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Effective Exchange Rates and Monetary Policy: The Thai Experience

By

Atchana Waiquamdee, Piti Disyatat and Runchana Pongsaparn

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E-Mail Address: pitid@bot.or.th runchanp@bot.or.th

Effective Exchange Rates and Monetary Policy: The Thai Experience *

Abstract

This paper aims to outline the role that effective exchange rates, both real and nominal, play in Thailand's monetary policy framework. It discusses some of the applications that effective exchange rates have been applied to in practice, highlighting some of the limitations that often arise. Finally, the paper touches on many of the key issues that have to be considered in determining how exchange rate developments should be taken into account in formulating the appropriate stance of monetary policy. In this regard, some evidence on the importance of exchange rate fluctuations for macroeconomic variables and its role in the monetary transmission mechanism in Thailand are presented.

Piti Disyatat, Runchana Pongsaparn and Atchana Waiquamdee

Monetary Policy Group

Bank of Thailand

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1. Introduction

For small and medium sized economies that are very open to trade and capital flows, changes in the value of the exchange rate can have a significant influence on inflation and the real economy. The choice of the exchange rate regime as well as appropriate policies required to back it up are, therefore, central to the successful pursuit of macroeconomic stability and the achievement of sustainable growth. In the aftermath of the Asian crisis, there was initially a general shift away from intermediate exchange rate regimes in favor of 'corner solutions'—a clean float on the one hand, or a rigid peg (such as a currency board) on the other. That said, many countries—including Thailand—have moved towards managed floating which involves occasional intervention by the central bank in the foreign exchange market in response to specific shocks or concerns. In this setting, a set of principles and guidelines is needed to formulate the decision of when and how much to intervene. Effective exchange rates are part of a set of tools that can be used in this respect.

This paper aims to outline the role that effective exchange rates, both real and nominal, play in Thailand's monetary policy framework. It discusses some of the applications that effective exchange rates have been applied to in practice, highlighting some of the limitations that often arise. Finally, the paper touches on many of the key issues that have to be considered in determining how exchange rate developments should be taken into account in formulating the appropriate stance of monetary policy. In this regard, some evidence on the importance of exchange rate fluctuations for macroeconomic variables and its role in the monetary transmission mechanism in Thailand are presented.

2. Evolution of Thailand's Monetary Policy Framework

Historically, the exchange rate has played a prominent role in Thailand's monetary policy framework. In discussing the uses of effective exchange rates in the Thai context, it is therefore useful to begin with a brief account of key developments in Thailand's monetary policy framework.

2.1. Transition to a managed float regime

Prior to 1997, Thailand operated under a fixed exchange rate regime. The mechanics of the regime as well as the value of the peg were adjusted from time to time as detailed in the appendix. Before the deregulation and liberalization in the early 1990's, the pegged exchange rate system against a basket of currencies provided a stable financial environment conducive to economic growth. By facilitating good export performance and encouraging investment, the peg helped Thailand achieve exceptionally high rates of growth for many years. From 1978-1995, the Thai economy recorded an average growth rate over 8 percent with moderate inflation.

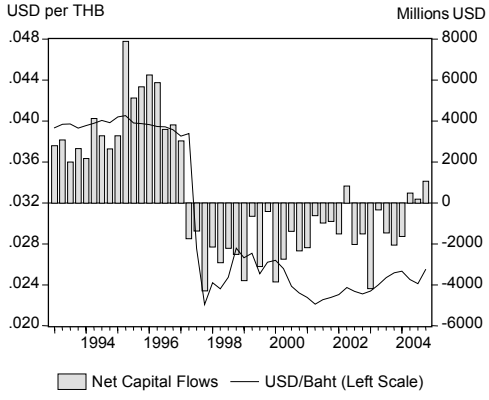
However, the pegged exchange rate regime meant that monetary policy had very limited room to maneuver. It also created a situation where the public became accustomed to a stable exchange rate, leading to a perception of very low exchange rate risk. In this context, the rapid financial deregulation that had begun in earnest after 1987 encouraged

large capital inflows which helped to deepen the financial system but also tempted Thai financial institutions and corporations to overly rely on short-term foreign borrowing. The latter, in turn, was used to build up excessive exposure in several areas, including the real estate and construction sectors, resulting in rapid growth and deteriorating asset quality.

The surge in investment resulted in a debt profile of Thai corporations which was skewed heavily towards short-term foreign currency denominated obligations, exacerbating both the maturity as well as currency mismatch in the balance sheets of the banking and corporate sectors. With real estate and equity prices over-inflated, collateral valuation underlying many debt obligations also became out of line with fundamentals. At the same time, the fixed exchange rate regime meant that the baht appreciated in line with the US dollar, resulting in a real exchange rate that became—in hind sight—increasingly over-valued and large current account deficits in excess of 8 percent of GDP. The economy therefore rested on precarious fundamentals and became vulnerable to shifts in investor's confidence and abrupt reversals in capital inflows.

Against this backdrop, pressure on the baht intensified in December 1996, and the Bank of Thailand was forced to intervene heavily on several occasions. In response to these pressures, informal capital controls were introduced towards the end of May 1997, whereby foreign exchange transactions with and lending of baht to non-residents were limited only to those with genuine underlying commercial or investment activities. This resulted in a 2-tier foreign exchange market with greater segmentation between the onshore and offshore markets. Following the imposition of the controls, liquidity in the latter dried up, driving offshore Thai baht overnight interest rates to very high levels. With no let-up in the pressure on the baht and after a significant draw down of international reserves, the Bank of Thailand abolished the fixed exchange rate and moved to a managed floating system on 2 July 1997. Figure 1 shows the evolution of the USD/Thai baht exchange rate as well as the abrupt reversal in capital flows that accompanied the crisis.

Figure 1: Capital Flows and the Baht



Source: Bank of Thailand

2.2. Thailand's monetary policy after the crisis

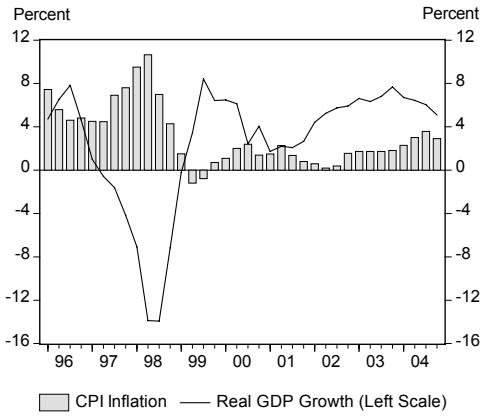
After the floatation of the baht, the immediate macroeconomic policy priority turned towards the restoration of both internal and external stability. With the support of an IMF program, Thailand began to put in place a series of economic adjustments and reforms to deal with the structural problems in the economy and restore investor confidence.

In regards to the monetary policy framework, a new nominal anchor was needed after the fixed exchange rate regime was abandoned and Thailand adopted a monetary targeting regime under an IMF program whereby domestic money supply was targeted to ensure macroeconomic consistency. At the same time, the Bank of Thailand carefully and extensively sought the most appropriate monetary framework for Thailand—one that

would best concentrate market expectations and strengthen the credibility of monetary policy—and formally adopted an inflation target in May 2000. The Bank of Thailand chose to target core inflation, which excludes volatile raw food and energy prices, to remain within the range of 0-3.5 percent. Together with a managed float currency regime, this framework gave the Bank of Thailand sufficient flexibility to respond quickly to fast changing domestic and external developments while ensuring price stability in the long run. The flexibility in the exchange rate helped the economy to adjust and correct previous imbalances. While the baht depreciated steeply initially, the currency stabilized after about 6 months both in terms of value and volatility. The current account, meanwhile, moved from deficit to surplus reflecting debt repayments and reduced imports.

Under the managed float system, a key issue lies in the distinction between the two dimensions of exchange rate variability: short-term volatility on the one hand, and longer-term currency misalignments on the other. In the short term, managing the currency within a band provides the flexibility to prevent volatility in the financial markets from adversely affecting the real economy. Over the longer term, a managed float framework can provide the flexibility for the central bank to prevent currency misalignments by allowing the equilibrium (real) value of the exchange rate to reflect changes in underlying fundamentals, such as a trend increase in the savings rate and higher productivity in the export sector. Thus successful currency regimes should be consistent with secular movements in the exchange rate, in both nominal and real terms, that reflect changes in the underlying fundamentals.

Figure 2: Growth and Inflation



Source: Bank of Thailand

So far, the new monetary policy framework and currency regime have provided for a flexible, credible, and transparent framework for the conduct of monetary policy and have served Thailand well in facilitating the economic recovery. In particular, so long as inflation is within the target range, the Bank of Thailand has the flexibility to vary the balance between growth and inflation as well as internal and external balance. Figure 2 shows that Thailand's inflation and growth performance has generally been quite good with the sharp recovery not accompanied by a corresponding pickup in inflation.

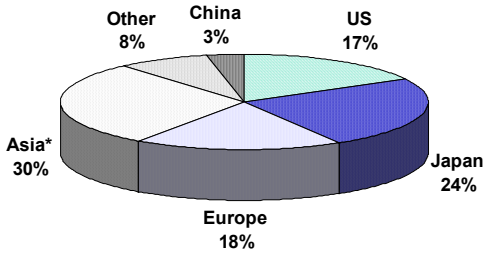
3. Practical Applications of Effective Exchange Rates

The Thai experience has served to highlight the fact that capital flows in emerging markets are often more volatile and driven by sentiment rather than fundamentals, and that such volatility can impose substantial risks on market agents, which they may not be able to sustain or manage. It has also illustrated how exchange rate developments can convey useful information about possible vulnerabilities and policy inconsistencies that may exist. Therefore as an indicator variable, the exchange rate has an important role and should be monitored closely. In this respect, there are a number of ways in which information contained in exchange rates can be utilized in policy formulation. This section discusses some of the main applications of effective exchange rates in the Thai context.

3.1. Assessment of competitiveness

Perhaps the most common and natural application of effective exchange rates is to assess a country's external competitiveness relative to its main trading partners. In this respect, the focus is on a measure of the real effective exchange rate (REER)—the relative price of Thailand's goods and services relative to its trading partners', expressed in a common currency. In constructing the REER, the key issue that arises is the choice of weights and price indices to use. The appropriate weighting scheme depends on the purpose for which the REER is being constructed. For assessing changes in competitiveness, the relative importance of a nation's trading partners is an obvious choice and explains the Bank of Thailand's use of trade weights in constructing the REER. As reflected in Figure 3, much of Thailand's trade is taken up by the US, the European Union, and Japan. Thus movements in Thailand's REER are predominantly determined by price and nominal exchange rate developments of these economies.

Figure 3: Thailand's Main Trading Partners



* Excluding Japan and China
Source: Direction of Trade Statistics 2000, IMF

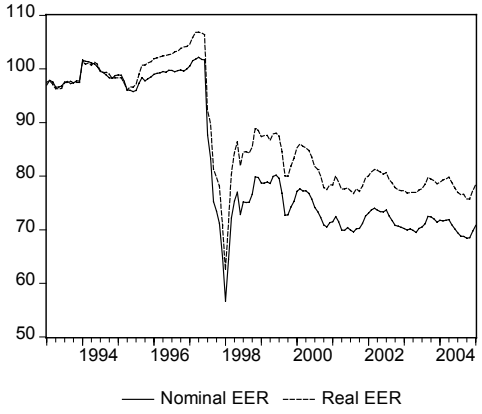
Recently, the Bank of Thailand has revised the construction methodology of the REER to better reflect Thailand's competitiveness by also taking into account so-called third market effects. For example, in assigning the weight for China, apart from taking into account competition between Thai and imported Chinese products in Thailand and competition between Thai exports and products produced and sold in China, it also considers competition between Thai exports and Chinese exports in the third country, for example, the US.[1] Such calculation gives weights that reflect competition in all markets, and could therefore better capture the effects of movements in other currencies on the price competitiveness of Thai products.

With respect to the choice of price indices, the consumer price index (CPI) is generally used since it is timely, similarly constructed across countries, and available for a wide range of countries over a long time span. Because they capture the relative costs of a broad basket of goods and services across countries, CPI-based REER measures provide a good reflection of the purchasing power of the domestic currency. However, the fact that CPI baskets contain a significant non-traded component makes CPI-based REER less than ideal for assessing competitiveness. A measure based on the price of traded goods would be more appropriate in this respect. Thus REERs are often constructed using the export deflator or the producer price index. Alternatively, unit labor costs (total wage costs divided by total output) are sometimes used. This would give an indication of cost competitiveness of the country relative to others. Nevertheless, the heavy reliance on CPI-based measures reflects the fact that it is often difficult to obtain data on these alternative price indices on a comparable basis across countries over a reasonable length of time. The Bank of Thailand's REER index is constructed using CPI price indices.

[1] A more detailed discussion can be found in the Bank of Thailand (2005), as well as Leahy (1998).

Figure 4 shows the evolution of the nominal and real effective exchange rates in Thailand since 1993.[2] Thailand's REER remained relatively stable for much of the first half of the 1990s but appreciated steadily between 1995 and 1997, a period that coincided with a significant deterioration of the current account deficit. The dramatic decline in the baht following the 1997 crisis brought about a sharp depreciation of the REER. Despite the subsequent recovery, the real exchange rate in Thailand remains well below pre-1997 levels, reflecting improved competitiveness and is one of the factors behind the recovery in Thai exports and the return to current account surplus. Note that the appreciation of the REER before the crisis was driven more by relatively high inflation rates in Thailand compared to that in trading partner countries, while the sharp depreciation during the crisis is mostly the result of the abrupt fall in the nominal value of the baht. Thus the notion of competitiveness as measured by the REER can be influenced by both changes in the nominal exchange rate and domestic price levels.

Figure 4: Effective Exchange Rates



Source: Bank of Thailand

It should be kept in mind that the REER captures, albeit imperfectly, only price competitiveness and does so at the national level. As an aggregate measure, it masks information on competitiveness at the industry and firm levels, where the issue is more meaningful but information harder to obtain. It also says nothing about other qualitative aspects of competitiveness such as the quality of the good exported and the level of after sales support, which are important determinants of demand. As such, the REER may not be able to adequately capture competitiveness for goods and services that are sufficiently differentiated and do not compete purely on price, but is more appropriate for commodity-type goods. Importantly, a rise in the REER is not always a bad thing. Rapid productivity improvements in the tradable sector, for example, can lead to real appreciations (as they did in Japan in the latter half of the 1900s) that are associated with higher per capita income levels. Despite these drawbacks, the REER remains one of the most important and timely indicators of competitiveness, and efforts to improve its construction and utilization in analyzing the economy at the Bank of Thailand are ongoing.

3.2. Assessing the degree of possible exchange rate misalignment

In conducting monetary policy under flexible exchange rates, estimates of the equilibrium real exchange rate are sometimes useful in helping policymakers to assess the prevailing exchange rate and make judgments about its likely future direction. If an exchange rate movement or trend is a cause for concern, further analysis on the

[2] An increase (decrease) in the index indicated an appreciation (depreciation) in the Thai baht vis-à-vis currencies of Thai competitors.

underlying factors driving the exchange rate can be conducted to help determine whether such movements should be resisted or not.[3] Forming an estimate of equilibrium real exchange rates requires that a number of issues be confronted, not least the definition of the equilibrium real exchange rate and the estimation techniques to be used. A comprehensive survey can be found in Driver and Westaway (2001) where it is stressed that the appropriate measure of equilibrium real exchange rates very much depends on the specific question which the analysis is seeking to answer. Hinkle and Montiel (1999) also discusses the key issues involved in estimating equilibrium exchange rates in the context of developing countries.

Much of the differences in equilibrium exchange rate concepts arise from the varying horizons over which the assessment is focusing on and the perceived determinants of exchange rates at that horizon. In the short-run, the main determinants of exchange rates appear to be expectations, news, and sentiment. Over the medium-term, macroeconomic exchange rate models based on standard fundamentals such as relative money supplies, interest rates, government spending, current account balance, and output growth do appear to be able to explain qualitatively some of the exchange rate movements. In the long-run, once shocks (monetary and real) have dissipated, nominal rigidities washed away, and re-allocation of factors of production completed, exchange rates movements appear consistent with PPP adjusted for productivity differentials.

One potential use of estimated equilibrium exchange rates is to provide guidance for reasonable ranges for the real exchange rate from a medium-term perspective. Such an estimate helps to point towards the likely path that the exchange rate is likely to take as the economy converges to its medium-term equilibrium. This is essentially the macroeconomic balance approach which has been used extensively by the International Monetary Fund.[4] It is based on a common definition of the equilibrium real exchange rate as one that is consistent with a state of internal and external balance. Internal balance means that all available factors of production, such as labor and capital, are being fully utilized and wage and price inflation is stable. External balance can be characterized as a state of stable net foreign assets.

The framework recognizes that estimates of equilibrium exchange rates are inherently imprecise and also stresses the fact that a deviation of prevailing exchange rates from their medium-term equilibrium does not automatically imply that markets are wrong. This follows since the framework gives an estimate of what the exchange rate can be reasonably expected to be when the economy is in both internal and external balance (that is, current account at a sustainable level and domestic as well as trading partners' output at potential). Thus the fact that the current exchange rate is weaker than its estimated medium-term equilibrium value, for example, could simply be a reflection of the fact that the economy is still operating below potential. The difference can be interpreted as indicating a plausible path for the real exchange rate going forward as the economy moves towards equilibrium in the medium-term.

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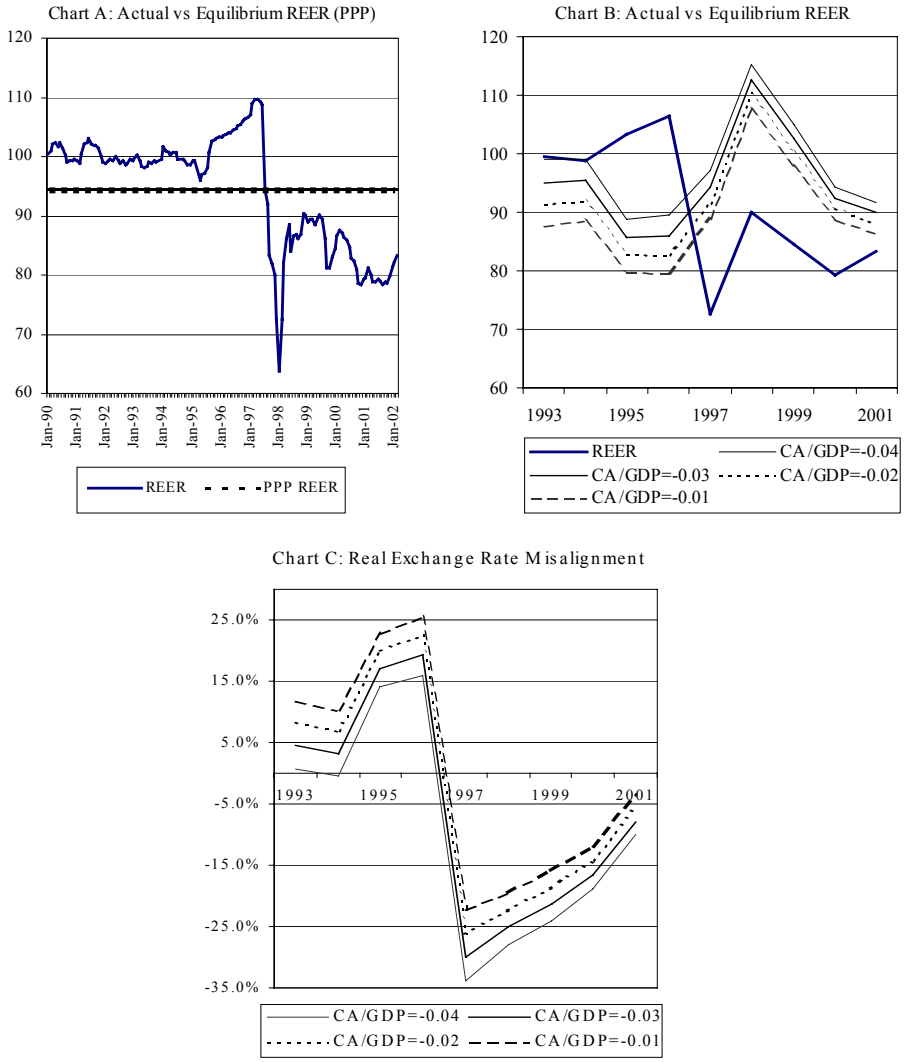
[3] Note that the notion of equilibrium can only be applied to real exchange rates. No such counterpart exists for nominal exchange rates.

[4] See Isard and Faruqee (1998) for details.

Figure 5: Equilibrium Exchange Rate



REER : actual REER

PPP REER : 10-year historical average of REER

(as a proxy for equilibrium exchange rate consistent with PPP)

CA/GDP = x : equilibrium exchange rate under the assumption that at the medium term current account balnce to GDP equals x

Source: Bank of Thailand

For illustrative purposes, an application of the framework to Thailand focusing on the period around the 1997 crisis is presented in Figure 5. As a rough and ready benchmark, Chart A of Figure 5 shows the real exchange rate level compared to it's 10-year historical average which can be thought of as an extremely crude approximation of the equilibrium exchange rate based on purchasing power parity. Chart B in the figure shows the estimated equilibrium exchange rate using the macroeconomic balance approach under alternative assumptions regarding the medium-term current account deficit level. The latter reflects the assumption that developing countries are expected to be net importers of capital as they embark on a catch-up process of growth.

While Chart B illustrates that the sharp depreciation of the Thai baht in 1997 was not inconsistent with estimates of equilibrium real exchange rates, it also suggests that the depreciation appears to have overshot its equilibrium by a sizable margin. In this respect, the appreciation of the baht in the past few years can be seen as partly a correction of the latter.

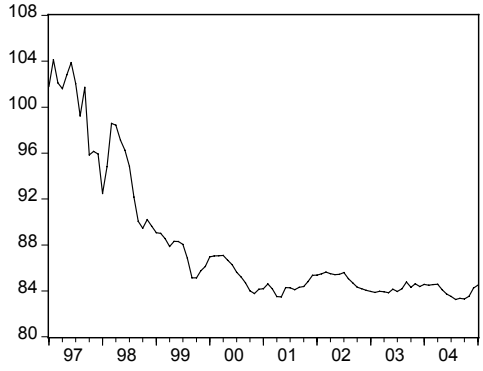
In this spirit, Lim (2000) also analyses the difference between the evolution of the actual real exchange rate and the hypothetical equilibrium rate—estimated using single equation reduced-form techniques—to assess the extent to which the market was factoring in an expected depreciation of the Thai baht. Using only information prior to the July 1997 depreciation, the results pointed towards an increasing degree of misalignment between the actual exchange rate and that expected by the market so that the subsequent depreciation was not entirely surprising.

3.3. Evaluating monetary and financial conditions

Another frequent use of effective exchange rates is in assessing monetary conditions to help formulate the appropriate monetary policy stance. In this respect, the Bank of Thailand has utilized a monetary conditions index (MCI), which is a weighted average of the short-term interest rate and the nominal effective exchange rate. The central idea behind an MCI is that both interest rates and exchange rates may have potentially offsetting impact on inflation. Thus when the exchange rate depreciates, for example, this usually entails higher future inflation which can be offset by an increase in interest rates. As discussed further below, however, the offsetting effects of interest rates and exchange rates on inflation very much depend on the nature of the shocks to exchange rates.

The MCI is a useful summary statistic of monetary conditions because it captures both the interest rate and the exchange rate channels of the monetary policy transmission mechanism, and has been variously used by central banks and private institutions. Figure 6 shows the evolution of Thailand's MCI and indicates the sharp tightening of monetary conditions that occurred during the 1997 crisis due to a dramatic hike in the short-term interest rate which has subsequently been reversed. However, the MCI fails to account for the effects of two important asset prices on the economy, namely house prices and stock prices. Changes in these prices lead to changes in household and corporate wealth, thereby leading to changes in economic activities. As a result, a broader index that accounts for these asset prices is a more accurate measure of overall conditions in the economy. One such measure is the financial conditions index (FCI), which is a weighted average of the short-term interest rate, the exchange rate, house prices, and stock prices. Thus in addition to the interest rate and the exchange rate channels of the monetary policy transmission, the FCI additionally captures household and firm wealth effects through house prices and stock prices. The Bank of Thailand is currently

Figure 6: Monetary Conditions Index



Source: Bank of Thailand

developing an FCI with weights based on VAR generalized impulse responses. Preliminary work indicates that such a measure can be a useful summary statistic for financial factors that affect future core inflation and also represents a more accurate measure of overall conditions of the economy.

In making use of such indices, one must be fully aware of the shortcomings inherent in their construction that limit their practical use. In this respect, it should be kept in mind that at least two countries, namely Canada and New Zealand, have both tried to use some variant of the MCI in setting policy and subsequently abandoned or greatly de-emphasized their role. The greatest limitation of an MCI is that it does not reflect the underlying forces that caused it to move. This is especially key when it comes to exchange rate movements. As highlighted by Mishkin (2000), the source of the shock driving exchange rate movements is crucial in determining whether they should be offset by interest rates or not. For example, if an exchange rate depreciation is caused by a real shock such as a negative terms of trade shock (a fall in commodity prices of a commodity exporting country), the depreciation would be associated with a negative demand shock which should be offset by more *expansionary* policy. The fall in the exchange rate provides this automatically, reinforcing the role of flexible exchange rates in acting as a shock absorber. However, through the lens of an MCI, the suggested policy response would be to *tighten* interest rates to keep monetary conditions unchanged. This is likely to exacerbate the negative demand shock and lead to undesirable outcomes as happened in New Zealand in the late 1990s.

Intuitively, the inherent problem with basing policy on an MCI is that it is built upon a partial equilibrium argument. It is true that an exchange rate depreciation will be expansionary on the economy so that *holding everything else fixed*, interest rates should be raised. However, in practice things rarely remain the same and a depreciation of the exchange rate is usually a reflection of some other development in the economy which is not taken into account in the MCI. The MCI should really be viewed as a rough indicator of the monetary policy stance for the average type of shocks hitting the exchange rate during the period over which it was constructed. If the types of shocks that occur has changed over time, the MCI may prove to be a misleading guide.

3.4. Guide for intervention operation

Under a managed float exchange rate system, the Bank of Thailand sometimes conducts intervention operations to counter what it sees as excessive and/or unwarranted exchange rate volatility. In recognition of the fact that the flexibility accorded by the managed float system has advantages in terms of facilitating adjustment to shocks as well as accommodating longer-term structural changes in the economy—including the encouragement of more efficient production techniques to compete on the world market and improvements in financial markets that enhance risk management, the primary aim of foreign exchange intervention has been to smooth out excessive day-to-day variability of the baht while accommodating fundamental trends. In doing so, effective exchange rates are sometimes used as a guide in determining when and how much to intervene.

Since the focus of intervention is often very short-term, the effective exchange rate used in this regard may not necessarily be constructed based on trade weights. Various weighting schemes have been employed depending on the context of the intervention.

These include, for example, effective exchange rates with weights designed to capture the movement of the baht relative to regional currencies only, as well as a set of 'relevant' currencies that have displayed high co-movement with the baht in the past. One useful piece of information conveyed by effective exchange rates in this regard is the extent to which a given bilateral movement of the baht against a major currency, such as the US dollar, is also shared by other countries in the region or is more unilateral. Indeed, whether a change in the value of the baht reflects movements in major currencies or developments unique to Thailand has an important bearing on the appropriate policy response.

In conducting its intervention operations, the Bank of Thailand is fully aware that the evidence on its effectiveness in the literature has been weak. While some studies on emerging markets do indeed point to a greater degree of effectiveness, it is hard to draw firm conclusions given the relatively limited literature focused on these countries. Combining the available evidence with that from advanced economies, the tentative conclusion points towards the existence of a high-frequency—daily or intradaily—connection between foreign exchange market intervention and both the level and volatility of exchange rates. There does not appear to be a reliable connection between official transactions and fundamental determinants of exchange rates that would allow central banks to determine exchange rates *independently* of monetary policy for sustained periods.[5]

From a policy perspective, the empirical evidence suggests that intervention may be useful in addressing undesired short-run exchange rate fluctuations stemming from temporary shocks but cannot substitute for monetary policy in dealing with underlying fundamental inconsistencies in macro policy that may arise from time to time. Indeed, protracted one-sided interventions are often a reflection of an inconsistency between the desired path of exchange rates and underlying fundamentals, including the monetary policy stance. The issue of how to take into account exchange rate developments in the monetary policy framework is analyzed in the next section.

4. Monetary Policy and Exchange Rate Developments

In light of the issues discussed above, it should be clear that the way in which exchange rate fluctuations should be figured into the setting of monetary policy very much depends on the particular context of each country and also the underlying shocks hitting the economy. From the perspective of an inflation targeting country, a key dimension in this respect is the extent to which fluctuations in the exchange rate are transmitted to prices in Thailand. Moreover, in calibrating the appropriate monetary response, it is also useful to have some bearing on how the real economy is influenced by exchange rate movements that accompany a given policy action. Accordingly, this section briefly reviews some of the Thai evidence on the degree of exchange rate pass-through and the exchange rate channel of monetary policy transmission, before ending with a discussion of how exchange rate developments feed into the formation of policy in an inflation targeting framework.

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[5] See Disyatat and Galati (2005) for a comprehensive review of the literature in the emerging market context.

4.1. Exchange Rates in Price Dynamics and the Transmission Mechanism

A primary factor that determines how much weight exchange rates are accorded in monetary policy is the impact of exchange rate movements on domestic inflation. Countries that experience high pass-through typically tend to put greater emphasis on the exchange rate in their monetary policy framework. In the case of Thailand, casual observation suggests that exchange rate pass-through is not all that strong. During the 1997 crisis, for example, the baht depreciated sharply by nearly 25 per cent from an average of 31.4 baht per US dollar in 1997 to 41.4 baht in 1998, while inflation rose from an average of 5.6 percent to 8.1 per cent over the same period, an effect that was surprisingly little and short-lived. Indeed, since Thailand opted for a flexible exchange rate in July 1997, consumer prices appear to have been largely insensitive to large fluctuations in the baht.

A detailed study of the degree of exchange rate pass-through in Thailand has been conducted by Buddhari and Chensavasdijai (2003) who found that the degree of pass-through varied significantly depending on the price indices used. Table 1, which summarizes the results, shows that at the end of the first year, while the pass-through elasticity for producer prices is relatively high at 64 per cent, it is only 23 per cent and 15 per cent for headline and core CPI, respectively. After two years, the estimated pass-through for headline and core CPI rises to 34 per cent and 26 per cent, respectively, implying that more than half of the long-run pass-through to consumer prices occurs within the first year. It is interesting to note that the pass-through elasticity declines at each stage along the pricing chain, so that shocks to the exchange rate have the biggest impact on import prices, followed by producer prices and consumer prices. For comparison purposes, Table 2 places the degree of pass-through in Thailand in an international context.

Table 1: Exchange rate pass-through coefficients

	Response horizon (Quarters)		
	1	**4**	**8**
Local Currency Import Price	0.79	1.86	1.79
Producer Price Index	0.19	0.64	0.87
Headline CPI	0.06	0.23	0.34
Core CPI	0.04	0.15	0.26

Source: Buddhari and Chensavasdijai (2003)

Overall, the main findings is that while import prices adjust rapidly and completely to variations in the exchange rate, domestic consumer prices do not respond fully even in the long run. The degree of pass-through also tends to vary across sectors, reflecting differences in the share of import content. As one might expect, the pass-through is stronger for tradables than non-tradables because the former generally has higher import content. An important policy implication is that the low pass-through has provided more room for maneuver in monetary policy. Instead of focusing on the direct inflationary impact of exchange rate fluctuations, policymakers can place greater emphasis on the indirect effects of such shocks on the economy. Moreover, the limited effects of exchange rate variations mean that monetary policy can concentrate more on price stability and less on exchange rate stability.

Table 2: Exchange rate pass-through across countries

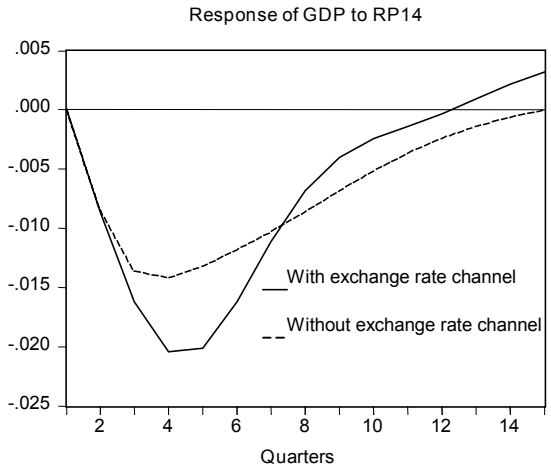
	Response horizon (Quarters)		
	1	**4**	**8**
Philippines	0.02	0.34	0.72
Thailand	0.06	0.23	0.34
United Kingdom	0.00	0.11	0.25
Korea	0.04	0.15	0.16
Japan	-0.02	-0.01	0.07
Euro area	0.01	-0.02	-0.15
Singapore	-0.01	-0.14	-0.49
Taiwan	-0.10	-0.26	-0.70

Source: Buddhari and Chensavasdijai (2003)

The appropriate policy reaction to exchange rate movements also depends on the strength of the exchange rate channel in the transmission mechanism which relies on the fact that a nominal depreciation brought on by monetary easing, say, combined with sticky prices, results in a depreciation of the real exchange rate in the short-run and thus higher net exports. The strength of the exchange rate channel depends on the responsiveness of the exchange rate to monetary shocks, the degree of openness of the economy, and the sensitivity of net exports to exchange rate variations. However, substantial unanticipated exchange rate depreciations can actually reduce output when a significant share of debt in the economy is foreign currency denominated.

Disyatat and Vongsinsirikul (2003) examined the role of exchange rates in the Thai monetary transmission mechanism using a vector auto-regression (VAR) model. Figure 7 shows the response of output to innovations in the Bank of Thailand's policy rate (RP14) with and without the real exchange rate exogenized. With the exchange rate channel blocked off, the output response is dampened somewhat with the trough output being around 0.5 percent of baseline higher than the case where the exchange rate channel is allowed to operate. This suggests that the exchange rate channel is not very strong in Thailand. Given that the study was conducted over 1993-2001 which included a substantial period when the Thai baht was fixed, this result is not entirely surprising. Thus even though real exchange rates can still vary under a pegged regime, the finding of a weak exchange rate channel suggests that the effects are likely to be muted given that prices adjust slowly.

Figure 7: The Exchange Rate Channel



Source: Disyatat and Vongsinsirikul (2003)

Since *a priori* one would expect the move from a fixed to floating exchange rate regime to enhance the importance of the exchange rate channel for the simple reason that nominal exchange rates are not allowed to fluctuate in the former case, the paper also examined results using only post-crisis data. While the estimates were not very precise given the relatively small number of post-crisis observations, they do suggest that the exclusion of data from the fixed exchange rate period tends to increase the significance of the exchange rate in propagating monetary shocks. Thus the exchange rate channel is likely to become more prominent as the flexible exchange rate regime becomes more entrenched.

4.2. The Role of the Exchange Rate Under Inflation Targeting

What determines the weight of the exchange rate in the monetary policy framework? The paper has so far highlighted several key factors including the impact of exchange rate movements on domestic inflation and economic activity, the source of shocks, the volatility of capital flows, and the strength of the exchange rate channel in the monetary transmission mechanism. In pursuing monetary policy under an inflation targeting framework, the Bank of Thailand has had to continually balance not only these considerations, but also how a response to the exchange rate may affect public perception of the central bank's policy objectives.

With exchange rate fluctuations receiving a great deal of attention in the press and among policymakers, there is always the danger that monetary policy may put too much emphasis on them. The first problem is that an overly heavy emphasis on limiting exchange rate movements may lead to public perception that the exchange rate is the nominal anchor that takes precedence over the inflation target. This would undermine credibility and transparency of the inflation targeting framework. The second problem as discussed in section 3.3 above is that a focus on limiting exchange rate fluctuations can lead to wrong policy decisions since the underlying source of the shock may be overlooked or misidentified. Indeed, in a majority of cases, exchange rate movements are desirable in that they help to offset the impact of and cushion the economy from the impact of shocks. This is precisely one of the key arguments in favor of a flexible exchange rate regime. In a way, by targeting 'core' inflation, which is less sensitive to movements in the exchange rate than headline inflation, the risk of tying policy too closely to the exchange rate is toned down considerably.

Importantly though, a focus on achieving an inflation target does not imply that the central bank pays no attention to the exchange rate. Inflation targeting is not inconsistent with managing excessive exchange rate fluctuations from time to time. Movements in the latter constitute an important channel of the transmission mechanism particularly in small open economies such as Thailand. Thus the Bank of Thailand closely monitors exchange rate developments and factors their impact on the economy in setting its policy stance. That said, the conceptual role of exchange rates in monetary policy decisions is not much different to that of other asset prices. The Bank of Thailand determines the appropriate response to a given movement in exchange rate on the basis of how it may impact inflation and output currently and into the future. Depending on the nature of shocks and initial conditions, the policy response may be different. Such a rationale is also used in communicating its policy and discussing the relevance of a given exchange rate movement with the public.

5. Conclusion

For a broad range of developing and transition countries, exchange rates are typically very important macroeconomic variables, and increasingly so due to trends towards greater integration of these countries in the global economic system. The choice of a particular exchange rate regime, however, depends on the specific situation and economic characteristics of the country in question. Although adhering to a fixed exchange rate regime can be a successful strategy for controlling inflation, the Asian crisis has illustrated how dangerous this strategy can be for an emerging market country with a large amount of foreign-denominated debt and a fragile banking system. A flexible exchange rate regime has the advantage that movements in the exchange rate are much less nonlinear than in a pegged exchange rate regime. Indeed, the daily fluctuations in the exchange rate in a flexible exchange rate regime have the advantage of making clear to private firms, banks, and governments that there is substantial risk involved in issuing liabilities denominated in foreign currencies.

In making the transition from fix to floating, the Thai experience has illustrated how effective exchange rates can play an important and useful role in conveying key summary information to policymakers. These include developments in the degree of external competitiveness, possible exchange rate misalignment, and overall monetary conditions. While in hindsight, it may be clear that a careful examination of these indicators would have raised questions about the sustainability of Thailand's peg before the 1997 devaluation, they provided no indication at all about the *timing* of the adjustment. The economic and political trade-offs facing policymakers at the time were enormously complex, not least because of the tremendous amount of uncertainty surrounding market perception of the baht's direction. Thus, in practical terms, the link between extracting information about exchange rates and translating them into policy action is very hard to establish. If anything, the most valuable lesson from Thailand's experience is that a fixed exchange rate regime can ultimately be successful if and only if it is accompanied by a clear and well thought-out exit strategy.

A move toward greater exchange rate flexibility, however, should not be regarded as a prescription for averting a financial crisis. Attention has to be paid to ensuring the consistency of the overall policy framework in order to maintain confidence and avoid excessive currency depreciation; this includes the establishment of an alternative monetary anchor or inflation target and a preemptive strengthening of the banking system. In order to support and sustain the evolving rapid transformation in international trade and payments, exchange rate regimes in small open emerging market economies should be robust, flexible and credible. It should be capable of handling large and frequent fluctuations in currency movements. It should provide for adequate financing of temporary imbalances in the overall balance of payments and reflect the country's evolving need for foreign capital. But in the end, to enjoy the full benefits of access to global markets while reducing the risk of disruption, the appropriate currency regime must be supported by consistent domestic policies, a sound financial system, the removal of economic distortions, as well as progress in transparency and disclosure on the part of governments and financial institutions.

Appendix 1

Developments of Thailand's Exchange Rate System		
Periods	**Baht Values**	**Exchange Rate System**
Before World War II	11 baht per pound	Fixed exchange rate with the pound-sterling. Minimal capital controls.
During World War II		Exchange Control Act 1942. Thailand was forced to trade with Japan only.
1947	40 baht per pound 9.93 baht per US dollar	Multiple Exchange Rate. The market rates were usually much higher than the official rates.
1949	35 baht per pound 12 baht per US dollar	Thailand became a member of the IMF. Reserve assets were re-evaluated with the official rate.
1955	56 baht per pound 20 baht per US dollar	Establishment of the Exchange Equalization Fund (EEF). The multiple exchange rate system was abolished due to inflation and trade deficit problems.
1955-1963	20 baht per US dollar	The **official rate**, used in evaluating the reserve assets, was not related to the market rate.
October 1963	20.80 baht per US dollar 0.0427245 grams of gold per baht	**Par Value under the Bretton Woods system**. Exchange rate movements were controlled within the band of 1 percent of the par value (20.59 – 21.00 baht per US dollar).
1973-1978	20 baht per US dollar	**Revaluation** of the baht to 20 baht per US dollar. Exchange rate movements were allowed within a wider band of 2.25 percent of the par value (19.55 – 20.45 baht per US dollar).
1978-1981		**"Daily Fixing"** with the commercial banks. Changed from the Par Value System to the **Basket-of-Currencies** system as from 1 November 1978.
1981-1984	23 baht per US dollar	The **baht devaluation** of 8.7 percent relative to the US dollar on 15 July 1981. The EEF abolished the Daily-Fixing system and became the sole agent determining the exchange rates.
2 November 1984		Change of the exchange rate system back to the **Basket of Currencies**. The exchange rate of the baht vis-à-vis the US dollar was announced daily by the EEF.
5 November 1984	27 baht per US dollar	The baht was devalued by 15 percent relative to the US dollar in order to mitigate the problem of trade deficits.
30 June 1997	25.79 baht per US	The last day of the Basket-of-Currencies system.

Developments of Thailand's Exchange Rate System		
Periods	**Baht Values**	**Exchange Rate System**
	dollar	
2 July 1997	27.383 baht per US dollar	Changed to the **managed float** system. The baht depreciated by 5.8 percent relative to the US dollar.

Source: Bank of Thailand Economic Focus. Volume 2, Number 2, April-June 1998.

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