession or overheating, most fixed-rate countries have been prepared – or forced – to adjust, or float, the rate. As Obstfeld and Rogoff (1995) observe, few pegs in medium-sized open economies have lasted longer than five years.
24. Deciding when to adjust a peg or move a “target zone” – probably the most crucial monetary policy decision under managed exchange rates – is obviously a very difficult decision. It is often hard to determine, without the benefit of hindsight, how extreme and persistent are the circumstances facing an economy. The problem that a central bank administering a fixed exchange rate faces is, in some respects, similar in nature, but typically more acute, than that which faces an inflation-targeting central bank when trying to decide how to respond to a sharp movement in its exchange rate. In both cases, the central bank needs to diagnose whether the pressures it is facing in the exchange market are temporary or permanent, and whether they are tied to changing (or a changed assessment of) real economic fundamentals or reflect on the stance of monetary policy. In the latter case, defending the exchange rate with monetary policy might be successful, but to do so in the former case risks be “punished”, that is, a perverse outcome where the exchange rate depreciates in response to a monetary policy tightening.<sup>10</sup>

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<sup>10</sup> This seems not to be unique to countries with managed exchange rates. It seems that exchange rates these days respond to monetary policy as much on the basis of the assessed implications for economic activity – and hence future interest rates – as they do to the immediate rate differential (BOT, para 4.7).

25. Beyond that, even a correct assessment that the pressures are temporary and that the exchange rate is near fair value may not mean that defence of a peg will be successful. So-called "second generation" currency crisis models have demonstrated that a crisis can be caused purely by foreign exchange market speculation, even if (prior to the speculation) the fundamentals were consistent with the exchange rate peg<sup>11</sup>. The vulnerability of pegged or "managed" exchange rates to such attack clearly will be the greater where it is known that the peg is "adjustable". Such a peg, in effect, provides speculators with something approaching a "one way bet". As to the role of monetary policy in such circumstances, it is not obvious that it can do much. The textbook response, of course, would be to use monetary policy to support the exchange rate. But where the exchange rate peg is not credible, tightening monetary policy to defend a rate under attack, beyond some point, may serve only to further weaken the credibility of the peg. Hence the importance attached to the institutional arrangements for buttressing the credibility of an exchange rate regime (BI, para 16).
26. An alternative for countries wishing to maintain an independent monetary policy without foregoing entirely influence over the exchange rate might be to adopt exchange rate bands, but bands sufficiently wide as to not provide a "target" (or, if a target, at least a "moving target"). In practice, this implies a need to be willing to move or widen the bands should capital flows mount in a way that threatens the credibility of the regime, as opposed to where the exchange rate spikes in, say, a thin market. In the latter case, perhaps in cases where the exchange market itself is still at an embryonic stage of development, some independent influence over the exchange rate may be possible. But for countries where the foreign exchange market is already deep, this prescription comes close to, if not merges into, that suggested for a country with a floating exchange rate.
27. To summarise this section, once the capital account has been largely opened to foreign investment, an exchange rate peg can only be reasonably assured by putting in place institutional structures (such as a currency board), which essentially take away the ability of the central bank to conduct an independent monetary policy. The costs of this loss of monetary policy independence need to be weighed up against the potential advantages of fixed exchange rates, including the nominal anchor it provides for monetary policy and the impetus which exchange rate stability may provide to trade and investment.
28. The alternative is to adopt, or move toward, a flexible exchange rate regime. This would enable the benefits of monetary policy independence to be accessed, while opening up the issues and challenges that arise with such regimes.

## 5. Some concluding remarks

1. The aim of this study has been to outline the implications of capital flows for the conduct of monetary policy in a small open economy. To do this we need to consider capital flows both as an external, or "exogenous", influence (as typically will be FDI flows) as well as an element of the mechanism by which monetary policy is transmitted (from interest rates to capital flows

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<sup>11</sup> Some draw parallels between the vulnerability of rigidly pegged exchange rates to large capital outflows (speculative attack) and the vulnerability of a bank to a run. Even a solvent bank (ie, one whose fundamentals are sound) can be brought down by a run. The lender of last resort function of central banks is designed to counter this vulnerability.

and either back into interest rates, where the exchange rate is fixed, or into the exchange rate if it is floating).

2. We also find that capital flows present monetary policy-makers with a range of issues to be grappled with irrespective of the choice of exchange rate regime. In the case of countries with a floating exchange rate, the effects of “exogenous” capital flows are reflected in the exchange rate itself. In countries with fixed exchange rates, the effects are reflected in domestic monetary conditions. But capital flows are also endogenous to monetary policy, which can make it difficult to disentangle the relative importance of the two separate influences. In turn this complicates and introduces uncertainty into policy judgements.
3. It will also be evident that capital flows can be a source of stress within the macro economy, whatever their source. Under floating rate regimes, large swings in the exchange rate – as can be induced by capital flows – can create tensions between the tradable and non-tradable sectors of the economy. Under fixed rate regimes, the tendency is for the economy to be either awash with liquidity, or subjected to a liquidity squeeze. Neither regime can be said to insulate the local economy from the effects of large scale capital flows, but rather generate their own, different, stresses and tensions.
4. Monetary policy, by taking a medium-term view, which looks through temporary factors, can help mitigate these stresses, but only to a limited degree, given the limited ability of policy-makers to distinguish the temporary from the permanent. Under a floating exchange rate regime, this implies some ability to take the effect of capital flows on the exchange rate, and to calibrate interest rate settings in a way that takes account of the restraint or stimulus being applied to the economy from that source. Under a fixed exchange rate regime, the options are more limited.
5. The fact that monetary policy has only a limited capacity to mitigate the macroeconomic pressures that arise from capital flows points to the need for economic and financial structures that are robust in the face of those pressures. Of central importance here is the rigour with which the capital flows are intermediated, and the robustness of both the intermediaries and principals to shocks. In practical terms, these things are about the rigour and quality of credit and investment standards, the strength of balance sheets and the management of foreign exchange risks. When these attributes are present, capital flows are more likely to be more closely based on the underlying macroeconomic fundamentals, resulting in less pronounced stress on the economy and the financial system. And where, or to the extent that they are not, the economy is more likely to be able to cope with the stresses that come with capital flow reversal. If that can be achieved, the task of managing monetary policy, whether under a floating or a managed exchange rate regime, in the face of large and potentially volatile capital flows, is made considerably less complicated (BI, para 5; RBNZ; para 19).

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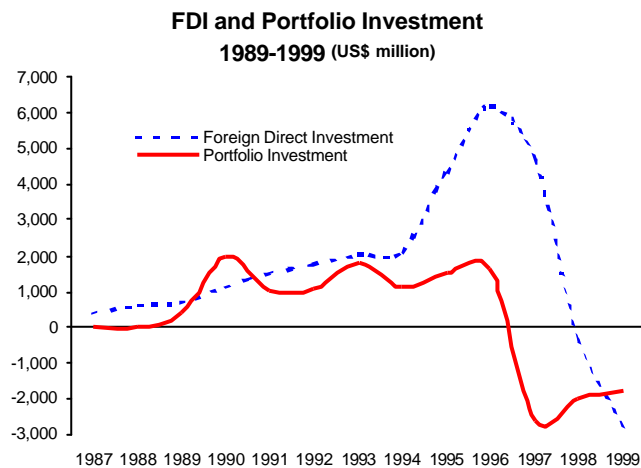
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## Appendix 1

### The Capital Account and the Exchange Rate in Monetary Policy Decision Making

#### THE CASE OF INDONESIA

1. The structural reform process that Indonesia went through over the past 30 years significantly changed the nature of the Indonesian economy, moving it from a closed, heavily regulated economy with a high level of government intervention to a more open and market driven economy. The Indonesian economy also increased its presence in international markets and became one of the emerging markets that benefited significantly from international trade and capital flows. Increased capital inflows helped Indonesia to achieve strong economic growth during the period 1990 – 1997. However, capital inflows also created problems in macroeconomic policy management. Under a controlled exchange rate regime, large-scale capital inflows led to an expansion of the monetary base as the central bank intervened to prevent appreciation of the exchange rate. Monetary base expansion fuelled growth in broader monetary aggregates, expanding aggregate demand and putting upward pressure on domestic prices. Given a nominal exchange rate target (or a crawling band target) higher domestic prices translated into an appreciation of the real exchange rate despite the central bank's efforts to prevent the nominal exchange rate from appreciating.



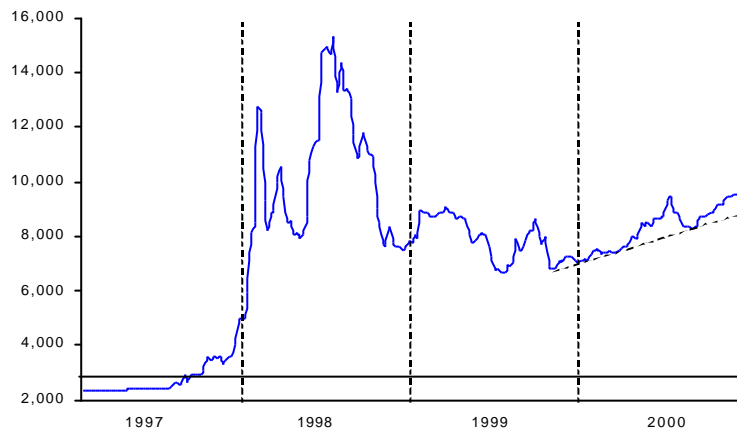
2. Before 1997, the performance of government measures to mitigate the negative impact of capital inflows seemed to work very well. These measures included sterilized intervention, a widening of exchange rate bands, an increase in reserve requirements, and changes in the net open position. In light of the problems associated with a tightly managed exchange rate, an open capital account and sterilization, the government decided to allow more flexibility in the nominal exchange rate. Initially, greater flexibility was introduced through repeated widening of the intervention band. A wider band was expected to dampen the volatility since the risks of short-term investments could be more risky for speculative actions. However, just in 1997, the same government measures seemed to be impotent. The combination of these measures

proved to be not adequate to neutralize the massive capital outflow and severe currency depreciation following the contagion effect which began with the floating of Thai baht.

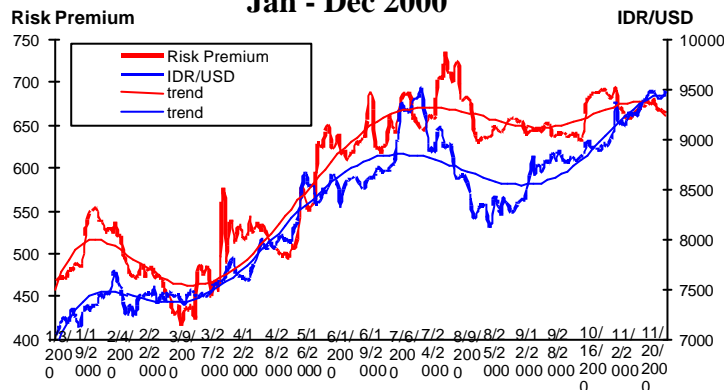
3. To some extent, it seems that the problem arose from inconsistency **between perfect capital mobility under open capital account and a managed floating exchange rate**. At a theoretical level, if domestic monetary policy is to be kept independent, it is necessary to adopt a purely floating-exchange rate regime. Otherwise one can retain a managed floating regime accompanied with full capital controls. Apparently, the monetary authority preferred to abandon the exchange rate band and adopt a purely floating exchange rate system. This step was taken in particular recognition of the fact that defending the currency was unlikely to succeed due to the intense pressure on the rupiah and relatively limited reserves. In addition, applying capital controls could undermine investor confidence in the long run.
4. But, after the rupiah was left to float, domestic monetary policy faced a different ball game. *First*, the rupiah moved erratically in response to both fundamental and technical factors. The closure of 16 unsound commercial banks – which was expected to boost market confidence failed to convince the market, and resulted in lower credibility in the eyes of the public and foreign investors. As the uncertainty concerning domestic economic and social-political developments increased, the exchange rate reacted excessively to negative news and rumors. *Second*, the exchange rate pass-through effects to inflation have been large and with a short-term lag due to the significant share of imports in the Indonesian economy. Limiting imported inflation would have provided significant help in controlling inflation. *Third*, as a result of financial problems, export oriented companies could not take advantage of exchange rate depreciation to boost their exports. This particularly made balance of payment stabilization more difficult.
5. Prudent domestic monetary management has been challenged by excessive liquidity in the market and this threatened the stability of the monetary aggregates. The excess liquidity especially was a serious problem during the early period of crisis, when bank runs, panic buying and speculative motives heighten the needs for central bank liquidity support to banks and increased the demand for currency. The problem reemerged under the recent “credit crunch” period whereby instability in the domestic social-political sphere, as well as slow progress on corporate and debt restructuring imposed constraints on the banking system in extending loans.
6. As monetary stability is instrumental in stabilizing the exchange rate, Bank Indonesia’s monetary policy has been geared to regain control of monetary base expansion. Three major steps have been taken. The framework for monetary management has been set to control the monetary base and its major components, namely net international reserves and net domestic assets, to some level consistent with certain macroeconomic targets. The effectiveness of the open market operations has been improved mainly through the enhanced mechanism of SBI (Certificates of Bank Indonesia) auctions and improved information on liquidity management and market conditions. After some progress on bank restructuring, the central bank’s liquidity support to banks could be contained and limited to short-term liquidity mismatch problems within the lender of last resort mechanism.
7. As Bank Indonesia regained its grips on the monetary situation, since the second half of 1998 the rupiah exchange rate has been gradually strengthening and the inflation rate subsiding.

Inflation for traded goods dropped from 95.2 percent in 1998 to only 0.56 percent in 1999. However, a weakening rupiah in 2000 increased traded goods inflation to 2.59 percent in September. Supported by some improvements on some areas, particularly in the distribution of basic necessities, in the banking restructuring program, in the debt restructuring program, and in better political and social conditions, the rupiah exchange rate stabilized at around Rp.7,000 – 8,000 per USD in the fourth quarter 1999 until the 1st quarter of 2000. Nonetheless, the rupiah remains fragile, especially when social and political tension increases, and at the end of 2000 it was traded at around Rp 9,500 per US dollar.

**The Development Of Rupiah Exchange Rate  
Jan 1997 – Dec 2000**



**Co-movement of IDR/USD and Risk Premium  
Jan - Dec 2000**



8. The renewed pressures on the rupiah is reflected in the yield spread of Indonesian Yankee bond over US Treasury notes, as a proxy for the risk premium on Indonesia country risk. The higher is the risk premium, the lower is investors' confidence on the Indonesian economy. This condition, in turn, caused increasing pressures on the rupiah exchange rate, which moves in the same direction as risk premium.
9. The increasing uncertainty has stimulated speculative pressures on the rupiah exchange rate. The attacks have been facilitated by the relatively open foreign exchange system and advanced development of the instruments used in the foreign exchange transactions. Currently, cross border transactions in the rupiah are relatively free, and a rupiah offshore market has

been active for some time, especially in Singapore. This is mostly reflected in active movements of vostro accounts<sup>12</sup> in some foreign exchange banks.

10. The relatively unrestricted currency trading in the offshore rupiah market, utilizing financial derivatives and well (and rapidly) developed techniques in foreign exchange market dealing, make Indonesia an easy target for profit taking and speculative transactions. Besides, the market is very thin and segmented in Indonesia, while the financial sector is still weak and undergoing structural reforms. Therefore, the rupiah is prone to experience significant swings, responding to even slight changes in market sentiment, which results in high volatility of the rupiah exchange rate.
11. These current problems have prompted Bank Indonesia to seek some measures (non-monetary instruments) to dampen the risks for renewed currency crises. *First*, with the passage of Foreign Exchange Act Number 24 of 1999, an on-line monitoring system has been developed and implemented to facilitate better understanding of the nature and magnitude of foreign exchange transactions. The system has been running for over 8 months now, even though some improvements are needed to increase the accuracy of the information reported by the foreign exchange banks. *Second*, an on-site examination has been conducted of those foreign exchange banks that are heavily active in foreign exchange dealings. The examination focuses on the movements of vostro accounts to detect any possible violation of prudential regulations, especially with respect to net open position limits and limits on forward sale transactions to non-residents. *Third*, in mid- January 2000, new regulations were issued to restrict **non-underlying** rupiah transactions by non-residents. Of course, these measures are not a cure for all factors affecting the stability of the rupiah exchange rate. But, it certainly helps ease somewhat the burden on monetary policy in regaining control over inflation and the exchange rate.
12. On the other hand, exchange rate movements have a pass-through impact on inflation, particularly in light of the high import content of domestic industries. Therefore, a policy of gradual depreciation directed to the attainment of external balance disturbed internal balance through an increase in imported inflation. This problem created a policy conflict between the exchange rate target and price stability and caused a dilemma that undermined the credibility of monetary policy. For example, the use of high interest rates to fight against inflation before the crisis erupted in mid-1997 was accompanied by large scale capital inflows that pushed the rupiah to the lower edge of Bank Indonesia's exchange rate band and caused the rupiah to appreciate in real terms. In addition, attempts to sterilize the inflows created intolerable quasi fiscal costs.
13. The above issue was resolved in the new Central Bank Act No. 23 of 1999, which states that the single objective of the central bank is to maintain the stability of the rupiah (the domestic currency). Although this objective is subject to different interpretations, as it could refer to price stability, exchange rate stability or both, given the free floating exchange rate regime adopted since mid-1997, there should be no policy conflict between exchange rate targets and inflation targets and **monetary policy can be focused on the achievement of an inflation target.**

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<sup>12</sup> The rupiah account owned by a non resident.

14. The new Act also provides an important monetary policy framework for Bank Indonesia in achieving its objective of maintaining rupiah stability. In conducting its monetary policy, Bank Indonesia is granted full authorization to formulate the target to be achieved (goal independence) and the freedom to use various monetary instruments to achieve the target (instrument independence). The Act also prescribes that Bank Indonesia, as an independent state institution, is free from government intervention or intervention from other parties.
15. The new central bank Act stipulates that Bank Indonesia must set a target for the inflation rate every year and direct its effort to achieve the target. Although the Act does not explicitly state that Bank Indonesia should follow an inflation targeting framework, the features of monetary policy outlined by the Act – such as announcement each year of an inflation target, a single objective for monetary policy, and the granting of instrument independence to the central bank – have placed Bank Indonesia’s monetary policy into an inflation targeting framework.
16. After three years of experience, there are some basic requirements for successful implementation of a floating exchange rate regime that can be learned.
  - Automatic stabilization mechanism should work properly. This requires that at least the financial sector be in sound condition and as well as corporations as foreign exchange generators. In addition, any regulations that clog such mechanisms should be limited or eliminated.
  - Credibility does matter for the carrying out of stabilization programs. Policy makers should be able to convince the public that any program will be carried out as announced. Policy announcements will only be honored if the economy arrives at a point that the public had expected. To achieve that:
    - a. There has to be a strict discipline on monetary and fiscal management to limit policy and time inconsistencies.
    - b. Decision makers have to be provided with early, timely, and comprehensive information through some form of system for monitoring capital movements, in order to make early and proper responses to external shocks.
    - c. Political and social uncertainty should be minimized to reduce speculative motives
  - While the financial market has yet to work efficiently, in order to stabilize the rupiah exchange rate, strengthened regulations related to minimizing the risks of cross border capital flows may be needed. The nature of the instruments and degree to which measures are needed to “put some sand in the wheels” of capital flows depend on the specific country.
  - Inflation pressure from the supply side should be minimized. This means eliminating all obstacles to the smooth functioning of the markets and of the production and distribution systems for basic necessities.
17. Ideally, the process of moving from a relatively fixed exchange rate regime to a floating regime takes place gradually within an environment of stable macroeconomic conditions. But, Indonesia did not have that luxury. Due to an unfavourable economic and political situation, efforts to stabilize the exchange rate in a floating regime created high costs to Indonesia, not only in the form of difficulty in exerting monetary policy, but also in terms of high inflation and output losses. The costs might be much less if it could somehow reduce the volatility of capital

movements during the transition period until the economy is familiar with the new regime. With the benefit of hindsight, Indonesia has now learned a lesson of living with volatility.

## **Appendix 2**

### **THE CASE OF NEW ZEALAND**

#### **Introduction**

1. This paper reviews New Zealand's experience in conducting monetary policy, under a floating exchange rate and inflation targeting regime, in the face of the large and volatile capital flows of the 1990s. The paper is divided into two parts. Part I reviews the period up to the commencement of the Asian crisis, and Part II the period since then. (Charts referred to in the text are appended.)

#### **The 1990s up to the Asian crisis**

2. New Zealand adopted an inflation-targeting framework for monetary policy, formally, in 1990, but in practice, some years earlier. Meanwhile, the exchange rate had been floated in 1985. The initial inflation objective was to reduce inflation from the high double-digit levels of the mid-1980s to a rate more comparable with those of our trading partners. Subsequently a price stability objective was established. This latter objective was formalised by way of an inflation target of 0 to 2 percent, to be achieved by end 1992 (subsequently extended to end 1993), and maintained thereafter. In the event, a combination of tight monetary policy, the subdued world economy of the early 1990s, and the effects of economic restructuring in New Zealand, resulted in inflation falling to 2 percent by end 1991 (chart 5). With inflation tracking toward the target at least as quickly as desired, the first few years in the 1990s were characterised by a relatively easy monetary policy (a low interest rate and a low exchange rate; charts 1 and 2).
3. But from about 1993, the New Zealand economy moved into a period of solid and prolonged upswing. The initial driving forces were growth in exports (assisted by a competitive exchange rate, a growing world economy, and improved primary commodity export prices), and strong growth in business investment. Close behind, private consumption picked up, and there was a surge in immigration that put pressure on residential real estate markets (chart 3). Then, commencing mid-1996 fiscal policy was eased, by way of tax cuts. The fiscal easing was seen as appropriate given that the fiscal balance had moved into surplus in 1994, and the outlook was for the surpluses to keep growing. Mirroring the strong expansion in economic activity was rapid growth of bank lending, largely to the household sector.
4. By early 1994 it was evident that the economy was nearing its potential and that tighter monetary conditions were required. Between early and late 1994, short-term interest rates were increased from under 5 percent to nearly 10 percent (chart 2). But the economy showed surprising resilience in the face of this monetary tightening. Activity seemed to be sustained by a high level of confidence – perhaps even a degree of “exuberance” – about the medium-term prospects for the New Zealand economy. The residential real estate market in

particular developed a strong momentum – of the nature we have come to associate with asset markets.

5. To restrain inflation pressures, monetary policy needed to be held firm for an extended period and, for over four years, New Zealand interest rates were high compared with those prevailing in the rest of the (low inflation) world. At the same time, international confidence in the New Zealand economy was at a high point. New Zealand's economic reforms were receiving a lot of positive international exposure, and this exposure doubtless contributed to New Zealand becoming an attractive destination for international capital. Given the smallness of our economy – New Zealand's GDP, for instance, is only 15 per cent of that of Australia, and 1.5 per cent of that of Japan – relatively small shifts in international investors' portfolio allocations in respect of New Zealand can have a major impact on our capital markets. Together these factors – high interest rates and a positive investment environment – induced substantial capital inflows.
6. Some indicators of just how significant foreign capital flows were include that:
  - Between early 1994 and early 1997, the non-resident share of New Zealand government security holdings increased from 27 percent (out of NZD24.9 billion) to 61 percent (out of NZD 24.8 billion);
  - In the same period non-resident investors' share of the market capitalisation of companies listed on the New Zealand stock exchange increased from about 45 percent to 61 percent (after having been as low as about 25 percent in the early 1990s);
  - In the two and one half years from early 1996 to mid 1998, approximately NZD 20 billion of NZD denominated securities were issued to offshore (mainly retail) investors by (mainly) offshore issuers. The investors in these securities, who were mainly from Europe (so-called euro-kiwi issues) and Japan (samurai bond issues), were attracted by the high NZD interest rates relative to those available in their own markets. These offshore issues of NZD paper generated upward pressure on the exchange rate, since the subscribers had to acquire the NZDs to invest. It also resulted in a large pool of non-resident-held NZDs available for New Zealand institutions to tap through the swaps market. By accessing this market, New Zealand institutions were able to raise NZD funding more cost effectively than in the local market. The attractiveness of this source of funding for New Zealand institutions is reflected in the fact that between June 1996 and August 1998, over half of the net increase in deposit-taking (M3) institutions' funding was raised from non-resident sources.<sup>13</sup>

(See Table 1, appended, for a more comprehensive analysis of the stock of foreign capital imported and exported by New Zealand.)

7. This strong international investor demand had the effect of shifting much of the effect of monetary policy restraint from interest rates to the exchange rate channel. Investor demand for NZD assets had the effect of pushing the exchange rate up, and tended to push interest rates down (charts 1 and 2). In consequence, interest-sensitive domestic expenditures

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<sup>13</sup> For a comprehensive description of the euro kiwi bond market, and its implications for the New Zealand capital markets, exchange rates and economy more generally, see K Eckhold (1998).



(particularly in the residential real estate market) were not quelled as much as was hoped, while the tradables sector of the economy was under much pressure. These disparate pressures on the economy were reflected in low inflation in the tradables sector and higher inflation in the non-tradables sector (chart 5).

8. Of course, in one sense, there would have been no issue here if resources had been able to move freely between the tradables and non-tradables sectors of the economy. If that were so, resources freed up as the result of the exchange rate pressure exerted on the tradables sector of the economy would have quickly flowed to, and helped ease the excess pressure on resources and thus inflation in, the domestically-oriented sectors of the economy. But we know that this is scarcely ever the case. Capital and labour in, for example, the farming sector, which in New Zealand produces predominantly for export markets, cannot be re-deployed quickly, if at all, to meet the demand for goods and services of domestic consumers. Adjustment tends to be slow and costly.
9. Moreover, there are implications for the structure of the balance of payments. Meeting excess demand pressures with increased net imports (that is, by importing capital) is subject to limits. History teaches us that there are limits to the sustainability of external account imbalances, and that on those limits being reached, or in the event of an external shock, the availability of foreign capital can ebb, and imports again have to be paid for by exports. This is precisely what has happened in New Zealand from about 1997 onwards.

### **1997 onwards**

10. By late 1996 sufficient evidence was emerging that inflation pressures a year or so ahead would wane, and that an easing in monetary policy could commence. New Zealand interest rates began to come back to the levels of our international peer group, and the exchange rate from early 1997 commenced trending downwards. Then, in the second half of 1997, with the on-set of the Asian crisis, New Zealand's export markets in Asia, and capital market sentiment, deteriorated. This precipitated a quite rapid depreciation of the exchange rate. Meanwhile, the current account deficit had widened considerably (to a peak of 7 percent of GDP for the year to June 1997), meaning that on the current transactions side too, there were more sellers than buyers of NZDs.
11. For New Zealand, however, the downswing in the exchange rate has, in some respects, been not all that uncomfortable. This is not to suggest that New Zealand was sheltered from the Asian crisis. On the contrary, the downturn in the world economy, and in East Asia in particular, had a substantial negative impact on New Zealand. There was a direct adverse effect stemming from the fact that East Asia takes nearly 40 percent of New Zealand's exports, and also indirectly as the result of falls in the world price of a range of commodities exported by New Zealand. These were important factors behind the nearly 2 percent contraction in real output recorded by New Zealand during late 1997/early 1998.<sup>14</sup>

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<sup>14</sup> Other contributing factors were an El Nino-related drought that caused a significant drop in agriculture sector production and processing, and also the closure of motor vehicle assembly plants as the result of the removal of tariffs on motor vehicle imports into New Zealand.

12. There are a number of strands to how monetary policy responded to the change of circumstance. One result of the earlier strength of the exchange rate had been increased cognisance of the role of the real exchange rate in the transmission of monetary policy, that is, the role of the exchange rate in increasing or decreasing demand pressures in the tradables sector of the economy by altering the competitiveness of New Zealand goods in world markets. This was reflected, from early 1997, in the adoption of a monetary conditions index (MCI) framework for formulating and implementing monetary policy. Within this framework, the RBNZ regarded a one per cent appreciation of the exchange rate as imparting about as much of a contractionary – and hence, in the medium term, dis-inflationary – influence on the economy as a 50 basis point increase in the short-term interest rate, and vice versa.
13. This MCI framework for taking account of the exchange rate in monetary policy, however, proved to be too narrow. As already noted, in the second half of 1997 and early 1998, ie, at the time of the Asian crisis, capital flows turned negative and the exchange rate depreciated quite sharply. Although monetary policy was eased in MCI terms, the extent of the exchange rate depreciation resulted in interest rates still being increased. This turned out to be an insufficiently accommodative response to the effect of the Asian crisis on the New Zealand economy. The Asian crisis for the New Zealand economy represented a negative shock that, in the absence of exchange rate depreciation, would have imparted a strong dis-inflationary, and possibly deflationary, influence. In these circumstances, the more appropriate monetary policy response would have been to accommodate the easing in monetary conditions delivered by the exchange rate depreciation, a stance that was not adopted until the second half of 1998, when interest rates were allowed to fall sharply. Meanwhile, though, monetary policy, for a period, had been held tighter than was warranted, with the result that the negative impact of the Asian crisis on GDP growth was not buffered quite as much as it could have been, and inflation fell to year-on-year rates of around 1 per cent (perhaps a little lower than could have been justified in the circumstance of the large exchange rate depreciation).
14. Apart from the problem that arose from the way in which the MCI framework was applied, New Zealand's monetary and financial arrangements stood the test of the Asian crisis relatively well. Because of the almost complete absence of unhedged foreign currency borrowing<sup>15</sup>, and because of generally sound credit practices in the New Zealand banking system – in part the result of lessons learned in the second half of the 1980s when the New Zealand financial system was deregulated – New Zealand avoided banking system stresses.
15. The final phase of the period under review corresponded with the post Asia crisis recovery in the world economy, from about end 1998 and continuing throughout 1999 and 2000. During this period the New Zealand economy rebounded from the brief recession in late 1997/early 1998, and the official cash interest rate was increased from 4.5% (the rate set at its inception in March 1999) to 6.5% (by March 2000). Meanwhile, the exchange rate, after recovering somewhat in the first half of 1999, continued to trend downwards, hitting an all time low towards the end of 2000. The more recent depreciation of the exchange rate reflects the combined influence of the large current account deficit (still projected at 5½ per cent of GDP for the year to March 2001), as well as negative influences from elements of the capital

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<sup>15</sup> Surveys conducted by Statistics New Zealand indicate that the foreign currency debt raised by New Zealand banks and corporates in recent years has been overwhelmingly hedged, albeit to a significant extent with “natural hedges” eg, exporters raising foreign currency debt against expected future export cash flows. See Statistics New Zealand (1999).

account. For instance, non-resident holdings of government securities fell from 54.9% of the total of NZD24.6 billion on issue in January 1998, to 35.1% of the NZD25.2 billion on issue in January 2001. Similarly, the stock of eurokiwi securities outstanding fell from NZD20.3 billion at July 1998 to NZD15.6 billion at February 2001, implying net redemptions of NZD 4.7 billion.

16. A central issue facing monetary policy during the phase when the exchange rate has been depreciating has been how to respond to the direct pass-through from higher landed prices for imports in local currency terms, into the target, CPI, measure of inflation. However, that, so far, has proved to be a less pressing issue than might have been expected, as the extent of “pass-through” has been less than expected. This is reflected in CPI inflation having remained within the 2 to 3 percent target range throughout 1998 and 1999, and having not exceeded the top edge of the range until December 2000 (chart 6), and then largely as a consequence of the spike in international oil prices in late 2000.
17. The relative lack of pass-through has been attributed mainly to foreign suppliers “pricing to market”, that is adjusting their selling prices, at least to some extent, to take account of the exchange rate facing New Zealand importers, and more generally to those engaged in international trade having faced competitive pressures that, at least to some extent, have forced some margin contraction. Having said that, the most recent evidence does point to some increase in exchange rate pass-through now occurring. The Reserve Bank’s stance towards this has been to be willing to accommodate some increase in the CPI to the extent it can be attributed to the direct, first-round, effect of the exchange rate depreciation, but to be very alert to the risk of spill-over into domestic costs and prices (which would tend to reflect rising inflation expectations, and/or excess demand pressures, not least in the tradables sector which is benefiting from the presently competitive NZD).

### **Overall assessment**

18. Overall, therefore, New Zealand’s monetary policy coped with the large and volatile capital flows of the 1990s relatively well. Certainly, inflation performance was not materially compromised. This, to a substantial degree, has to be attributed to the fact that New Zealand maintained a freely floating exchange rate throughout. Hence, the influx of capital, attracted by the high interest rates prevailing in New Zealand in the mid-1990s, and by the then perceived very positive outlook for the New Zealand economy, did not undermine the price stability objective of monetary policy.
19. Another positive factor was the maintenance of financial stability throughout the decade. Following a boom and bust cycle in the 1980s which was associated with some financial stresses, New Zealand financial intermediaries in the 1990s maintained relatively disciplined credit policies, which saw them well placed to cope with the down-turn from the Asian shock. Moreover, that the exchange rate had been floating for more than 10 years by the time of the Asian crisis, and had been through a previous large appreciation/depreciation cycle (in the second half of the 1980s), meant that New Zealand borrowers had not engaged in large scale, low interest rate, unhedged foreign currency borrowing. Thus, the New Zealand banking system did not suffer large-scale exchange rate related losses when the NZD fell neither

directly, nor via borrowing customers with unhedged foreign exchange exposures<sup>16</sup>. The resilience of the New Zealand financial system in the face of the Asian crisis shock helped in the conduct of monetary policy in a material way, in that the considerable complications for monetary policy that are present at times of serious financial stress (ie, credit crunches, the need to liquefy illiquid markets and institutions, etc) did not arise. Hence, the Reserve Bank was able throughout the period to keep monetary policy directed to its medium-term inflation objective in a reasonably consistent and predictable way.

20. For all that good news, the large cycle in the value of the NZD – substantial appreciation in the years running up to 1997, followed by substantial depreciation, such that by end 2000 the NZD was at historic lows – has left questions about whether such large exchange rate cycles may cause damage to the medium-term growth prospects of the tradable sector of the economy, and if so, whether they are avoidable. This will have been one element of the background to discussion in New Zealand about whether New Zealand should seek to form a currency union with Australia, or “dollarise”, as a means of achieving greater exchange rate stability – although less focussed on in this discussion is that those currencies too experienced quite large cycles in the 1990’s meaning that even if New Zealand had had a common currency arrangement with either Australia or the United States, most New Zealand exporters would still have faced substantial currency fluctuation. (Neither country accounts for more than about a quarter of New Zealand’s exports.)
21. Meanwhile, there has been some evolution in the way that monetary policy takes account of the exchange rate, with less emphasis on the need for near-term responses, whether to the direct pass-through effect on the prices of tradables in the CPI, or to real exchange rate effects (as in the MCI framework that applied in 1997/8). Also, the Policy Targets Agreement, which specifies the Bank’s inflation objective, has had added to it a provision that requires the Bank, in pursuing the inflation target, to avoid unnecessary instability in interest rates, the exchange rate and output.

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<sup>16</sup> Perhaps perversely, the most significant financial stress caused by the rapid fall in the exchange rate arose from exporters who had taken out substantial amounts of forward cover at exchange rates that turned out to be unfavourable (ie, appreciated relative to the low levels the currency has subsequently reached). This left exporters holding forward contracts that were substantially “out of the money”, and for some, at a time (ie, at the time of the Asian crisis) when expected export sales were being pared back. This combination of circumstances resulted in some exporters facing credit pressures.

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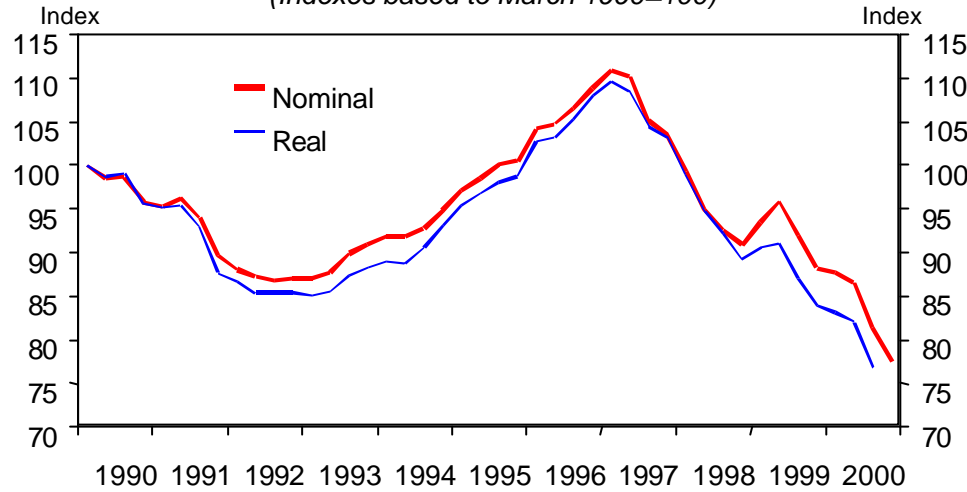
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**Chart 1**

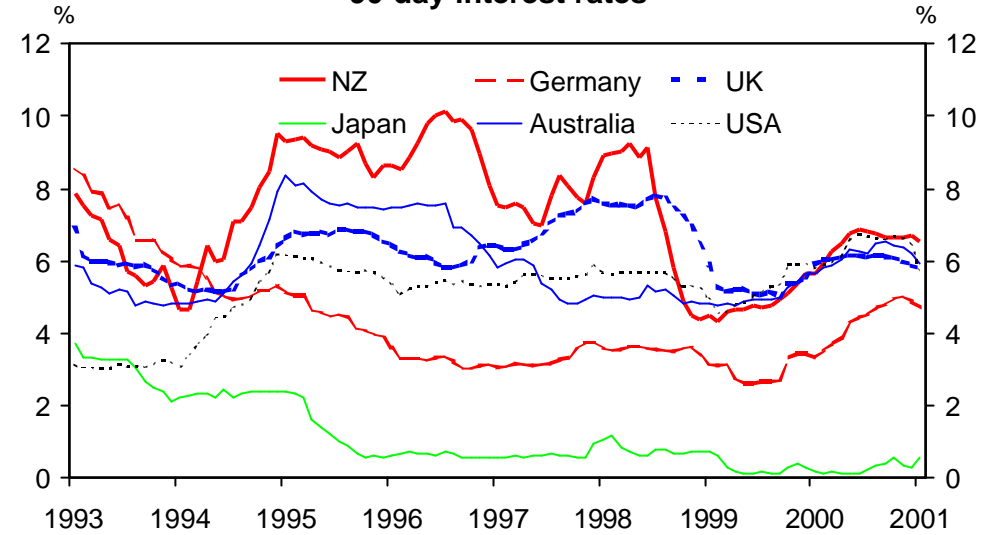
**Nominal and real exchange rate (trade-weighted)**  
(Indexes based to March 1990=100)



Source: Reserve Bank of New Zealand

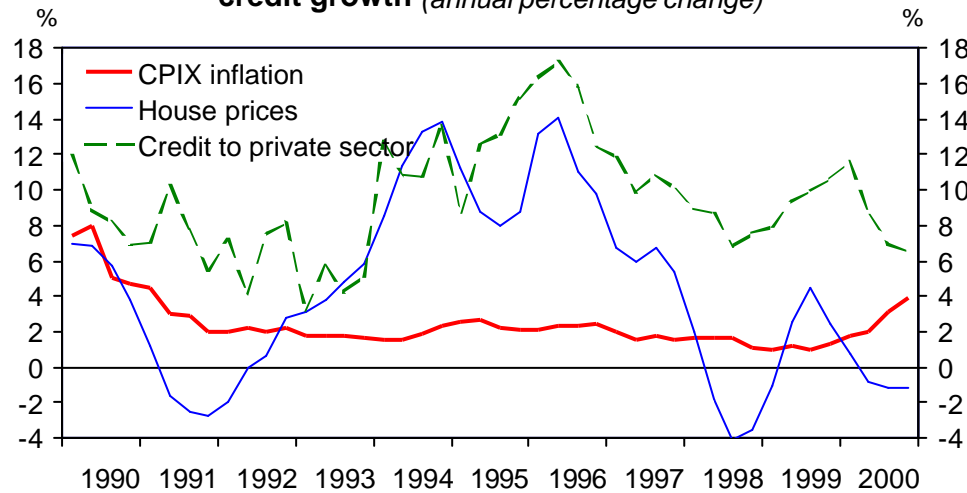
**Chart 2**

**90-day interest rates**



**Chart 3**

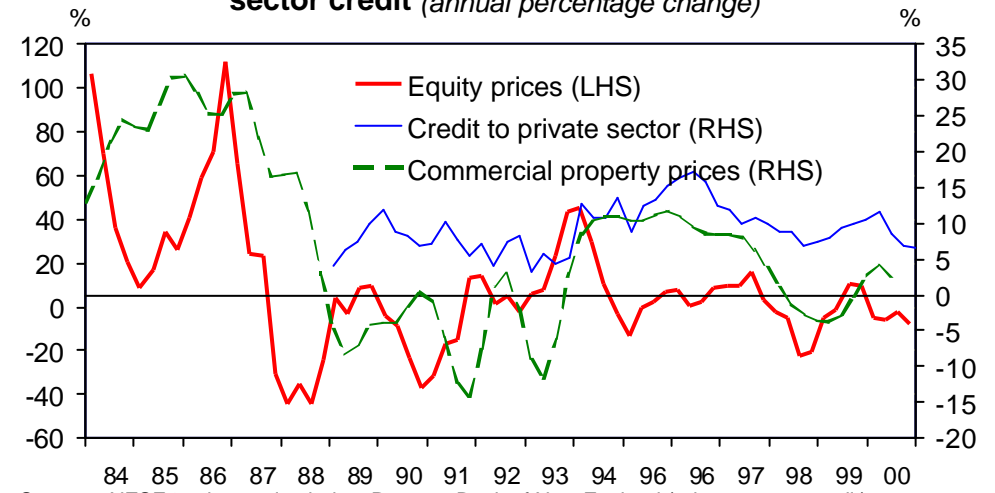
**Consumer price inflation, house price inflation and credit growth (annual percentage change)**



Sources: Reserve Bank of New Zealand, Quotable Value New Zealand, Statistics New Zealand.

**Chart 4**

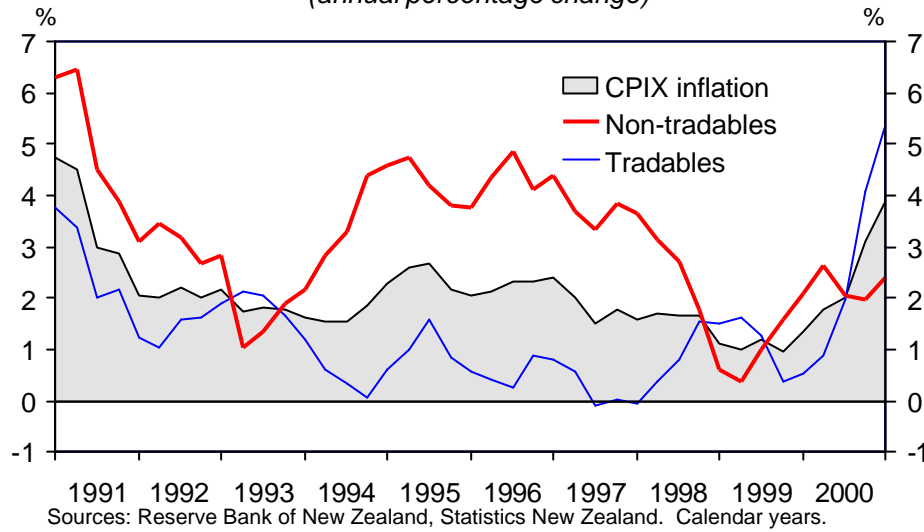
**Equity & commercial property prices, and private sector credit (annual percentage change)**



Sources: NZSE40 share price index, Reserve Bank of New Zealand (private sector credit), Quotable Value New Zealand (commercial property prices)

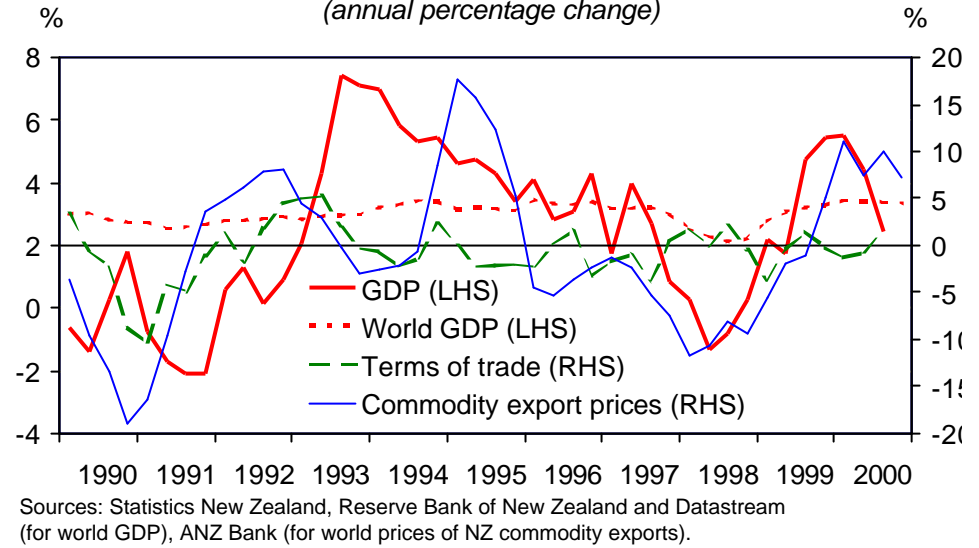
**Chart 5**

**Tradable and non-tradable inflation**  
(annual percentage change)



**Chart 6**

**Real GDP, terms of trade and commodity prices**  
(annual percentage change)



**Table 1**  
**The composition of the New Zealand capital flows**

<b>Obligations to non-residents</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Direct investment			(NZD billion as at March)					
Equity	21.2	27.2	32.0	40.7	43.6	50.6	50.6	51.0
Borrowing from parents	8.3	10.4	10.1	10.3	11.6	13.0	13.8	15.5
Portfolio investment								
Equity	2.4	1.5	2.3	0.4	1.5	0.4	0.5	0.8
Debt	7.8	13.4	14.4	28.1	27.5	31.3	32.9	26.9
Other investment								
Official borrowing	19.5	17.0	13.7	21.9	20.6	20.2	17.4	17.7
Bank & corporate borrowing <sup>1</sup>	33.4	30.4	31.0	14.5	21.0	21.0	33.6	47.2
	92.6	99.8	103.5	115.9	125.9	136.5	148.8	159.1
<u>Claims on non-residents</u>	28.7	32.5	32.4	45.0	46.0	47.2	61.7	72.0
Net obligations <sup>1</sup>	63.9	67.3	71.1	70.9	79.9	89.3	87.1	87.1
Memorandum item: Nominal GDP	79.1	85.3	90.4	92.7	96.9	99.6	101.2	105.9

<sup>1</sup> For the purposes of **official** International Investment Position data, borrowing by New Zealand firms from overseas (financing) subsidiaries is classified as a negative direct investment claim, on the claims side of the ledger. However, as the borrowing in question is, in substance, no different from funding raised directly from non-resident counterparties, these amounts have been included in this table in the “other investment, bank and corporate borrowing” category.



## Appendix 3

### THE CASE OF THAILAND<sup>17</sup>

#### 1. Introduction

1. After the breakout of financial crisis in July 1997, there have been a number of changes taking place in the *design* and *conduct* of monetary policy in several emerging-market economies (EMEs). One change in the case of Thailand is the move toward the new managed float exchange rate regime in early July 1997. Another is the adoption of inflation targeting in May 2000 as the main framework for the conduct and implementation of monetary policy. However, the associated large swings in capital flows and the increased fluctuation of the nominal exchange rate under a flexible regime may have posed some potential problems for the monetary authorities in the conduct of monetary policy.
2. This paper provides an overall review of the making of monetary policy in Thailand. Its main focus is given to the conduct and implementation of monetary policy in the period after the currency crisis in July 1997. It begins in *Section 2* with a discussion of Thailand's experience with capital flows in the 1990s, including how Thailand measures capital flows, and the impact of capital movements on Thailand's exchange rate and hence monetary policy. It also provides a brief discussion of the implications of capital liberalization for monetary policy. *Section 3* describes how the Bank of Thailand (BOT) takes account of the exchange rate in monetary policy decision making. The section also discusses some main issues with respect to the design of the framework for more effective management of capital flows in the period after the crisis. *Section 4* discusses some important issues related to the recent application of the inflation targeting framework. *Section 5* concludes with some references to certain characteristics of the economy that may have potential implications for the conduct of monetary policy in the period ahead.

#### 2. Thailand's Financial Market Liberalization: Implications of Capital Account Liberalization for Monetary Policy and the Financial System

1. One of the main characteristics of the 1990s for Thailand was the extraordinary increase in the capital flows to Thailand. As can be seen from Table 1 (appended), similar to the experiences of other emerging countries in the Asian region, net capital inflows to Thailand increased at a relatively rapid pace in the 1990s from around US\$ 9.7 billion in 1990 to US\$ 19.5 billion in 1996. However, these net inflows of capital declined sharply after that. There were net capital outflows of around US\$ 9.7 billion in 1998 after Thailand experienced the currency crisis in July 1997.
2. Such a sharp increase in capital inflows in the period before the currency crisis can be attributed to both external and internal factors. Externally, relatively low yields in industrial countries together with liberalization in the developed capital markets helped increase the

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<sup>17</sup> Background paper prepared for the EMEAP study on "The Capital Account and the Exchange Rate in Monetary Policy Decision Making" by **Rungsun Hataiseree**, Monetary Policy Group, the Bank of Thailand.

flows of capital to the EMEs in general and Thailand's market in particular. Domestically, impressive economic growth, attractive returns in developing economies, financial deregulation, and almost no exchange rate risk also encouraged large capital inflows to Thailand.

3. Private capital inflows to Thailand are usually classified into 2 categories: (i) bank and (ii) non-bank. After the establishment of Bangkok International Banking Facilities (BIBF) in 1993, the role of the banking sector in mobilizing foreign funds to domestic market tended to increase remarkably. Borrowings via BIBF, as indicated in Table 1, helped increase the share of capital inflows into the banking sector from around 20 percent in 1992 to 56 percent in 1993-96. The non-bank sector, on the other hand, can be decomposed into six categories, including (i) foreign direct investment, (ii) loans, (iii) portfolio investment, (iv) non-resident baht account, (v) trade credits, and (vi) others.

### ***Capital Account Liberalization***

4. With the benefit of hindsight, Thailand's experience of opening up the BIBF, ahead of putting in place necessary conditions for appropriate frameworks for monetary policy and for financial supervision and regulation, has been claimed to be the major factor that caused a rapid accumulation of short-term foreign currency borrowing. Financial liberalization through the introduction of BIBF, as it has been claimed, significantly enlarged the short-term portion of the country's external debt outstanding. As is commonly agreed, a large bulk of BIBF credits were given on a short-term basis and continually rolled over for long-term uses. As part of the policy response to discourage the excessive inflows of BIBF credits, the monetary authorities in October 1995 decided to raise the minimum amount of out-in BIBF from US\$ 500,000 to US\$ 2 million, giving rise to the reduction of the volume of BIBF net inflows afterward (Table 2, appended).
5. Another salient characteristic of capital flows was the greatly increased importance of portfolio investment. Capital inflows via portfolio investment, as indicated in Table 1, rose remarkably in 1995-1997, ranging from US\$ 3.3 to US\$ 4.6 billion. The rapid and continuous increase in private net capital inflows, as a whole, reached the point that the country's external debt outstanding surged from US\$ 52.1 billion in 1993 to US\$ 108.7 billion in 1997. Importantly, as can be seen from Table 3, the share of the short-term component jumped from around 36 per cent in 1990 to the peak of 50 per cent in 1995. Such a high share of short-term debts has been regarded as an important factor in making Thailand increasingly vulnerable to changes in market sentiment and foreign investors' confidence. The rapid building up of short-term external debts was seen to be the result of the implementation of capital account liberalization and of a rigid exchange rate.
6. Experience in the Asian currency crisis suggests that large surges of short-term and potentially reversible capital flows to the country can have adverse effects (Griffith-Jones *et al.* 1998). For one thing, these surges present complex policy dilemmas for policy management, as they tend initially to push key macroeconomic variables—such as exchange rates, and the prices of assets like property and shares—away from what could be considered their long-term equilibrium. For another, these kinds of short-term flows present the risk of sharp reversals. These reversals—particularly if they lead to currency and

financial crises—can result in a serious loss of output, investment, and employment. The situation in Thailand in the period before the currency crisis in 1997 is a perfect illustration of these negative aspects.

- 7 The currency crisis in 1997 pointed to the danger of the potential negative impact of large and volatile capital inflows, especially in the case where the exchange rate is *de facto* fixed. Under such a circumstance, large scale capital flows, particularly of short-term flows, can lead to an excessive expansion of money supply, giving rise to inflationary pressure, an appreciation of real exchange rate, and a widening current account deficit. Lack of appropriate policy responses to the large capital inflows may aggravate the situation, as should they reverse abruptly, through self-fulfilling expectations or herd behavior, they can bring about a currency crisis.
- 8 Before the crisis, short-term capital flows accounted for about 80 per cent of the total inflows of capital into Thailand. However, after the crisis, there has been a considerable change in the structure of capital flows. During the past three years, more longer-term capital inflows have gained an increasing share of the total inflows of capital, accounting for about 80 per cent of the total inflows. Also, the nature and/or the type of capital inflows has shifted from private to government based inflows. As is commonly agreed, capital inflows in the government sector tend to be locked in the country for some time. Their movements tend not to constrain the conduct of monetary policy in the short run.
- 9 This favourable improvement in the nature of capital inflows, together with the continuous surplus in the country's current account balance for more than 24 months in a row, has, to a certain extent, enabled the monetary authorities to retain the use of a low interest rate policy to help speed up the country's economic recovery process. It has also helped reduce the burden of financial sector problems without much danger of an adverse impact from a declining value of the domestic currency.
- 10 A recent empirical study by TDRI has provided a number of interesting results with respect to the reaction of different types of capital flows to exchange rate fluctuations (Siamwalla *et.al* 1999,). First, it was found that while net inflows of loans decreased substantially in response to substantial currency depreciation, net inflows of FDI increased significantly after the baht was floated. Evidence of this kind seems to indicate that different types of capital flows arise from different underlying incentives and determinants.
- 11 Second, FDI was claimed to be stable compared with some other types of inflows. FDI barely fluctuated with market liquidity or other short-term disturbances, because investors' primary concerns were long-term oriented.
- 12 Third, on the contrary, non-FDI flows -- including loans, portfolio investment, non-resident baht accounts, trade credits, and commercial bank facilities-- were found to be more volatile or sensitive on a short-term basis.
- 13 Fourth, the evidence seems to suggest that an attractive economic growth rate, a stable exchange rate, moderate inflation, and high interest rate captures a growing stream of net

capital flows to Thailand, jumping from 2 – 6% of GDP p.a. in 1980s to 9 – 12% p.a. during 1990-96. A large part of these inflows were in the form of loans.

### *Implications of Capital Flows for Monetary Policy*

- 14 With the benefit of hindsight, large capital inflows into Thailand, especially in the period to July 1997 while Thailand still maintained the pegged exchange rate regime, led to an over expansion of bank lending. This over-expansion was exposed when the flows reversed, and resulted in instability or a collapse of the banking system. (UNCTAD, p. 37).
- 15 In the positive side, inflows of short-term capital can provide more funds to import machinery and equipment and raw materials from abroad, leading to a high level of capital formation. Nevertheless, from a financial and monetary policy perspective, large inflows of foreign funds usually lead to the expansion of high-powered money, and in turn create a multiplier effect in terms of expanding both bank credit and the broadly-defined money supply. The original increase in foreign exchange reserves also played an important role in the expansion of bank credit, especially under the relatively fixed exchange rate regime.
- 16 Although such an increase in additional liquidity may be partially absorbed by the increased demand for money through higher interest rates, in the short run, this tends to result in an excess supply of money. In principle, liquidity in the domestic financial system tends to be increased, if large inflows of capital are not sterilized in an appropriate manner.
- 17 In the Thai context, the measures adopted by the authorities to cope with surges of capital inflow at the time included sterilized intervention in the foreign exchange market, increases in reserve requirements and/or discouragement of certain types of capital inflow. The experience of Thailand suggests that a sterilization policy tends to be short-lived and that its effectiveness in mopping up liquidity tended to cause an increase in domestic interest rates that preserved the incentive for capital inflows.
- 18 Another negative impact of capital inflows was that large capital inflows tend to lead to an unsustainable appreciation of the real exchange rate. The continuous appreciation in turn eroded the country's competitiveness. Overvalued exchange rates, as has often been claimed, cause sub-optimal investments that are costly to reverse, undermine active trade promotion (Fischer and Resin, 1993). Experience in the recent Asia crisis suggests that excessive or large short-term capital inflows tend to cause local funds to be channelled into financial activities of a purely speculative nature, thereby giving rise to a "bubble economy".
- 19 The recent experience of the Asian crisis suggests that there are risks in capital account liberalization. On one view, the crisis suggests that the capital account is more often the source of economic difficulties and risk rather than benefit, and therefore that capital account liberalization should be postponed as long as possible. (Fisher, 1997). Thailand also at one stage took measures to separate offshore traders from the domestic foreign exchange market, in response to speculative attacks on baht in May 1997, by establishing a two-tier market. Another view is that the benefits of liberalizing the capital account outweigh the potential costs.

- 20 Rapid liberalization of financial markets and of the capital account which is not preceded or accompanied by appropriate measures to ensure that the risks can be adequately identified and managed has been claimed to be one of the factors that lead to the currency crisis in 1997. Capital account liberalization, as has been claimed, puts a premium on the need for sound, consistent, and credible economic and financial policies. That is why Thailand now opts for the adoption of inflation targeting as a monetary policy framework, as well as for a strengthening of the financial system.
- 21 In view of the fact that the weakness in the financial sector will be magnified the greater the degree of openness, and that the financial sector cannot be strengthened overnight, policymakers therefore need to consider how to sequence financial liberalization in an orderly fashion.
- 22 Once the system has become open and the economy is subject to excessive volatility, one option is to consider imposing temporary restrictions on certain types of inflows—for example, prudential controls that increase the cost of external debt (particularly short-term debt). Although such controls may lose their effectiveness over time, as it has been claimed, they do slow inflows and thus buy time for rectifying structural weaknesses. Prudential regulations limiting the volume of inflows that can be intermediated through the banking system may also be appropriate. However, such measures also have their drawbacks, namely, they must not give the impression that the authorities are substituting controls for tackling the real cause of the problem. If this is the case, the policy will not be credible, and attempts will be made to by-pass administrative controls.
- 23 The Asian crisis has made clear that a weak banking system, combined with an open capital account, exposes the economy to speculative attack. Reliance on cross-border interbank funding, which can be quickly withdrawn is risky. It may be possible to prevent excessive reliance on such funding by basing capital requirements for banks on their liabilities as well as on their assets, or by imposing reserve requirements on interbank liabilities. Changing the weights given to different types of risk may also be a way to raise capital requirements.

### **3. Capital Flows and the Exchange Rate with an Open Capital Account**

1. The move toward the new exchange rate regime has had several implications. The first implies that the exchange rate is now an endogenous variable, and thus can be treated as one of the intermediate target variables for the attainment of the ultimate targets of economic policy, such as inflation and sustainable economic growth. The second suggests that the exchange rate variable is a policy instrument for the achievement of the ultimate target of inflation.
2. Under the new exchange rate regime, the exchange rate is used as part of the monetary policy instrument set to influence some components of aggregate demand and to ensure the achievement of price stability. In this regard, movements of the baht against the U.S. dollar have been closely monitored by the authorities to ensure that movements continue to be in line with those of other currencies, particularly those in the Asia-Pacific region. As of 12 July 2000, the Thai baht depreciated from the beginning of the year by 7.01 per cent. In a similar vein, the Euro, the Japanese yen, the Singapore dollar, the Philippine peso, and the

Indonesian rupiah weakened by 7.85 per cent, 4.09 per cent, 4.95 per cent, 10.87, and 23.88 per cent, respectively.

3. Given a relatively high degree of importance of trade in the Thai economy, a change in the exchange rate could exert significant influences on domestic inflation through its impact on total demand. With external demand accounting for approximately 80 percent of total demand in Thailand, the exchange rate has an important effect on demand for domestic resources. A weak exchange rate, for example, could lead to overheating of the economy. The resulting inflationary pressures would push up the real exchange rate and lead to a reduction in the country's competitiveness. This may nullify the effect of the initial exchange rate depreciation.
4. As in some other countries, the Thai authorities tend to pay close attention to the medium-term effects of movements in the real exchange rate (RER) which could lead to the pressures on Thailand's international competitiveness. In view of this, the authorities monitor closely the behavior of the *real effective exchange rate* (REER) of the baht, to ensure that it is consistent with the underlying economic conditions and fundamental factors. The REER of the baht against a basket of 25 currencies of Thailand's major trading partners and competitors, using 1994 as the base year, depreciated by 19.01 per cent by August 2000, and by 20.50 per cent and 21.50 per cent by September and December 2000, respectively. This weakening of the real exchange rate, to some certain degree, provided impetus to export competitiveness. (Bank of Thailand, 2001, pp33-34).
5. However, it is increasingly acknowledged that the exchange rate in an inflation targeting regime can also act as *a source of disturbances* which can affect the economy and sometimes reflect a change in the policy stance.<sup>18</sup> As mentioned above, the movements of RER has been closely monitored by the BOT to ensure that there have been no serious problem with overvaluation which would in turn undermine the country's competitiveness compared with its competitors. On the other hand, care has to be taken to ensure that an undue real depreciation of RER would not cause a problem with inflation.
6. As has been widely claimed, the undue overvaluation of the Thai baht in the period before the currency crisis in July 1997 was seen as one of the important factors causing the sharp decrease in export growth. This in turn led to the widening of the current account deficit, to approximately the equivalent of 8 per cent of GDP in the period 1995-96.
7. Thailand's experience has suggested also that the concept of "fundamentals" for the determination of the exchange rate needs to be enlarged to include the health and resilience of the financial system. Even with a flexible exchange rate regime, it is likely that large medium term exchange rate changes can be expected. This, in turn, exerts increasing pressure on the solvency of firms and, more importantly, commercial banks. It reflects a need to have a sound, well supervised, and risk-averse banking system. This is particularly the case if there still remains weakness in the financial system, particularly a sizable level of the country's NPLs.

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<sup>18</sup> Specifically, there are two potential problems, however, with a freely floating regime: (1) volatility of the exchange rate in the short-term; and (2) misalignment of exchange rates in the medium-term.

8. As one can see, under the newly adopted exchange rate regime of a managed float, Thailand experienced an *overshooting* of the currency in early 1998, dropping drastically from 26 baht to a dollar before the float in July 1997 to 56 baht in January 1998. Such a rapid decline in the value of domestic currency seemed to provide little choice to the authorities, except to take austerity measures by tightening the money supply. This, in turn, pushed up domestic interest rates and led to a massive contraction of the economy. The current account surplus thus came at the expense of growth.
9. For some of the reasons cited above, it appears that movements of the exchange rate are too important to let the market determine the rate itself without occasional intervention from the authorities. In view of this, occasional interventions in the foreign exchange market are sometimes required to smooth out fluctuations in the foreign exchange market, but not to change the trend. Interventions are sometimes used as a means to send a signal to the market. In so doing, however, considerable care is normally carried out to avoid giving some sort of targeted rates to the market, neither through interventions nor official comments. Such actions may threaten the long-term credibility of the central bank should investor confidence be low.
10. Where the exchange rate appears to have departed on a prolonged basis from the underlying fundamentals, the resultant effect may be imported inflation. In such a case, some form of pre-emptive measure may need to be exercised in order to curb the inflationary trend. Foreign exchange market intervention could be also used in this circumstance to alter market sentiment and counter an overshooting of the exchange rate.
11. In other words, the BOT may resort to the use of foreign exchange market interventions to a limited degree if the exchange rate moves significantly out of line from what is considered to be a reasonable level on the basis of fundamentals, or in the event of exceptional short-term volatility in the foreign exchange market. In such circumstances, the risk of ending up with a game situation against exchange market participants tends to lessen.
12. In practice, the interest rate is used as a major instrument of monetary policy. The interest rate can have an influence on the exchange rate directly via the differential between domestic and foreign interest rates, and indirectly via inflation expectations.

### ***Conduct of Monetary Policy in a World of Increased Capital Flows***

13. As mentioned earlier, Thailand experienced a surge in capital inflows in the period beginning in the late 1980s. The immediate response was to pursue sterilization and fiscal tightening, combined with structural reforms, including trade liberalization and liberalization of capital outflows. At the same time, commercial banks' and finance companies' net foreign exchange position limits as a ratio of capital were raised. Even though the pegged exchange rate system was maintained and the real exchange rate appreciated only moderately, the economy experienced increasingly large current account deficits.
14. Credit restraint was insufficient to reduce the asset price bubble, and domestic demand continued to increase. Further tightening of credit encouraged more capital inflows, while the current account continued to deteriorate. In 1996, Thailand began to experience

speculative attacks, which eventually led to the crisis of July 1997. As has been claimed, there was a strong feedback from large capital inflows to large capital account deficits in Thailand in the period 1989-96. (Wong and Carranza, 1998).

15. The move toward the new exchange rate regime of a managed float after July 1997 has paved the way for the Thai authorities to use the exchange rate as a policy instrument to reduce the adverse impact of short-term capital inflows on the domestic economy. Under this new system, greater exchange rate flexibility is usually allowed to help accommodate increased uncertainty associated with large and volatile capital flows. As is widely agreed, balance of payments equilibrium under this regime is achieved through flexible adjustment of the exchange rate, and monetary policy can be used to fulfill the prescribed set of domestic targets without a need to pay too much attention to external influences. To some certain extent, flexibility in the exchange rate enables private economic agents to recognize and to manage prudently the foreign exchange risks that are unavoidable for countries open to global financial markets.
16. Nevertheless, it is increasingly acknowledged that the adoption of an appropriate exchange rate regime alone may not be able to reduce massive capital inflows, especially short-term capital inflows. The surge in short-term capital inflow can lead to excessive appreciation of the domestic currency, as well as greater vulnerability of the financial institutions performing an intermediation function for such flows. In cases where the domestic financial institutions still remain weak, sudden shifts in market sentiment can lead to a systemic bank run.
17. In EMEs like Thailand, which is a small open economy, large and rapid fluctuations of the exchange rate following enlarged capital flows tend to produce adverse effects on the real economy and the financial markets. In view of this, as mentioned earlier, occasional interventions in the foreign exchange market or adjustments to short-term interest rates are sometimes called for so as to smooth out abrupt exchange rate fluctuations deemed to be inconsistent with underlying fundamentals.
18. However, it is likely that the effectiveness of such interventions is conditional upon a number of factors. These include among other things (i) the central bank's knowledge of market positions, and (ii) expectations and flows in the foreign exchange market. In this connection, assessments and monitoring of the market by the central bank tend to be more effective if it has timely and accurate market information for the formulation of appropriate intervention strategies.
19. Appropriate means to discourage short-term capital inflows may play a positive role at times when the process of strengthening banking system is still under way, and given that there are inherent limitations associated with the use of monetary and exchange rate policies, as has often been the case for most of EMEs. In this regard, some of market-based measures – such as the Chilean-tax type measures of the so-called unremunerated reserve requirement (URR) and minimum holding period (MHP) – which make capital inflows increasingly more costly the shorter the maturity, may be used to induce the composition of capital inflows toward longer maturities.



20. Another option is to resort to the use of prudential requirements to manage capital flows. As an example in this regard, some financial institutions may be required to match their short-term foreign liabilities with short-term and liquid foreign assets, so as to prevent an elastic supply of foreign funds from encouraging excessive expansion of cyclically-sensitive loans. As has been suggested extensively in the literature, some sorts of prudential measures can provide a breathing space to mitigate double mismatches arising from excessive dependence on short-term borrowing until the necessary infrastructure has been put in place. In other words, prudential measures are considered to be desirable policy so long as they are used as part of a package of policy measures that lead to sound macro-economic fundamentals.

### ***Strength of the Financial System***

21. Experiences from the recent financial crisis suggest that healthier domestic financial systems are an important factor in helping to reduce the macroeconomic implications of international capital flows. It is widely accepted that fragility in the financial system in emerging market economies – including weakness of financial supervision and regulation and the absence of market disciplines — combined with open capital account were major causes of the currency crises in 1997. The need for strengthening the financial systems of EMEs is viewed as being particularly vital.
22. In the Thai context, considerable efforts have been devoted to strengthening prudential regulation and to heighten the efficiency of the financial system by financial restructuring, the widening and deepening of financial markets, the cultivation of human resources, and the introduction of advanced financial techniques. Thailand has made considerable progress in cleaning up and consolidating its financial sector. NPLs peaked in May 1999 and declined continuously to a level of 17.86 per cent of banks' total loans in January 2001. Such a declining NPL trend reflected in part satisfactory progress in the debt restructuring and recapitalization processes.
23. On the regulatory framework, the Bank has tightened the loan classification and provisioning rules. For example, the definition for NPLs has been progressively tightened from 12-month past due to a 3-month overdue period. Full provisioning must be made by the year 2000, and commercial banks must maintain a capital to risk asset ratio of at least 8.5 per cent. The core banking system has been strengthened through progressive recapitalization.

## **4. Transition toward Inflation Targeting**

1. The move toward the managed float exchange rate regime in early July 1997 has enabled the Thai authorities to regain an increased degree of autonomy in the management of monetary policy, with greater freedom to administer the money supply and domestic interest rates. Nevertheless, the subsequent sharp depreciation of the baht and rising inflation in the second half of the 1997 seemed to suggest that there was a need for a new nominal anchor (under a relatively more flexible exchange rate regime) as a substitute for the role the exchange rate played previously.
2. The inflation targeting framework has been seen as an alternative framework that can allow the Thai authorities to achieve a low and stable rate of inflation, with sustainable economic

growth. Under an inflation targeting framework, the Monetary Policy Board (MPB) has to look ahead 18-24 months and adjust its policy stance today to influence the outcome of the future. This will help minimize the boom-bust cycle in the economy. The adoption of the managed floating exchange rate regime will also help prevent imbalances from building up excessively, hence minimizing the risk of major crises.

### ***Salient Operating Features***

3. The BOT last year announced its explicit intention to control inflation, and the range of 0 to 3.5 per cent of core inflation was announced on 23 May 2000. More specifically, the operating features include: (i) targeting core inflation, while also monitoring headline inflation; (ii) a core inflation target of 3.5 percent as the upper limit; (iii) using the 14-day repurchase rate as the key policy rate; (iv) putting a weight of 40 per cent (in our optimization equation) on output to smooth the fluctuation in the output level and 60 per cent on the deviation of forecast inflation from its target.

### ***Monetary Policy Transmission Mechanisms***

4. Under this new framework of monetary policy, there are three main channels through which monetary policy -- e.g. a change in the 14-day repurchase rate -- may exert influence on important macroeconomic variables such as inflation and economic growth:
  - (1) The effect on deposit and lending rates, which has an impact on private credit demand and the money supply;
  - (2) The effect on exchange rates, which has an impact on international trade, the money supply, and the price level;
  - (3) The effect on inflation expectations, which impact on private consumption and investment (see also BOT, 2000).

### ***Flexible exchange rate and inflation targeting***

5. Although the inflation targeting framework has been adopted as the main strategy for monetary policy, it has been increasingly accepted that the authorities still have room to accommodate other intermediate targets, such as the exchange rate, for other stabilization objectives. More specifically, intermediate targeting of the exchange rate can be used, to a limited extent, to stabilize the current account that is deemed to be an important macroeconomic variable to prevent a crisis. However, it should be emphasized that under this new framework intermediate targeting of the exchange rate is subject to inflation targeting. That is, when there seems to be a sharp conflict between the intermediate target of the exchange rate and the inflation target, the attainment of the inflation goal will be given a higher priority.
6. Experience during the third week of September 2000 suggests that the authorities tend to be very cautious in the move toward using high interest rates to curb and/or defend the weakening of the baht at times when there are still some signs of weak economic conditions at home. Despite at these times facing mounting pressure from some circles to switch to the

use of higher interest rates to defend the baht, the authorities have decided to maintain its policy stance of low interest rates to help speed up the country's economic recovery process.

7. With inflation targeting as the lead driver of monetary policy, interest rates need to be seen to be moving according to the achievement of the inflation objective. Adjustments in interest rates should not be dominated by the consideration of the value of the currency, as long as there is insufficient evidence to indicate that such a decline in the value of domestic currency will lead to an increase in domestic inflation. It is generally agreed that higher interest rates, when not justified by wider fundamentals, tend to be ineffective in stemming currency losses.
8. In other words, what is more important for the market is the reasons behind interest rate changes rather than the movements in interest rate *per se*. Simple interest rate differentials should not be used as the primary reason for making calls on exchange rate trends. If, for example, the BOT decides to tighten further, though interest rate differentials may argue for the support for the baht in the short run, it is believed that such a rate hike would push the baht to a new record low. Tightening monetary policy into an environment of slower-than expected economic recovery would exacerbate currency depreciation for the Thai baht over the medium term.

### ***Flexibility in the Use of Inflation Targeting***

9. The actual application of the inflation targeting framework has been implemented in a flexible manner. In this connection, five observations are now in order.
10. *First*, the system allows for certain fluctuations in the actual inflation rate. More specifically, the inflation target is set in terms of the band rather than a point, and attaining the inflation target is typically set to be fulfilled over a multi-year horizon, ranging from one and a half years to two years in Thailand's case. Specifying the inflation target in terms of a band rather than point estimate over the medium-term allows the central bank to maintain significant scope for applying discretion in the conduct of monetary policy.
11. *Second*, the system also allows for flexibility in implementing monetary policy to help stabilize inflation and output simultaneously. As indicated earlier, both inflation and output variables are both incorporated into the BOT's optimization equation, albeit with a different weight attached to each variable as aforementioned. The inclusion of variables implies that the use of a high interest rate policy to stabilize the demand side of the economy may be subject to some limits. This is particularly so in the case where a depreciation of the exchange rate has been viewed as a short-run phenomena that would raise the domestic prices of imported goods on a temporary basis, and thus causing a direct one-off increase in the price level.
12. *Third*, the direct price effect of the rise in oil prices on the CPI seems to have received less attention, as it is generally believed that such a rise in the oil price is just a one-off phenomena that may cause increased volatility of inflation in the short run. Such a direct price effect, however, is seen to have no significant influence on the level of inflation over the medium term.

13. *Fourth*, as there still is a reasonably high degree of uncertainty regarding the estimation of the output gap for use in the optimization equation, the Thai authorities find it useful to keep an eye to the behavior of the growth of monetary and credit aggregates. In view of this, the MPB will continue to use monetary aggregates in its assessment of the state of the economy. Nevertheless, monetary aggregates will no longer serve as the main intermediate target as in the past.
14. *Fifth*, although the volatility of exchange rate changes has increased in the period since the adoption of the managed floating regime compared to the period where we adopted the basket-pegging regime, its adverse impact on domestic prices seems to have been minimal. As documented elsewhere, the pass-through effect from movements in the exchange rates to changes in the CPI has been found to be relatively small in the case of Thailand (Hausmann, et al. 2000). This implies that fluctuations in the exchange rate seem to cause little change in the domestic CPI.
15. The estimated coefficient of inflation pass-through for Thailand is reported to be 0.03 which is remarkably lower when compared with those in the case of Mexico (0.58), Indonesia (0.49) and Korea (0.18). Such a relatively small pass-through effect suggests that the direct effect of changes in the exchange rate on aggregate demand and, hence, on inflation, should be given to relatively low weight in the design and formulation of monetary policy to help stabilize domestic prices.
16. As the inflation targeting framework has only been in place for less than a year, it may be too early to undertake a detailed evaluation of experience with this regime. Nevertheless, some benefits can be expected in that the interest rate charged for long-term bonds has tended to fall. Since the beginning of the year, we have seen the yield on the 10-year bond drop from 7.78 per cent per annum to 6.14 per cent. This has helped lengthen the maturity structure of corporate bond issues. By August 2000, 2.3 per cent of corporate bonds issued were for 7 year or longer maturities, compared to 1.9 per cent at the end of 1999. While other factors may have contributed to this reduction of long-term borrowing costs, it has been argued that public confidence in our commitment to control inflation has certainly been one of the important factors. In other words, a lower path for long-term interest rates possibly reflects a reduction of the risk premium on investment in Thailand, implying an improvement of inflation expectations over the medium term.
17. The use of inflation targeting is not problem free. A number of issues need to be clarified or explicitly addressed to ensure successful use of inflation targeting as a monetary policy framework. These include (i) the model used in forecasting inflation, (ii) the treatment of asset price inflation, (iii) the width of the target band, (iv) and the measure of inflation.
18. As for *the first issue*, measures have been recently taken to help alleviate the potential problems with respect to some technical issues, including a refinement of the BOT's inflation forecasting framework. Although the macroeconomic model used for forecasting inflation has performed satisfactorily, there still remain some limitations: (i) the observation period is still short, and (ii) the coefficients in some equations may not be very stable. This is because the estimation covers periods of both high and low economic growth, including the period in

which the economy had undergone a severe crisis when financial institutions were not performing their normal intermediation function and many businesses are in the process of debt restructuring. Therefore, the model needs to be constantly improved in terms of data inputs, econometric techniques, and the theoretical relationships among the variables, in order to enhance the predictive power of the forecasts and the effectiveness of policy settings.

19. It should be noted, however, that the model serves only as a tool to assist decision-making on monetary policy implementation under the inflation-targeting framework. Similar to the experiences of other countries, the model has been used in conjunction with analysis of data on economic conditions and the judgment of the policy makers.

### ***The Role of Monetary Policy and Prudential Policy in Relation to Asset Prices***

20. *The second issue* is related to the treatment of asset price inflation. Although it still remains unclear whether, and to what extent, the authorities need to respond to asset price inflation, it has been increasingly accepted that the monetary authorities may have reason to react to movements in asset prices, including in particular the prices of equities and real estates, even though the effect on inflation seems to be negligible. One of the important considerations in this regard is the central bank's responsibility for the stability of the financial system. This is particularly the case in small open economies where international capital flows and attacks on the currency played major roles in the recent financial crises.
21. Recent experience in Asia has suggested that if asset prices have been driven up to unsustainable levels that do not correspond to the underlying fundamentals, such speculative asset price bubbles eventually end up with asset prices bursting. The resultant effects include declining value of collateral and deteriorating balance sheets, potentially threatening the stability of the banking system.
22. The aforementioned discussion seems to be consistent with the situation in Thailand in the period prior to the currency crisis in July 1997, where banks holding real estate and stocks with falling prices came under severe pressures from withdrawals because the value of their liabilities is fixed. This experience suggests a relationship between the occurrence of drastic rises in asset prices, that is, positive bubbles, and monetary and credit policy. It also shows that the collapse of the bubble can lead to severe problems because the fall in asset prices leads to strains in the banking sector. To avoid potential instability, the central bank has to monitor closely the potential for excessive credit growth and the possibility of asset prices bubbles building up.
23. Against the background mentioned above, asset price inflation – caused by rapid increase in capital inflows and a subsequent surge in credit expansion in the period before the crisis needs to be addressed, although the adverse impact associated with this type of inflow on inflation appears to have been less in the period after the currency crisis, as there has been a continuous decline in the flows of foreign capital into the real estate and/or stock markets. In the case where the economy is threatened with asset price inflation which may not show up in the chosen price index, the BOT will have to use judgement in assessing these circumstances, as the Bank finds it no easy task to forecast the aggregate demand effects of

asset price movements. In general, the BOT tends to ignore movements in stock prices that do not appear to be generating inflationary or deflationary pressures.

24. However, under the present system of a flexible inflation targeting framework, the Bank finds itself in a better position to adjust interest rates in order to help stabilize the financial markets or the economy in the face of asset price instability. This is particularly so in the case where asset price increases threaten to overheat the economy and vice versa.
25. Regarding the issue of the width of the target band, more in-depth study needs to be carried out to see whether it would be more appropriate for an emerging economy, like Thailand, to have a band around the inflation target that is somewhat wider than the common plus or minus 1 per cent. In faster-growing and more volatile emerging economies, as it has been claimed, the appropriate width of the target band may well be different from those chosen in the advanced economies. In particular, the higher share of imports in consumption, and the fact that the overwhelming bulk of commodities are imported, could make it difficult to meet an inflation target in the light of volatile exchange rate movements.

## **5. Challenges to Monetary Policy in the Period Ahead**

1. Although much progress has been achieved toward increasing the effectiveness of monetary policy implementation in both the institutional and technical fronts, there remain several challenges to monetary management in the short- and medium-term. In the short run, as a consequence of the financial crisis which occurred three years ago, the banking system in Thailand is still faced with a sizable level of NPLs and a high level of liquidity due to caution by banks in extending new credits. Over the medium-term, the substantial borrowing of the FIDF – which is the BOT’s arm in assisting ailing financial institutions – from the private sector could be an additional constraint on monetary policy. Such unfavorable financial conditions may limit the Bank’s ability to effectively implement monetary policy in the short run.
2. Moreover, the financial markets are still not significantly developed to fully provide an efficient financial environment. Thus, another area that is being addressed concurrently by the authorities is the development of the bond market, which will pave the way for use of open market operations as a monetary policy instrument, in addition to the present BOT-operated repurchase window and loan window. Under its Bond Market Development Program, authorized dealers have been named by the BOT, a regular schedule for the issue of treasury bills and government bonds has been introduced, and an automated real-time DVP (delivery versus payment) system for government securities is being developed, among other things. Nonetheless, it will be some time before the debt paper market gains sufficient breadth and depth to make it an efficient monetary policy instrument.
3. Apart from these developments aimed at achieving more effective implementation of the inflation targeting framework in Thailand in the period ahead, the monetary authorities may have to further consider the following aspects:
  - *The problems that it may face in the environment of large public debt overhang.*  
The conduct and implementation of monetary policy in the medium term appears to be

constrained by reasonably large government budget deficits. Debt service was 9.1 per cent in last year's budget. It is estimated that it will be at around 12.6 per cent in 2004.

- *The sustainability of the current account surplus.* Thailand has experienced a surplus on the current account balance for more than 24 months consecutively.<sup>19</sup> Surplus on the current account balance is expected to continue for the next 2 or 3 years provided that the considerable expansion of exports continues over that period. This in turn should help reduce adverse pressure on the domestic exchange rate.<sup>20</sup> Favorable figures of this kind have, to a certain extent, enabled the monetary authorities to retain the use of a low interest rate policy to help speed up the country's economic recovery process, without much danger associated with an adverse impact from the decline of the domestic currency. However, there is a view that the trend of current account surplus may be more short-lived than expected. The challenge in this regard is how long this low interest rate policy can be maintained without an undue adverse impact on the exchange rate?
- *The rising trend of the country's foreign debt.* At present, the level of the foreign debt is higher than the BOT's target, with foreign debt equaling 69 per cent of GDP. Although the ratio has started to decline gradually, as a result of the central bank's earlier policy of strengthening the baht in order to help reduce the burden for foreign currency debtors, it still remains relatively high. As has been widely argued, if the country can lower its foreign debt to a level less than 50 per cent of GDP, the government will be able to manage its economic policy more efficiently without a concern for foreign-debt.
- *The openness of the economy.* Similar to the experience of other emerging market economies, Thailand's economy has become increasingly integrated with the world economy, in terms of both its trade in goods and services and, particularly, in its involvement in international capital markets. Empirical studies by the BOT (e.g. Hataiseree and Phipps, 1996; Hataiseree, 1996), indicate that the degree of capital mobility seems to be reasonably high for Thailand, ranging from 0.85 to 0.89 in the 1990s. Such a relatively high degree of integration suggests that the Thai economy has become increasingly exposed to the risks in cross-border capital transactions.

Because of the small and open nature of the Thai economy, the monetary authority of Thailand realizes that its economy tends to be sensitive to changes in foreign interest rates as well as changes in world inflation. Since the large bulk of commodities used in Thailand are imported, the decline in the currency would effectively boost the cost of imported goods. Inflationary pressure would become more severe, if it is accompanied by excessive increases in oil prices.

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<sup>19</sup> To put this into perspective, Thailand experienced a reasonably large current account deficit in 1997 of 8 per cent of GDP. It turned into a surplus in 1998 of about 12.8 per cent of GDP. The current account balance has continued to be in surplus in 1999 and 2000 of around 10.0 and 7.3 per cent of GDP, respectively.

<sup>20</sup> The terms of trade of Thailand appeared to have improved in recent years, as the current account has registered a surplus for more than 24 months consecutively. The continuous trend of trade surpluses has become an important factor for exchange rate stabilization purposes.

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**Table 1**  
**THAILAND: CAPITAL MOVEMENTS (NEW FLOWS)**  
(Millions of US\$)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000P
<b>1. BANK</b>	<b>1,603</b>	<b>-253</b>	<b>1,934</b>	<b>3,604</b>	<b>13,894</b>	<b>11,239</b>	<b>5,003</b>	<b>-5,717</b>	<b>-</b>	<b>-</b>	<b>-6,611</b>
									<b>12,723</b>	<b>10,617</b>	
1.1 Commercial Bank	1,603	-253	1,934	-4,052	3,807	3,097	419	-5,212	-3,272	-1,265	-2,603
1.2 BIBF	-	-	-	7,656	10,087	8,142	4,584	-505	-9,451	-9,352	-4,008
<b>2. Non-Bank</b>	<b>9,380</b>	<b>10,574</b>	<b>7,582</b>	<b>6,712</b>	<b>-1,869</b>	<b>9,582</b>	<b>13,198</b>	<b>-1,906</b>	<b>-2,760</b>	<b>-3,219</b>	<b>-2,438</b>
2.1 Direct Investment	2,402	1,866	2,015	1,438	903	1,169	1,455	3,180	5,019	3,218	2,574
2.1.1 Foreign Direct Investment	2,542	2,033	2,151	1,732	1,325	2,004	2,271	3,627	5,142	3,562	2,633
2.1.2 Thai Direct Investment	-140	-167	-136	-294	-422	-835	-816	-447	-123	-344	-59
2.2 Other Loans	4,535	5,661	2,846	-2,432	-5,844	1,518	5,452	-3,688	-3,713	-4,359	-3,804
2.3 Portfolio Investment	457	163	561	4,852	1,110	3,288	3,488	4,550	422	391	141
- Equity Securities		48	456	2,687	-394	2,122	1,123	3,987	265	946	905
- Debt Securities		115	105	2,165	1,504	1,166	2,365	563	157	-555	-764
2.4 Non-Resident Baht A/c	1,336	2,042	1,707	2,685	2,066	3,406	2,924	-5,812	-4,300	-3,204	-328
2.5 Others	650	842	453	169	-104	201	-121	-136	-188	735	-1,021
<b>3. Total Private Sector (1+2)</b>	<b>10,983</b>	<b>10,321</b>	<b>9,516</b>	<b>10,316</b>	<b>12,025</b>	<b>20,821</b>	<b>18,201</b>	<b>-7,623</b>	<b>-</b>	<b>-</b>	<b>-9,049</b>
									<b>15,483</b>	<b>13,836</b>	
<b>4. Public Sector (Incl. BOT)</b>	<b>-1,239</b>	<b>1,017</b>	<b>136</b>	<b>199</b>	<b>158</b>	<b>1,100</b>	<b>1,303</b>	<b>3,280</b>	<b>5,741</b>	<b>5,929</b>	<b>-451</b>
<b>5. Capital Movements (Net)</b>	<b>9,744</b>	<b>11,338</b>	<b>9,652</b>	<b>10,515</b>	<b>12,183</b>	<b>21,921</b>	<b>19,504</b>	<b>-4,343</b>	<b>-9,742</b>	<b>-7,907</b>	<b>-9,500</b>

Source: Bank of Thailand

**Table 2**  
**CHRONOLOGY OF CAPITAL ACCOUNT LIBERALIZATION**

**Before the crisis:**

- 1990**
- Accepting Article VIII's status of IMF agreement
  - Starting the 1<sup>st</sup> phase of Capital Account Liberalization
  - Increasing commercial bank's net FX exposure from 20% to 25% of capital on net overbought while maintaining the limit on net oversold at 20% of capital
- 1991**
- Starting 2<sup>nd</sup> phase of Capital Account liberalization by allowing non-residents to hold Baht-denominated accounts and Thai residents to hold foreign currency deposits ( subject to certain conditions)
- 1992**
- Expanding scopes of businesses of commercial banks and finance companies
  - Abolishing ceilings on lending rates of financial institutions
- 1993**
- Imposing the BIS capital adequacy standard 7% for domestic banks and 6% for foreign banks and later increased to 7.5% and 6.5 %, respectively
  - Establishing BIBFs
  - Introducing MRR
- 1994**
- Abolishing the limit on foreign currency amounts to travel expenses
  - Imposing net FX exposure on finance companies ( 25% of 1<sup>st</sup> tier capital on the overbought and 20% on the oversold)
  - Establishing PIBFs
  - Reducing net FX exposure of commercial banks to 20% on the overbought and 15% on the oversold or US\$ 5 million, whichever is greater
- 1995**
- Increasing minimum amount of disbursement from out-in BIBF loan from US\$ 500,000 to US\$ 2,000,000
  - Allowing finance companies to issue B/E domestically and abroad
  - Requiring foreign bank branches, BIBFs and large finance companies to submit credit plan
  - Requiring BIBFs to make provisions for classified debts
  - Issuing BOT bonds on a weekly basis to absorb liquidity
  - Imposing 7% cash reserve requirement on short-term non-resident Baht
- 1996**
- Imposing 7% cash reserve requirement on short-term foreign borrowing by commercial banks, BIBFs and finance companies
  - Expanding a definition of liquid assets to include FIDF's debt instruments

### **During and after the crisis (1997 – present):**

- Net capital outflows due to
- Debt repayment induced by lower confidence of debtors and high domestic liquidity
- Liquidation of Baht assets ( equities, debt securities)
- However, FDI registered net inflows to recapitalize foreign companies in Thailand and commercial banks ( Bank recapitalization amounting to US\$ 2.291 billion in 1998 and US\$ 1.555 billion during the first 9 months of 1999)
- Thailand finances net capital outflows by
- Current account surplus
- Official borrowing (only the amount sold in market)
- Foreign exchange transactions reduced markedly
- FX transactions ( spot+forward+swap) fell from the peak of US\$ 9.0 billion per day in January 1997 to US\$ 1.9 billion per day in October 1999
- Volume of transactions ( gross inflow+ gross outflow) of non-resident Baht account fell from the peak of US\$ 6.7 billion per day in 1995 to US\$ 0.9 billion per day in 1999.
- After a heavy Baht attack in May 1997, BOT separated FX market into “onshore” and “offshore” market by prohibiting Baht transferred to non-residents in all cases without economic underlying. On January 30, 1998, this measure was abolished and replaced by the 50 million Baht lending limit to non-resident to control internationalization of Baht
- Development of domestic bond market will help cushion on impact of rapid capital movement while it will not jeopardize the policy to limit “offshore” Baht.

**Table 3a**  
**THAILAND: EXTERNAL DEBT**  
(Millions of US\$)

TOTAL DEBT STOCKS (END OF PERIOD)	1995	1996	1997	1998	1999	2000
<b>PUBLICSECTOR</b>	<b>16,402</b>	<b>16,801</b>	<b>16,925</b>	<b>19,856</b>	<b>23,207</b>	<b>21,798</b>
Long-term	16,317	16,747	16,905	19,706	23,077	21,772
Short-term <sup>1</sup>	85	54	20	150	130	26
<b>PrivateSector</b>	<b>84,430</b>	<b>91,941</b>	<b>85,194</b>	<b>74,024</b>	<b>59,624</b>	<b>46,431</b>
Long-term	32,117	44,252	46,920	45,734	39,795	32,154
Short-term	52,313	47,689	38,274	28,290	19,829	14,277
Commercial Bank	14,436	10,682	9,141	6,486	4,596	3,921
Long-term	4,443	2,314	3,923	3,940	2,967	2,580
Short-term	9,993	8,368	5,218	2,546	1,629	1,341
BIBF <sup>2</sup>	27,503	31,187	30,080	21,836	13,106	8,236
Long-term	3,799	10,697	10,895	6,945	5,269	4,151
Short-term	23,704	20,490	19,185	14,891	7,837	4,085
Non-Bank <sup>3 E</sup>	42,491	50,072	45,973	45,702	41,922	34,274
Long-term	23,875	31,241	32,102	34,849	31,559	25,423
Short-term	18,616	18,831	13,871	10,853	10,363	8,851
<b>Monetary Authorities</b>	-	-	<b>7,157</b>	<b>11,204</b>	<b>12,817</b>	<b>12,019</b>
Use of IMF credit	-	-	2,429	3,239	3,431	3,062
Others	-	-	4,728	7,965	9,386	8,957
<b>Total</b>	<b>100,832</b>	<b>108,742</b>	<b>109,276</b>	<b>105,084</b>	<b>95,648</b>	<b>80,248</b>
Long-term	48,434	60,999	70,982	76,644	75,689	65,945
Short-term <sup>1</sup>	52,398	47,743	38,294	28,440	19,959	14,303
<b>Bank foreign assets</b>	<b>9,672</b>	<b>7,360</b>	<b>8,115</b>	<b>11,832</b>	<b>13,579</b>	<b>15,770</b>
<b>Gross official reserves</b>	<b>37,027</b>	<b>38,725</b>	<b>26,968</b>	<b>29,536</b>	<b>34,781</b>	<b>32,661</b>

<b>TOTAL DEBT STOCKS (END OF PERIOD)</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
<b>Debt Service Payments</b>	<b>8,253</b>	<b>9,024</b>	<b>11,629</b>	<b>14,430</b>	<b>14,134</b>	<b>12,692</b>
Principal	4,059	3,822	6,071	8,951	9,622	8,868
Interest	4,194	5,202	5,558	5,479	4,512	3,824
<b>Public sector</b>	<b>2,029</b>	<b>1,845</b>	<b>1,959</b>	<b>2,192</b>	<b>2,876</b>	<b>3,412</b>
Principal	1,125	987	1,077	906	1,372	1,739
Interest	904	858	882	1,286	1,504	1,673
<b>Private sector</b>	<b>6,224</b>	<b>7,179</b>	<b>9,670</b>	<b>12,238</b>	<b>11,258</b>	<b>9,280</b>
Principal	2,934	2,835	4,994	8,045	8,250	7,129
Interest	3,290	4,344	4,676	4,193	3,008	2,151
<b>Export of goods and services</b>	<b>72,287</b>	<b>73,497</b>	<b>74,169</b>	<b>67,518</b>	<b>72,916</b>	<b>82,540</b>
<b>Debt Service Ratio</b>	<b>11.4</b>	<b>12.3</b>	<b>15.7</b>	<b>21.4</b>	<b>19.4</b>	<b>15.4</b>
Public sector	2.8	2.5	2.7	3.3	4.0	4.2
Private sector	8.6	9.8	13.0	18.1	15.4	11.2

Source: Bank of Thailand

1. Short-term external debt is defined as debt that has an original maturity of one year or less.
2. BIBF's debt has been adjusted to original maturity basis since January,1996,consistent with other external debt items.
3. Non-bank debt is based on BOT's external debt survey result as of end 1998. Historical series have been adjusted back to 1995 using flow data obtained through ITRS.
4. Debt statistics released are quarterly series. In the case where quarterly survey result is not yet finalized, monthly series are estimated by applying ITRS's flowdata with survey result of the previous quarter.

**Table 3b**  
**THAILAND: EXTERNAL DEBT**  
(Millions of US\$)

TOTAL DEBT STOCKS (END OF PERIOD)	1999				2000p					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Oct.p	Nov.p	Q4.p
<b>PUBLICSECTOR</b>	<b>21,097</b>	<b>21,520</b>	<b>22,557</b>	<b>23,207</b>	<b>23,479</b>	<b>22,724</b>	<b>22,684</b>	<b>22,468</b>	<b>22,030</b>	<b>21,798</b>
Long-term	20,947	21,390	22,427	23,077	23,349	22,630	22,684	22,459	21,943	21,772
Short-term1	150	130	130	130	130	94	-	9	87	26
<b>PrivateSector</b>	<b>69,941</b>	<b>66,161</b>	<b>62,601</b>	<b>59,624</b>	<b>55,812</b>	<b>52,356</b>	<b>48,630</b>	<b>47,839</b>	<b>47,215</b>	<b>46,431</b>
Long-term	44,368	42,687	40,990	39,795	37,942	35,357	33,436	33,137	32,761	32,154
Short-term	25,573	23,474	21,611	19,829	17,870	16,999	15,194	14,702	14,454	14,277
Commercial Bank	6,070	5,413	5,125	4,596	4,897	5,061	4,607	4,242	3,862	3,921
Long-term	3,757	3,361	3,140	2,967	3,038	2,919	2,844	2,838	2,726	2,580
Short-term	2,313	2,052	1,985	1,629	1,859	2,142	1,763	1,404	1,136	1,341
BIBF2	19,244	16,589	14,252	13,106	11,771	10,704	9,105	8,866	8,699	8,236
Long-term	6,491	5,676	5,045	5,269	4,964	4,681	4,642	4,512	4,539	4,151
Short-term	12,753	10,913	9,207	7,837	6,807	6,023	4,463	4,354	4,160	4,085
Non-Bank 3 E	44,627	44,159	43,224	41,922	39,144	36,591	34,918	34,731	34,654	34,274
Long-term	34,120	33,650	32,805	31,559	29,940	27,757	25,950	25,787	25,496	25,423
Short-term	10,507	10,509	10,419	10,363	9,204	8,834	8,968	8,944	9,158	8,851
<b>Monetary Authorities</b>	<b>11,286</b>	<b>11,903</b>	<b>12,702</b>	<b>12,817</b>	<b>12,730</b>	<b>12,586</b>	<b>12,411</b>	<b>12,332</b>	<b>12,097</b>	<b>12,019</b>
Use of IMF credit	3,123	3,343	3,470	3,431	3,367	3,343	3,245	3,198	3,013	3,062
Others	8,163	8,560	9,232	9,386	9,363	9,243	9,166	9,134	9,084	8,957
<b>Total</b>	<b>102,324</b>	<b>99,584</b>	<b>97,860</b>	<b>95,648</b>	<b>92,021</b>	<b>87,666</b>	<b>83,725</b>	<b>82,639</b>	<b>81,342</b>	<b>80,248</b>
Long-term	76,601	75,980	76,119	75,689	74,021	70,573	68,531	67,928	66,801	65,945
Short-term 1	25,723	23,604	21,741	19,959	18,000	17,093	15,194	14,711	14,541	14,303
<b>Bank foreign assets</b>	<b>14,544</b>	<b>14,982</b>	<b>14,264</b>	<b>13,579</b>	<b>15,232</b>	<b>15,499</b>	<b>15,274</b>	<b>15,030</b>	<b>15,267</b>	<b>15,770</b>
<b>Gross official reserves</b>	<b>29,936</b>	<b>31,434</b>	<b>32,360</b>	<b>34,781</b>	<b>32,284</b>	<b>32,142</b>	<b>32,250</b>	<b>32,245</b>	<b>32,316</b>	<b>32,661</b>
<b>Debt Service Payments</b>	<b>3,762</b>	<b>3,293</b>	<b>4,470</b>	<b>2,609</b>	<b>3,265</b>	<b>2,937</b>	<b>3,609</b>	<b>n.a.</b>	<b>n.a.</b>	<b>2,881</b>
Principal	2,292	2,274	3,382	1,674	2,111	2,034	2,643	n.a.	n.a.	2,080
Interest	1,470	1,019	1,088	935	1,154	903	966	n.a.	n.a.	801

TOTAL DEBT STOCKS (END OF PERIOD)	1999				2000p					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Oct.p	Nov.p	Q4.p
<b>Public sector</b>	<b>683</b>	<b>624</b>	<b>997</b>	<b>572</b>	<b>1,005</b>	<b>677</b>	<b>828</b>	<b>n.a.</b>	<b>n.a.</b>	<b>902</b>
Principal	266	269	608	229	546	262	411	n.a.	n.a.	520
Interest	417	355	389	343	459	415	417	n.a.	n.a.	382
<b>Private sector</b>	<b>3,079</b>	<b>2,669</b>	<b>3,473</b>	<b>2,037</b>	<b>2,260</b>	<b>2,260</b>	<b>2,781</b>	<b>n.a.</b>	<b>n.a.</b>	<b>1,979</b>
Principal	2,026	2,005	2,774	1,445	1,565	1,772	2,232	n.a.	n.a.	1,560
Interest	1,053	664	699	592	695	488	549	n.a.	n.a.	419
<b>Export of goods and services</b>	<b>17,347</b>	<b>17,188</b>	<b>18,484</b>	<b>19,897</b>	<b>20,247</b>	<b>19,289</b>	<b>21,516</b>	<b>n.a.</b>	<b>n.a.</b>	<b>21,488</b>
<b>Debt Service Ratio</b>	<b>21.7</b>	<b>19.2</b>	<b>24.2</b>	<b>13.1</b>	<b>16.1</b>	<b>15.2</b>	<b>16.8</b>	<b>n.a.</b>	<b>n.a.</b>	<b>13.4</b>
Public sector	3.9	3.6	5.4	2.9	4.9	3.5	3.9	n.a.	n.a.	4.2
Private sector	17.8	15.6	18.8	10.2	11.2	11.7	12.9	n.a.	n.a.	9.2

Source: Bank of Thailand

1. Short-term external debt is defined as debt that has an original maturity of one year or less.
2. BIBF's debt has been adjusted to original maturity basis since January,1996,consistent with other external debt items.
3. Non-bank debt is based on BOT's external debt survey result as of end 1998. Historical series have been adjusted back to 1995 using flow data obtained through ITRS.
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