On a comprehensive case for Managed Floating in Thailand: How much “managed” and how much “floating”?

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November 2003

The views expressed in this paper are those of the authors and do not necessarily represent those of the Bank of Thailand.

Abstract
This paper searches for an appropriate exchange rate regime and provide a broad guideline for exchange rate management for Thailand in the medium term. An appropriate exchange rate regime is defined to be a credible regime that is most desirable. Our findings are in agreement with the flexible exchange rate view, but not freely floating. Flexible exchange rate is associated with higher long-term growth and lower inflation on average. We find that a Fix-Flex hybrid is desirable for Thailand from the point of view of shock absorbance. The vital consideration for credibility in the medium run decides in favor of leaving much of the decisions to the market, that is more Flex than Fix. Specifically, we advocate a Fix-Flex hybrid along the line of the Adjustable Basket and Band (ABB) plus inflation targeting. This type of managed float entails a trade-based basket design that allows the nominal effective exchange rate (NEER) to float within a relatively wide and adjustable band that incorporates an allowance for productivity improvement and inflation differential over time, all unannounced, combined with inflation targeting as anchor for nominal expectations.

* The author is indebted to Titanun Mallikamas, Kobsak Pootrakul, Piti Disyatat, Jirathep Serivongse Na Ayudhya and other participants at internal workshops on exchange rate and capital flow policy at the Monetary Policy Group for comments and criticisms. The views expressed herein are those of the author’s and not necessarily those of the Bank of Thailand.
1. Introduction

The debate about whether countries should fix their nominal exchange rates (Fix, for short) or adopt a flexible regime (Flex) is an age-old one. Soon after the currency crises erupted in Southeast Asia and inflamed into full-fledged financial crises the verdict was overwhelmingly in favor of Flex largely since Fix had been a predominant regime of choice. Nevertheless, the advocates of Fix are relentless and continue to argue that there is a need to recognize the difference between good and bad Fix, where a good Fix is taken to mean full dollarization, for instance (see Calvo (1999)). In any case, Fischer (1999) calls for a truce and documents that the polar regimes are more appropriate than their intermediate counterparts.

This paper searches for an appropriate exchange rate regime and provide a broad guideline for exchange rate management for Thailand in the medium term. An exchange rate regime means the entire gamut of monetary and exchange rate policy including other supporting macroeconomic and capital control policies.

An appropriate exchange rate regime is defined to be a credible regime that is most desirable. In this paper, the term Fix and Flex means “near and including the extreme of hard fix” and “near and including the extreme of freely floating”. The terms “Fix-Flex hybrid” and “intermediate regime” are used interchangeably.

Our criteria for evaluation of alternative exchange rate regimes are (1) Long-term growth and inflation performance; (2) Ability to absorb shocks that buffet the economy; and (3) Regime feasibility over time.

We first evaluate regimes according to desirability criteria (1) and (2), assuming that the regime is feasible over time. In the wake of the recent crises, crucial issues have emerged that require policymakers’ attention in deciding which regime is appropriate for their economy. These issues have largely been ignored by the established literature. They are (a) volatility of capital flows and the real exchange rate, (b) currency mismatch and financial fragility, (c) the functioning of the credit channel in case of systemic bank runs or significant and rapid disintermediation, (d) domestic output and factor price flexibility and pricing behavior of domestic and foreign firms, and (e) the supporting macroeconomic policies that can help offset negative effects from alternative exchange rate regimes.

Then we consider criterion (3), the issue of regime credibility, or equivalently, feasibility over time. Credibility is a dynamic issue; a long view needs to be taken. The last part will include coordination between monetary authorities or governments in exchange rate management and the costliness of the loss of monetary policy independence under the case of Fix from observations regarding business cycle comovements.

The focus is on three types of regimes: (A) Hard fix, (B) Freely floating with inflation targeting, and (C) Managed float (specifically Basket, Band with adjustable parity) plus inflation targeting. Other arrangements typically fall in between and will not be explicitly analyzed.
Our findings are in agreement with the flexible exchange rate view, but not freely floating. Flexible exchange rate is associated with higher long-term growth and lower inflation on average. We find that a Fix-Flex hybrid is desirable for Thailand from the point of view of shock absorbance. The vital consideration for credibility in the medium run decides in favor of leaving much of the decisions to the market, that is more Flex than Fix.

Specifically, we recommend a Fix-Flex hybrid along the line of the Band, Basket and Crawl (BBC) plus inflation targeting. This type of managed float entails a trade-based basket design that allows the nominal effective exchange rate (NEER) to float within a relatively wide and adjustable band that incorporates an allowance for productivity improvement and inflation differential over time, all unannounced, combined with inflation targeting as anchor for nominal expectations.

The paper proceeds as follows: Section 2 defines the goals of exchange rate management. Section 3 discusses why markets for foreign exchanges may be different from those for other commodities and that laissez faire may not be the best option at all time. Sections 4 and 5 present a detailed analysis on the appropriate exchange rate regime based on long-term growth and inflation performance and ability to absorb various shocks, respectively. The analysis of credibility of regimes proceeds into Section 6. Section 7 discusses appropriate exchange rate regime options for Thailand in the near to medium term with a focus on the most appropriate option of a wide-band BBC plus inflation targeting. Section 8 concludes and makes suggestions for further research and consideration on future directions of exchange rate policy in the longer run.

2. Exchange rate management and long-term growth

The ultimate goal of exchange rate management is to assist in the making of a stable macroeconomic environment that is widely agreed to be conducive to a sustained improvement in the standard of living in an economy. The term “sustained” necessarily implies a long-term consideration while “stable” implies both short- and long-term concerns. Stability also deals with the ability of the macroeconomic regimes -- the exchange rate regime being a prominent one -- to absorb various shocks that buffet the economic system.¹

Standard growth theory reasons that long-term economic growth rate depends on the rate of technological change or total factor productivity (TFP) growth. The literature on competitiveness of nations is overwhelmingly supportive of the implication of this standard theory; that is, the fundamental question is how to obtain higher TFP growth. Standard growth theory and evidence make no mention of the role of the nominal exchange rate as a determinant of underlying economic growth. For example, a relatively weak nominal exchange rate may lead to short-term export price advantage, but it has no bearing on growth in the long or even medium run. Price competition via nominal exchange rate devaluations, for instance, will not necessarily lead to higher productivity and thus to higher long-term growth. The more permanent effect is widely understood to come from technological and institutional improvements or higher TFP levels.

¹ In this narrow sense, one may equate the term “stability” with “resiliency”.

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Suggestions on how to create sustainable growth in TFP mostly center around human capital building, openness to trade and physical investment, innovation and adoption of more efficient technology, among other things. In essence, sustainable economic growth is about designing an institution or economic arrangement that will lead to a continuing increase in productivity and the accumulation of human and physical capital. Insofar as the choice of a preferred exchange rate regime is concerned, the extent to which it will prove beneficial to long-term growth is in its facilitation of these mechanisms.

Most economists agree that while stable macroeconomic environment is not sufficient for improving the rate of output growth, growth cannot be sustained without it (see Ahuja and Moenjak (2002)). With regard to the behavior of the exchange rate, no reliable economic research at present can be cited to support the specific contributing role of its constancy to long-term growth. In short, only when the relative constancy of the exchange rate has any bearing on a stable macroeconomic environment will it have known measurable impact on economic growth on average. For example, most fixed exchange rate regimes adopted are more concerned with this issue in the form of disinflation or inflation expectation anchoring to obtain stable macroeconomic environment than with shock absorbance per se.

We shall argue in this paper that fixing or floating is not a simple dichotomy and hence not a panacea for growth and stability. Accompanying these regimes are other institutional arrangements with regard to capital controls or restrictions of asset holding, credibility of monetary policy, and fiscal discipline, to name only a few important ones.

Domestic monetary institution is a key determinant of a stable macroeconomic environment and is not fundamentally in discord with either a good fix or a good flexible regime. Indeed, the choice of an exchange rate regime depends both on the desirability and the credibility of the regime under a given domestic monetary and politico-economic institutions.

3. A case against freely floating

A large majority of economists agree that some or the entire task of determining exchange rates should be left to private markets. Any disagreement is centered on whether some government intervention is desirable in order to keep actual exchange rates close to the equilibrium exchange rates as they are determined by economic fundamentals.

Interventionists claim that exchange rates are routinely prevented from attaining their equilibrium values, even approximately, from the force of market speculation. Noninterventionists’s argument centers on the question of whether the markets for foreign exchanges are different from markets for other things.

Speculation arises whenever views about future prices affect current demands and supplies and hence, current prices. Can it be established that speculation is more rife in the markets for foreign exchange than in other markets? Does the desirability of government intervention depend on the amount of speculation? Even if that were established, the noninterventionist would maintain that central bank officers are not
better positioned than market participants to decide where the equilibrium or fundamental exchange rates are. The validity of this argument depends only on a general qualitative assumption that there is no difference between fiat currencies and other things, and therefore no reason against letting the private markets decide their relative prices.

We intend to argue that fiat currencies are special objects, unlike other assets. This uniqueness is the key to the understanding of why the markets for foreign exchange are different from those for other goods and assets like fruits or shares in firms.

The nature of fiat currencies is unique. The three distinguishing general properties of fiat currencies are: (1) It is intrinsically worthless and useless; (2) It is unbacked; and, (3) Its cost of production per unit is near zero.

The intrinsic worthlessness in (1) implies that there is only an indirect or derived demand for fiat currency, i.e. it is wanted to an extent that it makes future consumption possible. The fact that it is unbacked (2) can be seen from the issuer’s point of view. That is, a unit of fiat currency is a claim on no more than another unit of the same thing, not on any commodity, gold or otherwise. The idea behind (3) is that, from society’s point of view, its value in exchange exceeds the additional cost of producing another unit of it. The implication of (2) and (3) is that the provision of fiat currencies (their supply) cannot be left to the market, if the currency is to remain fiduciary. Most economists agree that competition would drive down the value of the promise to pay to below its marginal cost of production. Therefore, their supply must be regulated.

This logic reinforces the idea that the analogy between fiat currencies and other goods is fallacious. For most commodities, supplies and demands can be determined in the free market, in which neither supply nor demand is regulated.

The different nature of fiat currencies undermines the analogy that the advocate of freely floating rates without restrictions on capital account and asset holdings (i.e., capital and exchange controls) or other government intervention use to support their view -- namely that since private markets can price apples in terms of oranges, or GE shares in terms of Microsoft shares or apples, they can also price dollar in terms of baht.

Since the nature of fiat currencies necessitates that their supply be regulated, what determines the equilibrium exchange rate is their demand. If demand for fiat currencies is not regulated and is determined freely by the market, then according to various studies, see e.g. Kareken and Wallace (1978), the equilibrium (price) exchange rate is indeterminate; that is, if there is an equilibrium for a positive and unchanging exchange rate, then there is an equilibrium for any positive and unchanging exchange rate. Indeterminacy necessarily implies that the exchange rate movements are not governed entirely by economic fundamentals. Therefore, the use of these fundamentals to forecast the exchange rate paths is largely limited. Indeed, a major stylized fact in international macroeconomics is that exchange rates are volatile and persistent and so apparently
disconnected from fundamentals at least in the period of less than 1 year (See Obstfeld and Rogoff (2000)).

That is, left to its own devices, free-market or unregulated demand for fiat currencies can be determined entirely by speculation. Indeed, it would be a contradiction if the exchange rate were to be fundamentally-driven and is indeterminate simultaneously.

Why might the indeterminacy proposition hold true? Let’s start with a simple example of how the market would price the newly issued 20-baht bills (the Greens) in terms of, say, the 100-baht bills (the Reds) under different circumstances. Suppose for a second that the Greens had no numeral on it, and the Thai government made no announcement whatsoever with regard to the new bills’ value when it issues them, how would the market price the Greens? This is not equivalent to the market pricing GE shares in terms of oranges. The current exchange ratio between the shares and/or the fruits can be determined without government intervention, most likely from dividend streams and the desire to consume the fruits per se.

Even if we suppose that there are fixed and constant stocks of Greens and Reds, no fundamental factor exists to guide the market to find the current relative price, or the equilibrium exchange rate. If the market could not, without government help, price the Greens in terms of the Reds, how could it price baht in terms of dollar absent government’s reference or intervention?

Suppose now that the government announces that it will exchange 5 units of Green for 1 unit of Red, then the Green becomes a “20” even though there is no numeral stamped on it. Suppose, instead, that there are fixed stocks of Green and Red outstanding today, and the government announces that starting one year from today, it will exchange 5 units of Green for 1 unit of Red, and vice versa, will 5 Greens still exchange for 1 Red? Surely. Otherwise, the rates of return on the two currencies would have to differ, which would violate (1), that fiat currency is intrinsically useless. The announced future exchange ratio is in fact today’s market exchange ratio. So long as the announcement is believed (credible), the exchange ratio will remain. This announcement would not necessarily work with the fruits or shares’ exchange rates, however.

Without regulating the demand for fiat currencies through capital account (legal or quasi-legal) restriction or forced tender (and not just legal tender) or government intervention in the foreign exchange market, letting market decide means that there will be exchange rate indeterminacy or an equilibrium path for every rate of exchange -- as a dollar would be no different from a baht in terms of their rates of return in every period and market speculation dominates the decision on what the exchange rate should be. Indeterminacy simply means that the equilibrium exchange rate can be anything.

2 The so-called exchange-rate disconnect puzzle, of which the Meese-Rogoff (1983) forecasting puzzle and Baxter-Stockman (1989) neutrality-of-exchange-rate-regime puzzle are manifestations.

3 Note that there is a difference between legal tender and forced tender. Legal tender implies the notes are legally honored as part of the central bank’s liability and can be used to transact legally. It also implies that all transactions with the government must be performed through these notes only. Forced tender implies that only these notes can be used for transactions.
The *laissez-faire* noninterventionists believe that a floating rate system can be as free of capital-account and trade restrictions as a single currency system (See Friedman (1960, 1966)). In short, there is to be no official exchange market intervention and international lending and borrowing are not at all restricted. That would be a sound argument if absent legal restrictions of various kinds the demands for individual currencies were well defined, like those for other things. The nature of fiat currency shows that this argument of the *laissez-faire* noninterventionists suffers from implicit theorizing. Once explicitly analyzed, the picture they depict is infeasible. Markets simply would not know how to price these currencies under the circumstances.

The indeterminacy proposition implies that the floating rate regime may not be desirable without legal restrictions on asset holdings or government intervention, simply because demand for fiat currencies is not well defined and so the markets may be subject to fads and bubbles at times. When the exchange rate is not fixed, either legal restrictions on asset holdings or anticipated government intervention plays a crucial role. These are the major forces that determine the exchange rate when the rate is not explicitly fixed.4

How regulated should demand for fiat currencies be in order for it to be well defined?5 6 7 That is, how pervasive should capital control and government intervention be for this strict purpose? In the world of increasing capital mobility, what is the optimal degree of control? These questions will be addressed at least partly below. The main message, however, is that there is a certain degree of exchange rate indeterminacy that we need to accept under the flexible exchange rate regime, i.e. that there are moments when the exchange rate will be subject to speculative behavior and its levels may deviate from that supposedly determined by the fundamentals.

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4 At times, anticipated intervention, a less obvious form of intervention, can be as effective (or ineffective) in determining the exchange rate as actual intervention for a certain period of time.

5 Why is legal control beyond the more subtle restrictions such as those implied by legal tender laws needed for determinacy? Because demand for fiat currencies is still not well defined enough even with the legal-tender laws. In essence, we are trying to identify a way to obtain a well-behaved demand for fiat currencies short of imposing laws that preclude capital account transactions but that is more pervasive than the legal tender laws.

6 An explicit analysis of legal-tender laws would have to recognize that they amount to explicit restrictions like a requirement that real tax liabilities be paid in the form of a particular currency (e.g. Thai baht). Such laws imply at best the lower bounds on the amount of wealth held in the form of a particular currency. A range of indeterminacy still exists as long as the total quantity demanded for currency exceeds the implied lower bound. The behavior of exchange rate and money supplies in many countries can shed light on the size of that range of indeterminacy, since their behavior may not be easily reconciled with well-defined demand functions for individual currencies.

7 For example, there is a close relationship between the role of controls on asset holdings in producing determinate exchange rates and the notion that equilibrium exchange rates are determined by the condition that trade be balanced. As a matter of accounting, the imposition of laws that preclude capital-account transactions (and, therefore, the ownership by residents of one country of currency issued by other countries) implies trade balance. It also implies well-defined demand for the currency issued by the home country and hence, a determinate exchange rate. Note that both trade balance and determinate exchange rate are implied by the pervasive capital controls case in point, but it would be false to suggest that trade balance is a natural state of affairs and that an equilibrium exchange rate is determined by the balanced trade condition.
A certain degree of speculative behavior may even be desirable because it allows for different opinions about where the fundamentally implied rates are or because it simply reflects a desire of legitimate effort to hedge against uncertainty in doing business. What is not desirable is the excessive speculative behavior that can plague the markets from time to time and disrupt legitimate macroeconomic goals, for example the goal of price stability.

If a certain degree of indeterminacy is to be accepted as a fact of life, how do we minimize it? The alternatives to fixed exchange rate regime (which is not the regime of relevance in this subsection) are various kinds of implicit intervention schemes and implicit or explicit restrictions on asset holdings. Absent intervention and capital control of all sorts, the difference between the American and Thai monetary standards (dollar and baht) in the eye of the asset holders hinges principally on the credibility of the respective central banks in defense of the purchasing power of their respective currencies through expectations anchoring, among other things. That is, in short, domestic monetary regime matters in exchange rate management at least in terms of keeping the extent of indeterminacy localized or anchoring the exchange rate near its fundamental level. No government should therefore forswear the use of intervention in the foreign exchange market.

4. Long-term growth and inflation: Regime performance

We proceed now to report on the outcome of a basic evaluation of exchange rate regime with regard to the goals of macroeconomic stability and long-term economic growth across countries in the past decades.

Empirical facts surrounding the association between exchange-rate regimes and long-term growth and inflation performance across economies are inconclusive and subjective to regime classification methods. A few quick lessons to be drawn from the literature of this type is that no existing body of work concerns itself with causation, and that common belief in favor of one over another needs a re-evaluation with country-specific factors taken into account as well as the general economics of it.

Comparisons of exchange regime performances on economic growth and inflation abound. Results can be different depending on the period under examination and exchange rate regime classification methods. Among those that form the recent literature, Reinhart and Rogoff’s (2002) extensive research is unique in its realistic approach. It suggests that the choice between Fix and Flex, the two extremes, is no longer a simple trade-off between “faster” growth and low inflation with Fix on the one hand and economic stability and policy independence with Flex on the other.

Reinhart and Rogoff (2002) recognizes that countries do not practice what they officially report and so creates an algorithm to verify official declaration with statistical findings of their own in the process of redrawing a more realistic classification. Studying a full sample of IMF member countries, they report that under the “official (de jure) classification,” for the period 1970-2001, a “freely floating” exchange rate regime is associated with a paltry average per capita real output growth rate of 0.5 per cent and an
average annual inflation rate of 174 per cent. Under their new classification the picture changes drastically. The “free floaters” are now associated with average annual inflation of less than 10 per cent (the lowest of any exchange rate arrangement), and an average per capita real output growth rate of 2.4 per cent, rivaling those of countries with “limited flexibility” and exceeding those of the “peggers” and the “managed floaters”.

The difference between this new classification and the old “standard” version is in the identification and the creation of a new category called “freely falling” –– separating it from the free floaters under the new “natural” classification. We think that the decision to separate a clear case of failure before performing an evaluation of exchange rate regime vis-à-vis growth and inflation finds solid support in basic logic and statistical inference. At the very least, it is consistent with our earlier suggestion that macroeconomic stability is necessary but not sufficient for sustainable economic growth. Consequently, for the purpose of deciding which regime is more desirable, it only makes sense to evaluate only the cases that do not lead to obvious and immediate failure (i.e. we need only those that are credible at least for a reasonable span of time). Ruling out the outliers generally makes statistical sense as well.

The lessons from Reinhart and Rogoff (2002) are (1) Free float is not associated with bad long-term growth and inflation performance on average; (2) The cause and effect of exchange rate arrangement on long-term growth and inflation performance is unclear. There are other factors behind each regime’s appropriateness and these factors are not necessarily similar to those that determine the long-term growth path of a country.

Attempts to find an association between exchange-rate regimes and long-term macroeconomic performance yield results that are not robust across classification methods (de jure v de facto v mixed) and time periods under consideration. Ghosh et al (2002), employing the de jure method of classification on 136 countries from 1960-1990, finds that (a) lower and more stable inflation can be associated with “peg”; (b) the growth rate varies only slightly across regimes, but (c) “peg” is associated with more variable growth. One distinctive difference between this study and Reinhart and Rogoff (2002) is the period of study. Even though a period of 30 years is long enough that cyclical attributes should not play a major role in regime evaluation, the crisis of the 1990s, which differ from the previous ones in size and nature (the origin of which is within the capital account as opposed to the current account), are not considered by Ghosh et al (2002). It is not hard to imagine that their outcome would change if they also consider the 1990s as well.9

8 “Free float,” in the context of Reinhart and Rogoff (2002), does not mean zero foreign exchange intervention.
9 On a different note, another example of dependence of results on regime classification is the following: Using the mixed (de jure + de facto) classification method, Fischer (2001) reports a dramatic shift in the 1990s toward the “bipolar” extremes both in the entire sample of IMF member economies and in subgroups of industrial and emerging market economies. Fischer’s (2001) findings are disputed by those of Levy-Yeyati and Sturzenegger (2002) and Masson (2000), which use de facto classification. The latter two studies find a large degree of regime crossing, but no distinct sign of “bipolar” domination during the 1990s.
Even though no concrete result regarding the association between the choice of exchange-rate regime and macroeconomic performance has emerged from this group of cited work, there are clear and useful lessons: (1) A freely floating regime is not necessarily associated with bad long-term growth and inflation performance; (2) The desirable choice of exchange rate arrangement based on long-term growth and inflation performance is not clear cut across countries. There are, among other things, country-specific factors behind each regime’s appropriateness (desirability and feasibility); moreover, these factors may not be the same or belong in the same category as those that determine the long-term growth path of an economy.

As long as the exchange rate regime is credible, it can be seen from this body of literature that its effects on long-term real GDP per capita growth and inflation remain unclear depending on country-specific factors. However, a non-credible regime leads to macroeconomic instability, which is detrimental to long-term growth and inflation performance. A good Fix can provide immediate regime transparency for countries with undeveloped monetary infrastructure, but its advantage disappears if the monetary institution is sufficiently developed and the monetary regime transparent, e.g. a regime with an inflation cap (See Athey, Atkeson, and Kehoe (2001)).

5. Shock absorbance: What are the key issues?

We now explore the crucial issue of shock absorbance ability of alternative exchange rate regimes. The crucial issues listed, which have emerged in the wake of the recent currency and financial crises and which require policymakers’ attention regarding regime appropriateness, have not been analyzed by the established literature. These issues are mentioned in the introduction: (a) volatility of capital flows and the real exchange rate, (b) currency mismatch and financial fragility, (c) the functioning of the credit channel in case of systemic bank runs or significant and rapid disintermediation, and (d) domestic output and factor price flexibility and pricing behavior of domestic and foreign firms. Embedded in this discussion is also the supporting macroeconomic policies that can help offset negative effects from alternative exchange rate regimes.

In this section, we use the bare-bones Mundell-Fleming-type model to analyze which type of exchange rate regime fares better, and therefore is more desirable, under a variety of macroeconomic shocks when the objective is to minimize output volatility and/or real exchange rate volatility. The desirability with respect to economic welfare cannot be studied within this model class, but inference can be drawn with some caution. The model is used here principally to organize facts and to frame issues for analysis.

We analyze the following shocks: shocks on the current account/ terms-of-trade; on the capital account; shocks affecting financial and non-financial firms in the presence of currency mismatches; shocks to the credit channel under the case of systemic bank runs or disintermediation of funds; and shocks to the financial system with implications on financial stability.

We distinguish in this study the difference between expected and unexpected shocks. Unanticipated changes in the nominal (and in these models also real) exchange rate are costly because they disrupt production through their effects on the relative price of
inputs and outputs, and because they may impact on the performance of foreign-exchange denominated loans.

The following proposition finds wide support in the literature: Let the objective be the selection of a foreign exchange regime that minimizes output fluctuation or variance. Then, Fix is better than Flex, if the volatility of nominal (or price) shocks is larger than the volatility of the real shocks, and *vice versa*. If domestic price is fully flexible, then Fix and Flex are equivalent from the perspective of variance minimization.

Prominent examples of nominal shocks are shocks that affect the money stock or money demand or foreign interest rates, and those of real shocks are those that affect productivity levels, fiscal policy or government spending. It can be argued that a capital-account shock affects both the IS and the LM relationships (e.g., a fall in the international interest rate will likely give a boost both to aggregate demand (IS) and the demand for money (LM); or, after a financial crisis, both aggregate demand and monetary aggregates have been known to fall). If this line of argument is convincing, then it can be suggested that the correlation between real and nominal shocks may indeed be positive under certain circumstances.

This proposition is an outcome of a bare-bones model of the Mundell-Fleming class. In models of this class, the focus is on the markets of domestic output and money. The stochastic IS curve is affected by the real (or “flow”) shocks and the LM curve by nominal (or “stock”) ones. Most of the literature in this field studies exchange-rate regime choice when an objective is to minimize the variance of domestic output, or some related yardstick. Free capital mobility and random shocks are explicitly assumed in this model.

Therefore,

\[ y = \alpha \varepsilon + u \]  
\[ m = y + \nu, \]  

where \( y, \varepsilon, m \) are domestic output, the nominal exchange rate, the nominal stock of domestic money, all expressed in logarithms; and \( u \) and \( \nu \) are stochastic exogenous (for the time being) variables; and \( \alpha \in \mathbb{R}_{++} \). The nominal price of domestic output is the price level, which is assumed to be a constant and normalized to 1 (or 0 in log terms).

10 Admittedly, even though micro-foundations have been created for this type of models, the model itself is static (no inflation dynamics, for example) and partial equilibrium. It does not allow for explicit welfare analysis; we can, however, assume that more welfare is likely accompanied by superior shock absorbance ability of a regime. This class of models is used here because it is easy to use for analysis of issues. We shall confirm results with those models that are of later vintages below.
Equation (1) is the stochastic IS curve, where interest-rate effects are collected in the stochastic term $u$, for simplicity’s sake. Equation (2) is the stochastic LM curve where the demand for money is assumed unit-elastic with respect to output and as in the case of Equation (1), interest-rate effects are lumped into the stochastic term $v$.

For the two polar systems: Fix implies $\varepsilon = \overline{\varepsilon}$, and $y$ and $m$ are endogenous, and Flex implies $m = \overline{m}$, and $y$ and $\varepsilon$ are endogenous. Thus, under Fix,

$$\text{var}(y) = \sigma_u^2, \quad \text{and} \quad \text{var}(\varepsilon) = 0$$

(3)

And, under Flex,

$$\text{var}(y) = \sigma_v^2 \quad \text{and} \quad \text{var}(\varepsilon) = \left(\sigma_u^2 + \sigma_v^2 + 2\rho \sigma_u \sigma_v \right) / \alpha^2,$$

(4)

where $\sigma_i$ is the standard deviation of stochastic variable $i = u, v$; and $\rho$ is the correlation coefficient between $u$ and $v$.

The natural outcome of the above class of models is that the variance of real output is equal to (a) that of nominal shocks when the exchange rate is flexible and (b) that of real shocks when the exchange rate is fixed.

The issue of shock absorbance or short-run stabilization ability of each regime is now discussed in the context of the model. How different kinds of shocks are modeled depends on how their effects are channeled through to real output. It is generally assumed that nominal shocks are channeled through the LM schedule, which represents the stock relationship, and real shocks the IS schedule, which represents the flow relationship.

We now use the simple model above to analyze the abovementioned issues that came to the fore after the crisis of 1997.

5.1 Volatility of capital flows and the real exchange rate

Recent financial crises episodes show that sharp changes in the real exchange rate can cause serious financial damage, especially when those changes reflect a large unanticipated component. As a result certain advocates of Fix suggest that $\text{var}(\varepsilon)$ be included in the objective function to minimize (see Calvo (1998 and 1999)).

A single most often-cited “disadvantage” of Flex, whose conclusion theoretically and empirically is nowhere near final, centers on the unfavorable effects of the fluctuating real exchange rate on trade and investment flows. Under this type of simple model, domestic prices are assumed fixed, and so real and nominal exchange rates are identical.
If the volatility of the real exchange rate is to be avoided, it implies that the variance of the nominal exchange rate should be included in the objective function of the model.\(^{11}\)

Taking account of overall volatilities of real output and exchange rate, the attractiveness of Fix increases if the correlation between real and nominal shocks is positive and large. As a result, within the context of this model, the more prominent the capital-account shocks are, the more volatile the real exchange rate and the more attractive Fix becomes.

If domestic price is fully flexible, then it is not difficult to show that the choice between Fix and Flex is not relevant from the perspective of variance minimization. A special case of flexible domestic price is studied here: Imagine the case when domestic output price is not assumed fixed, but rather is fully indexed to the nominal exchange rate. In this case, the real exchange rate will be constant regardless of the nominal exchange rate. In this setting, the IS-LM system in (1) and (2) is reduced to:

\[
y = u, \quad (1')
\]

and,

\[
m = y + \varepsilon - v. \quad (2')
\]

Therefore, under both Fix and Flex, \(\text{var}(y) = \sigma_n^2\). Output variability depends only on the real shocks under both Fix and Flex while full indexation renders exchange rate variability totally irrelevant (of course, it is still lower under Fix). Consequently, full indexation of domestic output price to the nominal exchange rate implies that Fix and Flex are equally desirable. This argument leads us to think of the importance of domestic price adjustment to changes in the nominal exchange rate in determining which regime dominates. It is worth noticing that so far the movements in the exchange rate are taken to be exogenously determined.

In sum, if volatility of the real exchange rate were to be an issue of concern, Fix would appear to dominate Flex. With price flexibility, the dominance weakens. In Thailand, according to Chensavasdi\-jai and Buddhari (2003), government administered prices accounted for only 28 per cent of the representative CPI basket and the rest is determined completely by the markets. CPI inflation averages at 3.2 per cent with a standard deviation of 3% from 1996-2003. Furthermore, the fact that the core inflation has been negative in the recent past and is now hovering near zero goes to show that there is downward flexibility in the representative consumer price basket in Thailand. At issue is how much time it takes for prices to adjust after a shock. We need a more in-depth model of business cycle for Thailand to determine what type of shocks dominates and how flexible the prices are, but \textit{prima facie} evidence shows that prices are not very rigid even in the short run.

\(^{11}\) Clearly, if the focus is exclusively given to the volatility of the nominal exchange rate, then it follows trivially that Fix will always dominate Flex.
5.2 Currency mismatch and financial weakness

First we address the issue of financial crises and exchange rate regime choice. Incidents of macroeconomic instability and adverse current account position are usually associated with large and persistent trend appreciation. (By trend we mean the slowly moving, not necessarily linear, component of the exchange rate time series.)

The stylized story of trend appreciation and financial crises needs to be recounted. It usually begins with large capital inflows, regardless of the cause, into an economy, leading to rapid credit expansion and an investment and asset price boom. Banks then become overextended. After a while, the pace of capital inflow starts to slow. All the while, the real exchange rate appreciation erodes the country’s export price competitiveness and the current account begins to suffer. Finally, the story usually ends with a reversal of capital flow, an asset price and exchange rate collapse, firms and banks’ balance sheets severely damaged and the credit channel blocked.

A set of stylized facts or empirical regularities can be gleaned from the above story. They are: 1. Financial crises are usually associated with a real exchange rate trend appreciation and fixed exchange rate regime (implicit guarantee of absence of currency risk). This fact characterizes Latin America and Asia in the 1990s. 2. Real exchange rate “misalignment,” i.e. persistent appreciation, large capital inflows and current account deficits can also be associated with countries with flexible exchange rate regimes. (See experiences of several Euro accession countries such as the Czech Republic, Hungary, and Poland, including the US.) 3. Persistent REER misalignment alone does not necessarily lead to a financial crisis. 4. Foreign exchange volatilities seem to be associated with smaller short-term capital inflow.

These stylized facts suggest that whereas persistent REER misalignment seems to be one of the major causes of financial crises, countries that experience financial crises are those identified with Fix and not those using Flex. On the surface, one can argue then that these countries can avoid financial crisis if they opt for Flex. However, the stylized story suggests that the choice of exchange rate regime contributes to the financial crises insofar as it encourages large capital inflows, all too likely too large a magnitude than the country’s financial industry can bear.

The story also suggests that other underlying factors may contribute to the crises from its inception point, namely 1. weak financial infrastructure and supervision; 2. large degree of currency mismatches; and 3. the country’s low credit rating. All of these attributes are associated more with poorer emerging economies, which also have the tendency to employ Fix. Therefore, with the continuing presence of these three factors, Flex should not be thought of as a panacea, but it is certainly a more prudent choice of exchange rate regime vis-à-vis financial stability than Fix. The reason for this is that even if the probability of a crisis is equal, it is more likely that the size of the misalignment engineered by Fix would be larger than that under Flex, and thus the expected loss from the larger jump to a new equilibrium should be higher.

As articulated earlier, unexpected changes in the exchange rate is costly not only because they may disrupt production, but there is also a dimension of foreign exchange-denominated loans’ performance. The typical case of concern is the combination of an
unexpected depreciation of the domestic currency in the face of positive net foreign currency liabilities. It could also be the case that domestic firms have foreign exchange liabilities while their cash flows and earnings are in domestic currency. Basically, a situation of this type in which the profiles of foreign currency commitments and cash flows available at the corresponding time horizon are mismatched is called “currency mismatch.” Embedded in this currency-denomination mismatch problem are the issues of liquidity and maturity.

What may be the sources of currency-denomination mismatch? In some countries, the source is currency substitution – the use of foreign currencies as medium of exchange. In many economies, Thailand included, the source may be the moral hazard of implicit guarantee of a fixed exchange rate regime (with history of government bailouts or continual implicit promises), thereby “removing” substantially the currency risk from the calculation of private firms. The “original sin” story also plays out in several countries where firms cannot borrow long-term in domestic currency because no lender anywhere is willing to extend loans in that denomination. This can happen if the market for lending in domestic currency is underdeveloped or missing, rendering it impossible or excessively costly for borrowing firms to hedge. Currency mismatch was a pertinent case for Thailand prior to the crisis of 1997.

Whatever the cause (note that “moral hazard” is not independent of the exchange rate regime choice), currency mismatch is associated with the existence of a large stock of foreign-currency loans (or FXL). The question is whether these FXL are made to the indexed (or hedged) sectors, or the non-indexed sector. It depends on the exchange rate regime choice (allow us to abstract away from the issue of credibility for now).

Under Flex, assuming the volatility of the nominal exchange rate is high, FXL will likely be concentrated on hedged (or indexed) or tradable sector, and the non-indexed (or nontradable) sectors are likely to be excluded from FXL. Consequently, exchange rate volatility need not be costly. Moreover, if smaller capital inflows associated with Flex imply a lower correlation between nominal and real shocks, then overall volatilities under Flex could be lower, given a possibility of currency-denomination mismatches.

Under Fix—or as long as exchange rate volatility is taken out of firms’ consideration—FXL will likely be channeled to unhedged or non-indexed sectors. Indeed, it would enhance the credibility of the Fix regime if private hedging were discouraged. A definitely disastrous situation would be when firms expect Fix and Flex occurs. Therefore, a weak (non-credible) Fix is obviously a bad system.

Recall that the random shock assumption may not be realistic under “currency mismatch,” and may be relaxed. That is, currency mismatches, particularly if they originate from currency substitution, may imply close substitutability between domestic and foreign currencies. Slight parameter changes, be it domestic inflation, rate of return on assets, etc., may induce a large impact on domestic money demand. Therefore, it may be the case that currency mismatches increase the variance of nominal shocks. Under this interpretation and in the context of the above model, the larger the degree of currency mismatches already in place, the more the balance tilts in favor of Fix—much like a vicious cycle.
We need also to identify the cause of this trend appreciation, which could come from productivity gains on the part of the appreciating currency’s country, and therefore should not be offset by monetary policy.

In Thailand as of 2003, currency substitution and mismatch are a non-issue. Resident non-banks’ foreign exchange holdings held domestically and abroad are less than 5 per cent of M2—a small number that is comparable to those in advanced industrialized countries namely the US, Japan, and Australia, while foreign currency denominated debt has declined tremendously since 1997. It is certainly a quantity one should monitor as the economy expands and the need for FXL increases. As Thailand moves toward full capital account liberalization in the future, currency mismatches can become an issue. Flex as a part of that liberalization plan can help prevent the buildup of currency mismatches, which means that in the future there is even less benefit to turn to Fix.

In short, for Thailand today, while the degree of currency mismatch is low, the fragile financial system and the low credit rating suggest that Flex is more desirable than Fix.

5.3 The credit channel in case of systemic bank runs or disintermediation

In developing countries, emerging markets included, credit market segmentation is a major issue. In particular, non-indexed and non-tradable sectors are heavily dependent on bank credit for productive activities. Firms in Thailand rely heavily on bank credit, as is evidenced in the ratio of private credit to GDP, which averages around 110 per cent during 1995-2000. This ratio is the highest among all emerging market economies. In the context of the model outlined above, changes (e.g. shocks) to broad monetary aggregates, a significant component of which is bank credit, may affect real output directly. One can imagine the case when bank deposits shrink for example from systematic bank runs, lending itself to a contraction in bank credit.

The credit channel can be captured by putting monetary aggregates directly into the IS schedule, under the assumption that the base money multiplier is constant. In line with the previous analysis, also assume that a real depreciation of the domestic currency is expansionary. Thus,

\[ y = \alpha \epsilon + \delta \mu + u, \]

where the parameter \( 0 < \delta < 1 \) is so constrained to capture an expansionary effect of a real depreciation.

As a result, under Fix,

\[ \text{var}(y) = \frac{\sigma_u^2 + \delta^2 \sigma_y^2 + 2\delta \rho \sigma_y \sigma_u}{1 - \delta^2}, \text{ and } \text{var}(\epsilon) = 0. \]

For Flex, expression (4) still holds. Therefore, the overall volatilities do not change under Flex, whereas they increase under Fix. As a result, our analysis indicates that the
shocks to the credit channel where dependence on bank credit is high indicate a favor for Flex.\textsuperscript{12}

Under Fix, the central bank loses ability to tackle system-wide bank runs (see “feasibility” subsection below). So, for Fix to be more credible, the need for sound bank management is paramount, i.e. smaller chance of bank runs to go with it. That is to say that a good Fix requires a strong financial system or other measures to protect the financial system from adverse shocks.\textsuperscript{13} We also discuss a supporting (fiscal) policy choice in case a country has to deal with bank runs under Fix in Section 6.

The above analysis has so far focused on the objective of minimizing second moments and ignored the suggestion that, dollar for dollar, net capital inflows can be welfare enhancing, i.e. the scale effect also matters. All things being equal, net capital inflows are likely to be larger under Fix than Flex, because short-term loans to non-indexed sectors will be more expensive under Flex and therefore of smaller sizes. As a result, the beneficial scale effect seems to favor Fix, but the scale effect is not incorporated into the model. A new issue is now injected into the picture: for capital inflows to be welfare-enhancing, as assumed, we need a strong financial system in place as a necessary condition. Discussion on this aspect of Fix versus Flex continues below.

5.4 Firms’ pricing behavior

There is another dimension to the issue of price stickiness: the currency in which the prices are sticky. The price that is sticky in the context of this model is that which is quoted in producer country’s currency. Recent literature on pricing behavior has questioned this pricing behavior, and suggests that firms price their products differently according to the market in which they sell the goods. We certainly need a better picture of producer’s price setting behavior in Thailand. Devereaux and Engel (1998) shows that the effect of pricing to market and local currency pricing on the optimal exchange rate regime is decisive, and welfare analysis is in favor of Flex even under nominal shocks.

Preliminary studies of Thai firms’ pricing behavior, using correlation between changes in the nominal effective exchange rate and the terms-of-trade, show inconclusive results in favor of neither producer’s currency pricing nor local-currency pricing. That is, the correlation is near zero (0.02), instead of being positive (pointing to producer’s currency pricing) or negative (local-currency pricing), both for data during 1980-1997 and 1980-2002. Evidence of PTM/LCP is expected to be found in goods of certain classes (esp. manufacturing), just as in Europe.\textsuperscript{14} A better picture of producer’s price setting behavior in Thailand is needed.

\textsuperscript{12} The result here rests partly on the constant money base multiplier. In a situation of bank runs, the said multiplier will likely not be constant. We need a model that incorporates this feature of the reality in order to analyze the shock-absorbing ability of each regime more appropriately.

\textsuperscript{13} Another crucial question is whether bank runs are more or less likely to happen under Fix or Flex. Currency crises can induce bank runs. Since crises are more associated with Fix, an initial assessment would be that widespread bank runs are more likely to occur under Fix than Flex.

\textsuperscript{14} See Engel (1999)
5.5 Drawback of analysis

Our objective in this section has been to compare shock stabilization across exchange rate regimes. The nature of shocks that the literature has so far tried to identify and understand are those that originate from the current and capital accounts, respectively. In general, the focus is on the second moments (volatilities and variances) of real GDP and/or real exchange rate, and the shocks are usually assumed to be random, that is independent of the foreign exchange regime.

The stochastic Mundell-Fleming approach we adopted to frame our analysis of stabilization across regimes is quite easy to manipulate but at the same time problematic. Focusing on the second moments is only reasonable if (1) the shocks are symmetric and (2) that upward and downward risks are equally costly. Moreover, (3) the Lucas-Critique argument can be made that shocks are likely to be a function of the foreign exchange regime itself, and therefore not at all random; this issue has largely been ignored in the literature of this kind. The Lucas-critique argument is explored in the next section under “feasibility”. At issue in this section is the focus on desirability in terms of long-term growth and inflation performances and the stabilization aspects.

Focusing on the second moments would be reasonable if shocks are roughly symmetric and the costs imposed on the economy are also approximately symmetric. For example, symmetry is not objectionable for terms-of-trade shocks (in logarithm), but even then cost-symmetry is not reasonable, particularly for highly indebted emerging market economies and because terms-of-trade shocks are usually persistent.\(^{15}\) From this example, we need to be able to identify initial conditions on which these results may depend. For Thailand, a moderately indebted country with prospects for lower debt, these assumptions seem reasonable.

However, the assumptions of shock symmetry and cost symmetry should be dispensed with in the analysis of capital account shocks. Arguments have been made to the effect that imperfect information in the global markets and the cost of sudden stops in capital inflows to emerging market economies should render the cost-symmetry assumption unrealistic. If the focus is on overall volatilities and capital account shocks are considered most costly, then the balance tilts toward Fix. (See the case of Malaysia).

The model also assumes that shocks are independent of the choice of exchange rate regime made. It ignores that the shocks may not be random, but are endogenously generated, i.e. a function of the regime itself. We deal with this shortfall by completing our analysis of the credibility issues in Section 6.

5.6 Conclusion: A Fix-Flex hybrid is more desirable than the extreme for Thailand

\(^{15}\) Amelioration in the terms of trade enables them to be within their incentive-compatible budget constraint, while deterioration may call for major fiscal adjustment, particularly if the shocks are highly persistent. More strongly, this claim applies when shocks stem from the capital account.
If the shocks buffeting the Thai economy originate mainly in the current account (terms-of-trade shock) or in the capital account, the above analysis concludes in favor of Fix. The threat of a widespread disruption to the bank credit channel in Thailand and the issue of financial stability decide in favor of Flex. At the moment, when currency mismatch is low in Thailand, the issue of currency mismatch prevention is crucial under both Fix and Flex, but particularly under Fix. Flex can help prevent the buildup of currency mismatches better than Fix.

If shock stabilization issues are the only concern, then we can conclude that from the most desirable exchange rate regime may not call for pure Fix or Flex, but Fix-Flex hybrids such as target zones, etc. In fact, it takes further in-depth research to determine which kind of shocks dominate in the case of the Thai economy. At the moment, the only conclusion we can draw is that it is almost impossible to determine the type of shocks that predominates. We should realize that we live in an uncertain world and the trend of the world international finance is toward more and not less ferocious capital mobility. Hence, the policy can take the form of a feedback rule such that the balance between Fix and Flex depends on parameters of the model economy (calibrated to fit Thailand) and the relative variance of the two types of economic shocks. For example, if the ratio of the variance of real shocks to the variance of nominal shocks approaches zero (infinity), the more desirable regime will be Fix (Flex).

From the above analysis and discussion, it seems that a Fix-Flex hybrid, such as a wide-band adjustable-parity Target Zones, should combine the desirable properties of both Fix and Flex and thus should be more desirable than either extreme. By Target Zones, we mean a band within which the exchange rate is free to float with a scope for central bank intervention in case the exchange rate is leaving the band. Target Zones, if combined with inflation targeting, may be desirable because, unlike Fix, it reduces one-way bets against the central bank and combined with a wide band, it should give more scope for active use of monetary policy when it is needed. If the band is wide enough, this hybrid arrangement is almost no different from freely floating (an extreme form of Flex.)

Suffering from much the same drawback of Fix, Target Zones may be attractive if the credit channel shock is not a serious threat. Therefore, there is a need to limit the degree of currency mismatches. Moreover, in light of past experiences (all without inflation targeting), they have not prevented high nominal interest rates and excessive credit tightening – for cases in point, see Mexico 1994-5 and Brazil 1999 crises (See Calvo (1999) and Obsfeld and Rogoff (1995)).

More at issue seems to be how to prevent an undesirable persistent trend appreciation in the exchange rate that is out of line with the economy’s relative productivity increase. A more pertinent point is how to achieve low and stable domestic inflation (which helps prevent trend appreciation under “Fix” beyond that which is necessary, and expectation anchoring under “Flex”). Moreover, we have seen that a resilient financial infrastructure, high credit rating, low currency mismatch matter very much under “Fix” and “Flex”, but more so under “Fix”.

6. Regime credibility: How to make it feasible over time?
The purpose of this section is to explore the issue of credibility, which in due course will be seen as equivalent to feasibility, of the exchange rate regime. The discussion will inevitably be focused on whether there is a comfortable middle ground between freely floating rates and the adoption of a currency union for Thailand. We also discuss coordination between monetary authorities or governments in exchange rate management, and the relationship between business cycle comovements among countries and the costliness of the loss of monetary policy independence under the case of Fix.

Unless otherwise noted in this section, when we consider Fix, we mean unilateral Fix; that is, a fixed exchange rate arrangement between two countries that is non-cooperative. The literatures on exchange rate regime feasibility and on time inconsistency of policy are highly intertwined, a central premise on which they are built is that credibility is a dynamic issue and that credibility matters for both Fix and Flex.

For Fix (and in this case, we extend our argument to include “crawling peg” and the like), the need to convince investors and price setters of the central bank’s long term unconditional commitment to its exchange-rate targets is paramount. If the promise not to devalue lacks credibility, then it invites costly speculative attacks. Developing and maintaining such credibility around an exchange rate target is difficult, judging from recent experiences of failed fixed exchange rate arrangements even in industrialized countries (see experiences of the EMS countries in the early 1990s). The fact that Fix implies that the country necessarily loses some or all of the control of its domestic money supply indicates that the degree of credibility also varies in inverse proportion to the difficulty for the government to compensate for the loss of its stock policy (monetary) with flow policy (fiscal) when the need arises.

For Flex, the exchange rate is not a nominal anchor or a central target for monetary policy, but it is treated as another important macroeconomic indicator under freely floating and as a minor target under Target Zones. Therefore, credibility under Flex is tantamount to that of the central bank’s commitment to low and stable domestic inflation. On this note, the issue of transparency is crucial. Central banks without a history of success in anchoring inflation expectations have a tougher time with Flex than otherwise. Since Fix affords the central bank immediate transparency, it can be preferred as an instrument that helps bring price stability to the domestic economy (see Athey, Atkeson, and Kehoe 2001). Under Flex, a monetary regime has to be identified and inflation expectations anchored through other means. Lack of monetary policy transparency under Flex invites suspicion that the exchange rate can suffer large depreciations.

6.1 Technical feasibility of Fix

Even though world capital markets have grown to become very large with daily volume of foreign exchange transactions exceeding USD 1 trillion, it is still technically feasible for a country with much smaller foreign exchange reserves to fix its exchange rate. Furthermore, even though the IMF’s estimates of private hedge funds’ total capital are around USD75 – 100 billion in the early 1990s, far exceeding most countries’ foreign

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16 This subsection is relies heavily on Obstfeld and Rogoff (1995).
currency reserves, there is no insurmountable technical obstacle to fixing the exchange rate in the face of this seeming resource mismatch.

Provided that a central bank is willing to subordinate other macroeconomic goals, then it is within its power to defend the peg. Recall that the central bank is the monopolist supplier of domestic currency. Even in the face of volatile demand for domestic fiat currency, its control of money supply allows the central bank to keep fixed the price of the domestic currency. All the central bank needs is to have resources to buy back part of the monetary base, enough to allow the interest rates to be raised to a level so high that speculators shorting the currency find it prohibitively expensive. A quick look at most of the currencies that have come under speculative attacks in the 1990s (see Table 1 in Obstfeld and Rogoff (1995)) reveals that all of the central banks in question had enough foreign exchange on hand to buy up at least almost the entire monetary base. Furthermore, most major central banks have established swap-line arrangements on which to draw the foreign currency needed for the defensive intervention. Governments can also borrow from the private markets to absorb the high-powered monetary base. Government’s credit constraints are not an issue for all of these countries; none of them are near insolvency even after their public debt-to-GDP ratios were raised by the amount of the entire monetary base.

It is known that other distractions from the exchange rate goal, such as the lender-of-last-resort role, may jeopardize the Fix (see the above subsection on “desirability”). Even the large and sudden expansion of private sector claims on central bank’s foreign reserves owing to credit expansion policy to counter (systemic) bank runs can be avoided. Should the country desire to defend the peg, it could opt for a bank holiday or conversion of private deposits (liabilities of private banks) into government debt, albeit with considerable undesirable aspects.

6.2 Is Fix practically feasible? Unilateral v Coordinated Fix

As mentioned earlier, the credibility issue is a dynamic one. The real problem that is inherent in every Fix regime is inconsistent government goals or agenda. If we accept as reality that the nature of government agenda and goals are necessarily competing or inconsistent, then the weakness of Fix is innate. This inherent weakness of Fix is manifested in every crisis situation. It is the reason speculative attacks in the past have succeeded in breaking the Fix. Domestic political and economic realities simply will not allow a central bank to mount a defense without distraction. Usually to fend off a currency attack, short-term domestic interest rates are driven sky high, causing immense harm to the banking system, which borrows short and lends long. These unanticipated interest rate rises usually carry with them tremendous adverse effects on investment, employment, and other macroeconomic variables over the longer run, not to mention domestic income distribution. Credibility of Fix and the magnitude of possible subsequent economic loss require that the markets be convinced very early on that these adverse impacts will be tolerated, indeed ignored, for a certain length of time. However, any pledge to that effect is likely to be viewed as non-credible. Without credibility, vulnerability to attacks increases. The same argument can be extended to hard-edged Target Zones and Band-Basket-Crawl (BBC), particularly at the edges.
So far, we have only discussed the technical feasibility of a unilateral peg. If a Fix has an unqualified support from both central banks, which are truly committed to maintaining their mutual exchange rate above all, then no hedge funds or private speculators can change the exchange rate status quo.

Most Fix arrangements in the world are unilateral. A currency union is the only example of a coordinated Fix, the cooperative nature of which includes sine quibus non: 1. The parties must agree to swap currency for another’s at a fixed rate, in any amount and at any time. 17 2. They must agree on the total growth of money supply and the distribution of the resulting seigniorage. The first condition prevents the exchange rate from fluctuating from speculative pressure. The second guarantees that there is no incentive to take advantage of the first condition and over-issue one’s own currency to benefit from more seigniorage revenue, i.e. exporting domestic inflation to the other parties.

To see that both conditions are necessary, without which a cooperative Fix cannot be sustained, we turn first to the first condition. Without (1), even if the money growth rates were the same and other economic fundamentals unchanged, economic research shows that exchange rates can fluctuate simply because people think they will (see King, Wallace and Weber (1989)). Without (2), each party will have an incentive to take advantage of (1), which will eventually make for a deviation from the agreed upon fixed rate in (1). Under Fix, the country with the anchoring role gets more seigniorage revenue, the larger its money supply growth. Under cooperative Fix, the country with the fastest growing money supply gets the most revenue from money creation, and some of the seigniorage is collected from residents of the other countries under the arrangement because, under Fix, the inflation caused by one country is shared by all. This will eventually become unacceptable, and at least one country will let its exchange rate appreciate, thereby leaving the Fix.

In practice, coordination is also feasible. Cases in point are the experiences of Euroland and the US. The US is a system of Fix that is most rigid, a currency union. Each of the twelve district banks in the Federal Reserve System issues its own notes, as is identifiable on the notes themselves. In a physical sense, US currency is not strictly uniform, not very much unlike those between the Thai and Japanese currencies. The differences imply that the US could opt to use Flex among the currencies of the twelve Fed districts. Instead, they opt for Fix. Despite changes in economic fundamentals among the districts, the US has not been forced to adjust the exchange rates between district currencies. For instance, it is highly unlikely to observe the fifth district currency to depreciate against the rest when its economy decline while the other districts are expanding.

The reason this Fix scheme works is because it satisfies both the requirements above. First, the district banks have an agreement to swap their currencies for another district’s at the fixed rate in any amount and at any time. Moreover, each district bank cannot

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17 The first condition sets out an agreed upon exchange rate, which will naturally affect the distribution of wealth between the people of the two countries. The choice of the exchange rate is not one of feasibility, however; it is one of wealth redistribution.
pursue its own monetary policy, i.e. agreements on how to set the money growth rate and how to redistribute the resulting seigniorage are in place. Even if all notes were distributed by the first district, the revenue would be pooled and disbursed by the centralized authority; that is the US Treasury.

An argument that in the long run only Flex is feasible and that exchange rates must reflect changing economic conditions is not borne out by reality. Cooperative Fix is also feasible, both technically and in practice. What is required is that monetary policies be coordinated among fixed parties. The question, then, is not whether countries can fix exchange rates, but whether there is a desire and a will. The choice involves at least a sacrifice of monetary policy independence of the weaker partner and getting the strong partners to compromise on their domestic goals significantly. A currency union may not be politically acceptable to the weaker and/or the stronger parties for different reasons. Intermediate regimes such as Target Zones also benefit from cooperation. It also suffers from the same cooperative limits as Fix does.

Assuming that a cooperative Fix (currency union) is politically acceptable and is economically desirable, then one unanswered question remains: with whom should Thailand join to create a currency union? More pertinent at the moment is with which currency or currencies should we fix the Thai baht?

6.3 Making Fix credible is costly for Thailand: Heavy load on fiscal policy

It may be the case that most Fix regimes originate from the desire to contain inflation or to disinflate the economy, i.e. to maneuver the economy toward macroeconomic stability. To make the Fix credible, however, the loss of monetary policy independence in return for inflation-fighting credibility should not be excessively costly. If there is a desire to fix the baht unilaterally, the issue then is the feasibility of the scheme, which also depends on the design of a basket of currencies for the purpose of establishing a nominal anchor for the baht. If the cost is perceived to be too high in the longer run, then markets can eventually question the rationality of the Fix and speculative pressure can mount.

One major cost of Fix is the loss of monetary independence. This loss (from having to rely solely on fiscal policy) can be partly compensated for and the cost lessened if, for instance, the parties with which we fix our currency share important features of the business cycles with us. To see why, consider and extreme case of two countries where there is a complete synchronization of the business cycles between two countries. When the larger country (the one against which the smaller country fixes its currency), experiences a boom (so does the smaller country) and interest rates are on the rise, the maintenance of interest rate differential is not a problem, since the smaller country would not mind raising domestic interest rates as well. The argument applies when both experience a synchronized bust.

The following analysis produces a set of empirical regularities about international business cycle comovements, using annual real GDP data from 1970-2002.18 The

18 Consult Ahuja, Mallikamas and Poonpatpibul (2003) for strength and weaknesses of the analysis in this appendix.
countries under studies are Thailand and those with whom Thailand may wish to fix our currency, namely the US and Canada (NAFTA/dollar zone), France, Germany, the Netherlands, Italy (Large economies representing the EU/euro zone), the UK (part of the EU), Japan and Korea (the yen zone). The terms procyclical means that the two economies tend to move in the same direction in the same period of observation, and countercyclical means they tend to move in opposite directions in the same period of observation.

The stylized facts are organized from the statistics reported in Table 1 below. These statistics provide information on three basic aspects of the cyclical behavior of the aggregates:

- The amplitude of fluctuations
- The degree of comovements with Thailand’s real GDP (our measure of pro- or countercyclicality)
- The phase shift of a variable relative to Thailand’s business cycle (defined as cyclical real GDP)

It is to be emphasized that the deviations are in percentage, and not absolute, terms (it is the log difference).

In the table below, the $x(t)$ column indicates the degree of contemporaneous comovements with Thailand’s real GDP. The statistics in that column show the correlation coefficients between cyclical deviations of each series and cyclical deviations of Thailand’s real GDP. A number close to 1 indicates that a series is highly procyclical. A number close to –1 indicates that a series is highly countercyclical. A number close to 0 indicates that a series is uncorrelated contemporaneously with Thailand’s real GDP, i.e. the series does not vary contemporaneously with Thailand’s real GDP in any systematic way. The other columns display the correlation coefficients when the series have been shifted forward or backward, relative to Thailand’s real GDP, by 1-5 years. The numbers do indicate if there is a phase shift in the movement of a time series relative to Thailand’s real GDP.

If the number in the column $x(t)$ is positive, but largest in column $x(t-i)$, where $i >0$, then the series is procyclical, but tends to peak roughly $i$ periods ahead of Thailand’s real GDP; we say that the series leads Thailand’s cycle by $i$ periods. Correspondingly, if $x(t)$ is positive, but largest in column $x(t+j)$, where $j >0$, then the series is procyclical, but tends to peak $j$ periods after Thailand’s real GDP; in this case, we say the series lags Thailand’s cycle by $j$ periods.

The following is a set of stylized facts of international business cycles, as measured by deviations about trend of real GDP:

1. The EU is contemporaneously uncorrelated with Thailand, leading it by 4-5 years, and fluctuates 3 times less than Thailand. (Germany is the outlier – quite procyclical in several phases, and fluctuates only twice less than Thailand.)

Note that this stylized fact may change after the establishment of the Eurozone, as factors determining business cycle and economic structures may be changing within these economies. Conclusion may not
2. The US and Canada (NAFTA) are counter-cyclical, leading Thailand by 5 years, and fluctuate twice less.

3. Japan is somewhat procyclical, almost like but slightly less so than Germany, and fluctuates about two-and-a-half times less than Thailand.

4. Korea is highly procyclical and contemporaneous, fluctuating almost as much as Thailand.

It is to be emphasized that the deviations are in percentage, and not absolute, terms (it is the log difference). For example, the percentage deviation of Thailand’s real GDP is three times as much as that of France’s. Since Thailand’s real GDP averages less than one-eighth of France’s real GDP, its absolute volatility (volatility in units of currency) is somewhat less than that of France’s real GDP.

The question posed earlier as to with which country Thailand can potentially fix its currency for maximum degree of credibility admits no clear answer. Clearly from the data available, fixing with the euro or the dollar alone may not be at all reasonable owing to the nature of their business cycles. An option of a fix with the yen seems less costly, as the Thai and Japanese cycles tend to move more or less in the same direction in the past 30 years (possibly with some ambiguous lead-lag relationship). However, the amplitudes of the fluctuations are vastly different, with the standard deviations of 4.8 per cent for Thailand and 1.9 per cent for Japan. The difference in the amplitudes may imply different movements in the interest rates needed, and hence monetary policy sizes, for economic stabilization purposes in Thailand and Japan. From this exercise, a single currency peg may not be credible, but a peg with the yen as nominal anchor may be more reasonable than with the dollar or euro.  

The exercise above helps gauge the level of credibility of a unilateral fix. A principal reason for a country to fix its exchange rate, aside from trade reason, is to borrow credibility to fight inflation from the counterpart’s central bank. This simple exercise suggests that the loss of monetary policy independence may be quite costly since Thailand’s business cycles are not synchronized with any of the economy in the major currency zone, save perhaps for Japan and Korea. This analysis suggested that the balance tilts in favor of Flex for Thailand in the medium term.

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hold 30 years from today, but this stylized fact, as are all other, is based on observed data, which is naturally of the past. The dataset used spans 30 years, several cycles, so should be reliable.

20 We may have to investigate the dollar zone, which include China and Malaysia as well.
Table 1. Cross correlation between Thai real GDP (4.8% s.d.) and those of other countries

| X        | % Std Dev. | X(t-5) | X(t-4) | X(t-3) | X(t-2) | X(t-1) | X(t)  | X(t+1) | X(t+2) | X(t+3) | X(t+4) | X(t+5) |
|----------|------------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| FRA_GDPV | 1.5        | 0.4428 | 0.4550 | 0.3701 | 0.3612 | 0.2111 | -0.0069 | -0.2037 | -0.3837 | -0.3433 | -0.2592 | -0.2326 |
| ITA_GDPV | 1.5        | 0.2928 | 0.2678 | 0.1588 | 0.1751 | 0.1109 | 0.0792 | -0.0421 | -0.2537 | -0.2533 | -0.2266 | -0.1982 |
| NETH_GDPV| 1.7        | 0.3396 | 0.4376 | 0.3622 | 0.2424 | 0.0417 | -0.0733 | -0.1010 | -0.1126 | -0.0377 | -0.0350 | -0.0537 |
| UK_GDPV  | 2.2        | 0.4531 | 0.2400 | 0.1214 | 0.0648 | -0.0362 | -0.1444 | -0.3006 | -0.3791 | -0.2926 | -0.1661 | -0.0036 |
| JPN_GDPV | 1.9        | 0.3734 | 0.3709 | 0.3177 | 0.2382 | 0.2687 | 0.3532 | 0.2171 | 0.0115 | -0.1522 | -0.3270 | -0.3579 |
| GER_GDPV | 2.9        | -0.0257 | 0.2542 | 0.3649 | 0.4319 | 0.4322 | 0.4353 | 0.4007 | 0.2987 | 0.1707 | -0.0959 | -0.3145 |
| KOR_GDPV | 3.4        | 0.2240 | 0.1995 | 0.2908 | 0.3828 | 0.4657 | 0.5469 | 0.1471 | -0.2364 | -0.3069 | -0.3218 | -0.2454 |
| USA_GDPV | 2.0        | 0.3125 | 0.2174 | 0.0995 | -0.0439 | -0.1919 | -0.2507 | -0.3232 | -0.2688 | -0.0797 | -0.0330 | 0.0560 |
| CAN_GDPV | 2.2        | 0.3475 | 0.2469 | 0.1863 | 0.1203 | -0.0772 | -0.2686 | -0.4550 | -0.4923 | -0.3057 | -0.1413 | 0.0286 |
Figure 1. Cycles of real GDP (business cycles) of Thailand and other countries under study
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6.4 Capital control can enhance credibility in theory, but highly costly

So far our analysis has intentionally overlooked the issue of capital control. The reason for this is simple: one should first identify what is desirable and then find a way to make that choice achievable and credible.

Restrictions on asset holdings, from legal tender to strict exchange control, can help lessen the destabilizing effects under both Fix and Flex and enhance credibility of either regime. Usually, it is perceived that capital control can play a helpful role when the authorities cannot tolerate large swings in the exchange rate. But there are also immense costs to growth and financial market developments. With the global trend of rising capital mobility, however, a more pertinent analysis should be done without the confinement of capital control.

Our position is as follows: If needed, capital control should be temporary and focused, aiming to stem excessive short-term debt flows.

There are three foreign investment channels: direct investment (FDI), equities and debts. Economists generally agree that FDI is the most stable form of finance with risk-sharing attributes and usually comes with skills and technology transfers. Equity investment also benefits from risk sharing. Sudden reversal in equity investment can occur, but usually massive reversals occur under Fix. The area of foreign investment under intense debate over whether controls should be put in place to stem them is the realm of debt instruments—both short-term flows and certain types of long-term flows, e.g. debt payable in foreign currency or indexed to short-term domestic interest rates. Debt has no automatic risk-sharing properties that FDI and equity do, and is subject to reversal of sentiment and make countries susceptible to insolvency problems.

Most studies that advocate using capital control focuses on short-term flows, particularly short-term loans. In fact, if viewed from the perspective of economic necessity and efficiency, short-term loans help reduce repudiation risk, as developing countries’ firms are not likely to be able to borrow long term in foreign currency without paying a hefty premium. The need for short-term loans is obvious as a result. Moreover, a type of short-term capital flow that is crucial for international trade is trade credits. Another type of flows that are widely despised, speculative flows, can help play an essential role in stabilizing foreign exchange and financial markets. Additionally, short-term instruments enable investors to hedge, thereby creating a welcoming environment for FDI.

This is, however, not to say that excessive debt flows are not a worry. Indeed, they are. With Fix, capital control can be most helpful in the short run (witness Malaysia and the PRC for example), but the transition toward lesser degree of control can subject the Fix to severe risks of being undermined. Under managed float with highly risk averse monetary authorities (fear of floating), control of “excessive” debt flows is believed to enhance the effectiveness of the authorities’ intervention in the foreign exchange market.

The Chilean experience with capital control (under the garb of macro-prudential policy) during 1991-1998 offers an interesting example that may be tempting for an emerging market economy like Thailand. The intention of the Chilean capital tax, or reserve requirement on short-term capital inflows, is to discourage “hot money”, the
destabilizing part of the inflows. It is based on an implicit assumption that all short-term inflows are hot money or at least a sizable majority of them is. What the Chilean authorities wish to emphasize is that this measure is instituted to aid in the transition from the managed floating to freely floating exchange rate regime.

Closer examination reveals that Chile’s need to borrow to pay for current consumption, owing to persistent current account deficits, means that it can ill afford to impose tax on foreign investor. In short, they were forced to reject the encaje (the Chilean Tax) in September 1998. The fear of REER appreciation that no doubt precipitated the use of the Tax in the first place to aid their managed float regime was also not alleviated; as shown by Edwards (1998), the REER appreciated anyway.

A pertinent question that one may ask, but is outside the scope of this paper, is: What is the optimal degree of capital control under Fix and Flex? Any answer would have to bear in mind and incorporate the following facts: Capital control may look good in theory, but in practice it usually breeds corruption, creates distortion in the financial markets. Its effectiveness also erodes over time through human ingenuity (evasion). As a result, sustaining effective control implies heavy intervention on account of the authorities in trade and the financial system. The authorities must also be disciplined to limit inflows during boom time.

Moreover, taxing capital income is not growth enhancing. Indeed, studies that use endogenous growth theory with heterogeneous agents in the dynamic general equilibrium framework (some of them stochastic models) in the open economy context have confirmed that taxing capital income is detrimental to economic growth, and therefore a bad idea. Even though these studies assume perfect private markets, an argument can be made to augment the credibility of the result. Economic theory suggests that market imperfections should be dealt with through other means, e.g. government provision of insurance or encouraging the market to provide insurance is more desirable than the distorting tax policy.

In the event that excessive debt flows become unmanageable without capital control, then the control should be temporary and focused, aiming to stem massive inflows or outflows of debt. The practical downside of it is that most controls are rarely temporary and focused. Thailand can also start by reducing biases in favor of debt financing and promoting fair, transparent and well-regulated equity finance. Strict supervision and regulation of financial institutions also helps stemming debt flows, and so does less fear of floating. Exchange rate volatility is desirable as it helps minimize short-term unhedged loans. With Flex, Thailand can also deal with excessive speculation through sterilized intervention without the aid of capital control.

6.5 Intermediate regimes: Can a desirable Fix-Flex hybrid be made credible?

We also observe that Target Zones, which seem to contain the desirable aspects of Fix and Flex, are not free of the seeds of instability plaguing Fix. A wide band seems to offer the central bank more scope for active use of monetary policy when it is needed, thereby enhancing the credibility of the commitment to the exchange rate regime. The problem that plagues Fix remains at the boundaries of the Zones, however. When the edges are
reached, defending them under speculative pressure will be difficult (although not impossible, provided that other goals are subordinated to this target).

In practice, examples of Target Zones that are forced wider and wider abound. See, for example, the attacks on the EMS countries in 1992. Britain, Spain and Portugal were all forced out of the 12 per cent wide zones of the EMS. In 1995, even after withdrawing from the EMS into a band 30 per cent wide, Spain and Portugal were forced to devalue. Mexico also presents an example of how even an expanding zone cannot be sustained. The problem is simple: if the zones’ boundaries are not credible, Target Zones will not work as a good practical balance between Fix and Flex.

The Band, Basket and Crawl (BBC) idea as floated by Williamson (1993 and after) views the zones as limiting excessive short-term exchange rate volatility and sharp medium-term movements in the real exchange rates. This arrangement is a refinement of a generic Target Zones, specifying a basket that depends on a country’s trade pattern, a band, and a crawl to allow the central parity to move according to “fundamentals”. The band is in place to allow for movements in the exchange rate. It is in admission of the fact that the fundamentally determined rate is most difficult to find, but may be approximated. The BBC arrangement does not envision the exchange rate as a monetary anchor. As a result, it is not completely identified as a monetary regime without a nominal anchor to pin down inflation expectations. With credible domestic monetary institution, a wide-band BBC scheme would not be essentially different from the freely floating exchange rate regime. If announced and the parity and crawl can be made to work, may be a possible aid to market psychology given by a transparent band.

Thus far, Fix is seen to be inferior to Flex under the dynamic credibility criterion and a Fix-Flex hybrid seems to be most desirable for Thailand. As a result, it is worth exploring in greater details the idea of BBC as a guideline for exchange rate management.

7. Managed Float is most appropriate for Thailand: Just how flexible?

7.1 Thailand is no typical emerging market: Fear of floating not justified

Assuming that the exchange rate regime set up is perceived as credible today. An often-cited drawback of Flex is the adverse impact of exchange rate uncertainty on trade. Existing literature provides no conclusive evidence that this conjecture is valid. In any case, most of the costly uncertainty should be that associated with sharp movements in the exchange rate. With regard to this, firms will have to take on private cost of hedging against this uncertainty. The cost of hedging is as low as 0.5 to 3 per cent of total foreign sales (See Wyplosz (RBA) and Rolnick and Weber (1989)). Compared to the cost of a currency crisis, which is endemic under a unilateral Fix, one could reasonably argue that the cost of private hedging is not excessive. The economic cost that may elude measurement is the fraction of firms that are discouraged from international trade activities because of this hedging cost.

Another often-cited drawback of Flex is the “fact” that emerging market economies tend to experience higher inflation pass-through. It is then argued that Flex may threaten the prospects for macroeconomic stability, as exemplified by low and stable inflation,
particularly in EMs. Reasons cited for this “fact” is that emerging market economies tend to be more open, with CPI basket being more tradable (foodstuff and manufacturing) heavy, and with history of higher inflation relative to industrialized economies. Upon closer examination, it is found that degree of openness and inflation pass-through share no identifiable, let alone robust, relationship across countries (See Ho and McCauley (2003))21. If any positive relationship were found, the very open Thai economy should see high pass-through, which would be a drawback for Flex. It may be true that the CPI baskets of EMs are dominated by tradables rather than non-tradable services, and therefore are more susceptible to exchange rate swings. History of high inflation affect economic agents’ inflation expectations, which act as an amplifier in the relationship between exchange rate movements and inflation, i.e. high inflation expectations based on past history exacerbate the problem in EMs, and not in industrialized countries.

Insofar as Thailand is concerned, since the inflation pass-through effect of the exchange rate is low, as is supported by Ho and McCauley (2003) and Chensavasdijai and Buddhari (2003), we argue that this drawback of Flex is minor. While the measure of pass-through can be debated statistically, the low pass-through results found in these statistical models are borne out across different studies and models used. Furthermore, they can be economically supportable. Chensavasdijai and Buddhari (2003) studies Thailand CPI basket in great details. It reports that Thailand’s CPI basket is non-tradable heavy (61.3 per cent of the basket with 10 per cent import content), is goods-based (70.8 per cent, with rents and fees accounting for the rest) and heavily domestic (79.6 per cent of the basket containing less than 30 per cent import). Since Thailand’s CPI basket is domestic, non-tradable goods heavy, it should come as no surprise that different studies find the exchange rate pass-through to Thailand’s CPI to be small.

Moreover, it can be argued that inflation expectations in Thailand have been anchored at low and stable rates under Fix in the past, and are now anchored through inflation targeting. Observed history of low inflation and fiscal discipline provides an anchor for inflation expectations in Thailand. Prior to the adoption of inflation targeting, with poor institutional transparency and information dissemination, Fix performed the role of expectation anchor, but today central bank credibility under inflation targeting has replaced the need for an exchange rate peg as a nominal anchor.

In conclusion, the two major drawbacks of Flex are relatively insignificant for Thailand. That Flex adversely affects trade needs more support from empirical evidence. Furthermore, Thailand’s low pass-through despite its openness suggests that a large role is played by non-tradable domestic-goods heavy CPI and inflation expectations, which was well-anchored under Fix and can be as well-anchored under Flex plus inflation targeting.

7.2 Fix requires stronger banks. Timely fiscal policy helps, but isn’t enough

21 To be fair, Ho and McCauley (2003) asserts that emerging market economies are susceptible to higher exchange rate pass-through to inflation mostly because of these countries have history of high inflation. A major weakness of this study is that its conclusions are based on a small sample of countries and regressions that possess very low explanatory power and therefore lead to dubious results.
A major drawback of Fix is that the credit channel shock cannot be dealt with effectively. This drawback is particularly pertinent for Thailand, owing to its heavily bank-based financial system. That is, the role of lender of last resort of a central bank can be severely curtailed, subservient to the overriding fixed exchange rate goal. Contraction of bank credit or bank liquidity problems in EMs, which rely heavily on bank credits for economic activities, can impact severely on the economy. One possible cause for such a contraction may come from unanticipated changes in bank deposits or bank runs, particularly on a systematic scale. Under the context of the Mundell-Fleming model articulated in a previous section, this “stock” shock cannot really be offset effectively by “flow” (i.e., fiscal) policy, unless it helps reverse the original stock shock. The best reply to this type of shock is a stock policy, namely an expansion or contraction of central bank credit to commercial banks. A fundamental problem under Fix is that credit expansion is equivalent to an increase in claims on international reserves (keeping monetary base constant), and it results in reserve loss and possible balance-of-payments crisis or abandonment of Fix itself. Usually, the probability of shocks is not known ex ante, or else contingent credit lines could be obtained and a balance-of-payments crisis could be avoided with high probability.  

The key problem is that any loss in reserves of a certain size could trigger fear of reserve inadequacy, which may precipitate an expectation that Fix may be abandoned. In this case, contingent credit lines may not suffice in preventing this kind of adverse expectation. Should a devaluation be expected, nominal interest rates could rise. As a result, even if the central bank succeeds in maintaining total credits, nominal interest rates will be high, adversely affecting output. Banks, which borrow short and lend long, will also suffer from the sharp rise in short-term interest rates (see Obstfeld and Rogoff (1995)).

In short, central bank’s stock policy may exacerbate devaluation expectations and not necessarily be stabilizing. Even if the Fix does not collapse (under some hard fix case, e.g., a currency board), the adverse effect of the credit channel cannot be offset completely. Therefore, a credible Fix ultimately relies on superior financial institutions and supervision, and the ability to prevent systemic run on banks.

A major potential weakness for Fix is its inability to cushion real shocks, which in the context of the model is equivalent to “flow” shocks or shocks that affect real output directly. A natural cushion to real shocks would be fiscal policy. However, fiscal policy usually suffers from lack of timeliness, e.g., from lengthy parliamentary approval. The timeliness issue, however, may not be pertinent to the case of Thailand judging from history. In all likelihood, there is more need for state-contingent fiscal policy under Fix, a prominent example of which is found in Chile’s Copper Stabilization Fund, which expands and contracts with the price of copper.

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22 The pooling of international reserves or contingent credit along the line of the Chiang Mai Initiative can play a helping hand to some extent.
Fix or an implicit guarantee of reduced exchange rate risk also increase the risk of asset price bubbles. Unless capital control measures, which come with high costs and dubious effectiveness, are in place, property and equity prices can be subject to more severe episodes of speculative bubbles. From the literature on asset price bubbles (see Ahuja, Mallikamas and Poonpatpibul (2003) for survey and a robust analysis in the case of Thailand), one can immediately see from this argument that an economy that wishes to ascribe to Fix needs to have a much better set of institutional support factors, namely informational and managerial transparency, risk-diversification methods, among other thing. Ahuja, Mallikamas and Poonpatpibul (2003) also argue that there may be a modest helping role for monetary policy in limiting the size of a bubble with much more significant monetary policy role in the aftermath of a burst. In this case, Fix presents a contradiction since it implies that the role of monetary policy in limiting the size of the bubble or shore up the economy after the bubble burst is severely curtailed and can become nonexistent unless there is a synchronous buildup or burst in a country to which the baht is pegged, and that monetary policy there is used as a tool to respond to bubbles.

7.3 How much “Flex” is best? Adjustable Band-Basket (ABB) scheme + Inflation Targeting

We have argued that freely floating is not the most desirable option and that an intermediate regime is most desirable. At issue is how flexible and how to make it credible.

A Fix-Flex hybrid that is appropriate for Thailand is one that allows for a large degree of exchange rate flexibility while limiting excessive short-term volatilities and sharp medium-term real effective exchange rate swings.

We suggest that Thailand’s monetary authorities float the nominal effective exchange rate within a certain well-defined region or band. The band itself must be allowed to adjust over time when there is a requirement to neutralize inflation differentials or to accomplish a real appreciation in a rapidly modernizing economy with high productivity growth such as Thailand in order to maintain equilibrium and hence, the feasibility of the exchange rate band itself.

The frequency with which the band will be adjusted depends on how wide it is and how the central bank’s view of the fundamentally implied rate changes. It is of paramount importance that the band be made consistent with the movements in short-term interest rate instrument, and therefore, the inflation target.

The exchange rate should be treated as an intermediate target to be managed when it is determined to be excessively influenced by speculative behavior and as a macroeconomic indicator when there is no reason to suspect that it is deviating from the fundamentals-implied region. The first question to ask therefore is whether currency speculators excessively influence the exchange rate. Indeed, the essence of this flexible exchange rate policy proposal is that the exchange rate should not supplant price stability as a monetary policy goal or inflation as a policy target.
With the use of inflation targeting as a monetary framework, the issue of Fix having an advantage in terms of policy transparency disappears and the exchange rate band can be maintained with credibility as it will be consistent with a well-defined monetary policy goal and changes in the economic system.

Since the exchange rate that matters for policy is the real effective exchange rate, which is similar to the nominal effective exchange rate in the short run under a low inflation environment, a natural progression of this policy outline leads us to a decision on the parameters regarding the three parts of the scheme; that is, (1) the basket for the effective exchange rate, (2) the band within which the effective exchange rate is allowed near-free to free mobility, and (3) parity adjustments over time to be determined with help from the market. At issue is also whether these parameters ought to be made public in order to shape and stabilize its expectations, which we will discuss shortly.

7.3.1 More basket weight to the USD recommended

The basket component is the most obvious. It suggests that countries with diversified trade such as Thailand would be better off if it does not preoccupy itself with a single currency peg. This is because exchange rate variations among the industrial economies that float can alter Thailand’s effective exchange rates, which may disrupt macroeconomic balance. An effective exchange rate is the weighted average of exchange rate against all relevant currencies. The weights are usually chosen to reflect the pattern of trade.23 Since the USD is a major invoicing currency for Thailand, it may carry more importance than the trade weight would account for, therefore the basket may give higher weight to the USD than the trading volume would imply.

7.3.2 Why a wide and adjustable band?

The band part is more controversial, but it is the essence of the scheme itself. From the arguments outlined earlier, we argue that Thailand would be best off with a largely flexible exchange rate within a band that helps limit excessive short-term volatilities and sharp medium-term real effective exchange rate fluctuations. In particular, the band should be wide (interpreted by Williamson (2001) as up to ±10 or even ±15 per cent, but not necessarily that wide all the time) so that parity rate determination can be helped by the market over time.

We emphasize that Thailand needs to allow its effective exchange rate to fluctuate within a fairly wide band. We have consistently argued that in most cases markets should be able to, and it is best to let them, determine an exchange rate that attains an equilibrium for the economy while in infrequent cases of excessive speculative behavior the monetary authorities may have to take action to influence the exchange rate toward the direction that it deems more suitable. The width of the band can change, as long as it is relatively wide, depending on the circumstances. For example, if there is need for shock absorbance and the central bank does not know the new parity, then the band can be widened for a short period until it can be recentered.

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23 For ways to choose the weights for Thailand, see Vimolchalao and Piemchol (2003).
A wide band is preferred because: Firstly, the central bank should not embark on a potentially destructive path to defend a disequilibrium exchange rate. Given that no model is good enough to determine with precision where that equilibrium rate is and our understanding of the equilibrium exchange rate is rather limited, a wide region surrounding its best estimate is not at all unreasonable. It follows then that the parity or the center of the band ought to be adjustable to keep it in line with the fundamentals.24 Secondly, a wide band allows the exchange rate to perform its task of helping stem the tide of temporary (or short-term) capital inflows, the excess of which can be destabilizing to the Thai economy. Thirdly, a wide band will allow the Thai economy to reap the full benefit of Flex; that is, an independent monetary (interest rate) policy for counter-cyclical purposes particularly when our business cycles are generally not synchronized with any major currency zone or for tackling specific issues that may occasionally take place domestically, such as an asset price bubble burst.

7.3.3 Parity and its adjustment
The crawl, as envisioned in the original proposal by Williamson (2001), is used with a view to neutralize differential inflation over time. A crawl has in fact been used by Israel to steer inflation down over time at a loss to short-run international price competitiveness. We, on the other hand, would like to think of a crawl not as an explicit rule of thumb to be fixed at 1-2 per cent per annum, for instance, but as occasional small parity adjustments in order to facilitate needed real adjustment.

Since the equilibrium exchange rate is unknown, the central bank will need to let the market help determine a parity rate. Since the central bank already determines part of the fundamentals, in particular the short-term interest rates, that are consistent with the inflation target (and therefore inflation expectations), it should find a parity exchange rate that is consistent with these fundamentals with the aid of the market. The central bank has no choice but to perform a trial and error experiment with the levels of the exchange rate by picking one that its analysis shows is within the region most suitable for the economy and is acceptable by the market.

The central bank should monitor and intervene “randomly” so that a short-run moving average of the exchange rate does not breach the band. If there is pressure that the rate will breach the band, then a revision of the band’s appropriateness should take place.

7.3.4 Little gain from formal announcement with much to lose
Williamson (2001) argues that all parameters should be announced, including the width of the band and the crawl component, to take advantage of the arrangement. The idea is

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24 In general, a discrete exchange rate change (by the authority) every now and then, e.g. having a narrow band that needs frequent adjustment, or the expectations of it by the market can be destabilizing. A wide band with adjustable parity can help stabilize the foreign exchange market provided that the band is announced, which is another issue that merits a discussion.
based on the belief that as long as the band can be made credible, the expected exchange rate will revert to parity. Arbitrageurs will deduct an appropriate discount from or add an appropriate premium to the baht yield when they compare the expected return from holding funds in Thailand with foreign yields to decide whether to place funds in this country. Insofar as the tradable goods sector is concerned, investors in that sector may look at the parity rather than the fluctuating market rate in their investment project assessment.

We do not believe that there is much to be gained by announcing the parameters involved in this arrangement (width of band, weights in basket, frequency of band adjustment or parity change) explicitly. If the band is wide, the potential gain for Thailand will be the placebo effect of psychological nature. Indeed it could invite speculative pressure on (a one-way bet against) the baht if the announced band is viewed as rigid and narrow. Fundamentally, we view as inconclusive the argument that underpins proposals to establish an intermediate regime of any kind; that is, there is can be a complete segmentation between monetary policy (interest rate policy), or the fundamentals, and the equilibrium exchange rate. As a result, an explicit announcement would create more confusion as to what the target of monetary policy is, the exchange rate or price stability, and speculation of whether interest rate movements and the exchange rate bands are consistent.

The wide-band BBC-type scheme proposed is best considered as a conceptual guideline for intervention and not as an alternative to the inflation-targeting monetary regime. Since the fundamentally implied rate is hard to identify in the short run, we cannot know if the exchange rate is misaligned in the short run; however, the exchange rate under this scheme is market-led and so chances of dangerous persistent misalignment will be reduced.

8. Concluding position and suggestion for further research

The necessary ingredient for successful exchange rate management discussed in this paper is regime credibility. Even though from the point of view of shock absorbance, a Fix-Flex hybrid may be preferred, the extreme Fix or Flex is much safer than an intermediate regime. The middle ground is to be avoided unless, it seems, there is a time-limit to it and it is made widely understood and credible (e.g. limited flexibility before joining a currency union in a pre-announced and credible level and time horizon). Even if there is a well-known time limit, there is no guarantee that a currency attack, forced devaluation or revaluation, may not take place; several examples from the EMS period and as late as early 2003 in Hungary bear testimony to this fact.

Specifically for Thailand, since we cannot fix credibly by subjecting everything to the exchange rate goal, we argue that moving toward Flex is reasonable. With this, we need to find a good Flex. Freely floating is not desirable and herd and excessive speculative behavior (shocks to capital accounts) should be countered, keeping in mind that not all volatilities is detrimental. Indeed, if it is the case that the central bank has private information on the speculative nature of exchange rate movements, then it may be desirable for the central bank to intervene to even out the effects of speculative drives. The intervention need not be actual, it could be threatened (simply verbal). Minor volatilities should be left to the market, lest Thai firms will never grow to realize that we
live in an uncertain world and it is their responsibility to protect themselves through available means of hedging, the cost of which is not excessive compared to the cost of a currency crisis or loss in reserve under a crisis situation, i.e. between 0.5 to 3% of total sales, (see Wyplosz (2001)).

The exchange rate should only be a tool or an indicator and not the goal. Explicit BBC should be ruled out, unless the band is wide and the crawl is determined by the market. The wide-band adjustable parity scheme proposed in Section 7.3 should be used as an internal reference for intervention under case of massive abnormal volatility. The announcement of the band and basket parameters can confuse the public as to what is the main policy target. The central bank should remain focused on domestic inflation as policy target and that means looking out for excessively undisciplined fiscal policy. Degree of currency mismatch should be monitored and limited.

If constancy of the nominal exchange rate evolves into a goal (based on the inconclusive trade-enhancing or welfare argument), then establishing a currency area in Asia or a coordinated fix between important trading partners may be called for. Further research on its desirability is needed.

We have pointed out in our analysis a few loose ends that need tying up in future research: 1. The nature of shocks that predominate in the Thai economy, and 2. The empirical evidence of pricing behavior of certain classes of goods by exporting Thai firms along the line of Engel (1993, 1999), i.e. producer currency pricing versus pricing to market with local currency pricing.

Reference


