An Independent Evaluation of the Bank of Thailand's Monetary Policy under the Inflation Targeting Framework, 2000-2010

Stephen Grenville and Takatoshi Ito[1]

[1] We are grateful to the Staff of the Monetary Policy Group for their professional help in assembling information and data necessary for us to conduct the evaluation and for their personal hospitality. Their intellectual skill and personal care impressed us. We also thank those who agreed to have been interviewed. for frank discussions. The meeting schedule and names of people we interviewed are listed in Appendix 4.

Section 1. Introduction

During the decade of inflation targeting (2000-2010), Thailand has recorded an excellent performance in price stability. As Figure 1.1. shows, the inflation target period (2000-2010) is a remarkable improvement on earlier decades. Not only has core inflation been within the band for almost the whole period as shown in Figure 1.2. (90% of the time, and the departures were on the low side of the band), but it also compares favourably with other countries of the region. The Bank of Thailand (BoT) has put in place an inflation-targeting framework which meets international Best Practice, with high levels of accountability, transparency and external communication.

Just how much of this performance is attributable to the inflation targeting framework *as such* is debatable. Among Thailand's neighbours, those that do not have formal inflation targets have done just as well (Malaysia and Singapore), and inflation targeters like Indonesia and the Philippines have performed less well than the regional average.

That said, the inflation targeting experience seems to have been a very positive and valuable one for Thailand. It was initiated at a time when the BoT's prestige and credibility was still reflecting the damage of the Asian Crisis, and inflation targeting replaced a failed monetary policy anchor – the fixed exchange rate. Inflation targeting was put in place largely at the initiative of the BoT itself, but it not only provided an effective basis for monetary policy decisions and an anchor for inflation, but it also defined the nature of the relationship between BoT and the Government. One of the essential elements of inflation targeting is that the central bank should be independent so as to be able to achieve its target without unhelpful pressure from the political process, which in many countries often gives a lower priority to price stability. This independence was not formalized in legislation until 2008, but the BoT was able to operate with *de facto* independence during the whole of the period. With this independence formalized in the 2008 BoT Act, the interface with the political system is more clearly defined and the accountability and transparency which are integral to the inflation targeting framework have been well established, through press releases and press conferences after policy decisions are made, through a comprehensive Inflation Report, and through other reporting to the Cabinet.

Figure 1.1: Thailand Core inflation rate, 1986-2010 and policy rate, 2000-2010

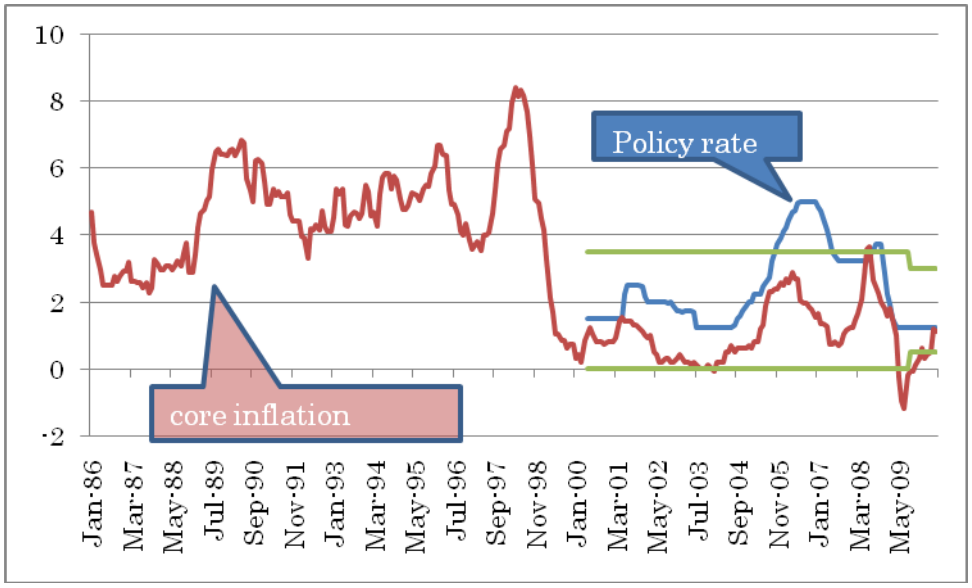
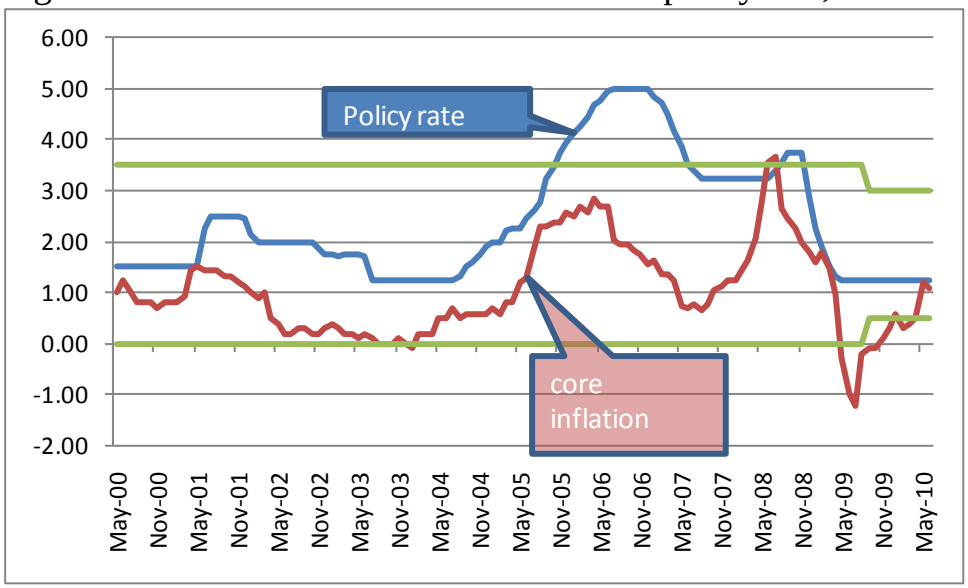


Figure 1.2: Thailand Core inflation rate and policy rate, 2000-2010



Data Source: Bank of Thailand

One of the outstanding features of the Thai inflation targeting experience is that this framework, focused as it is on the primary objective of price stability, does not seem to have prevented the BoT from meeting other policy objectives as well. Price stability has not been achieved at the expense of economic growth, as output has averaged 4.2% through the inflation targeting period, and this would have been higher had it not been for the exogenous shocks of the Global Financial Crisis and domestic political conflict. All central banks have responsibilities to maintain financial sector stability, and the BoT has done this effectively. In addition, the BoT Act empowers the MPC to manage the exchange rate, and it has become a key policy objective (not just in Thailand but in the region more widely) to maintain a degree of stability in the exchange rate using a range of measures, including foreign exchange intervention.

One caveat should be added to this story of success. The inflation targeting approach has not yet been subjected to really taxing stress-testing so far. For the early part of the period, the economy was still operating with spare capacity (a legacy of the Asian Crisis), which made inflation control easier. When serious supply-side shocks occurred in the form of oil price increases in 2005-08, the government acted to soften these with administered prices and fiscal subsidies. This benign environment has meant that, for eight of the ten years under assessment, Thailand was able to keep its interest differential (vis-à-vis US dollar rates) quite small, which may have restrained foreign capital inflows and prevented strong upward pressure on the baht (except in 2006). In the future we can envisage circumstances where the interest differential is larger, reflecting high growth potential and investment opportunities. This will boost capital inflows and create expectations of on-going appreciation. The upward pressure on the baht may be strong and unwelcome. There could be some conflict between the desire to maintain international competitiveness and the inflation targeting framework.

At the same time we have not seen an episode in this period when monetary policy has had to work hard to restrain demand. The connections between the policy rate, the banks' lending rate, and economic activity seem somewhat tenuous. The channel via the exchange rate may be more powerful but less politically popular, because it impinges mainly on the tradables sector, particularly exports.

Nor have we seen, in this period, serious asset bubble pressures. Although the BoT seems to have instruments that could address this, these have not yet been rigorously tested.

Should these tensions between the BoT's various secondary objectives become more problematic, a good understanding between the BoT and the Government (especially the Minister of Finance and his Ministry) will be needed to find the appropriate channel of communication and mutual understanding. The central bank and the Finance Ministry are natural allies in formulating effective macro-policy, so the relationship should be independent of each other but amicable.

Our judgment is that BoT has not only performed well in price stability, but the flexible inflation targeting framework which is now in place is Best Practice by international standards, and there is little that should be changed. We make various recommendations in Section 7 which we believe would further improve an already well-functioning system. Changes along the lines of these suggestions would demonstrate that the flexible inflation targeting framework can evolving continuously in response to the opportunities to make it work even better than is has in the first decade of its operation.

Here is a 'road-map' of this Report. In Section 2 we look at the international evolution of the broad inflation targeting approach over the past two decades. Section 3 examines the variations within the current 'best practice' Flexible Inflation Target (FIT) framework, illustrated by reference to inflation targeters other than Thailand. Section 4 applies this analysis to the specific circumstances of Thailand, focused on the main objective of the framework – price stability – and how this relates to output. Price stability is not the sole objective of the Bank of Thailand: Section 5 looks at other tasks within the Bank's remit. An essential element of Best Practice FIT is the central bank's governance, its accountability and transparency: these are covered in Section 6. In Section 7 we offer some recommendations for further evolutionary development of the Thai FIT framework and in Section 8 we return to our Terms of Reference to draw these threads together.

Section 2. Evolution of Inflation Targeting

Universally, monetary policy has some intrinsic characteristics that present challenging problems for the policy-maker. First, raising interest rates is almost always unpopular. More than half a century ago, the US Fed Chairman said: "it is the job of the central bank to take away the punch-bowl just when the party is getting to be fun'. In more academic terms, there will always be a temptation to 'slide up the short-run Phillips Curve' to achieve more output, even if this will cause a little more inflation later. The political pressures are almost always in favour of an easier stance of policy, particularly before an election. As well, monetary policy operates with lags, often quite long. Thus optimal policy must be forward looking, reacting to *expected* events rather than the current data. Hence it will be harder for the public to understand policy changes. A further characteristic is that one of the fundamental drivers of inflation is *price expectations*: producers raise their prices depending on their views on how prices will move in the future, and consumers accept higher prices when they think these are part of a general upward movement. Keeping these price expectations low and stable is at the heart of good monetary policy.

To respond to these characteristics, policy makers have seen the advantages of a firm *pre-commitment* element to policy-making that ties the hands of policy-makers to some degree. Such a commitment prevents them from simply responding to the pressures to ease policy and allow a little bit more inflation (which would inevitably be the start of a cumulative process). While policy-makers need this sort of restraining pre-commitment, they also need enough flexibility or *discretion* to respond to the unfolding events. At the same time, if they have been given this independence to act with this kind of *constrained discretion,* they should have comprehensive obligations to be accountable for their actions through transparent reporting to the public and to the government or the parliament.

The **inflation targeting framework** is a policy regime designed to respond to, and work within, these constraints. Its key elements are:

- A public commitment to a numerical target level (or range) for an inflation rate, usually in the form of a mandate from (or an agreement with) the government.
- Operational (instrumental) independence for the central bank, so that it is free to pursue this goal.

- Accountability via public transparency and reporting to the government/parliament (the political interface).
- In explaining the central bank's performance to the public, the inflation forecast plays a central role.

There are many variants in terms of implementing inflation targeting as will be summarized in Section 3.

Within this broad policy framework, inflation targeting has evolved. Beginning with the rigid managerial-control version of the original RBNZ target, the 'best-practice' inflation targeting framework had changed by the time Thailand adopted this framework in 2000, about ten years after RBNZ. Originally, an inflation targeting framework was interpreted by many academics and policy makers as giving highest (and often sole) priority to keeping the inflation rate at around the target. However, by the late 1990s, inflation targeting had become a monetary policy framework which included some commitment to output stability as well as price stability. Price stability without output near potential (i.e., near full employment) in the long run would not be desirable. An inflation-targeting policy framework that includes both price and output became known as the Flexible Inflation Target or FIT. The FIT had become mainstream by the time BOT adopted inflation targeting in 2000.

Under FIT, keeping inflation expectations anchored is an important part of the policy framework, even when the actual inflation rate deviates temporarily from the target. In order to achieve this anchoring of expectations, communication of the central bank's methods of operations and policy intentions has become extremely important. Hence one of the further developments of inflation targeting over the past ten years has been much greater transparency about the internal thinking and debates within the central bank.

Over the past two decades, the essential basic elements of inflation targeting (noted above) were confirmed. At the same time, the details were also worked out: the inflation target should be forward-looking (i.e. the central bank should target the *forecast* of inflation, aiming to achieve the target at some time in the future); core inflation was analyzed but priority was usually given to the *headline CPI* in reporting to the public, because this was the measure of inflation that the public understood best; time-flexibility (giving time for policy to work) was incorporated in most targets; central banks soon

established that, given independence, they did not suffer from time inconsistency (they had always wanted to 'take away the punch bowl just when the party was beginning to be fun'); central banks greatly increased their accountability (measured in terms of reports, press releases, speeches and parliamentary appearances); getting the right balance of transparency became an issue. While transparency and accountability increased over time, the early emphasis on punishing the decision-makers when target ranges were exceeded essentially disappeared, to be replaced by a requirement to explain departures from the target (Roger and Stone (2005)).

For a variety of reasons, all this looked to be a great success with the Great Moderation period (the 1990s), in which prices were stable and yet growth was satisfactory: there did not seem to be any conflict between price stability and real output goals, and the Taylor Rule (relating the setting of policy to how far the economy was from its inflation and output objectives) embodied this practical reality, even though no central banks embraced the rule formally.

The central point of this evolution was that as credibility was built up and inflationary expectations became firmly anchored, it was possible to make the inflation targeting *more flexible*, able to encompass other objectives. This flexibility was a result of its success in achieving the central aim: price stability and anchoring expectations. The political economy problem of 'taking away the punch bowl' seemed to have been solved, but as the remit widened, the simple clarity of the original single objective was lost.

The challenge of the Global Financial Crisis (GFC)

Some might argue that an excessive focus on CPI inflation was one of the factors that encouraged policy-makers to ignore the buildup of asset price bubbles in the USA and the UK, leading to the GFC. The proper lesson is, however, that price stability is a necessary but not sufficient condition for financial stability. Additional measures – effective supervision and macro-prudential actions – are needed. The central message of the GFC is that the FIT approach is still appropriate, effective and necessary, but that the central bank remit has greatly widened, with financial stability brought centre-stage. Central banks were fortunate, in that during the first decade of inflation targeting, they could concentrate on CPI inflation rate.

Thus it seems likely that in the post-GFC world, inflation-targeting central banks will *also* have to consider:

- Financial Stability. Almost all central banks already have financial stability ('system stability') in their remit (even where prudential stability has been shifted to another institution). But during the Great Moderation it seemed that active policy was not needed. Provided the prudential supervisor did a good job, it was enough that central banks had their *liquidity management* instruments working well. They would have a sufficiently powerful instrument to handle idiosyncratic financial problems, and the lender-of-last-resort (LoLR) would be ready to handle systemic issues[2]. The GFC, however, revealed the need for active and strong *macro-prudential* measures (discussed by the Bank for International Settlements (BIS) for a decade before the GFC) and for a resolution mechanism to shut down a (near-) insolvent institution while protecting the financial system. These requirements now need to be operationalised, and where the implementation of the prudential instruments is with another institution, the means for coordinating these with the central bank has to be put in place. While these arrangements can be made to work even when prudential supervision is not within the central bank, the substantial advantage of the central bank having a direct supervisory relationship with the core financial institutions has been demonstrated. There are inherent synergies of information, knowledge and expertise, with two-way flows between monetary and supervisory responsibilities. The supervisory relationship facilitates early action when there is need for extra liquidity or LoLR. The resolution authority should be legally established in cooperation between the government (which may foot the bill for capital injections and loss guarantees) and the central bank (which conducts lender of last resort). The case for having the macro prudential role in the central bank is even stronger for emerging economies, where markets (both financial and real assets) are less developed and more prone to disequilibrium movements and bubbles.
- Closely related to these issues of financial stability, the GFC has sharpened the long-standing debate over the role of monetary policy in restraining *asset prices*. This debate has shifted markedly in the direction of expecting central banks to be pro-active against asset price bubbles. Cleaning up afterwards has gone out of fashion.

[2] The ambiguities surrounding the LoLR (particularly, that the ultimate cost of a systemic bail-out could not be borne by the central bank over the longer term) could remain untested and unresolved.

- Quantitative Easing (QE) had been rare before the GFC (Japan 2001-2004 provides the sole example), but it became common among the mature-market countries during the GFC. In most cases it can be seen as an extension of open market operations, but in others the range of assets accepted in the open-market operations raised issues of moral hazard and risk to the central banks' balance sheets. Where the central bank was buying government debt, it raised the fundamental issue of separating the central banks balance sheet from any requirement to fund government debt, an essential pillar on which central bank independent rests.
- Perhaps more relevant to the countries of East Asia, the central bank's attitude to the *exchange rate* is ready for re-evaluation. When inflation targeting was introduced in Thailand in 2000, many saw the basic innovation being that inflation, rather than the exchange rate, would be the anchor of monetary policy. While there was obviously a place for the exchange rate in an inflation targeting framework (how much effect did interest rates have on the exchange rate? how big was the pass-through from the exchange rate to inflation?), the implication of the inflation targeting framework was that the exchange rate would be largely left to be determined by the market. Pursuing exchange rate objectives would distract the central bank from its price stability mandate. 'Corner solutions' (countries should chose either a strongly-fixed currency or a free float) and the 'Impossible Trinity' (countries with open capital markets could not have both an independent monetary policy and a controlled exchange rate) were central in the analytical mind-set.

  But for more than a decade since the Asian Crisis, a number of the countries of East Asia have taken a more active role in exchange rate setting than was implied by this inflation targeting framework[3]. Singapore and Malaysia have kept their exchange rates very stable through intervention, while others have been ready to intervene in response to sudden movements in the rate (Korea and Indonesia during the GFC) and in response to appreciation pressures from capital inflows (hence the ubiquitous rise in foreign exchange reserve levels). This success in influencing the exchange rate while maintaining an independent monetary policy in a world of free capital

[3] For arguments justifying this, see Ho and McCauley (2003). The IMF has shifted away from its advocacy of corner solutions, see Ghosh and Ostry (2009).

flows raises the question of whether the Impossible Trinity is less rigid and constraining than the text-book version implies, or whether these countries have found ways of imposing effective capital controls within a seemingly-open capital world.

The critical issue is: 'Are there circumstances in which the exchange rate objective will conflict with the inflation targeting objective?' Exchange rate stability should generally be helpful for inflation stability (McCauley 2004). As Ito (2007) points out, there is often no conflict between the needs of inflation targeting and exchange rate stability, although the particular parameters may sometimes cause problems.

There are, however, two circumstances that have the potential to cause a conflict between the desired stability of the exchange rate and inflation targeting. First, big capital inflows may come to push up the exchange rate. Central banks will be tempted to lower the policy interest rate to soften the appreciation, but domestic activity may be strong (and asset prices rising, particularly with capital inflows). Second, world commodity prices (say, oil) may go higher. This is a terms-of-trade shock: policy should allow the first round to pass through to change relative prices, even if this means missing the target. There may be a temptation to raise interest rates to discourage second-round effects (which would push up the exchange rate and restrain prices), but this would be bad for output and unnecessary if price expectations are well anchored.

- Pre-GFC, fiscal policy had fallen into disuse as a macro-control variable, either because of a belief in Ricardian equivalence, or that fiscal policy was too slow to respond, or that it was too subject to political misuse. Some kind of Golden Rule was common, which gave active fiscal policy a very modest role. The GFC strongly suggests that fiscal policy is effective against a downturn (although it reminds of the serious problems of excessive government debt). Will fiscal policy be returned to its largely passive role? If it remains active, is there a need to coordinate with monetary policy and if so how does this fit with inflation targeting?

Section 3. Comparisons of Best Practice

In addition to the general criteria of inflation targeting set out above, a 'Best Practice' framework has developed which has a high degree of commonality across inflation-targeting countries. There are, however, important variations within this Best Practice framework. These are examined here, using the FIT frameworks of various countries to illustrate the variations. For a detailed comparison of institutional framework of inflation targeting countries, see Appendix 1.

3.1. The Objective/s

When inflation targeting began in New Zealand, it was a central tenet that inflation should be the *only* objective. Over time, most inflation targeters have found some role for output; many have a remit for financial stability; and, at least in East Asia, most have some concerns for the level and volatility of the exchange rate. Almost all have felt uncomfortable about sharp asset price increases and bubbles. How do these various objectives link together, and which central banks include these as objectives?

(a) The role of output in the FIT target.
As noted above, excluding output from the initial RBNZ inflation targeting framework was a managerial idea. But there was also strong academic backing for this single-objective approach. First, this came from the Tinbergen notion that a single instrument could achieve only one target, so given that central banks had only one instrument (the interest rate), they should have only one target. Second, there was the *Milton Friedman/Quantity Theory* legacy that monetary policy impinged on prices but not output. The comparative advantage of monetary policy would be in stabilising nominal magnitudes. Real output would be determined by the resource endowment of the country and its productive apparatus[4] [5].

Central banks have often found it convenient to accept a narrow single objective and in their rhetoric to emphasise the inflation objective to the

[4] For recent assertions of this view, see Svensson 2009: 'Monetary policy cannot, on the other hand, affect the average level of real quantities such as output, employment, and resource utilization.'(p.3).
[5] For their part, the Real Business Cycle theorists gave no active role to monetary policy.

exclusion or down-playing of any output objective. This is, perhaps, understandable. It is easier to succeed in policy if there is only one objective. Partly this is also motivated by the perceived need to counter various biases and preconceptions in the political process in order to emphasise independence, discussed above[6]. Once output is openly admitted to be a part of the central bank's objective, then the government pressure upon the central bank would increase to respond to short-run fluctuations of output. In order to preserve independence, rhetoric to have price stability as the objective is the safest.

That said, this is not a tenable position. Even if it might be argued that monetary policy does not affect real output *in the long run*, it certainly does in the short run. More specifically, if interest rates are tightened to deal with an adverse inflation shock, getting back to target will generally require the opening up of an output gap, and the unemployment and underutilized resources that this entails should be the concern of the central bank. As well, if there is an output gap for some reason not connected to monetary policy, monetary policy should make some contribution towards the generally-accepted objective of getting back to potential output. Over the past decade there has been an increasing recognition in FIT frameworks that central banks should at least acknowledge that their actions have some effect on real output.

This evolution is best captured by the wide-spread acceptance of the Taylor Rule as a reasonable rule-of-thumb explanation of how central banks (whether IT or not) operate. In its simplest form, it says that policy setting will respond both to departures of the rate of inflation from its target, and to departures of actual output from its potential[7]. While no central bank would

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[6] Kuttner (2004) illustrates the point with his Table 3, which divides the inflation targeters into 'tough talkers', 'intermediate' and 'explicitly flexible'. Only one central bank (Norway) falls into the last category.

[7] Perhaps a reconciliation of the output/inflation debate is to note that the Taylor Rule does not imply that monetary policy can or should try to get output above its potential, but that central banks should be concerned when it is not at its potential and be ready to assist in getting back there. If the economy is below potential, monetary policy should be able to help boost it without much cost to inflation. A useful way of thinking about this is in terms of the expectations-augmented Phillips Curve, showing the relationship between inflation and unemployment (as a measure of the output gap). In terms of demand management, it should be the task of the central bank to have output close to the NAIRU (the rate of unemployment which is as close to capacity as possible without triggering higher inflation). To the left of the NAIRU is clearly an inflationary 'no-go' area, and to

acknowledge that it uses the Taylor Rule in its decisions, or that its actions can be accurately explained in its terms, most central banks now see some version of the Taylor Rule as being a sensible short-hand approximation of policy.

Nevertheless, many central banks maintain a preeminent role for inflation, Certainly no central bank has specified a target for real output, in the same way that inflation is specifically and explicitly targeted. That said, there has been a shift to acknowledge the role of output in the decision process[8]. It is now normal to find some mention of output within the central bank's objective, although it is in a lesser role, if only because it is not explicitly targeted. Thus, among the inflation targeters in East Asia, Australia, New Zealand, the Philippines and Thailand have some reference to an output-type variable. On the other hand, South Korea and Indonesia have their objective specified in terms of price and/or exchange rate stability, although even here Korean price stability is described as the "most important' objective, without specifying any others. Filardo and Genberg's Tables 1 and 2 set this out in detail and are reproduced as Appendix 2, Tables 1 and 2. See also the row on "objective" in Appendix 1.

Is it useful to express the inflation/output objectives as being *hierarchical*. The Swedish Riksbank, the Bank of England and the ECB specify their objectives this way. Others have dual mandates: within the regional inflation targeters, Australia falls in this category, and outside the inflation targeters, the US would be the most prominent example[9]. We share Giavazzi and Mishkin's view: 'the bottom line is that either type of mandate is appropriate as long as it operates to make price stability the primary goal *in the long run*, but not in the short run.' (Giavazzi and Mishkin (2006) page 14).

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the right represents an on-going loss of welfare. Thus there is no conceptual conflict between the two objectives in terms of demand management. The issue only arises when there is an adverse supply-side shock, where the economy may have to operate to the right of the NAIRU for some time in order to get inflation back on target. Here the key issue is the stability of inflationary *expectations*. If price expectations are stable in the face of such supply side shocks, the economy will return to low inflation with little or no additional loss of output.

[8] New Zealand included output in 1999, strengthening the reference in 2002.

[9] The Bank of Japan Act of 1998, Article 2, states: 'Currency and monetary control by the Bank of Japan shall be aimed at achieving price stability, thereby contributing to the sound development of the national economy.'

It might be worth noting that it is hard to see, from statements of objectives, much difference on this issue between inflation targeters and others.

(b) Asset prices

Inflation targeting invariably focuses on inflation in current prices of goods and services that are in a typical consumption basket, but not on asset prices. Nor do asset prices feature in any central bank formal objectives. Central banks have, however, long recognized the disruption caused by volatile asset prices. A crash of asset prices, in particular, real estate prices, will most likely increase nonperforming loans in banks' portfolios, resulting in a banking crisis and financial systemic instability. The Japanese experience of a boom in the second half of the 1980s and a bust in the 1990s illustrates the point. It is difficult for central banks to argue that this falls completely outside their general remit. Over the past decade or so central banks have attempted to find a place for asset prices in their analysis, as numerous conferences attest[10]. The practical difficulty is clear enough: any interest rate high enough to significantly slow an asset price boom would be very damaging for the normal flow of national output[11]. The two suggested solutions are either the lean against the asset prices, or to 'clean up' afterwards[12]. Neither of these suggestions provides a satisfactory answer, although there may be a place for each of them in a practical approach to policy, and room to do this within an inflation targeting framework.

The better solution, however, is to develop other *additional* instruments, so that there is no conflict or tension with specific monetary policy objectives. The primary candidate as instrument is a practical implementation of 'macro-prudential' policy. This is to use the regulatory instruments routinely in the hands of the bank supervisors to counter strong asset price growth. Much of this involves ensuring that the normal prudential tools are not actively pro-cyclical (which means ensuring that any temporary cyclical rise in collateral asset values does not encourage more lending, leaving borrowers and lenders vulnerable when asset prices turn down). The Spanish central bank has an active program of 'dynamic' capital requirements, so

[10] For example, the Fed of Kansas City's 1999 Jackson Hole Conference, the RBA's 2003 conference and the BIS's 2007 conference reported in BIS Papers 34.
[11] For a good discussion of these issues, see Kohn (2008) and the references in this speech.
[12] See White (2009).

that capital rises with the cycle to offset the pro-cyclical bias of static policy. Loss provisioning can, similarly, be made more 'dynamic'[13] One disadvantage is that such measures tend to impinge on the banking system rather than the entire financial sector.

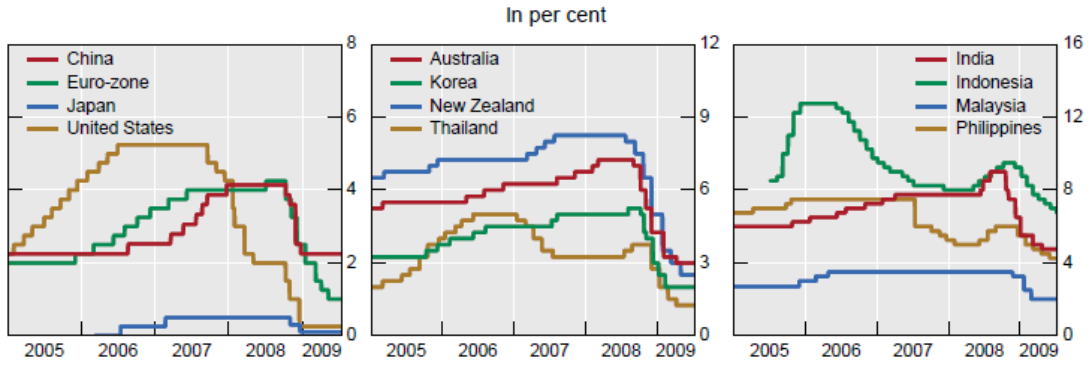
The Global Financial Crisis (GFC) has made the need for such measures more obvious and urgent. The countries of this region have tended to be readier than the mature financial economies to use this sort of measure, perhaps being more at home with direct measures. Thus we see, in particular, use of required loan-to-valuation ratios (LVRs), with some cyclical variation in these, in Hong Kong, Taiwan, Singapore and Thailand. Variable capital requirements have not yet been used extensively. The GFC has emphasized that the rationale for such micro-level measures will be found at the macro level to capture the inter-connectedness of the financial system, with the systemic threat that this poses.

(c) Financial Sector Stability

Most central banks have an explicit remit to look after financial stability, and where it is not explicit, it is implicit. It is, of course, not a specific element of inflation targeting, but we need to ask the question; 'does it conflict with inflation targeting'. Within the discussion of the appropriate arrangements for prudential supervision, it has been argued that monetary policy should be institutionally separated from prudential policy so that monetary policy is not distorted by the need to support the financial sector. But the GFC has demonstrated that central banks are an integral part (perhaps the most important part) of the response to financial problems. The varied and substantial measures taken by banks in the Asian region are set out in the detailed appendices to BIS (2009), in addition to the interest rate response shown in Figure 3-1. Certainly, interest rate setting should respond to a financial crisis, and where the inflation position is not at risk, low interest rates can assist in restoring balance sheet health. Even vigorous Quantitative Easing (QE) operations seem quite compatible with inflation targeting, as the Bank of England is currently demonstrating.

[13] . The first hurdle to this is the accounting procedures which generally oppose any such provisions, on the grounds that they provide 'hollow logs' that facilitate the smoothing of profits. Thus there is work to be done in establishing that these measures are not 'hollow logs', but rather a true reflection of the cyclical risks.

Figure 3.1 Policy Interest Rates



Source: BIS (2009)

The macro-prudential measures set out in the previous section will also be relevant. Financial sector instability often begins with asset price bubbles backed by excessive credit creation.

In short, all central banks have obligations in this area, and common sense can keep these consistent with inflation targeting. Best Practice is, universally, for central banks to act vigorously in the face of systemic financial shocks, with lower interest rate, liquidity enhancement and use of LoLR. There is, so far, no demonstrated conflict with inflation targeting.

(d) The exchange rate

In many countries, including Thailand, when inflation targeting first began, it was seen as an *alternative* to targeting a fixed exchange rate. The previous policy – using a fixed exchange rate as an anchor for monetary policy -- was seen as having failed. Thus policy should not attempt to influence the exchange rate per se. This was reinforced by the 'corner solutions' view of the exchange rate and the 'Impossible Trinity' doctrine, both of which strongly supported a free float.

The emerging market countries of East Asia have, however, found a free float to be inconsistent with their other policy objective. A stable rate has served them well in encouraging the dynamic export sector which has formed such a vital part of their growth strategy. They have also found that it is possible to exercise a degree of control over their exchange rates without

this compromising monetary policy independence[14]. The policy issue is, then, just how the exchange rate and inflation targeting fit together, and in particular what are the limits or constraints on exchange rate policy in an inflation targeting framework.

Those who see an inherent conflict between inflation targeting and exchange rate stabilization usually have two concerns. First, that intervention will lead to loss of control over the monetary instruments: interest rates will not be maintained at the desired policy rate because intervention is producing a loss of control over base money[15]. Second, that pursuit of exchange rate stability will distract the authorities from their inflation target objectives.

Where does this leave the relationship between inflation targeting and the exchange rate? All the inflation targeters in this region have concerns about their exchange rates, even if these are not formally incorporated in the central banks' objectives[16]. Two inflation targeters – South Korea and Indonesia – intervened heavily during the GFC but the consistent fall in the policy interest rate suggests that they did not use this instrument to support their exchange rate. (They must have judged that the support of domestic production and consumption by lowering the interest rate was more important than the interest rate defense of the exchange rate, that was affected by outflows of capital that was motivated more by external factors than the interest rate differential.) The longer-term experience (looking at the period since the Asian Crisis) suggests that exchange rate intervention is common among both inflation targeters and non-targeters. The rise in foreign exchange reserves does not seem to have adversely influenced monetary control, nor do interest rates seem to have been set at levels which fostered exchange rate stability at the expense of inflation control[17].

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[14] Ho and McCauley (2003, page 31) record that, among inflation targeters: "while the industrial countries split evenly between interveners and non-interveners, three quarters of the emerging market inflation targeters choose to intervene in some fashion with some frequency, consistent with our theme that the exchange rate generally poses a greater concern for them.

[15] At one level, this concern is misguided because it understates the very high capacity of central banks to sterilize the effects of intervention. At a more sophisticated level, the concern is that this sterilization will distort the balance sheets of the commercial banks.

[16] Indonesia does have such a formal objective.

[17] Ho and McCauley (2003 page 31) interpret the outcome as a clear assignment of instruments: 'Given the limited pass-through from exchange rate weakness to domestic inflation, the assignment of intervention to the exchange rate and the overnight interest rate to inflation has been quite straightforward and clear-cut.'

This readiness among the East Asian countries to intervene is not unique among inflation targeters. The RBA has done extensive intervention including in 2008, and the RBNZ has also intervened.[18] But the balance of international opinion is probably still sceptical about the efficacy of intervention and uncomfortable about the possibility of conflicts with price stability. More experience, data and discussion are needed to establish how far inflation targeters can go in simultaneously achieving exchange rate stability.

3.2. Specification of the inflation objective

Within the Best Practice FIT framework, there is room for considerable debate about just what version of 'inflation' should be targeted:

- Headline or core
- A range or a central tendency (fixed point)
- Whether there should be a specified time horizon to achieve the target
- Absolute Price stability (i.e. zero inflation) or inflation stability (a steady rate of inflation)
- CPI or some other measure of prices

The first three represent different ways that a FIT framework allows flexibility to accommodate shocks to prices. The designers of inflation targeting regimes recognized that it would not be possible for even the most competent central bank to meet a point target exactly and continuously. Just as important, it might not be desirable to do so. Core inflation *excludes* specified items not under the central bank's control. Even with exclusions, central banks will still miss a point target. So they need a *range* around this to accommodate unexpected shocks. As well, they need *time for policy to work*, permitting the central bank a period of time to get to its target. The following paragraphs look at these issues in more detail.

'**Headline' or 'core'**. From the viewpoint of popular understanding and acceptance, the FIT should target the headline rate of a widely-accepted and well-constructed CPI basket. This index should be available in a timely way, preferable with a monthly frequency. This index is usually familiar and accepted by the public, so any exclusions or modifications run the risk of

[18] Svensson (2001) advocated the fixed exchange rate at the depreciated level and unlimited intervention to achieve it to get out of deflation, as an advice to Japan.

misunderstanding, loss of credibility and accusations that the central bank's task has been made too easy and does not reflect the welfare of the people. In some countries it also plays an important role in wage-setting and legal contracts. Most inflation targeters use headline, and the BoT is a notable exception.

That said, many inflation targeters have either considered or used a core version of inflation with exclusions, particularly in the early days of inflation targeting. The rationale is that monetary policy cannot control this excluded component of the price index. Nor should it respond by tightening policy in response to the first round effect of supply-side price shifts, so long as these do not cause a second round effect. As well, core may be the best current estimate of the future trend of inflation, as it excludes unusual once-off components. [19], [20]. The best examples of logical exclusions would be administered prices and supply-side shocks such as foreign oil price increases. Not only are these outside the central bank's control, but they do not reflect domestic demand pressures. An important thing is that for monetary policy decisions, both headline and core should be examined carefully, and communication also uses both indices, when they deviate from either other.

International practice is neatly set out in Tables 3 and 5 of McCauley (2007), reproduced here as Appendix 2 Table 3 and 4. It might be summarised by saying that all central banks have extensive discussions of various versions of 'exclusions', but in their formal target they favour something close to 'headline'.

The range. A range around the target aims to encompass the likely shocks, without prior specification of which elements of the index will be the cause. The variation within this range over time might shed some light on whether the central bank is becoming more expert, but also on whether the public's

[19] In some countries there is a justification to exclude those items which would be affected by the policy instrument – notably where interest rate forms part of housing costs, this should be excluded, as it gives policy a perverse effect of worsening inflation when interest rates are raised to contain inflation. The BoE and RBA initially used core measures to exclude these interest rate effects, but later moved to headline indices which were constructed to minimize this effect in other ways.

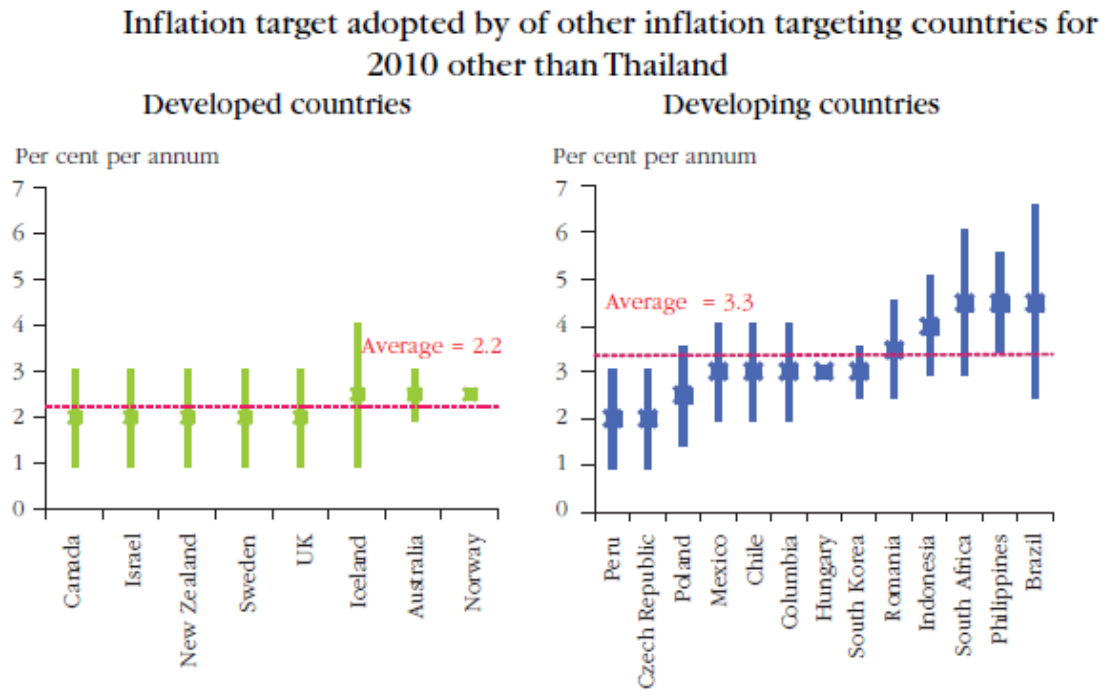
[20] A trimmed mean has much the same effect as core, without specifying in advance just which elements of the index will be 'abnormal' in any observation.

price expectations are becoming better anchored, so inflation is less easily pushed off the target. Kuttner (2004) compares the range and centre-point of inflation targeters, confirming that most fall in the 1-3 per cent range (centred on 2 percent). Giavazzi and Mishkin (2006, page 31) suggest that 'the choice of a number anywhere between 1% and 3% does not seem to matter very much'. The range is often linked to the issue of accountability: exceeding the range, both upward and downward, triggers the need for some public accountability, usually including some discussion of how a return to within the range will be achieved. Roger and Stone (2005) report that, among the inflation-targeters which have already established price stability, they are outside their target range 30 per cent of the time. In international practice, missing the target due to external shocks such as oil price increases or institutional reasons such as VAT increases, is not seen as a major issue and the accountability requirements that this triggers are relatively painless.

Whether the target should be expressed as a range (e.g. "between 1 and 3") or as a point with tolerance range (e.g. "2 plus/minus 1") may seem to be a very technical manner. Indeed, the difference is subtle. The former is better if the central bank is concerned about the credibility and accountability from achieving a specified range, while the latter is better if anchoring inflation expectations at a fixed point is considered to be important. The latter also avoids the problem of the 'electric fence': that being just within the range may be seen as success while being just outside the target may be seen as failure.

See Figure 3-2 for a comparison of target level and range, although this figure does not differentiate whether the target is express as an explicit range or point plus/minus tolerance band. See Appendix 1 for the choice of range/point of major inflation targeters.

Figure 3.2 Inflation target



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A time period for return to target. Some inflation targeting frameworks specify the target period as one year (e.g. Indonesia) and some three years (e.g. Korea). Thailand is on the short end by formally targeting the inflation rate in the current quarter, although in practice the BoT looks two years ahead. Does it matter how long the period is specified for achieving target (once the target is missed due to unexpected shocks)? There is a case for a longer period, maybe two to three years. This reflects two time-dependent aspects of policy: first, that there may be temporary cyclical variations in prices that average out over the course of the business or seasonal cycle; second (and more important), that there are lags in policy, so that when inflation is knocked off target, it will take time to get back again. While all inflation targeters operate on the basis that policy takes time to operate, only two explicitly embody a time horizon into their target – Australia and New Zealand, whose target applies on average 'over the course of the cycle'. An alternative approach is to target the *forecast* of inflation (see next section)

In 2004, Korea changed the horizon of inflation target from one year to three years, giving on the one hand certainty for the target range in the medium

run and on the other hand more time for the Bank of Korea to return to the target.

There is a powerful case for specifying the inflation objective as a future *forecast* rate of inflation, with the central bank constantly aiming to achieve its target rate of inflation at the end of the 'policy period': the period of time that it takes policy to work (see Svensson 2009). This is the proper specification of the task facing the policy committee: *whatever shocks have happened to the current rate of inflation, the MPC should set current policy in order to achieve the target at some time in the future, with this time period representing the lags of optimal policy*.

In the face of an adverse inflation shock, the MPC will trade off the following arguments[21]:

- A tighter policy setting may return inflation to the target more quickly, but the loss of output in the meantime will depend on the speed of return, and a very quick return may be quite disruptive to production.
- The longer the time to return, the more likely the public's price expectations are to move adversely, with loss of confidence in the central bank.

The problem with targeting the *forecast* of inflation is that it is not straightforward to assess just how well the central bank is performing currently. Whatever the actual outcome, the central bank can say that it is no longer focused on this (which is the product of the MPC's decision a year or two earlier), but rather on its two-year ahead target. Its current policy setting is not designed to influence the current rate of inflation (the opportunity to

[21] It might be worth noting that this trade-off is rather different from the one envisaged in the 'Taylor Curve", which is a standard loss-minimising approach with the variance of inflation on one axis and variance of output on the other. It is not at all clear, however, that the variance of inflation and output are appropriate measures of the welfare loss from sub-optimal inflation and output paths. It seems most unlikely that these are the loss measures considered by any MPC in practice. The central issue for an MPC facing an adverse supply-side shock is more uni-dimensional, encompassed in the second dot-point above: "what do we have to do with the policy setting to ensure that price expectations do not shift?'. The first analytical priority is to identify the nature of the shock. Is demand running too strongly (in which case a sharp tightening of the policy stance may well be appropriate) or is it a supply-side shock which may pass through without affecting on-going inflation (provided price expectations are well anchored).

do this has passed). A 'bad' CPI result is not, in itself, a reason for raising current interest rates, which may already be appropriately set to get inflation to the target within the policy time-horizon[22].

That said, there needs to be some assessment of current performance. If the assessment is based on the latest CPI result as it arrives, it could be judged simply on the basis of whether it is within the target range. But the proper focus is on the *centre* of the range, and it is better to take a longer period to assess performance, and judge this performance against the centre-point of the range: are the outcomes over time symmetrically distributed around the centre of the target? This is the RBA specification: that the target (in this case a 'thick point') should be achieved on average 'over the course of the cycle'.

If the central bank is to be judged in terms of *policy episodes* rather than simply the latest inflation statistic, it might be useful to do this against a Taylor Rule. This is not to suggest that the Taylor Rule would have provided the optimal policy setting, but rather that a central bank might usefully explain the reasons for its departure from such a simple rule[23]. Kuttner (2004) provides another approach, where he assesses *ex post* whether the central bank was dealing predominantly with supply-side shocks or demand shocks, noting that by far the most frequent departures from targets were caused by supply shocks rather than mistakes with demand management.

It is inevitable, however, that the general public (and perhaps the government as well) will be looking for some kind of assessment of whether the *current* stance of policy is appropriate, and whether the *current rate of inflation* can be seen as a vindication of the central bank's policy settings a year or two earlier.

For the current stance of policy, the best measure may be whether the financial market's forecasts of future inflation is close to the target, and

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[22] Svensson (2009) has an extensive discussion of assessment techniques of forecast targets, but these seem to have a narrow application in practice. The forecast horizon corresponds with the policy horizon and there seems no good reason why the forecast should ever be far from the target (if it is, why doesn't the central bank change the policy setting?). Thus this approach seems to revert to simply assessing the actual outcome against the target and the range.

[23] The debate between Taylor and Greenspan on the settings of US monetary policy in the three years after the 'Tech-wreck' provide an interesting example of such an approach.

whether the public's price expectations remain stable at a level consistent with the target. A further measure might be whether the financial markets expected and anticipated the current settings of policy. For markets to be surprised, there has to be a difference of views which may help to evaluate the central bank's performance.

As for the issue of whether the current rate of inflation vindicates the central bank's earlier policy settings, it might be possible to re-run this history using an econometric model, but in practice the universal approach is to discuss the outcome in words, noting whether demand developed as expected and what unforeseeable shocks occurred. The detailed analysis of an Inflation Report is the best place to do this. This seems to be the universal practice among inflation targeters.

Absolute Price stability or inflation stability. No inflation targeting regime sets zero inflation as an objective. When inflation targeting was first discussed, arguments were made that this would give the desirable characteristic of long-term price stability, so that investors could have some assurance that their long-term investments would retain their value until maturity. Some inflation targeters initially included zero as a floor of the range (New Zealand (from 1990 to 2002), Switzerland , Thailand (2000-2009))). But over time there has been a near-consensus that a positive rate of inflation is not only acceptable, but on balance desirable. It allows relative price shifts to occur without requiring some prices to fall. It is less likely that policy will fall into a deflationary liquidity trap, where the rate of inflation is negative and the nominal policy rate, which cannot be negative, cannot be lowered enough to meet policy needs. The inflation rate index also includes an upward bias (see Boskin et al. (1996) and Shiratsuka (1999)). Then there is a practical argument that most of the inflation targeting countries began with positive inflation: wringing the last few percent out of the process would be unnecessarily expensive in terms of lost output. What Alan Greenspan called 'practical price stability" is a rate that does not distort the public's decision making[24], and inflation targeting regimes everywhere incorporate this idea, either through a range which does not include zero, or a central tendency, often around 2 percent.

[24] "price stability is best thought of as an environment in which inflation is so low and stable over time that it does not materially enter into the decisions of households and firms." Greenspan (2002).

A recent development in this debate is the suggestion by Blanchard (2010) that emerging countries might operate more effectively with a higher rate, which he suggests might centre at 4 percent. This may be relevant for countries which have had trouble maintaining more moderate inflation rates, but for low-inflation countries, the costs of going to 4% may likely outweigh benefits of doing so.

Other price indices. Other bases of measuring prices have sometimes been suggested. GDP deflator would be a broader index with more recognition of value added, but it is only available with a lag, is available only quarterly, and is often revised. Wages might be a better measure of underlying basic domestic price pressures, but the data are usually available with a lag, and might be harder for the public to interpret: they are more likely to see the harm in CPI inflation than in wage increases, from which many of them benefit. Domestic (non-traded) goods prices might reflect the true domestic effects of inflation, excluding the effect of terms of trade and the exchange rate but this has little meaning for the public. Tradable goods prices would more accurately reflect a country's international competitive position (often an important policy objective), but these, also, have little meaning for the general public.

3.3. Operational Issues

With respect to an operational instrument for monetary policy, there is a high degree of uniformity in FIT procedures (and they don't differ from normal central banking procedures, which have become quite uniform over the past two decades).

All FIT countries operate monetary policy by changing the short term 'official' interest rate, which is a rate that impinges directly on the cost of short-term bank funds, usually dominating the inter-bank market. When inflation targeting was relatively new, some thought that it would not suit emerging countries, as their financial markets were not well developed. In some cases (Thailand and Indonesia) the FIT began by targeting the somewhat deeper markets a little further out the yield curve, but both countries have gone to the short end of the curve. To operate further out on the curve is technically feasible, but sometimes causes disruptions in the money market when changes in the policy rate are expected.

A further element of this uniformity is that banks routinely provide a 'corridor' for their regular open market operations in the form of an interest return on bank deposits with the central bank, and a discount window, with these two facilities forming a floor and ceiling on the short-term interest rate.

Table 1 of Ho (2008) sets out a comprehensive comparison of operating procedures, reproduced as Appendix 2 Table 5.

We noted earlier that central banks have other instruments as well: foreign exchange intervention; liquidity facilities; and macro-prudential instruments. The exact details of these will differ from country to country, but do not impinge on the FIT framework significantly.

3.4. Decision-making

There are many variants in the decision making process. What is suitable for any country will depend largely on the political and institutional context:

- Frequency of MPC meetings
- MPC composition (insiders only or a mixture?)
- Is the government represented in the decision process?
- Who sets the target (instrument independence versus goal independence)?
- Decision process (How does the MPC go about the decision process?)
- 'smoothing', whereby policy is not changed to the full extent required to meet the target, but instead if shifted in the required direction over time.
- Is the decision announced immediately?

(a) Frequency of meetings. These tend to be either monthly or every six weeks or so. (BIS Papers 37 discusses this issue in the context of a broader discussion of decision-making processes; Ho (2008) also sets this out in her Table 1, reproduced here as Appendix 2 Table 5). There doesn't seem to be much to choose between these time periods, as there is rarely any great urgency to adjust policy, although all systems should have the ability to do an unscheduled meeting if necessary.
(b) Composition of MPC. There is more variation here, but grouped under three broad decision types. One has a fully-internal decision group (central

bankers only), with no external members (the RBNZ represent one extreme of this type, as the governor is the sole decision-maker, although of course he is advised by his staff). The second (best represented by the BoE and the Swedish Riksbank) has external members who are experts in monetary policy and generally they are full time. This means that their discussions are deeper and usually take longer (two days in the case of the BoE MPC, supplemented by a 'pre-MPC' meeting where the forecasts are discussed in detail). The discussions can explore assumptions of forecasts and various economic and political factors that may not be in the model but are used to form policy judgments. The third alternative type has external members who are not necessarily expert in the details of monetary policy, but who bring other attributes to the table. The RBA and, of course, the BoT are in this category. The external members are less likely to indulge in 'group-think' as they bring a wider background. They may not be able to correct the detail of forecasts or modeling, but they may be more sensitive to political issues and the wider range of public opinion, which might, from time to time, improve a decision made solely by 'experts'. They may be able to represent the decision process to a wider range of audience. In this type the central bank management and staff will have a larger weight in regular routine decisions, with their expertise able to carry the argument. This type is more likely to have a relatively short meeting (say, half a day).

Best Practice probably favours one of the latter two types, including external members. With independence goes a heavier governance framework, and some outside representation in the decision process seems a sensible element of this governance, if only to assure the public that the central bank is not a 'closed shop' or 'ivory tower'. Just where this external representation should be drawn from depends on the specifics of the country. In some, it is drawn heavily from ex-bureaucrats; in others, from academics who can bring specific technical expertise to the decision; in others, it is drawn from a wider range of the community, sometimes specifically aiming to represent particular sectional interests (although this latter probably does not represent Best Practice as it may skew the decision discussion along sectional-interest lines). MPC members should be sufficiently familiar with current economic analysis that they can fully understand the rationale and detail of the inflation targeting approach. To make a contribution to the decision-process, they need to be able to interact effectively with the staff making presentations to the MPC (as well as with their fellow MPC members) and they should feel confident enough to question the assumptions and plausibility of the forecasts and assumptions of the policy proposals.

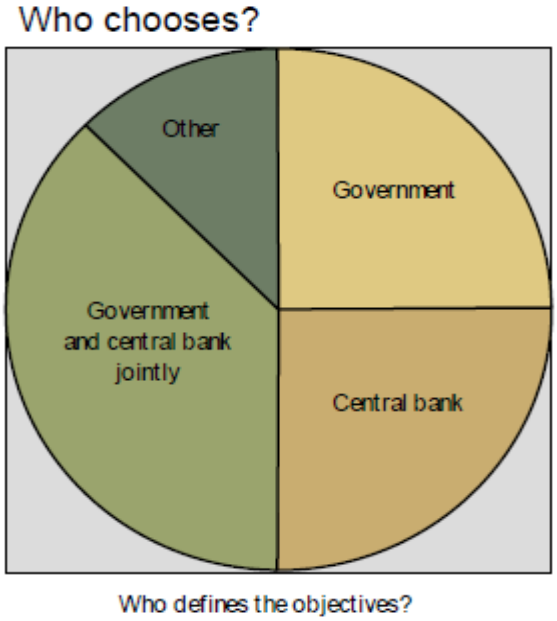
Diversity of background of the external members is valuable, but members also need to be able to couch their contributions within the inflation targeting framework so that decisions can be made expeditiously and justified coherently. A strong case can be made that at least some of the external members should be sufficiently expert in the technical side of monetary policy so that they are able to take part in the more detailed forecasting and pre-MPC meetings.

Roger and Stone (2005) present a table showing the composition of MPCs, showing the breakdown between internal and external members, reproduced as Appendix 2 Table 6. The BIS Central Banks' Governance Forum (BIS 2008) has produced a comprehensive compendium of MPC arrangements for member-countries of the Forum with an extensive analysis of the benefits and disadvantages of various MPC permutations.

(c) Government representative. In some MPCs (Japan, RBA, Korea, Philippines) there is a representative of the Ministry of Finance (or even, in the case of Sweden, the parliament) included in the decision-making process, sometimes without a vote. This has the advantage of providing coordination and draws on the expertise of the other institution. But, the government has to be fairly restrained not to undermine (perceived) independence and credibility.

(d) Who sets the target? In central independence, a distinction has been drawn between those banks that set their own target ('goal independence') as well as having the independence to pursue their target without constraint ('instrument independence') and those who have only instrument independence (Debelle and Fischer (1994)). The typical example of the former is Bank of Canada and the latter is Bank of England. While some central banks (RBA, Bank of Thailand) began the inflation targeting experience with both target and instrument independence (largely because inflation targeting had been the central bank's own initiative and other parts of the government were not at that stage very interested), it now seems an established part of Best Practice FIT that the target should be set by, or in consultation with, the current government. It also seems Best Practice that the central bank should be part of this process (often proposing the target) so that it has the 'buy-in' of achievability and can ensure that the target is technically feasible. This ensures that there is coordinated thinking and that the evaluation can take place without either party wanting to re-write the target.

Figure 3.3: Who chooses the inflation target



Filardo and Guinigundo (2008)

(e) How does the MPC go about the decision process? Do they use an econometric model, and if so is it an important part of the decision process? (This is discussed in detail in BIS Papers 37, including use of model and examination of risks to forecasts). Do they examine the risks to forecasts, using a fan chart and discussion of asymmetric losses on either side of the target? There is quite a bit of variation within the Best Practice framework, with greater complexity and sophistication going with the greater technical capacity present in MPC structures such as the BoE. Rather than look for a common specification here, we might just note that the degree of sophistication and complexity will vary considerably between countries, and while there should be pressure of constant improvement, there also needs to be realism about just what an econometric model can provide, and a recognition of the role of experience and broadly-based knowledge not only of the financial sector, but the political and institutional framework as well.

(f) It is universally the practice with central banks that, while the MPC is often tasked to set the policy interest rate at the level appropriate to achieve the target[25], in practice MPCs move only part of the way in response to

[25] This is explicitly set out in the BoE description of its MPC process, set out on the BoR web-site.

'news'[26] (see Figure 3.3). This 'smoothing' of instrument results in the policy rate characteristically shifting in small steps in the same direction: policy is made in 'tightening' and 'easing' phases. Whatever the merits of this (this is discussed in detail in Lowe and Ellis (1997)) it seems both universal and immutable. The key argument is that greater volatility in the interest rate path would be disruptive, perhaps diminishing central bank credibility, without an appreciable effect on inflation or output.

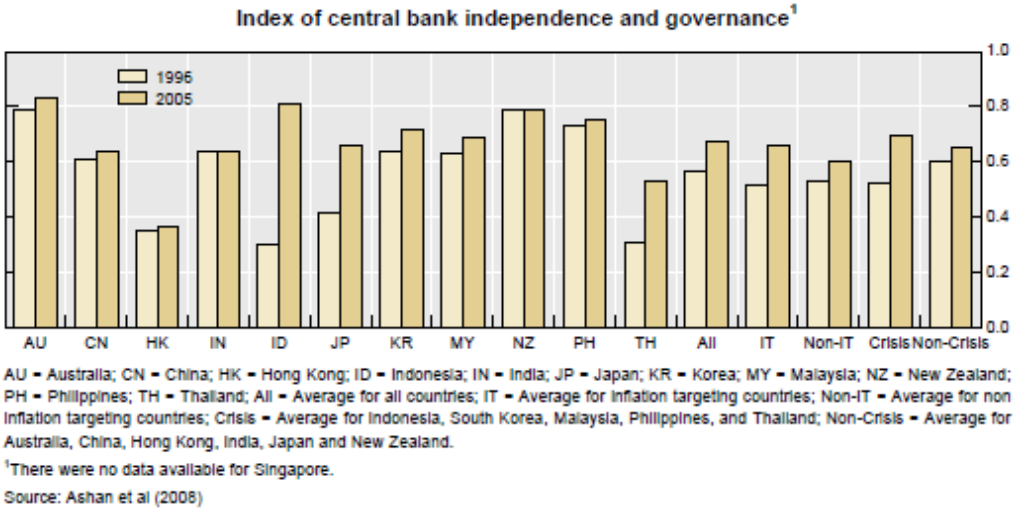
(g) Prior to inflation targeting, it was normal practice to carry out an open market operation which was intended to signal the desired policy change, without any formal announcement. This was thought to give a smoother and more gentle policy change which would not be so disruptive to markets and might be achieved in a low-key way, making it easier to raise interest rates. Over time, both inside and outside FIT regimes, it was recognized that it is better to announce policy changes. Initially this was often done on the day following the policy decision, for technical reasons. But now the Best Practice technique is to announce the same day, preferably immediately after the meeting

3.5. Central Bank Independence

Central bank independence has to be regarded as a central tenet of FIT. Without this, the central bank's ability to pursue its target would be in doubt. Within this general requirement, there is clearly opportunity for different types and degrees of independence, and observers have sought to analyse these. Is there a strong legislative base for the independence? Is the governor secure in tenure? There is a vast literature on what should be factors of measuring the degrees of independence and on how to construct the independence index. (cf. Cukierman (1992) and Ashan et al (2008)). Figure 3.4 shows the comparisons of Ashan et al, as recorded in 2005: since then, Thailand has risen in these ratings, reflecting mainly the passing of the BoT Act in 2008.

[26] Low and Ellis (1997) provide extensive evidence of 'smoothing'.

Figure 3.4: Central bank independence and governance



Source: Filardo and Genberg (2010), quoting Ashan et al. (2008)

The adoption of inflation targeting can precede or follow attaining the legal independence of the central bank. At least *de facto* independence is necessary for a central bank to be successful in adopting inflation targeting. Bank of England adopted inflation targeting in 1992 but did not obtain legal independence until 1997. The Bank of Thailand adopted inflation targeting in 2000 but did not attain legal independence until 2008.

3.6. Transparency, Accountability and Reporting

There are two important facets to this central requirement. The central bank must report its actions and assess its success to the public, including the financial markets which rely heavily on an accurate assessment of policy in their everyday business. The public needs to have confidence in the FIT approach if price expectations are to be strongly anchored[27]. This confidence also provides the social support which the central bank will need, from time to time, to resist unhelpful political pressures. The central bank, in Blinder's

[27] As Fracasso, Genberg and Wyplosz (2003) argue, "merely announcing IT and publishing inflation forecasts is not enough: the benefits from IT only accrue to central banks that convince the public that their decisions are rooted in the relatively tight constraints imposed by a process that starts with forecasts, considers the optimal responses and ends with decisions which, year after year, appear as derived from the same logic."

view[28], should 'teach the market its way of thinking'. It is more important that the public knows how the central bank will respond to as-yet-unknown unfolding events than it is to have the central bank's *ex ante* guess at the specific actions it might take in the future. Second, there needs to be a substantial interface with the political process. The central bank has been given freedom in using the instrument according to its judgment, through independence, to carry out a vital part of macro-economic policy. Monetary policy is, in this sense, outside the immediate democratic processes that apply, say, to fiscal policy. In return for this independence and to provide democratic legitimacy for the process, central banks need a substantial channel for reporting to the government and the parliament. This transparency also gives strong incentives to the central bank to meet its objectives.

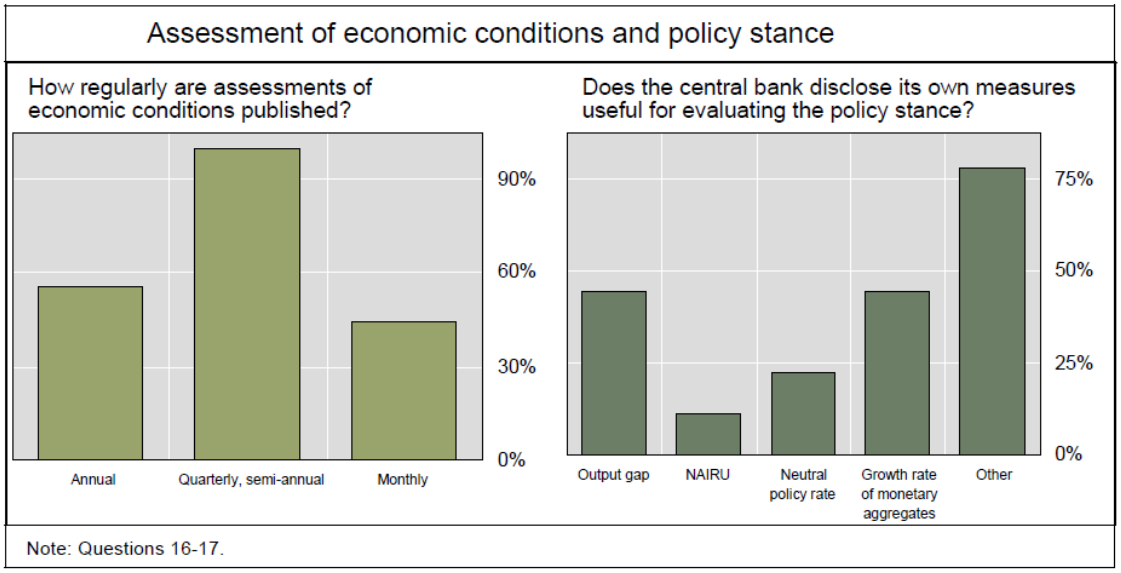
Often these two facets can be met with the one instrument: an inflation report will be the analytical centre-piece for serious members of the public to understand what the central bank and the MPC are doing, and will also be important in reporting to the political interface. Speeches by senior bank officials provide an opportunity to build social support for the bank and the FIT framework. Other channels of communication may be directed more specifically: the press release after policy changes will be mainly of interest to the financial markets. Minutes may be of greatest interest to the financial markets and academic researchers. There will be channels specifically aimed at the politic interface. There may also be 'back-door' channels by which commentators or the press are given additional background, although it is important that market-sensitive information should be widely released at exactly the same moment to everyone who might have an interest.

In terms of content, an intuitive starting point is that more transparency is always better (and certainly this is the direction that central banks have moved in over time). There is, however, a growing realization that there can be too much information or that it can be too frequent, so that the 'noise-to-signal' ratio of the communication is potentially negative. Blinder (2009) has a comprehensive survey or the arguments and practices. See also Giavazzi and Mishkin (2006, page 27-38). Edey (2006) has a detailed table comparing the content of transparency, reproduced as Appendix 2 Table 7).

[28] See Blinder (2009) page 9.

Every FIT central bank produces an Inflation Report, usually quarterly. A substantive analysis is normal, with most Inflation Reports exceeding 50 pages. Similarly, every FIT makes an announcement after policy changes, with speed-of-release being an important characteristic[29]. FIT countries are fairly evenly split between those that also have a face-to-face press conference and those that do not[30]. It is hard for the press conference to go beyond the material which is contained in the press release without this infringing the MPC's prerogative over what information should be available, although it may be possible to add nuance to the bare words. Speeches by senior staff have, universally, become more frequent. Some central banks (e.g. FRB, RBA) issue a press release without a press conference. Some (e.g. BOJ and ECB) issue a press release and press conference by the chair of the MPC (Governor of BOJ and President of ECB). For Japan and the ECB, voting results (with/without names) of the key decision are also stated in the press release.

Figure 3.5 Transparency on economic decisions

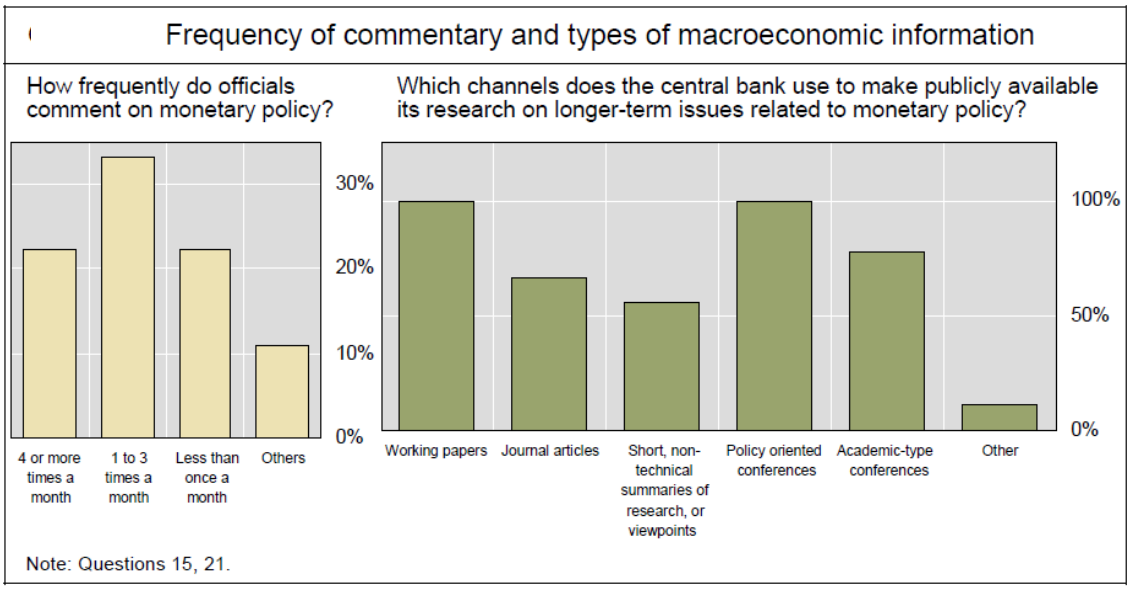


Filardo and Guinigundo (2008)

[29] Such an announcement may seem obvious, but until 1990 central banks did not announce policy changes, but instead let the market come to a gradual realization that the stance of policy had changed.

[30] Blinder (2009) notes that 'The central banks of the Czech Republic, Japan, New Zealand, Norway, Poland, Sweden, and Switzerland also hold regular press conferences.' Page 7.

Figure 3.6 Frequency of commentary



Filardo and Guinigundo (2008)

There is considerable variety on whether minutes are released and with what delay and detail (with the critical issue being whether voting numbers are released and if so, are they anonymous). BIS Paper 37 (Table 6) reports that only 37 percent of that sample of central banks publishes minutes, with 10 per cent reporting attributed votes. Similarly, within the region, only around 10 per cent publish minutes (Filardo and Guinigundo (2008)). It is clear, however, that the practice of releasing minutes is becoming more common over time (the RBA began releasing minutes in 2006). It is customary for this to be delayed, largely for logistical reasons, but this does reduce the value of the minutes to financial markets, for whom speed is of the essence. The presumption in favour of transparency is one argument in favour of release, but there is also a belief that it will put clearer responsibility on the members of the MPC (particularly if individual voting records are made public) and that this is a desirable thing[31]. The counter-argument is that this change in the dynamic of the MPC meeting is, in fact, unhelpful, and as well it will open up individual members to greater outside pressure if their voting is public[32]. As is understandable with such a two-sided arguments, much will depend on the composition of the MPC, with the more expert MPCs

[31] Thus it may make more sense for the BoE to release MPC minutes as the individual members are, in some sense, responsible.

[32] "Non-attribution of votes thus emphasises the collegial, consensus-based nature of the decision making process – that is also expected to be more open and frank". Filardo and Guinigundo (2008) page 10.

(such as the BoE) benefiting more from the release of detailed minutes. There seem good grounds for differences between FIT countries, reflecting these cultural and institutional differences.

There is more variety when it comes to the political interface. The RBA reports to a Parliamentary Committee twice yearly and the Swedish Riksbank reports to a Parliamentary committee yearly. The RBA found it useful to have a de-brief of the Minister very shortly after the decision meeting, which gave the bank the opportunity to set out its views in private and in detail. Being specifically a de-briefing, there was little opportunity for the Minister to assert direct influence on the decision process. Again, cultural and institutions differences will explain and justify different procedures.

In terms of content of the various communications, it is universal to give some forecast of the likely path of inflation (see Edey 2006), and the use of a fan-chart to reflect the uncertain nature of this forecast is becoming more common (e.g. BoE, Thailand, Korea, the Philippines and many of the recent inflation targeters)).

Perhaps the most difficult area relates to the future stance of policy. In Section 3.4(f) it was noted that MPCs' rhetoric is that they set policy to achieve the target, so further change is not needed, and this is usually explicitly built into the forecast assumptions. Some banks have, however, recognized that 'smoothing' is universal and that in any case there may be good reasons for not setting rates so as to meet the target without further modification[33]. But MPCs do not usually decide on the future path of policy at a meeting (although they may look at various simulations of different future paths): even when an MPC acknowledges that some future changes will be required, it is difficult enough to decide the current setting, without endorsing future changes. It may also be difficult for the public to understand the conditional nature of these forecasts, and the central bank may come in for criticism if it doesn't do what it predicted it would do[34]. At

[33] For example, if policy is responding to a shock which has taken inflation above the target, the policy interest rate will be raised now but will be lowered again *before* the target is achieved so that the path of inflation asymptotes towards the target rather than dips below.

[34] 'On the one hand, such policy paths would be fully consistent with recommendations from monetary policy theorists to improve the effectiveness of monetary policy. On the other hand, the highly contingent nature of the path could be a source of practical concern.

the 'cutting edge' on this issue are RBNZ[35], Iceland, Norway and the Swedish Riksbank, which publish their future interest rate path in their Inflation Reports. The BoE has a compromise, publishing the market's assessment. Where it is clear that further movements in policy are likely, the RBA explains its latest rate-change by noting its view that the market's *ex ante* policy path will not achieve the target, implicitly revealing its own expected policy path.

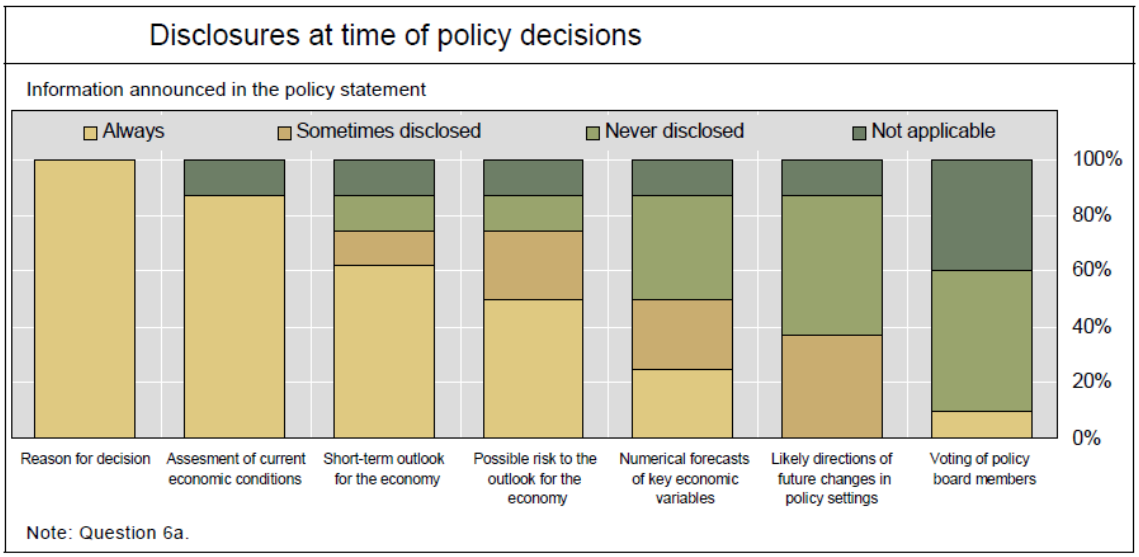
What seems to be best general practice is to include *in the press release* (i.e. in a timely way for the financial markets, in the context of the current decision-process) some broad assessment of where policy might be headed, sometimes using commonly-understood key words to convey some precision. If the MPC has productive discussions and debate, there will be value to release minutes[36]. These minutes might most usefully focus on the decision-making process itself (the arguments and the debate) rather than the fact-reporting, which is an important part of the MPC meeting but will be reported more comprehensively in the Inflation Report.

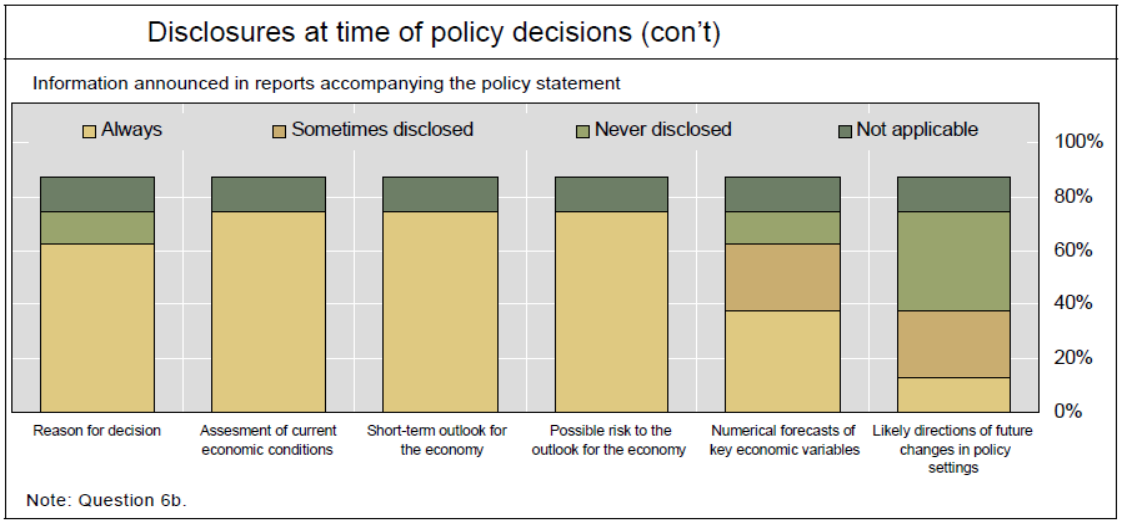
If the public were to perceive the path as a promise rather than simply being indicative of the likely direction, any deviation of the path could disappoint the public and, in turn, adversely affect credibility of the central bank.' Filardo and Guinigundo (2008) page 13

[35] It may be easier for the RBNZ to publish its future expected policy path as it has a single decision-maker.

[36] 'Reporting on the exact line of reasoning during policy meetings might provide useful information to the public about the preferences of board members and the weights that each member assigns to various macroeconomic and financial indicators when assessing the state of the economy and the appropriate monetary policy stance. Minutes would provide a record from which the central bank could be evaluated about its accountability. More transparency along these lines might represent the logical next step.' Filardo and Guinigundo (2008) page 10.

Figure 3.7 Disclosure at time of policy decisions





Section 4. An assessment of Thailand's inflation-targeting experience

4.1. How does Thailand specify its inflation target?

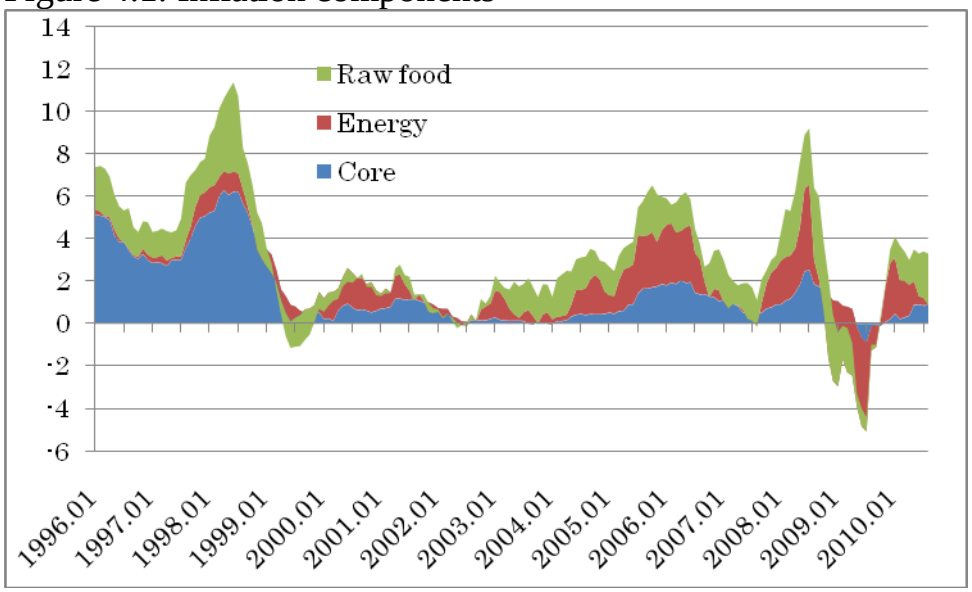
Thailand targets the core measure of inflation (excluding energy and fresh food) to be in the range of 0.5-3.0 per cent measured as the current quarterly average. This target is set each year – proposed by the BoT, agreed with the Minister of Finance, and endorsed by Cabinet. The procedure of setting the target seems well justified and consistent with international Best Practice. However, the target horizon (formally specified as the current quarter) seems to be too short. The Bank of Thailand staff tells us that monetary policy is conducted with the 2-year horizon. If so, the communication should be corrected that the target horizon is indeed 2 years.

Targeting core rather than headline focuses policy on the element that the BoT can influence – demand[37]. Volatility of energy prices and food prices are often due to external factors (e.g., the global oil market conditions for energy and weather for food) that cannot be controlled by Thai monetary policy. It would often be a mistake to react to the large supply-side external price shocks which Thailand experiences, which should be allowed to bring about relative price changes and which will pass through, with inflation reverting to its initial rate provided price expectations are well anchored. Ideally the core rate should also be a good measure of future inflation (both headline and core), having had the volatile items stripped out. This has not, however, been the case in Thailand over recent years, when core has been fairly consistently below headline (see McCauley (2007)). The BoT argues (Inflation Report January 2009) that the public is now well accustomed to the core rate, and the sensible compromise between core and headline is to have a substantive discussion of the headline rate as well as core. The BoT quarterly Inflation Report does this, spending about the same amount of time talking about headline as about core. If headline were to be used in place of core, it would require the target range to be significantly widened[38].

[37] For a discussion about the relationship between headline and core inflation in Thailand, see the BoT Inflation Report April 2006

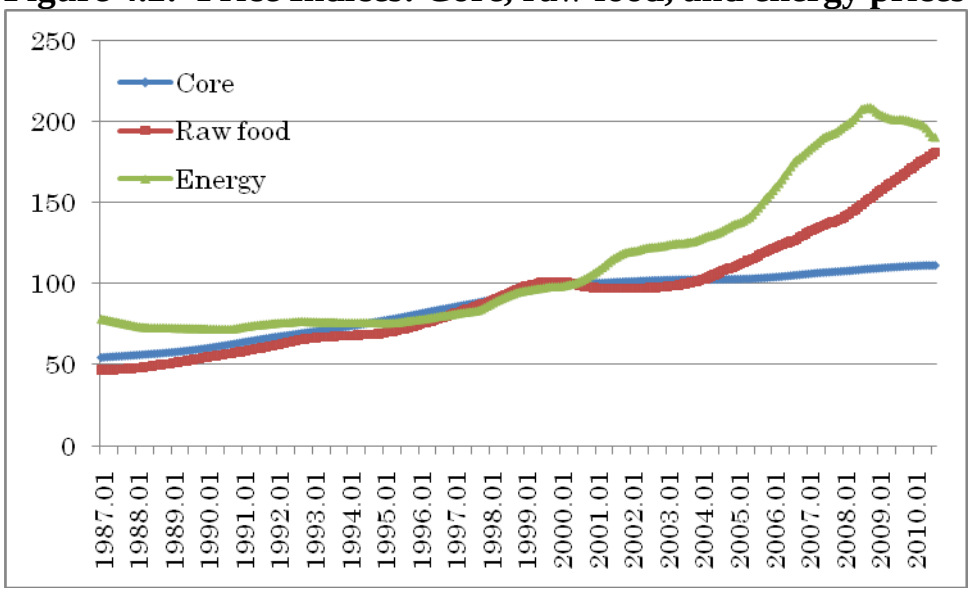
[38] But see the suggestion in the Recommendations that the target might be expressed in terms of a central tendency rather than a range.

Figure 4.1: Inflation components



Source: Bank of Thailand

Figure 4.2: Price Indices: Core, raw food, and energy prices

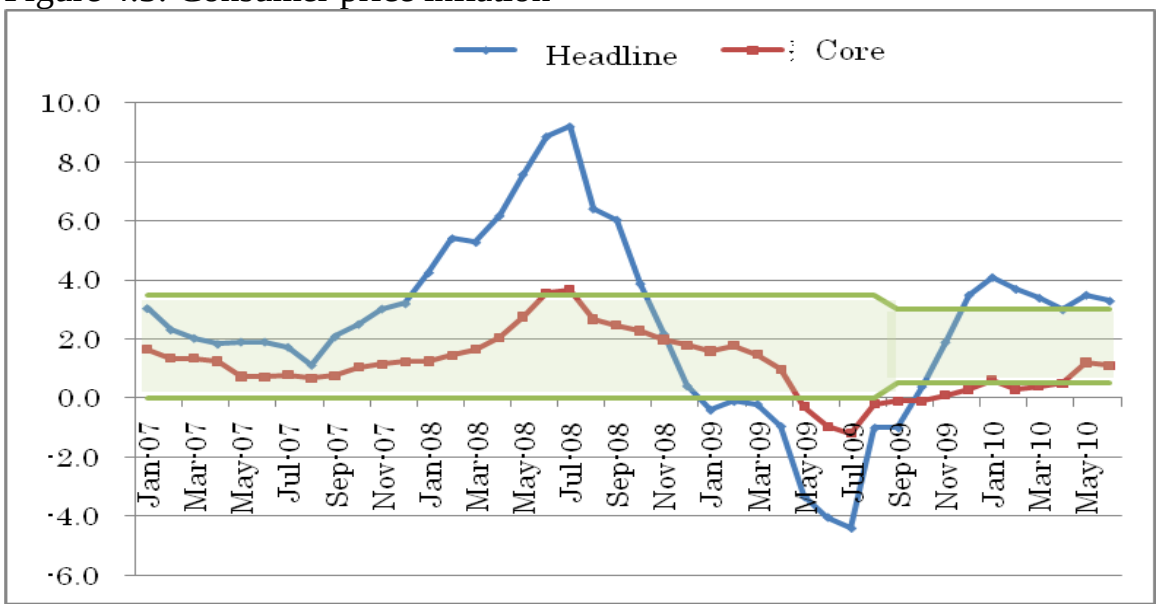


Notes: 24 month moving Average, May 2000=100
Source: Bank of Thailand

The BoT Inflation Report also discusses the causes behind the (rare) departures of the core rate from the range. It has undertaken not only to report such departures, but to describe the proposed path of return to the range (Inflation Report January 2009).

The initial range (0-3.5 per cent) was a little wider than the international norm (see Figure 3.2), justified in terms of Thailand's more volatile inflationary history. Beginning in September 2009, this range was narrowed so that it is now close to the international norm. It is interesting that this was announced during the period that inflation had begun to miss the target on the low side (see Figure 4.3[39]). The specific justification for raising the lower band of the range was to reassure the public that the BoT was aware of the dangers of deflation and would act to avoid it (Inflation Report January 2009).

Figure 4.3: Consumer price inflation



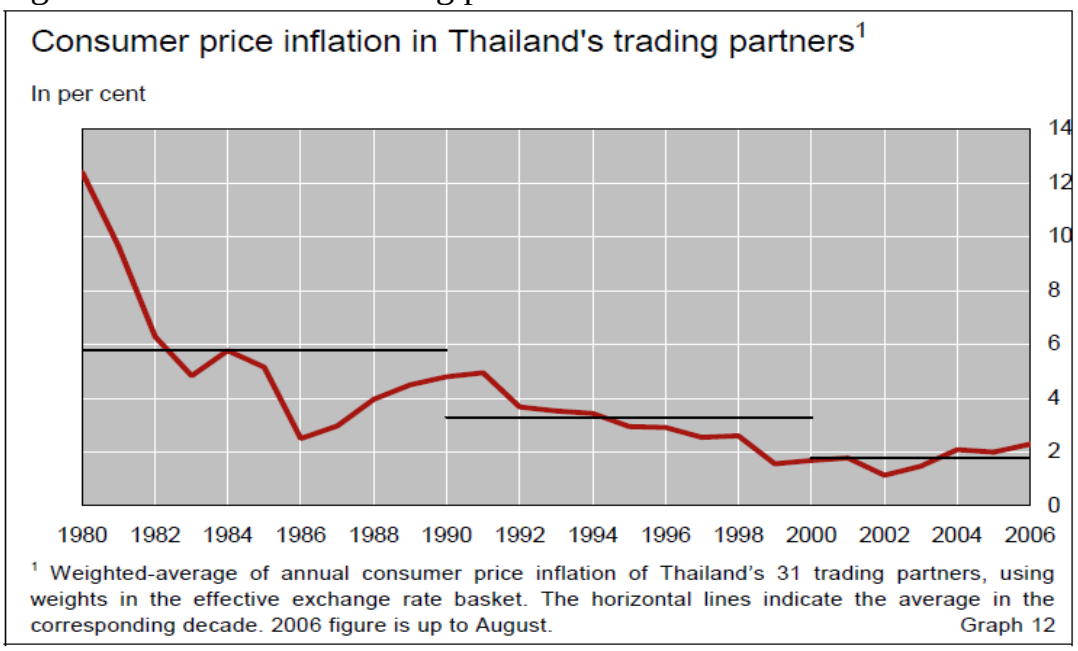
Source: Bank of Thailand

While the BoT does not specify the centre of the range or focus its discussion on this centre-point, the centre of the range (and thus the longer-term average) is around the international norm for developed countries and a little lower than the norm for emerging countries. Part of the justification (discussed in Inflation Report January 2010) for setting this as the average target is in order to keep Thailand's inflation around the same as its trading partners (and export competitors), which makes it easier to keep the nominal exchange rate stable[40].

[39] See also Box *Why did core inflation breach the target range in 2009 Q2?* in Inflation Report July 2009.

[40] For a discussion of this, see Waiquamdee, et al.(2009).

Figure 4.4: Inflation in trading partners



Source: McCauley (2007).

In terms of the inflation/output relationship, Thailand is at the 'flexible' end of the FIT spectrum. There is a prominently-acknowledged place for output ('The Monetary Policy Committee sets monetary policy in order to attain price stability conducive to sustainable economic growth.'). While the BoT states that long-term price stability is its 'main objective', the Inflation Report discussion suggests that the MPC believes that if it sets policy to keep demand close to normal capacity, then the overall outcome will be within the target provided that price expectations are stable,[41]. This seems to be a sensible and non-doctrinal approach, although it does not specifically address the task of stabilizing price expectations, beyond noting that keeping the target range consistent from year to year will foster stable expectations.

There is no specific mention of a time period for the target other than the quarterly average[42]. By implication, the two-year forecast horizon would suggest that the BoT believes that most of the impact of monetary policy occurs in this time horizon (and its econometric modeling would generally confirm this time horizon)

[41] Discussion of the expectations-augmented Phillips Curve reinforces this interpretation.
[42] Although the issue of time period is discussed in general in, for example, the January 2009 Inflation Report and Figure 4.8 below, taken from a BoT paper, does specifically mention 2 years.

The focus on meeting the quarterly average certainly allows a quick judgment of the appropriateness of current policy settings[43] and might have been the best way of establishing the credibility of the inflation targeting regime initially. While some focus on the latest CPI release is inevitable (and occurs everywhere), the contemporaneous focus sets an unnecessarily tight criterion for BoT to meet. Current policy setting should not focus on the latest CPI statistic (or its quarterly average), but on the *forecast* of inflation, one or two years ahead. Evaluating the *ex-post* record should be done over a period long enough to smooth out the random fluctuations and to make a judgment about whether, on average, the outcome is close to the centre of the target and the variation generally within the range.

The first decade of inflation targeting was, in some ways, a propitious time to put this framework into place. For the first five years (or longer), there was a persistent output gap with spare productive capacity, a legacy of the 1997-8 Asian crisis. For the same reason, there have been no pressures from asset price inflation (and in fact the rent component in the index has been extraordinarily stable).

When shocks arrived (in the form of international oil price increases in 2005 and 2008), BoT was assisted, in meeting its inflation target, by heavy use of administered prices and price controls (administered by the Ministry of Commerce). These took two forms: fiscal subsidization, mainly for energy and transport; and price-control pressure on producers (through decrees and monitoring) to restrain price increases. In general, the fiscal measures were unwound over time and the controls probably lost some of their effectiveness, so the overall outcome on the price *level* may not have been all that great. But the policies certainly spread out the impact of the shocks.

On top of this, the international environment was favourable. The decade was a continuation of the 'great moderation', with global prices held down by a combination of policy stance and structural changes, notably China's emergence as a major source of well-priced manufactures.

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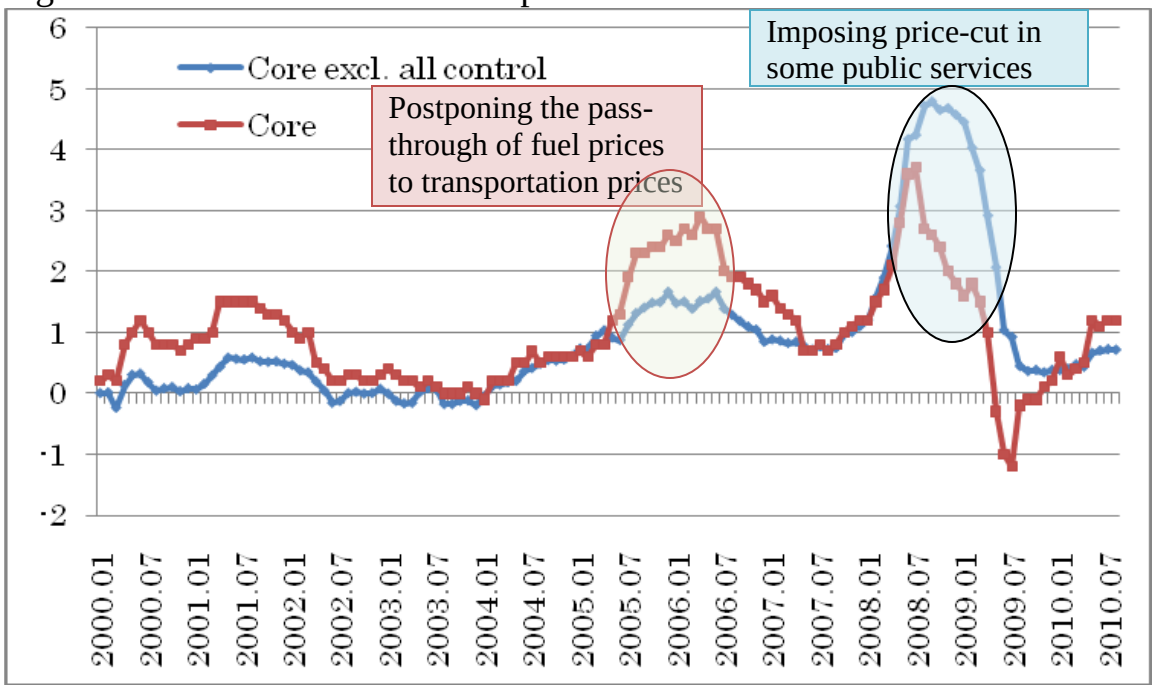
[43] As explained in Inflation Report January 2009: 'The announcement of a point target for inflation with a short and clear time-period is the most obvious way to show the central bank's commitment to its inflation target. This is partly because a short time-period will enable central bankers, as well as the public, to quickly detect if inflation falls outside the target range.'

There are other, more structural, factors which may make it easier for Thailand to maintain price stability. Wage pressures do not seem to be a major threat to price stability, with a high degree of flexibility at the lower wage levels. The pass-through from the exchange rate to prices is modest and slow (especially to the core inflation measure).

Many of these helpful factors will continue into the future. It is not clear, however, whether the extensive use of administered prices will continue. The fiscal costs of energy subsidies are a drain on the budget, and direct controls may be reaching their 'use-by' date.

Administered prices also set a special challenge for the inflation targeting framework. The extra measures introduced in 2009 (six measures to ease living costs and free education) were the main reason for the inflation target being missed (on the low side) in that year. Administered prices also make it harder for the BoT to assess the current state of demand. By keeping prices down, pressures on the index may be suppressed (making it an imperfect guide for the BoT and the public to judge the underlying pace of inflation), but at the same time holding prices down gives the public more to spend on other things

Figure 4.5: Effect of administered prices

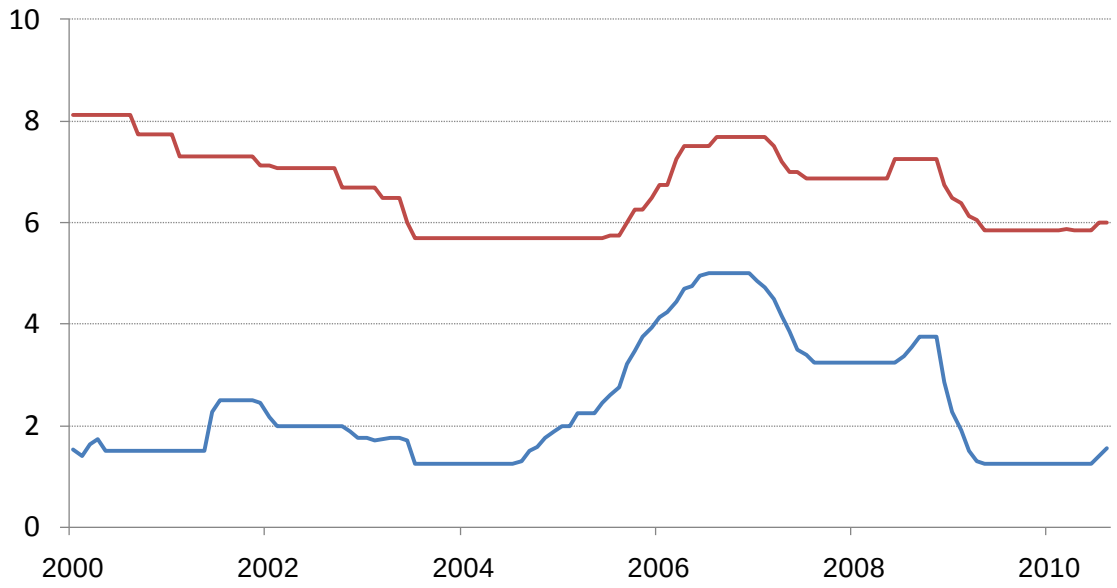


Notes: Core excluding control prices amounts to 67% of core prices
Source: Ministry of Commerce, computed by Bank of Thailand

4.2. The transmission channels of policy

The starting point of policy is the setting of the short-term interest rate[44]. The BoT clearly has close and effective technical control over this. The next stage of transmission is to other interest rates: market rates further out along the yield curve and commercial lending rates. The latter are of particular interest as the lending rate should influence borrowing. The link is by no means one-for-one, although Thailand does not seem much different from a sample of its regional central banks. See next two graphs.

Figure 4.6: Policy rate and MLR 2000-2010]



Source: Bank of Thailand.

[44] Prior to 2007, policy targeted the 14-day repo rate (see Box in Inflation Report, January 2007).

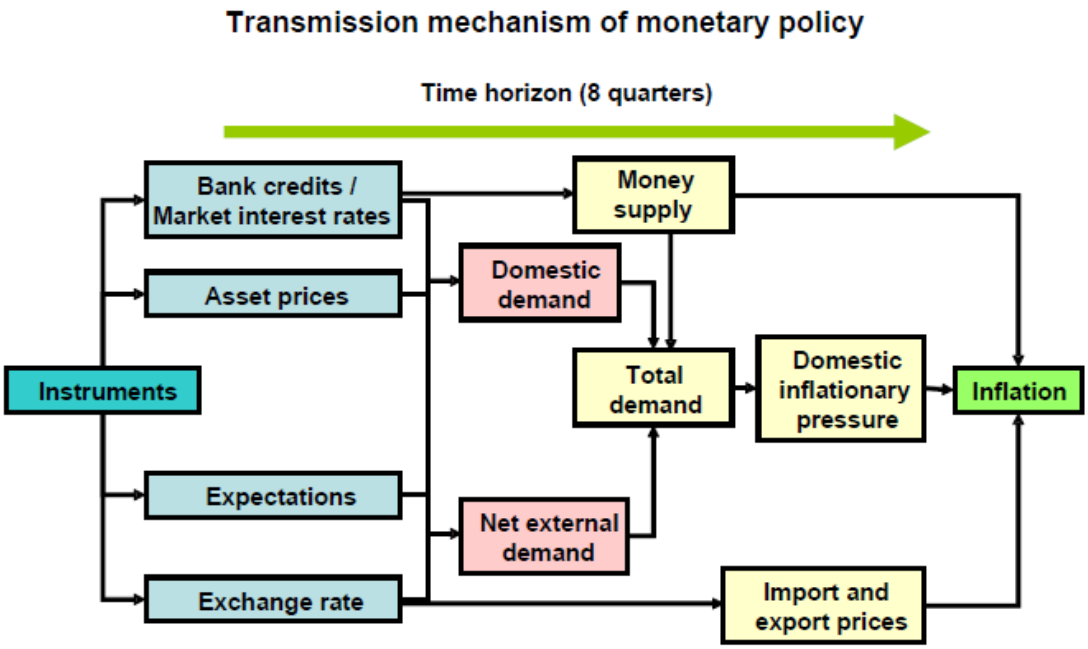
Figure 4.7: Incomplete pass-through of policy rates to lending rates, 2008-2009.

AU = Australia; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = Philippines; TH = Thailand.

BIS (2009; page22)

The channels, via interest rates, credit, the exchange rate and asset prices, are discussed in detail in BIS Papers 35 (Bank of Thailand (2008)).

Figure 4.8 Transmission of monetary policy



Source: Bank of Thailand (2008).

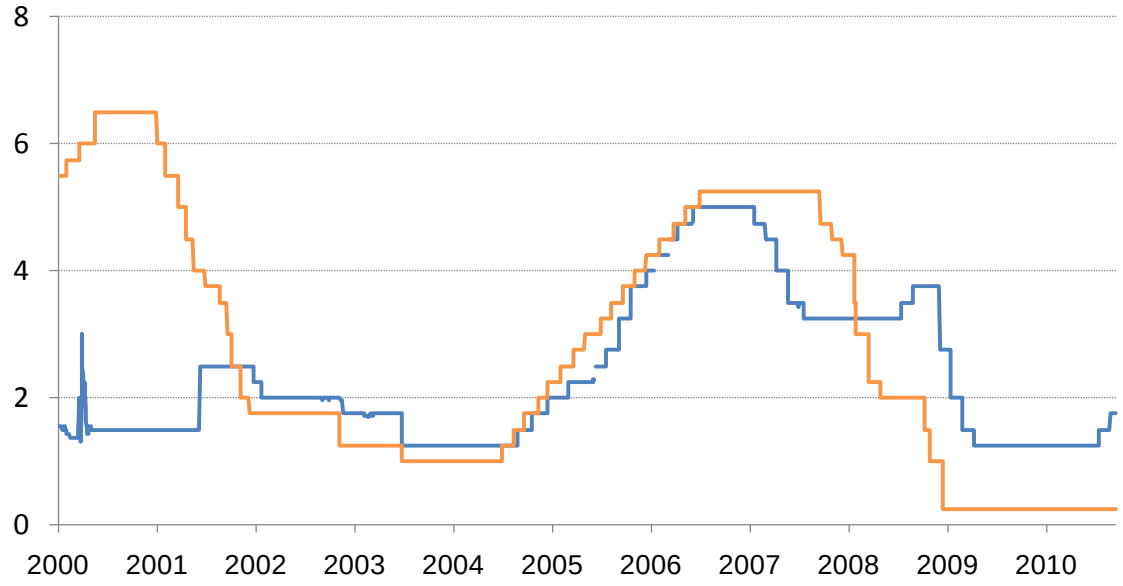
The summary is:

> ‘While the interest rate channel is generally the most important transmission channel in Thailand, its relative importance declined

> significantly for quite some time in the post-crisis period due to a heightened degree of risk aversion, in both the corporate and banking sectors, and excess liquidity in the banking sector. In the most recent period, however, there is evidence to suggest that this channel is regaining strength. Meanwhile, the **exchange rate channel** and **asset prices channel** have become relatively more important in the post-crisis period.'

This should be a reminder that monetary policy, universally, is at its weakest when attempting to stimulate a slack economy and avert deflation. In the case of the opposite situation -- inflationary pressures from excessive demand -- having a relatively weak instrument would not normally be an insuperable problem: the instrument could simply be pushed harder. But higher interest rates may attract substantial international capital flows and the main transmission channel may be through the adverse effect this has on the tradable-goods sector. Figure 4.9 may suggest that, from 2002 to 2007, the BoT had been reluctant to see the policy rate far from the federal funds rate of the US. So far this has not been in conflict with the needs of the domestic economy. For example, in August 2004, the MPC viewed that domestic inflationary pressure would be higher going forward due to continuously increasing capacity utilization, rising domestic oil prices, and the tightening labor market. More recently, the two rates have not tracked as closely as before.

Figure 4.9: Thai and US interest rates



Source: Bank of Thailand.

4.3. Quantitative Assessment of Inflation Targeting

We have discussed in general terms the techniques for assessing the inflation outcome in Section 3. 2(d). Here we will apply this to Thailand.

4.3.1. Hitting Score

The simplest, most common and perhaps most intuitive judgment is to ask whether the current inflation outcome falls within the target range. Over the ten-year assessment period, the actual outcome was within the target in 109 months of the 122 months between May 2000 and June 2010, or 89 per cent of the time. The official target is slightly different: that the *quarterly average* annual rate of inflation should fall within the range. On this basis, the figures change to 37 out of 41, falling within the band 90 per cent of the time. This is, by international comparisons, an outstanding result. Roger and Stone (2005) note that, even among the inflation targeters that have already achieved price stability, they miss the prescribed range about 30 per cent of the time. International comparisons of Thailand's performance should, of course, take account of the fact that for much of this period Thailand's target range was significantly wider than the international average, and even after it was narrowed in 2009, is still somewhat (by 0.5 percentage point) wider than the norm.

Table 4.1. compares the average inflation rate, standard deviation, the "hitting score" (how often inflation falls within the target range), and average squared deviations of the inflation rate from target and GDP gap.[45]

[45] For an earlier comparison of Asian inflation targeters, see Ito and Hayashi (2004).

Table 4.1. Inflation rate and GDP gap of inflation targeters

	Inflation Rate			Average squared deviations	
Developed countries	Average	Standard deviation	Hitting score (in the range)	Inflation (from target point/center of the range)	GDP gap
UK (May/1997-Jun/2010)	2.40	0.67	91.0%	0.52	1.70
Canada (Feb/1991-May/2010)	1.99	1.22	72.1%	1.48	3.57
Sweden (Jan/1993-May/2010)	1.51	1.41	49.5%	2.22	14.37
Australia (1993Q3-2010Q2)	2.85	1.74	38.2%	2.05	1.32
New Zealand (1990Q1-2010Q2)	2.39	1.42	64.6%	2.92	3.51

	Inflation Rate			Average squared deviations	
Developing countries	Average	Standard deviation	Hitting score (in the range)	Inflation (from target point/center of the range)	GDP gap
Thailand (May/2000-Jun/2010)	1.05	0.90	89.3%	1.29	10.78
South Korea (Jan/1998-May/2010)	3.27	1.72	50.3%	1.38	24.46
South Korea (Jan/ 2000-May/2010)	3.10	0.98	56.0%	0.78	20.73
Indonesia (Jan/2002-Apr/2010)	8.46	3.97	12.9%	21.63	22.27
Philippines (Jan/2002-Jan/2010)	5.21	2.73	14.4%	8.52	40.02

(Note 1) The inflation rate is “core” for Thailand and “headline” for others.
(Note 2) Data are taken from national sources in UK, Australia, New Zealand, Thailand and South Korea; and from IMF, IFS for Canada, Sweden, Indonesia, and the Philippines.
(Note 3) Hitting score is defined by the ratio of the number of months (quarters) where the inflation rate is in the target (or tolerance) range divided by the number of inflation-targeting months (quarters) in the sample.
(Note 4) For Korea, For the period from March 2000 to July 2005, most of the realized inflation values are in the target range. The hitting score deteriorated after August 2005.
(Note 5) The average deviation from the potential GDP is calculated as the average squared GDP gap, where potential GDP is the fitted value of the HP filter.

Source: Authors’ calculation

With regard to the hitting score, performance of the Thailand is as good as UK, and superior to any other inflation targeters. The average level is low

and standard deviation is small. These point to a remarkable achievement. In terms of average deviation from the inflation target, Thailand has also a good performer. However, the achievement has to be somewhat discounted, because Thailand has adopted "core" as the target variable, while others use "headline" and the core is less volatile. In terms of average GDP squared deviation, Thailand performance is better than other Asian inflation targeters, but worse than advanced economies.

All of the above are "ex post" measures. As Svensson (2009) argues, an ex post measure is not entirely appropriate as an evaluation measure of the inflation targeting. First, the "hitting score" of the inflation target alone ignores the balance of pursuing the inflation target and output target. Many "flexible" inflation targeting central banks indeed pursue both inflation rate stability around the target and the output stability around the potential output.[46] When the economy is under adverse supply shocks (higher prices), the central bank has to work on tradeoff between stable prices and stable output. Therefore a deviation of the inflation rate from the target, or a gradual return to the target, under the supply shock is desirable.. However, an appropriate weight between inflation gap, and output gap, is difficult to determine.

There is a further evaluation problem (discussed by Svensson (2009)). The full impact of monetary policy action will not be realized for 18-24 months. During this time, circumstances change (for example, a supply shock might occur) which might make the original policy setting seem inappropriate. But the policy makers should be evaluated in terms of whether their setting was optimal for the information which they had at the time policy was set (i.e. in *ex ante* terms). Within the MPC itself, it might be possible to conduct some kind of *post mortem* assessment of why the outcomes departed from the path envisaged by the MPC when policy was set, to see how much of this reflected new unanticipated events, or how far it reflected intrinsic errors within the forecasting or modeling process.

The first of these concerns is partially answered by evaluation using the Taylor rule equation. At least, the balance between inflation and output can be evaluated using the usual Taylor equation. In order to evaluate the *ex ante* decision, which Svensson (2009) advocates, we need the internal information on the MPC forecasting model and how MPC views the interest

[46] In theoretical literature, it is well accepted that the central bank has a loss function with the two variables, deviation from the target inflation rate π^* and potential output y^*.

rate path for the next several quarters. See Svensson (2009). We would not attempt this here.

4.3.2. Taylor Rule

The second method of evaluating monetary policy is a familiar Taylor rule equation.

As noted in Section 3 above, evaluating the performance in the twin dimensions of inflation and output presents problems. Ideally we would be carrying out an *ex ante* analysis (see Svensson (2009)) judging whether the MPC had used an optimal policy rule for their decision. In practice, the nearest we can go to this is to begin by estimating a Taylor Rule: looking back over the outcomes for inflation and output, what seemed to be the trade-off between the two objectives that was used by the MPC in its decisions? Estimating this is not straightforward:

- The MPC was targeting the forecast of future inflation, not the current rate of inflation[47].
- The data used should be that which was available to the MPC at the time of the decision, not the subsequent revisions.
- The potential output gap is notoriously difficult to estimate[48].
- The policy-rate adjustment often is done in consecutive steps ('smoothing': see discussion of Section 3 above). The professed policy assumption – that the policy setting will remain constant – does not represent established practice. When tightening starts, several rounds of rate hikes occur before the tightening stops. It is very rare that tightening is completed in a once-and-for-all large jump. The conventional estimation response is to add a lagged dependent variable to the estimation of the Taylor Rule, but that variable almost always dominates the regression result, casting some doubts on the accuracy of the other explanatory factors.

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[47] It might be possible, in theory, to estimate a Taylor Rule using the forecast , as done in Luangaram, Sethapramote, and Sirisettaapa(2009) but the only forecast that is available is the one *after* the MPC has already made its decision, and this forecast will always be close to the target. What is needed is, instead, the forecast of what would have happened if the MPC has *not* take its decision. .The Inflation Report comes out a week after the decision, so incorporates the latest policy setting, not the pre-decision setting.

[48] It is interesting to compare the estimates for the early years of the inflation-targeting period in Figure 3.2 of BoT Discussion Paper 06/2004 with the more recent estimates of the same period in the Box on potential output in the Inflation Report of October 2008.

Nevertheless, for our purposes here, it seems worthwhile to pursue this approach. We emphasise that we are not arguing that the BoT MPC uses this (or any other) Taylor Rule as a decision rule in its deliberations. No central bank uses a mechanical Rule in that way, as the decision process is far more complex than the simple Rule can capture. Instead, we want to use an estimated version of the Taylor Rule as a *base line* against which we can discuss why the MPC acted as it did.

Estimating the Taylor rule equation gives an average response of a central bank to deviation of π and y from π* and y*, respectively. To be precise, this is a reaction function of the central bank. Unless the average of the past behavior is interpreted to be optimal, deviations from the Taylor rule cannot be interpreted as being too tight or too loose. However, the Taylor rule estimation will be beneficial on at least two grounds. First, the relative weight (coefficients) of the inflation gap and the output gap gives important information about the balance of the two variables in the central bank's decision process. Second, when a significant deviation is observed, it is useful to explain why the action of the central bank was different from other periods. The central bank was possibly thinking that the shock that caused the deviation would be temporary, so that it did not respond. In any case, careful examination is warranted for periods of deviation from the Taylor rule average (fitted value).

The BOX 4.1 explains how Taylor rule is estimated.

The typical Taylor rule equation (Taylor (1993)), with modification of replacing the inflation rate by the expected inflation rate, is as follows:

(1) $$i_t = r^f + \pi_t^e + \beta_\pi(\pi_t^e - \pi^*) + \beta_y(y_t - y^*) + \varepsilon_t$$

Where i_t denotes the nominal policy interest rate; r^f the natural real interest rate; π^* the target inflation rate; π_t^e the expected inflation rate; and $y_t - y^*$ the output gap. For implementation of estimating this equation, rewrite (1) as

(2) $$i_t = (\, r^f + \pi^* \,) + (1 + \beta_\pi) \cdot (\pi_t^e - \pi^*) + \beta_y \cdot (y_t - y^*)$$

Therefore, estimate the following equation

(3) $$i_t = \alpha + \beta_1(\pi_t^e - \pi^*) + \beta_2(y_t - y^*) + \varepsilon_t$$

Where the coefficients are interpreted as,

(4) $$(r^f + \pi^*) = \alpha;\ \beta_\pi = 1 - \beta_1;\ \ \beta_y = \beta_2$$

As the interest rate should be most likely raised when the current inflation is above the target rate and when the output gap (current minus potential) is positive, the following sign condition should hold: $\beta_\pi > 0;.\ \beta_y > 0$

The policy rate adjustment often is done in consecutive steps. When tightening starts, several rounds of rate hikes occur before the tightening stops. It is very rare that tightening complete in once-and-for-all large jump. In view of this, the lagged dependent variable can be added. This term will take care of the tendency when there was the increase in policy rate in t-1, it is more likely to have a rage increase. Add the lagged term on the right hand side of (2)

(5) $$i_t = (1-\rho)\{(\ r^f + \pi^*\ ) + (1+\beta_\pi)\cdot(\pi_t^e - \pi^*) + \beta_y \cdot (y_t - y^*)\} + \rho\, i_{t-1}$$

Where $0<\rho<1$ is an adjustment condition. Then the regression becomes

(6) $$i_t = \alpha + \beta_1(\pi_t^e - \pi^*) + \beta_2(y_t - y^*) + \rho_{t-1} i_{t-1} + \varepsilon_t$$

Where

$$\alpha = (1-\rho)(r^f + \pi^*);\ \ \beta_1 = (1-\rho)(1+\beta_\pi);\ \ \beta_2 = (1-\rho)\beta_y$$

Structural parameters can be retrieved and the sign condition should be satisfied as follows:

(7) $$(r^f + \pi^*) = \frac{\alpha}{1-\rho};\ \beta_\pi = \frac{\beta_1}{1-\rho} - 1 > 0;\ \ \beta_y = \frac{\beta_2}{1-\rho} > 0$$

For the inflation expectation π_t^e is taken from Inflation Report forecast, 12 months ahead. Equations (3) and (6) are estimated with data from 2002 to 2010 with three different expectation variables. Then, the structural parameters are recovered by (4) and (7). The results are shown in Table 4-2.

The Taylor rule is estimated and the structural parameters are recovered. The results are shown in Table 4-2. The weight on the expected inflation gap is much higher than the weight on output gap. The coefficient on the output gap is statistically not significant. The smoothing coefficient is estimated as 0.79, which implies high stickiness in the policy rate determination.

Table 4-2: Inflation Report Expectation, 4 quarters ahead

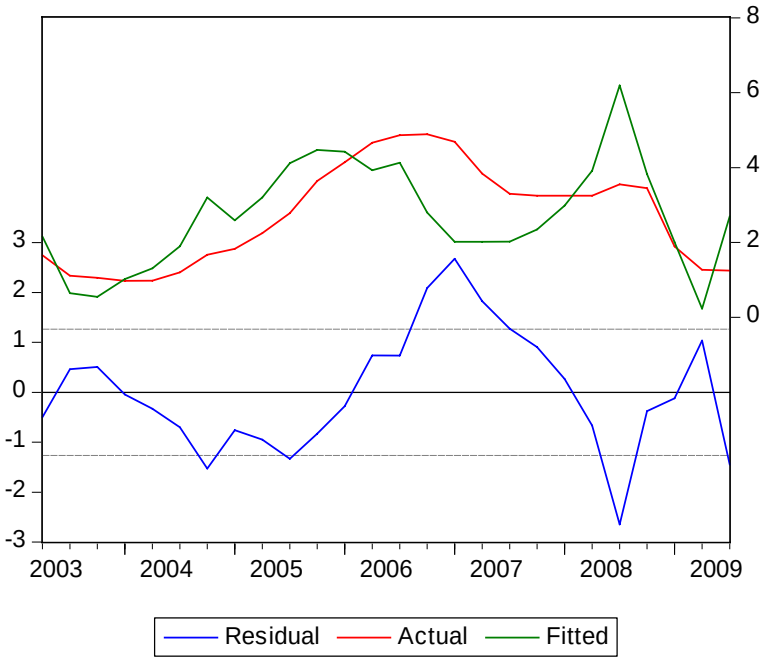
t+4	Sample period (2003Q1-2009Q3)					
	Normal Equation (8) Estimated by GMM		Smoothing Equation (9) Estimated by GMM			
	regression		regression		recovered	
Constant	$\alpha = r^f + \pi_*$	**2.81** (0.00)**	α	**0.62** (0.00)**	$r^f + \pi^*$	**2.95**
Inflation gap	β_1	**1.78** (0.00)**	β_1	**0.53** (0.00)**	β_π	**2.52**
Output gap	$\beta_2 = \beta_y$	-0.02 (0.74)	β_2	**0.05** (0.03)*	β_y	**0.24**
Lagged Policy			ρ	**0.79** (0.00)**	ρ	**0.79**
R-squared		0.19		0.96		

Notes: Brackets are standard errors. "**" denotes significance at 1%; .
Source: Authors' calculation.

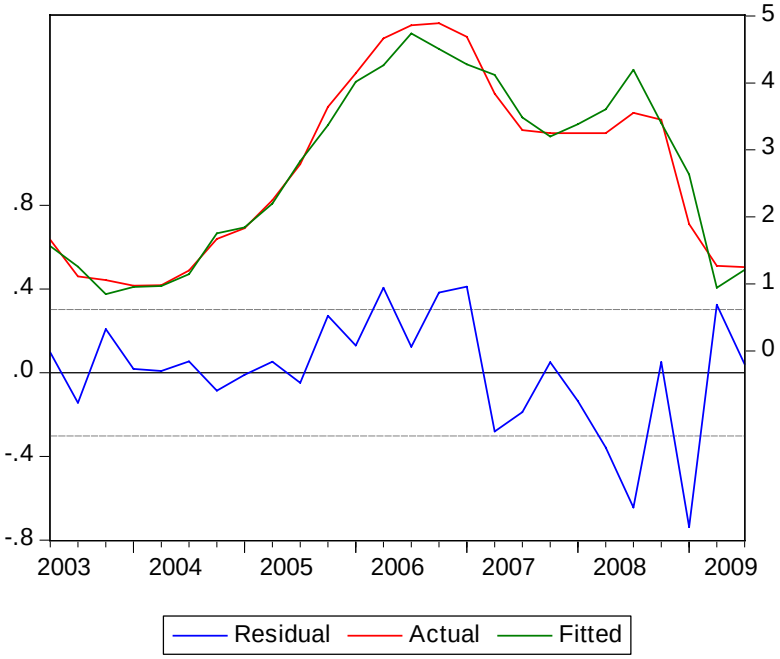
The results reveal in Inflation Reports provide reasonable estimates. All four variables in Smoothing specification produce the statistically significant estimates. The magnitude of structural estimate of the constant term (natural interest rate) is also reasonable. The structural coefficient of the inflation gap is much larger than that of the GDP gap. The monetary policy conducted in the manner estimated here is consistent with a description of a standard inflation targeter with good decisions.

Next, the deviation from the fitted value of the Taylor Rule estimation (residual) gives information of policy deviation from the average response in Figure 4-10.

Figure 4-10. Taylor Rule, actual, fitted, and residual.
No-smoothing (GMM)



Smoothing (GMM)



Residuals in the normal specification show that the monetary policy (actual) was tighter than average (fitted value) in 2006-2007 and looser than average in 2008. Residuals in the smoothing specification show a slightly different picture. The tighter-than-average policy is shown in 2006, but not in 2007. The looser-than-average policy in 2008 is the same.

The estimate with smoothing (i.e. including a lagged dependent variable) obviously shows a better fit[49]. Nevertheless, the non-smoothed version may provide a better base-line to demonstrate that policy setting involves much more than the application of a simple rule. The only substantial departure from the non-smoothed version of the Taylor Rule was in 2006-2008 period, and this departure cannot be explained in terms of smoothing lags, as policy moved *further* in a tightening direction in 2006 than the estimated Taylor Rule implied[50].

The explanation for this period seems clear enough: there were two sharp increases in international oil prices in this period, followed by the Global Financial Crisis. The core inflation rate was protected, to some degree, against the oil price increases, but the sharp rise in headline inflation signaled that there would be a danger of second-round effects. Headline inflation peaked at over six percent in 2006. In April 2006, the core inflation rate reached 2.9 percent. As well, the pace of recorded inflation (both core and headline) was being restrained by administered price stability: this restraint would be unwound in due course. Hence the firmer stance in early 2006. There was an opportunity to lower policy rates in the second half of 2006 and into 2007: not only was the international oil price easing, but the stronger exchange rate was restraining demand. It is interesting to see the exchange rate being mentioned in this period as producing firmer 'monetary conditions': the easing of policy might have reflected some discomfort with the strength of the exchange rate. It is also interesting to note that even when the BoT forecast core inflation to be close to the top of the range in 2006, policy rates were not raised enough to ensure that it would be back to the centre of the range at the end of the two-year forecast period: the MPC was content to allow more time for the supply-side shock to pass through. Their judgment must have been that price expectations would not be seriously

[49] Higher R squared for smoothing specification.

[50] There is another small departure in 2004, where it looks like the MPC was slow to respond to the growing inflation threat from the rise in international oil prices.

eroded, despite their own forecast being close to the top of the range for well over a year.

In contrast, when a similar supply-side shock to oil and food prices came in 2008, policy responded somewhat less than the estimated Taylor Rule implied (just two small hikes in July and August), because the MPC knew that the Global Financial Crisis was unfolding and activity was in the process of weakening, even if the full extent of this was not yet apparent. This is quite reasonable and appropriate response of monetary policy in the face of a supply shock. When it was apparent, the policy rate was lowered quickly: by 250 basis points between December 2008 and April 2009.

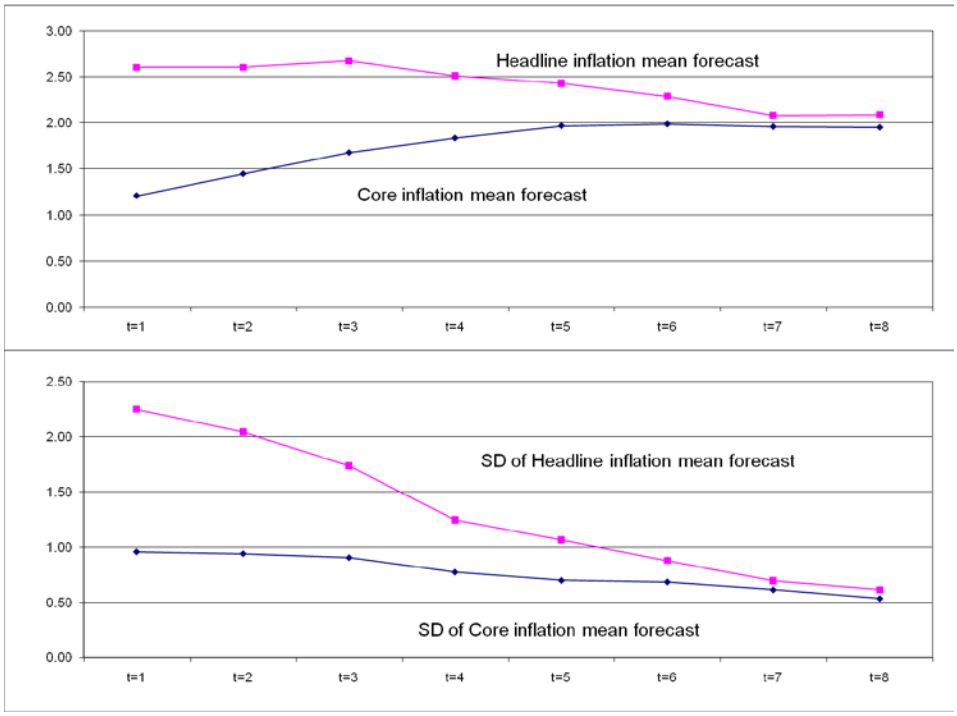
4.3.3 Forecast Accuracy

This intuitive/descriptive use of a Taylor Rule can be supplemented by a more rigorous approach, as has been admirably demonstrated by Luangaram, Sethapramote, and Sirisettaapa (2009). They test forecast bias and response to revisions not just for inflation, but output as well, using not only the end-point of forecasts, but pooled data for the path of the forecasts. They find no bias in the case of output forecasts, but a negative bias in the case of core inflation: the forecasts tend to be close to the centre of the target range[51], but (as noted above) the actual outcome has undershot this[52].

They report two fairly intuitive results for inflation: that the BoT's forecast path will asymptote toward the target and its standard deviation will get smaller as the forecast horizon shortens.

[51] 'Return to normality' is the forecaster's standard assumption, but in this case the motivation is stronger: if the MPC is not predicting that inflation will be in the centre of the band in one-two years, why don't they change the stance of policy to make it so?
[52] For headline inflation, there is the opposite bias: the forecast tends to be close to the target, but the outcome has tended to overshoot.

Figure 4-11: Convergence of forecasts



Luangaram, Sethapramote, and Sirisettaapa(2009),

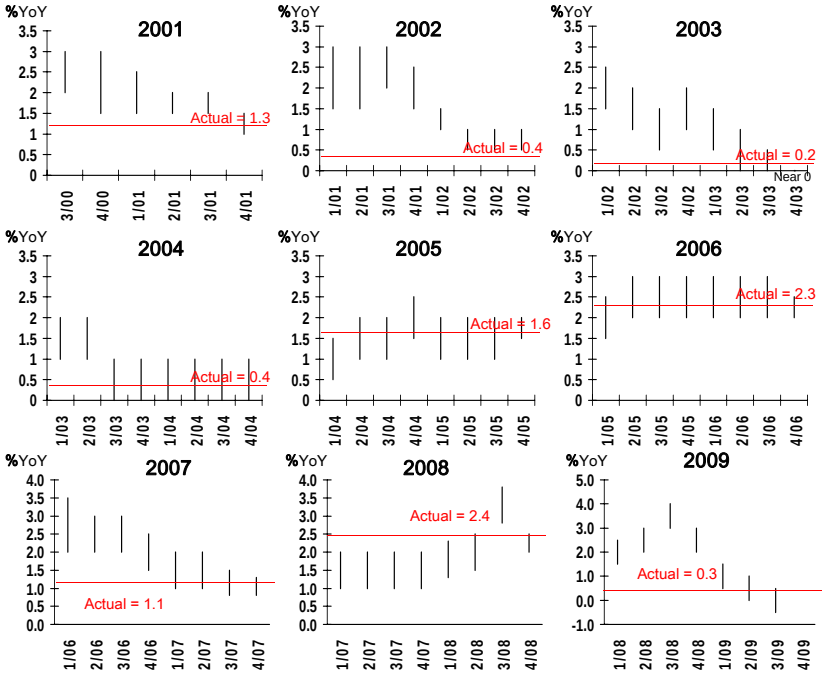
They also show that BoT's forecasts of output growth asymptote to a figure of just over five percent (which is close to the BoT's estimate of potential output growth: see Inflation Report October 2008).

They demonstrate econometrically that the BoT responds to forecast revisions in the right direction, although the regression explains only about half of the change in policy, which they conclude demonstrates 'a high degree of judgment on the part of the MPC'.

There are two other measures to gauge whether the BoT's inflation targeting regime has credibility with the financial markets. The first is whether financial market analysts routinely forecast inflation to be around the centre of the target range. The next graph illustrates this, showing how two-year-ahead forecasts were within a reasonably tight distribution, generally centred on the target, with some influence from recent actual inflationary experience. For an example of the latter, the initial estimates of 2005 (made in 2004) were at the low end of the target range, probably reflecting the experience of very low inflation in 2004. 2007 was at the upper end of the range, perhaps

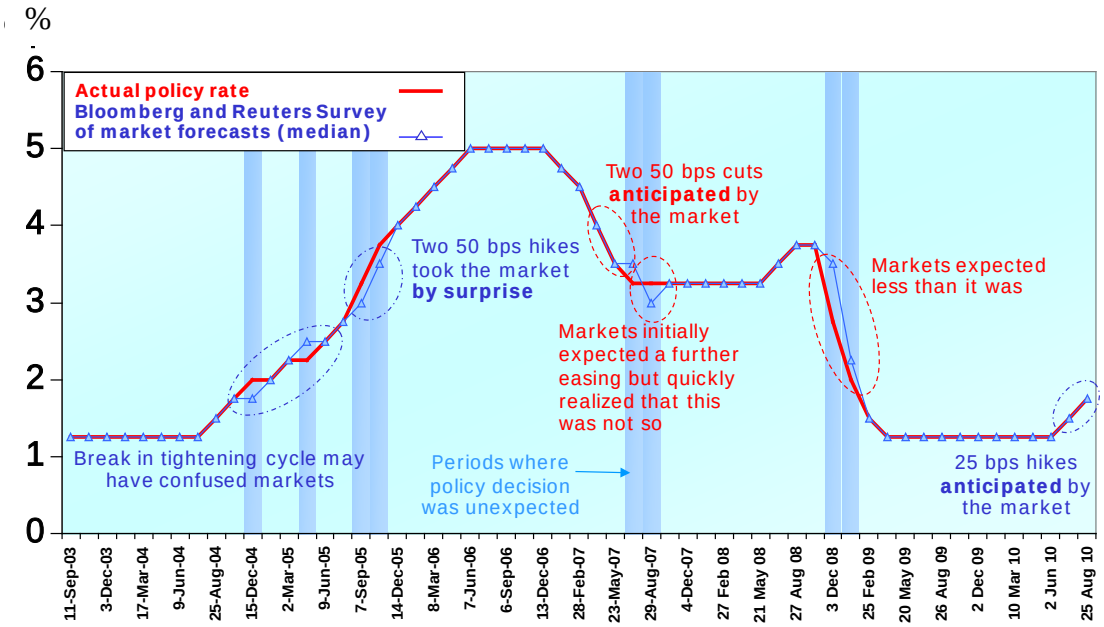
reflecting the market's initial view that the forces which had driven headline inflation to around 6 per cent in the previous year would still be acting to keep core inflation above the centre of the target range. Interestingly, in the confused circumstance of early 2008, the financial markets began their forecasts for 2009 closely grouped around the centre of the target range, suggesting that BoT retained some credibility following a disruptive period, although this forecast was soon revised upwards to reflect the higher actual inflation of the time.

Figure 4-12: Forecast accuracy



A further measure of BoT's credibility in the eyes of the financial market is to assess whether markets generally anticipate the BoT's policy moves. If so, this suggests that the BoT's actions are generally within the framework that the market understands, with forecast parameters not very different from their own. The following annotated graph suggests that the market anticipates the BoT's actions quite accurately, with the shaded areas indicating periods when there were some minor differences.

Figure 4-13: Actual Policy Rates vs. Market Forecasts (median)
MCP meeting dates, September 2003-August 2010



Source: Bloomberg and Reuters (since Feb 2008) surveys

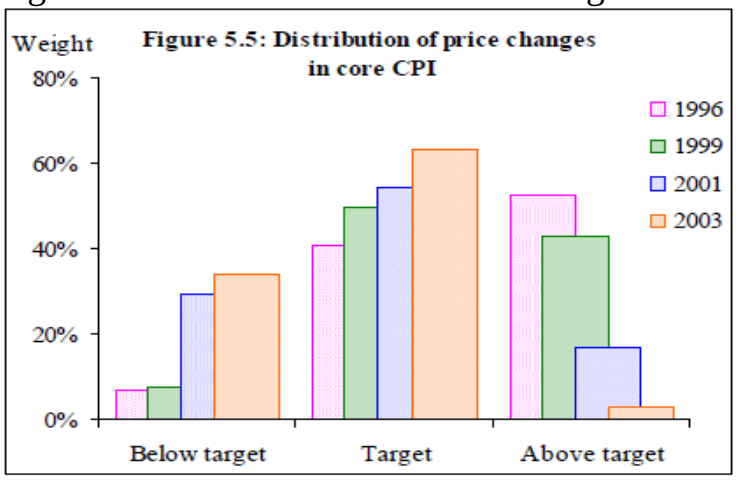
4.3.4. Price expectations

Stable price expectations are the key to successful inflation targeting and vice versa. If price setters and consumers have faith that the authorities will do whatever is necessary to restore inflation to its target level when it is knocked off this by supply-side shocks or mis-assessments of demand, then there will be consistency between inflation and output objectives. Examinations of inflation expectations in US, UK, Sweden and Canada, measured by the difference between the index bonds and regular bonds suggest that expectations are insensitive to economic news in inflation targeting countries, UK, Sweden, and Canada, but not in the US (See Gürkaynak, Levin, Marder, and Swanson. (2006), and Gürkaynak, Levin, and Swanson (2006)) .

The evidence from the early years of the inflation targeting period suggests a substantial improvement in price setting, both in terms of the mean and the distribution around the target inflation rate: see next graph[53].

[53] See Also Filardo and Genberg (2010: Figure 9)

Figure 4-14: Distribution of Price Changes in Core CPI

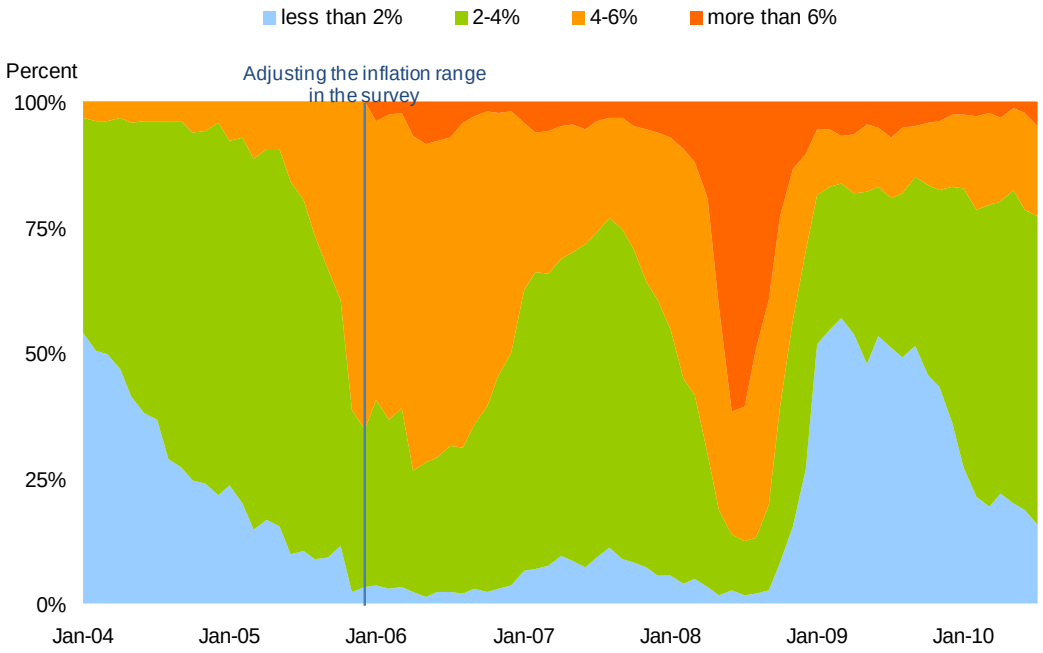


There is not much information available on how price expectations behave in the face of shocks. Attempts to measure price expectations from the yield curve are seriously distorted by changes in risk assessments and general market sentiment[54]. There is no consumer survey measuring price expectations. We are left with two measures: financial market economists' price forecasts, and the Business Survey.

Focusing on these two sources, we might ask how price expectations behaved during the two big adverse shocks to prices, in 2005-6 and 2008. In both periods, market forecasts (see graph above) did not 'see through' the shock, but instead moved up and down contemporaneously with actual outcomes, not falling until there was clear evidence that the shock had reversed itself and brought a return to lower inflation. The same can be said of the evidence from the Business Survey. That said, the early forecasts for 2009, made in 2008 under great uncertainty, grouped around the BoT target. This is rather slim and unpersuasive evidence, and price expectation stability may be a weak point in the current framework.

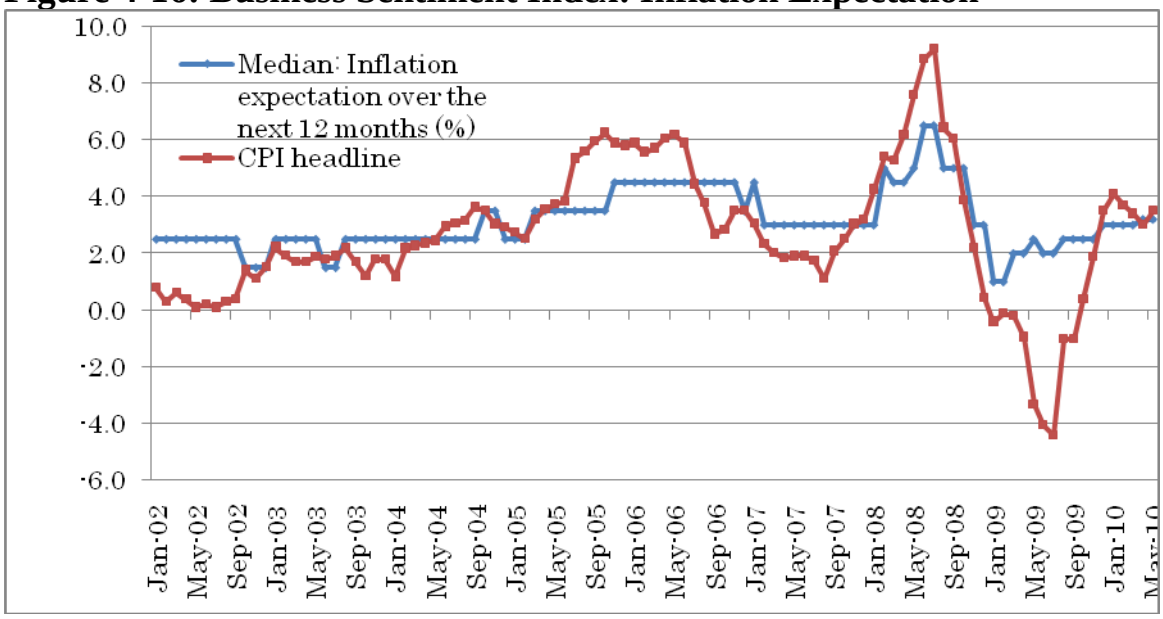
[54] For example, the long end of the yield curve rose sharply between April and June 2008, even though forecasts of future inflation were (correctly) falling (see Figure 4-12).

Figure 4-15: Inflation Expectations over the Next 12 months



Source: Bank of Thailand

Figure 4-16: Business Sentiment Index: Inflation Expectation



Source: Bank of Thailand.

CPI headline is added (red), to show how much expectation is influenced by current and recent-past headline inflation rates. [55] Expectations are centered at slightly above 2 percent, but they do fluctuate. When expectations change, in 2005-06, and in the first half of 2008 upward, they seem to be responding to the recent upward movement of actual inflation rate. In the second half of 2008, expectations fell in tandem with the actual inflation rate.

Is the inflation expectation anchored?
Business forecasters in the private sector are supposed to use all the information available to forecast future inflation rate in order to use this in their business decisions. Although we do not know what variables they use for their forecasts, we can guess some of the most important variables. When the central bank is a credible inflation targeter, the private sector's expectation can be assumed to be more or less anchored around the target inflation rate. However, if the central bank is not perfectly credible, then the expectations are sensitive to movements of other variable, such as the current inflation rate.

Box 4-2 explains how to test whether the business expectation is anchored or not.

BOX 4-2: Anchoring Expectation

The test of anchored expectation can be performed by regressing the expected inflation rate on the constant (anchor) and the deviation of the current inflation rate from the anchor. If the anchor is not perfect, the coefficient inflation rate has a statistically significant coefficient. In this specification the anchor is estimated at the same time, rather than assumed as a particular number. The specification is as follows:

$$\pi^{e}_{t|12} = \alpha^{*} + \beta\{\pi_t - \alpha^{*}\}$$

Where α^{*} is the estimated anchored expectation. This can be tested in the following regression:

$$\pi^{e}_{t|12} = \alpha + \beta\pi_t + \varepsilon_t$$

[55] Responses are compiled from a monthly business survey of approximately 800 medium and large firms, with registered capital more than 200 Million Baht, while responses received each month are approximately 60% of total survey distributed. The question asks about business respondent's expectation on inflation over the next 12 months

The estimated coefficient α can be interpreted as $\alpha = (1 - \beta)\alpha^*$, so that α^* is recovered. If the expectation is anchored perfectly, β is not significantly different from 0. Any other variables can be added to the right-hand side. They should have insignificant coefficients, if the expectation is perfectly anchored.

	Coefficient	Std. Error	t-Statistic	Prob.
α	2.07	0.23	9.19	0.00
β	0.38	0.07	5.70	0.00
$\alpha^*=\frac{\alpha}{1-\beta}$	3.33			
R^2=0.62				
DW=0.66				

Note: Estimation method is GMM.

The results show that the expectation is dependent on the deviation of the headline inflation rate from the perceived target rate.

Next, we test whether the expectation is unbiased and orthogonal to information that are available at the time of expectation formation. The forecast error is defined as

$FE_{t|12} = \pi_{t+12} - \pi^{e}_{t|12}$

The forecast errors should have zero mean and not dependent on any information that is available at time t.

$FE_{t|12} = c + \Delta\pi_t + \Delta e_t + \varepsilon_t$

Where e denotes the exchange rate. Since there is autocorrelation in the error term due to the overlapping observation, the autocorrelation term is added.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
c	-0.01	1.38	-0.01	0.99
$\Delta\pi_t$	1.21	0.70	1.74	0.09
Δe_t	-0.33	0.45	-0.73	0.47
$\rho(1)$	0.87	0.10	8.31	0.00

The results show that there is no evidence for biased expectation, and there is only weak evidence that the forecast error is correlated with the change in inflation rate. Therefore the business expectation is reasonably good expectation that has zero mean and not strongly influenced by headline inflation rate.

The results (in Box) imply that the expectation is sensitive to changes in actual (backward-looking) inflation rate. Results show that when the inflation rate rises by 1 percentage point, the expected inflation rate rises by 0.38. Although the response is moderate, it does show that the expectation is not perfectly anchored to a point. The estimated anchor inflation rate is 3.33. This may sound too high for Thailand compared to the target range of [0, 3.5], later revised to [0.5, 3.0]. However, we suspect that business expectation is for headline rather than core.

A further possible handle on price expectations might be obtained by measuring the *persistence* of inflation (see Filardo and Genberg (2010)).

Section 5. The Bank of Thailand's Other Objectives

In the previous Section we discussed how the Thai inflation targeting framework handled its preeminent objective – price stability – and the relationship of this to its objective of sustainable economic growth. These are, however, not the only objectives in the Bank of Thailand's remit. The BoT also has obligations relating to financial system stability (which gives it a vital interest in asset prices) and the exchange rate. It should also ensure that its policies are in harmony with other macro-policies. This Section explores how these other obligations fit with the FIT framework.

5.1. Financial Stability

Perhaps reflecting the experience of the Asian Crisis, the BoT seems highly aware of its responsibilities in this area. Its recognition of the linkages between financial stability and price stability is demonstrated in the (unusual) inclusion of a substantial section on financial stability in the quarterly Inflation Report. There is not a separate Financial Stability Report (as is produced by many central banks, even those that do not have responsibility for bank supervision, such as the BoE, BOJ and the RBA). Instead, this material is incorporated in the BoT Inflation Report.

Earlier concerns that central banks which also had supervisory responsibilities would distort their monetary stance to provide support for the financial sector seem to be misguided, to say the least. The GFC has demonstrated the key role of monetary policy in responding to financial problems, with lower interest rates supporting damaged balance sheets and providing some support for weak asset prices. It is clear that bold movement of the interest rate instrument is required in a financial crisis, even by those countries not directly affected (see Figure 3.1). The path of policy interest rates in Thailand in 2008-2009 reflected this.

In normal times, the linkage between the inflation targeting framework and financial stability is not as strong. To the extent that action is required on the interest rate instrument (say, in the face of incipient asset price increases), the most that can be done is to 'lean' against these with slightly higher interest rates. But it should be clear that this will not be enough to control an asset bubble. An interest rate high enough to cope with a serious asset price bubble would be too high for the rest of the economy.

Other instruments are available to the BoT. Prevention is, of course, better than cure. If the BoT sees problems arising, say through asset price increases or excessive expansion of bank balance sheets, it can increase surveillance, require extra capital, or impose varying LVRs. The BoT has an LVR in place for housing loans. In December 2003, BoT took preventive anti-speculation measures on real estate sector by putting in place loan-to-value ratio to 70 percent for residential property with the transaction price exceeding 10 million baht. And then in 2008, the LVR ratio had been increased to 80 percent. It would be salutary to adjust this upwards or downward to demonstrate to the banks that they should see this as a variable policy instrument and allow for this in their lending decisions. Other measures to make prudential supervision less pro-cyclical might be considered, such as dynamic provisioning and long-term averaging of collateral values so that higher collateral values in the boom don't facilitate greater borrowing.

Once a crisis occurs, the BoT has other instruments to call on. Normal open market operations are available to handle systemic liquidity shortages that might be caused by the drying up of liquidity in the money market. More problematic is when one (or a few) banks experience liquidity difficulties that are not relieved by inter-bank borrowing because that market has dried up or there are credit concerns about the borrowers. These circumstances show the advantage of having bank supervision inside the central bank: if the borrowing bank is solvent and has acceptable assets to offer, the BoT can relieve the liquidity shortage in a low-key way. In the face of systemic problems, the BoT has its LoLR. There is now considerable experience elsewhere (Japan, the UK and the USA) in the active use of the central bank's balance sheet to support financial markets and influence interest rates beyond the short-end of the yield curve. Just how effective this is depends on which assets the central bank is prepared to buy[56]. But if the occasion arose in the future, this experience could be drawn on in Thailand.

With this array of instruments, there seems no serious danger that BoT's obligations in financial stability will, in principle, impinge seriously on its ability to pursue FIT.

[56] The USA has taken the strongest (in terms of potential effect) and riskiest path of buying private-sector securities which the market has (it is to hope temporarily) undervalued.

5.2. The exchange rate

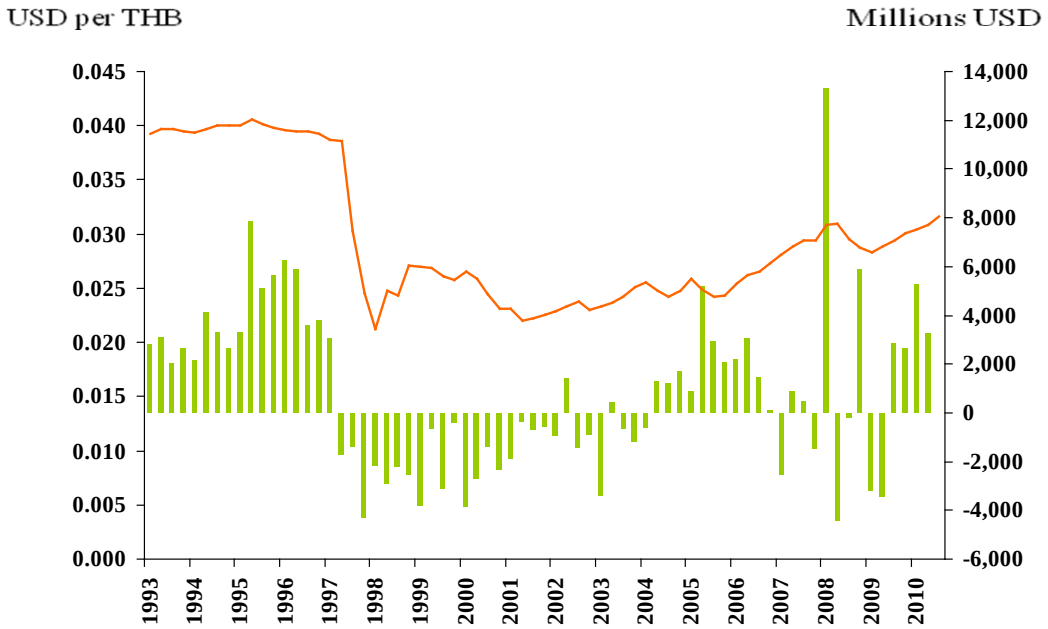
Although inflation targeting was initially seen as an *alternative* to anchoring monetary policy using the exchange rate, the 2008 BoT Law empower the MPC to determine exchange rate policy management[57]. The experience over the whole of emerging East Asia since the Asian Crisis is that central banks have been able to exert a helpful stabilizing influence on the exchange rate, particularly at those moments when the financial market loses track of the fundamentals and pushes the rate either excessively high or low. This desire to have a stable rate seems well founded: exports have been a key to the dynamic growth experience, and stable exchange rate is known to promote more exports (and imports).

In Section 2 above we noted that often there will be no conflict between inflation targeting and exchange rate stability. There are, however, two circumstances where there may well be tension and conflict. The first is where there are excessive capital inflows (which have the potential to become volatile outflows later, as happened prior to the crisis of 1997). The second is where there is a substantial change in the terms of trade[58].

[57] Section 28/7

[58] There is also the cases where the exchange rate might be weak at a time when inflation is low (perhaps this is the low point of the cycle) and there may be a policy dilemma between a higher interest rate to support the currency and a weaker policy stance to support the economy at a time when inflation is no threat. Generally the Thai authorities would be ready to allow some depreciation of the exchange rate at the low point of the cycle to support activity (relying on low pass-through and slack activity to keep inflation within the target), but there may be overshooting which will test their nerve. Ho and McCauley (2003) identify a possible instance of this in Thailand in 2001(see their footnote 69).

Figure 5.1: The exchange rate and capital flows, pre and post 1997 crisis

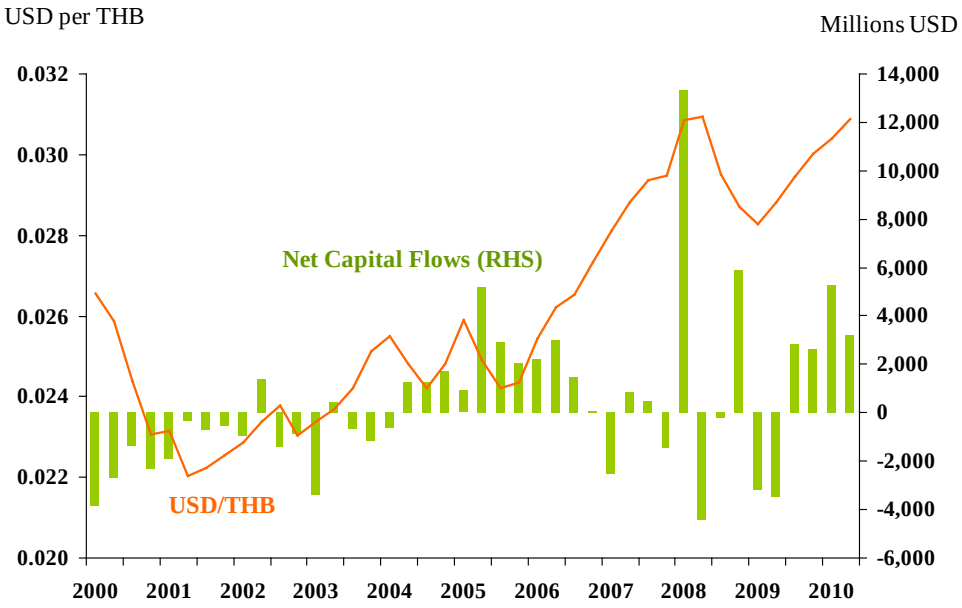


Source: Disyatat et al (2005) and updated by the Bank of Thailand

Volatile capital flows have provided a policy challenge for Thailand in the past. Leaving aside the painful 1997 experience (itself largely a product of excessive inflows in the preceding years), Thailand experienced substantial inflows again in the second half of 2006, which pushed up the exchange rate by 14 per cent over the course of 2006.

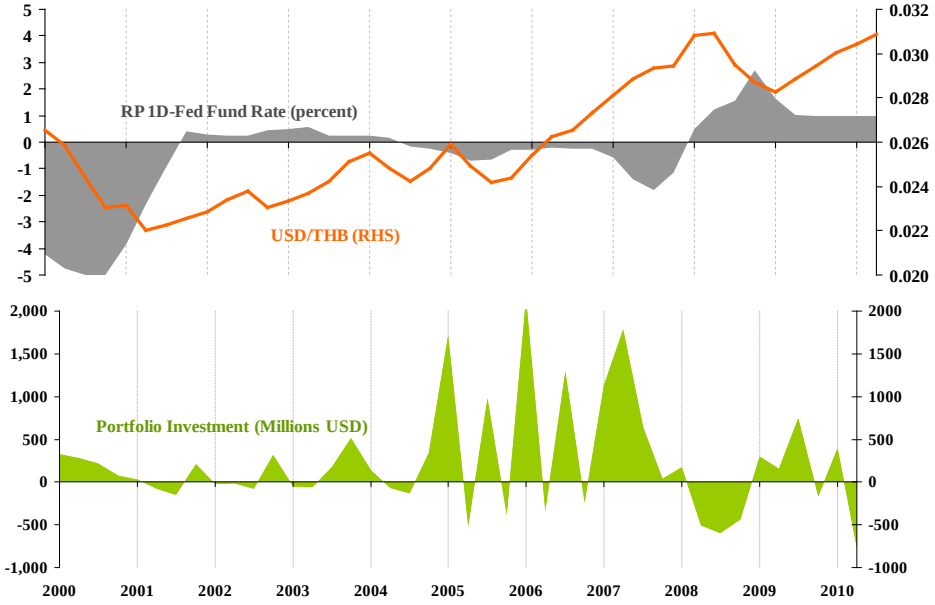
This inflow was not responding to a positive interest differential (in fact the differential was slightly negative). It is not possible to say that these exchange rate pressures distorted the setting that the FIT framework would have required (the policy interest rate was being raised in step with rises in the US and the rate of inflation was falling by this time), but there is clearly the *potential* for this distortion to occur.

Figure 5.2: Capital flows and the baht



Source: Bank of Thailand

Figure 5.2: Interest differentials, portfolio flows and the baht



Source: Bank of Thailand

The assessment of the BoT is that capital flows have not been very sensitive to interest differentials, with other factors such as the possibility of exchange rate change being more important in foreign investors' minds (see box in BoT Inflation Report April 2007 and Pongsaparn (2007)). Interest differentials, however, have been quite modest for eight of the ten years of the observation period. Looking ahead, if interest rates remain low in the US and Europe (reflecting prolonged economic weakness) and Thailand returns to full capacity-growth, it might be expected that the positive interest differential might become a significant encouragement to capital inflows in addition to other factors. The potential conflict with the inflation targeting framework may well increase.

BoT has explored a range of instruments, other than interest rates, to try to influence these capital flows. Most prominently, there is the Unremunerated Reserve Requirements (URR) imposed in December 2006. The measure amounts to a tax on domestic yield. The Bank of Thailand has moved away from the use of URR or other measures that might be considered to be capital controls and has recently introduced measures to encourage freer capital outflow.

While many observers (especially in financial markets) have been critical of this measure, much of the criticism has been directed at the implementation. It might also be added that the measures worked, in their narrow objective of discouraging capital inflows. Since then, several other countries (Brazil, Taiwan) have imposed various kinds of taxes on inflows and the IMF has shifted its earlier opposition to these sorts of measures[59]. Further detailed work on implementation may be required, but measures on short-term capital inflows, seems a useful instrument to have in the policy tool-box.

As well, there may be structural reforms, which will work in the right direction. As capital outflows are liberalized, this may help restrain the unwanted strengthening of the baht. There may be legitimate even-handed tax changes that would help: in the past, many countries gave foreign investors various tax breaks at the time when it seemed difficult to fund the current account position, but now with strong current accounts and eager foreign investors, it may be time to re-examine such tax breaks and ensure that foreigners are taxed on the same basis as domestic investors, especially

[59] See Ostry et al (2010).

for portfolio capital flows. The uniform use of withholding taxes may help restrain inflows. An effective capital gains tax is another possibility.

Financial markets assess country vulnerability using various rules-of-thumb, including the ratio of short-term debt to reserves (the Guidotti Rule). Regulation and taxation to discourage domestic residents from borrowing in the form of short-term financial instruments would contribute to lowering the probability of a future crisis.

The second circumstance where there may be a conflict between a stable exchange rate and inflation targeting is when there are large changes in the terms of trade (ToT), particularly if these are adverse. A terms-of-trade deterioration, such as an increase in the international oil price, will weaken the exchange rate (especially if it is thought to be permanent). If there was a large pass-through to inflation (especially the target core rate), an inflation-targeting framework might encourage the authorities to raise interest rates to offset the inflationary impact. But if price expectations become well anchored, policy will be able to respond less or not at all, by letting the first-round go through to prices and inflation (this is the *necessary* change in relative prices) without adding further downward pressure to output (which will have been affected by the fall in income that accompanies the adverse ToT movement) with higher interests rates.

Foreign exchange intervention to prevent the exchange rate from moving beyond a reasonable range of fluctuation may be effective and beneficial (Ito 2003). A key is to allow a reasonably wide range for free movement and intervene at around the (non-disclosed) edge of tolerance band. Also the speed of movement away from equilibrium (toward the limits of the range) influences the timing of intervention. Frequent interventions within the range rarely achieves any impact on the exchange rate movement,

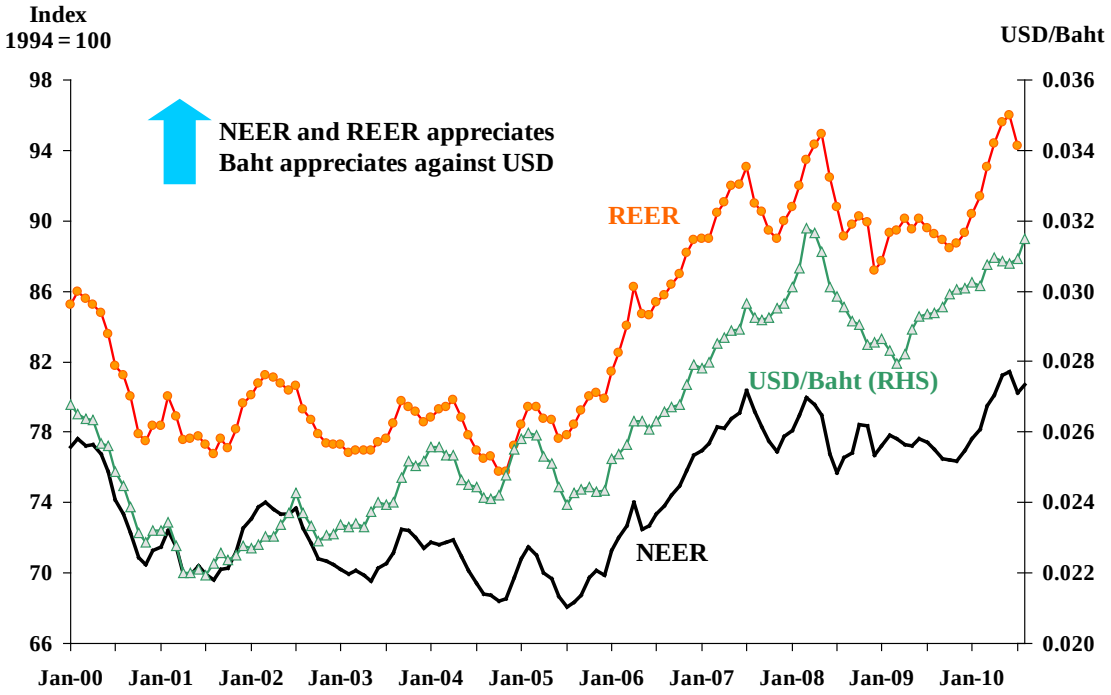
This kind of foreign exchange intervention has the potential to be an additional instrument in the central bank's policy tool-box. Many commentators are sceptical that intervention works in a managed float regime. However, it seems possible for a central bank to intervene occasionally to trim extreme movements. The critical analytic point is that intervention cannot hold the actual exchange rate away from its equilibrium value for long. But if the market has taken the exchange rate away from its equilibrium value, intervention may have some capacity to reduce the time and extent of the diversion from equilibrium. Of course it is not easy to

know exactly what the equilibrium is: the concept is a *real* (inflation adjusted) *effective* (calculated using a basket of foreign currencies reflecting the country's trade pattern) and will change over time depending on factors such as the ToT and the structure of the economy. But it seems likely that these structural changes will be gradual.

At present Thailand does not use a precise guide to its intervention. In our discussions, we often heard policy-makers avow strongly that they did not have any specific rate in mind, and this is an understandable affirmation that there is no notion of a *fixed* exchange rate, which is seen to have been one of the critical weaknesses in 1997. We also heard policy-makers say that they would not resist an appreciation which was justified by the fundamentals. Some said that the main objective was to reduce volatility in the exchange rate. Others said that BoT took considerable notice of its competitive position vis-à-vis its regional competitors. Some confirmation of this is seen by the fact that the effective exchange rate (reflecting substantial intra-regional trade) is much more stable than the rate against the US dollar or the yen [60]

[60] For a detailed (if slightly dated) discussion of intervention, see Disyatat and Galati (2005)

Figure 5.4: Nominal and effective exchange rates of the baht



Source: Bank of Thailand

We do not see much evidence from the experience the past ten years that BoT's management of the exchange rate has interfered with the implementation of inflation targeting. There may have been some limits on sterlisation in 2006 when the BoT balance sheet was short of government securities to use in open-market operations, but now that it can issue its own securities, there does not seem any reason to doubt the efficacy of sterilisation[61]. The rise in foreign exchange reserves can be justified in terms of useful insurance against shocks . There has not yet been enough two-sided intervention to make a useful calculation of whether the intervention has been profitable (which is evidence, but not proof, that the intervention was stabilizing over the medium run).[62]

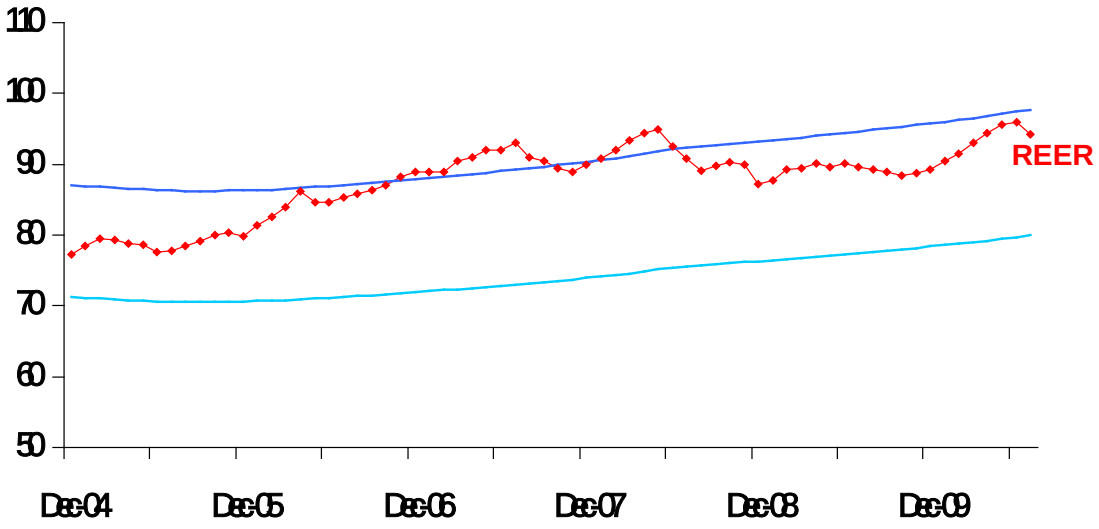
The combination of the 2006 URR and various political issues since then has given Thailand less foreign capital inflow than it might otherwise have

[61] China has demonstrated the capacity to sterilize vastly greater reserve build up – see McCauley (2008)).

[62] Becher and Sinclair (2004) calculate profits from RBA intervention. Ito (2003) also calculated profits from Japanese interventions.

received, which has been helpful for avoiding large appreciation and loss of international competitiveness. Nevertheless Thailand's REER is now back to the appreciated levels which were a concern in 2006-7. As noted above, interest differentials will probably widen and may prove more powerful in attracting foreign flows than is suggested by the experience of the majority of the inflation targeting period, when the interest differential was small.

Figure 5.5: The real effective exchange rate



Source: Bank of Thailand

Note: Bands are calculated from the 5-year moving average of the REER (starting from 2000) plus 10 percent and minus 10 percent

To the extent that the exchange rate is reflecting equilibrium forces (appreciating in response to longer-term capital flows, positive ToT movements or positive structural changes in the traded-goods-sector), intervention will not be a longer-term solution to loss of competitiveness through appreciation. The fact that exports have remained strong suggests that the export sector has adapted to the stronger REER. [63]

This would leave the role of intervention being to reduce misalignment arising from self-reinforcing swings in sentiment. In our view there is little

[63] The evidence on this is somewhat ambiguous. Chart 12 in Pongsaparn (2007) suggests that the strength of exports depends on the strong growth in export markets, and that the stronger exchange rate has, in fact, retarded exports.

point in intervention aimed at smoothing out the minor daily fluctuations in the rate (although such intervention may do no great harm), but putting a plus-or-minus ten percent band around the trend in the REER does reveal a couple of times when the rate seemed to move excessively, opening the opportunity for beneficial intervention.

Even with effective intervention, the exchange rate may appreciate more than policy-makers are comfortable with, especially when interest rates need to rise to retrain a more dynamic economy. Is there anything more that can be done?

An alternative approach is that taken by Singapore. While Singapore is not a formal inflation targeter in the sense that it has no numerical inflation objective, price stability is the paramount objective of the MAS (see Khor et al (2004)), and its record of low inflation is quite impressive. The more substantial difference between the approaches of the two countries is that, while Thailand uses the short-term interest rate as the instrument of monetary policy, Singapore uses the exchange rate in much the same way, as the instrument of policy (see McCallum (2006)). The exchange rate is heavily managed to keep the effective rate within a BBC-type band, with the MAS retaining the option to widen or shift the band as necessary. Interest rates follow US rates closely, usually a little lower to reflect the secular appreciation of the Singapore dollar and lower inflation, with the short-term rate largely left to be determined by the market rather than used as the policy instrument, as is done elsewhere. While the exchange rate is managed to keep it close to the assessed equilibrium, when activity is weak the exchange rate is depreciated to help activity at a time when inflation is not a threat, and appreciated when activity is pressing on capacity limits.

Would this variant on the usual approach suit Thailand[64]? It avoids the problem that higher interest rates (required in the context of the inflation target) may attract excessive capital inflow. But at the same time the approach loses the benefit of the interest rate instrument in addressing excessive domestic demand (Singapore relies on other more direct instruments to restrain demand).

Whether it would be more effective in achieving price stability and output objectives depends on the strength of the relationships between these

[64] This possibility is explored in Sangsubhan (2010).

objectives and the exchange rate, on the one hand, and the interest rate, on the other. The MAS argues, cogently, that Singapore is so closely integrated into international trade that the exchange rate is effective in influencing prices. Thailand is well integrated also, but not as deeply as Singapore. At the same time, Singapore's integration with international capital markets would make it more difficult to use the interest rate instrument actively to influence domestic activity without triggering large foreign capital flows.

Econometric estimation suggests that there is not as much difference between the two countries as might be first thought. Neither country exhibits a powerful econometric relationship between exchange rates and the CPI. For Singapore, Chew et al (2009) estimate that the short-run pass-through to the CPI of a one percent change in the exchange rate is 0.1 percent, and 0.4 in the longer-run. In Thailand, the same relationship has been estimated at 0.23 and 0.34 (Buddhari and Chensavasdijai (2003), although more recent econometrics has failed to find any statistically significant pass-though (Pongsaparn (2007)). For both countries, the more powerful channel is via the effect of the exchange rate on economic activity and hence to inflation by way of the Phillips Curve.

While the models don't show much difference between the two countries, a more intuitive approach suggests that Thailand has the approach more suited to its circumstances. There is little doubt that the interest rate instrument, pushed hard enough, is effective in restraining demand (and asset prices), and to the extent that this causes the exchange rate to rise, this is a helpful supportive effect. To the extent that this attracts excessive foreign capital inflow, there are other ways of discouraging this (explored above). The case seems to be for letting the exchange rate help, rather than intentionally managing it to greater strength.

Perhaps the main lesson here is that, whatever monetary instrument is used to counter inflationary pressures, there are unwelcome side effects. Thus the priority is to use the instrument to keep output somewhere near potential without excessive pressure, and work hard on keeping price expectations in check.

5.3. Fiscal Policy

We have looked at the interaction between inflation targeting and other aspects of the BoT's remit. There is, however, one important linkage with other macro-policy not explored so far: with fiscal policy.

The academic literature would support the idea that monetary policy and fiscal policy can be seen as separate instruments without serious overlap or potential for conflict. Without necessarily accepting the lessons of the "assignment' analysis, this seems readily translatable into practice, with the central bank pursuing its comparative advantage in price stability and financial system stability, leaving the deeply-political issues of fiscal policy to the political process. This is subject to one important caveat. Optimum policy would require both these instruments to be viewing the economy in the same way – its present conjuncture and the policy horizon. Thus there is a powerful case for the monetary authorities and the fiscal authorities to coordinate their forecast process. This may not always result in complete agreement, but at least there needs to be enough discussion to ensure that both understand the basis of policy-making of the other. With that done, an argument might be made that neither party should offer much advice to the other, focusing instead on getting its own specialization as close to optimal as possible.

Section 6. Governance, the MPC Process and Accountability in Thailand

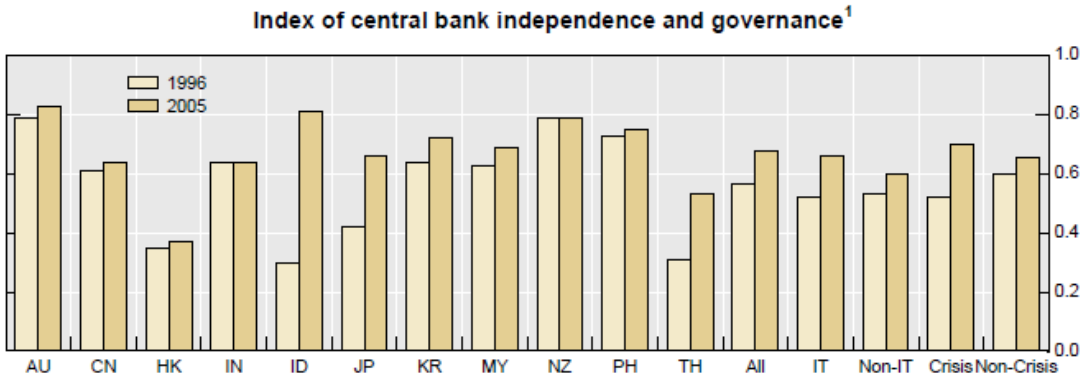
6.1. Governance

When Ashan et al (2008) made their comparisons of governance measures based on 2005 data, the Bank of Thailand was recorded as having a standard of governance somewhat below the average of the region, brought down largely by the 'legal' component, reflecting the then-current 60-year-old central bank law[65]. In fact the first eight years of the inflation targeting regime in Thailand had very little legislative backing, and the operational framework was more-or-less at the sole initiative of the Bank of Thailand. This did not seem to constrain the successful implementation of inflation targeting, although there are some suggestions that BoT Governors could be dismissed more readily than under Best Practice norms, providing at least the potential for undue political influence.

Filardo and Genberg (using the Ashan et al data) note that between 1996 (i.e. pre-Asian-crisis) and 2005 the crisis countries and the inflation targeters both improved their Central Banking Governance and Independence (CBGI) rating, with Thailand, of course, in both categories. There is little doubt that the inflation targeting process drew attention to the CBGI issues and set the scene for formalization of these aspects in the BoT Act, which was put in place when the legislative opportunity presented itself in 2008.

[65] This ranking was reproduced in Filardo and Genberg (2009)

Figure 6.1: Index of governance and independence



AU = Australia; CN = China; HK = Hong Kong; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = Philippines; TH = Thailand; All = Average for all countries; IT = Average for inflation targeting countries; Non-IT = Average for non inflation targeting countries; Crisis = Average for Indonesia, South Korea, Malaysia, Philippines, and Thailand; Non-Crisis = Average for Australia, China, Hong Kong, India, Japan and New Zealand.

[1]There were no data available for Singapore.

Source: Ashan et al (2008)

This absence of strong and specific legislative backing was remedied with the passing of the new Central Bank Law in 2008 which has brought the legal aspects up to Best Practice[66]. The BoT's independence to pursue its objectives is confirmed in the 2008 Act, and this independence is backed up by comprehensive specification of the appointment processes not only for the Governor, but for the four Boards (including the Monetary Policy Committee) that implement the BoT's mandate. Procedures for appointment of the Governor are set out, requiring the appointment of a selection committee to propose a short list of candidates to the Minister. Once the Governor is selected, he or she will have independence in setting policy in accordance of the inflation targeting framework. The position of the Governor has been strengthened (the Governor can only be dismissed in cases of 'wrongful misconduct', 'dishonest performance' or 'gross incompetence' and the reasons why the cabinet decided to dismiss the governor must be specified explicitly (see Section 28/19 of the Law)).

The Law provides for the BoT to have a Court of Directors (the Board), which has general control over the management of the BoT and, importantly, appoints the external members of the three specialized functional Boards/Committees (Monetary Policy (MPC), Financial Institutions Policy,

[66] See box in the BoT Inflation Report July 2008

and Payments Systems).There is a majority of external members in the BoT Court and in each of these functional Committees[67].

The BoT Court clearly has a key role, in its power of appointment of the external members of the three functional boards.[68] The Minister of Finance formally appoints the five external members of the Court: this might seem to give the Minister opportunity to influence the character of the decision making, but this seems in practice to be tightly constrained by the detailed selection process of the external members. A selection committee is used to propose new members of the Court, with this selection committee being drawn from former senior bureaucrats. The selection committee proposes the candidate, to be approved by the Minister and Cabinet. In practice the BoT Board seems clearly independent (the current Chairman is a former BoT Governor).

The task of coordination between the three functional Boards is achieved by overlap of membership (Governor and Deputy Governors) and by a specific working group that brings together monetary and supervisory officials. For example, the "Subcommittee on Financial Institution System and Financial Market Stability" was formed at the end of 2009. This subcommittee meets monthly, bringing together the surveillance capabilities from both sides of the bank, making the monitoring of financial imbalances more comprehensive and effective.

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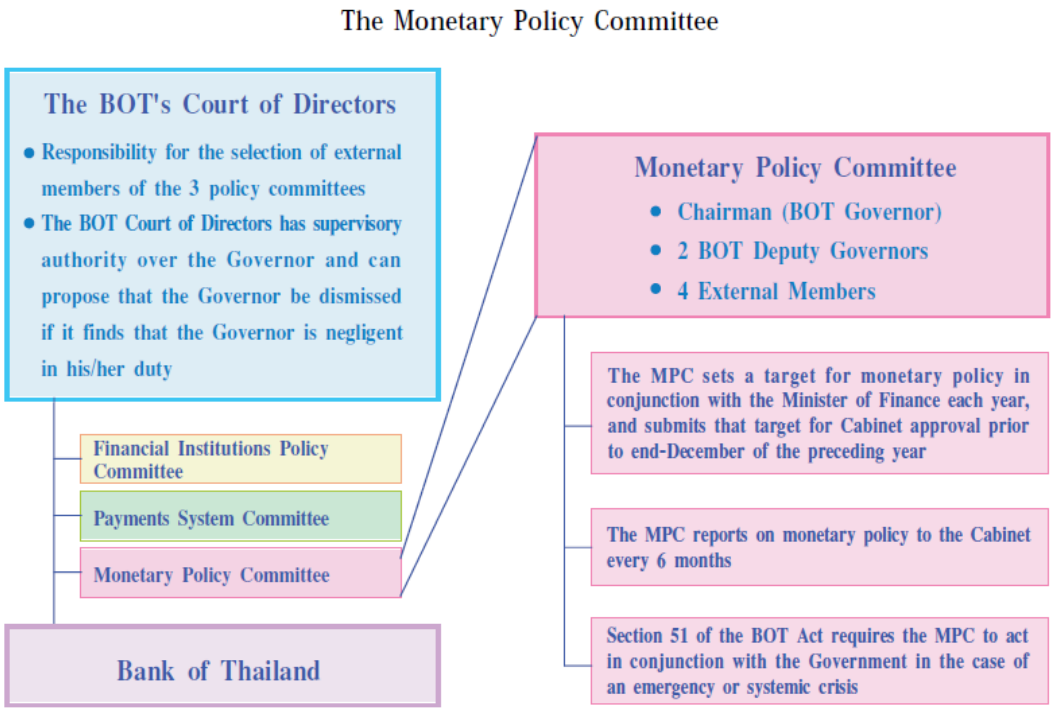
[67] While there is a majority of external members, some of the external members of the Financial Institutions Policy Committee and the Payments System Committee are *ex officio*. In the case of the Financial Institutions Board, the Fiscal Office, the Insurance Commission and the SEC are represented ex *officio*. For the Payments System Board, the President of the Thai Bankers' Association is an *ex officio* member.

[68] The BOT Court of Directors (the Board) have similar institutions in some of other central banks. The Reserve Bank of New Zealand (RBNZ) has a Board that has a function: "to review the performance of the Governor and the Bank. The Board holds regular meetings at which it receives extensive briefings on the Bank's activities, decisions and policies. At these meetings the Board also provides advice to the Governor." (RBNZ) However, at the RBNZ, Governor is a sole decision maker (single-member MPC), setting the policy interest rate. The Bank of England has the Court of Directors. The Court meets a minimum of seven times in a calendar year, and its functions are to manage the Bank's affairs other than the formulation of monetary policy, which is the responsibility of the Monetary Policy Committee . This includes determining the Bank's objectives and strategy, ensuring the effective discharge of the Bank's functions, ensuring the most efficient use of the Bank's resources and to review the Bank's strategy in relation to the Financial Stability Objective.

Figure 6.2: BoT governance



Source: Bank of Thailand

Initially the BoT set its own inflation target (in Fischer's terminology, it had both goal and operational independence), but this was not unusual in the formative period of inflation targeting[69]. In this period it already had a comprehensive set of reporting, based around the quarterly Inflation Report.

While the BoT no longer sets its own inflation target, the Act gives it a key role in setting the goal, as well as providing *operational independence*. The inflation target is set jointly by the MPC and the Minister each December, for the following year, with formal approval from the Cabinet. This distinction between goal and operational independence has not been a critical one in practice, as the target has been treated (in Thailand and elsewhere) as a largely technical issue. This division of labour, with joint setting of the goal and full operational independence, has become the conventional practice in inflation targeting countries (see Figure 3.3).

[69] the RBA had similar goal independence until 1995

Some accountability requirements are now built into the legislation (twice-year reporting to Cabinet), but BoT's actual accountability and reporting goes far beyond the specific requirements of the Act.

It might be worth noting that, while the earlier academic literature tried hard to establish a connection between these governance/independence issues and macro performances such as the average inflation rate (see Cuikerman (1992)), it is hard to establish the clear relationship in practice, because *de jure* and *de facto* could not be clearly differentiated and the direction of causation is sometimes ambiguous.

6.2. The MPC's decision-making process

In Section 3 above we discussed three types of MPC. The first, with no external members; the second, with external members who are full-time (or nearly so) at the central bank; and the third, with part-time external members. The BoT MPC is in the last category. Having a majority of external members, it conforms to this element of Best Practice.

Compared to the second type, it is hard for the external members to be as involved in the technicalities of the decision-making – the preparation and analysis of forecasts and detailed model-based comparisons of alternative policy paths. The level of the discussion is likely to be more broad-brush, and the BoT members of the MPC (and the BoT staff making presentations to the MPC) are likely to dominate these aspects of the discussion. An MPC of this type is likely to be strong on general experience, well versed in political (and bureaucratic) niceties but less technically expert than the full-time external members of, say, the BoE MPC.

This is our understanding of the BoT MPC. The external members clearly take their role very seriously and show a firm understanding of the FIT framework and its relationship to other BoT obligations. They bring wide-ranging experience (including experience in commercial banking, in the BoT itself, and in commercial business). Potential conflicts-of-interest are addressed with a clear and comprehensive Code of Conduct for MPC members. The appointment process shows a sensible balance between continuity (to develop MPC-specific experience) and renewal (to have the benefits of different views).

It seems a valuable part of BoT's governance and decision-making that the BoT members and the BoT staff should be ready to test their policy ideas on people who, while not generally specialist in monetary policy, represent the well-informed public. We note that the MPC meets for half a day. This contrasts with the longer meetings (two days in the case of the BoE MPC), supplemented by other detailed pre-MPC discussion of forecasts and alternative model simulations.

6.3. Accountability and Communication

Accountability and communication might be thought of as separate functions, operating along two different channels – one to the Government/Parliament, and the other to the public at large. But as there is almost total overlap operationally, these will be treated together. Both channels are central to an effective inflation targeting framework. Accountability to the political interface is the counterpart/complement of central bank independence. Providing the general public with a clear understanding of monetary policy is not only needed to assure public confidence and anchor price expectations, but provides the central bank with social protection which safeguards its independence. The key issue in communication is not so much to tell the public what the CB precisely and specifically intends to do, but to assure the public that it will respond to unfolding unexpected events in a way that will maintain price stability.

The Inflation Report provides the central source of information about the BoT's analysis and thinking about the forecasts. In particular, the fan charts are a reader-friendly way of presenting the forecasts and risks around the central point of forecasts. The Report covers inflation and economic conditions (both domestic and international), monetary conditions and exchange rates, financial stability, and the outlook for inflation and growth. The Report has undergone a number of changes since its first publication in July 2000. A synthesis of information, gathered from business contacts, has been added since January 2004, and a chapter on financial stability of the corporate and household sectors since July 2005. A joint study by the International Centre for Monetary and Banking Studies (ICMB) and the Centre for Economic Policy Research (CEPR) ranks Thailand's Inflation Report as the fourth best among inflation targeters [70].

[70] http://www.cepr.org/press/P161.htm

On the decision-making process itself within the MPC, there is less information. The Press Release after decisions is quite brief (as tends to happen if the release is made promptly at the end of the meeting, as is increasingly the international practice) and gives no indications of the nature of the discussion/debate in the MPC.

In many central banks, communication immediately after MPC is emphasized. Brief summary of discussions are commonly disclosed, with or without Governor's press conference. Some central banks disclose voting records with names within a reasonable time span.

The extent of direct reporting to the Thai Government/Parliament is rather less than is found in most other inflation targeting countries. There is a twice-yearly report to Cabinet and the Governor attends the weekly Economic Cabinet meeting.

Section 7. Recommendations

7.1. The Inflation Target

In conceptual terms, there would be advantage is changing the focus of the inflation target in two ways:

- To make it more *forward looking*. As the MPC cannot do much about inflation in the immediate future because of the lags in policy, it sets policy so as to maximize the probability of being around the centre of the band at some time in the future when current policies have had time to operate – two years ahead. Of course BoT will have to make its report on its actual performance in terms of the unfolding figures of current inflation, but the policy setting (and the discussion surrounding this) should always be focused on *future/forecast* inflation. The two-year horizon could be more explicit and more prominent in the BoT's public communication.
- It would help anchor price expectations if the focus of the target were to be on the *centre* of the band, rather than the edges (as at present) of a target band. The aim would be to have the public think in terms of the approximate centre of the band, (currently 1.75%, possibly 2% if the range is revised to be 1-3%) rather than the 'big figure' of the top of the band, currently 3%). It should be emphasized that the BoT does not expect to hit the center precisely all the time, so some deviations are not taken as a failure of the IT regime.[71]

These changes would take the focus away from meeting the target 'on average over the quarter', which is too short a time horizon for proper evaluation of performance. These suggested changes of focus do not require any substantive changes to the specification of the target: its range and calibration could be as at present. But the rhetoric – the discussion in press releases, speeches and the Inflation Report – could be oriented to the target as a future forecast objective, and the centre – 'around 2 percent in one to two years'– could be the common reference. Some modification to the detailed wording at the time when targets are set between the BoT and the Minister would reinforce this. The target might be set once every three years rather than every year.

[71] Some advocate the price level targeting in the context of influencing expectations in a deflationary environment (see Ito and Mishkin (2005) and Svensson (1999)). However, this does not apply to Thailand.

A majority of inflation targeters use headline inflation as a reference measure. It is more readily understood by the public as it directly relates to cost-of-living and welfare. This said, we see the arguments between use of core or headline being quite evenly balanced in Thailand. The very large swings in energy and fresh food mean that the band would have to be widened, if BOT were to change the reference CPI from Core to Headline, to accommodate normal shocks, and this would be unhelpful for keeping price expectations low. We argued above that the conceptual case was for the exclusion from the index of administered prices. Seasonal variation (i.e. the food component) might be better handled by assessing a longer average of inflation (a year or more) rather than the average of a quarter, but on balance we don't think it is worth changing until there is a higher degree of confidence that the substantial volatility in those items currently excluded will be lessened.

The current specification and parameters of the target are now well established (and the narrowing of the range was accomplished smoothly), so the overwhelming case is to leave a well-functioning system alone. While we support the continued use of core inflation, we strongly support the continued substantial discussion (in the Inflation Report and elsewhere) of the outcome for *headline* inflation, including discussion about the relationship between core and headline, and the prospects for headline inflation.

If it were to be decided to shift to headline inflation, that would be a propitious moment to follow the Bank of England example and specify the target in terms of the centre-point, with some accountability/reporting triggers around this (for example, a public explanation if inflation is more than 1 per cent away from the centre-point). The fact that actual inflation is likely to be outside this accountability/reporting range much more often than in the past may not affect BoT's credibility much: other inflation targeters are outside their target range 30 per cent of the time (Roger and Stone (2005)) without serious consequences.

7.2. The MPC

At present the technical aspects of the decision-making are largely in the hands of the BoT members of the MPC and the BoT staff. It is difficult in a half-day meeting to spend much time on the assumptions lying behind the

model-based forecasts, or use the model to explore alternative policy paths. Over time, this more technical analysis will become increasingly important, not just for the decision-making itself, but also for the accountability and reporting, to demonstrate that the full range of policy options has been explored.

One formula which might incorporate some of the advantages of the full-time expert external members (along the lines of the BoE) would be to seek out one or two external MPC members who could commit the necessary time and who have background expertise to take a more hands-on involvement in forecasting and the analysis of model-based policy scenarios, participating in some of the pre-MPC internal BoT meetings. This might act as a bridge between the technically-oriented BoT staff and the real-world experience that typifies the current external MPC members.

The international trend has been for the MPC process to become more technical over time, with greater use of model-based forecasting and analysis of model-based alternative policy paths. The best practice in this regard is pre-MPC discussions conducted by the Bank of England. The MPC members sit with staff members a week earlier than the decision day. Another possibility is to extend the MPC meeting to two days, with the first day being dedicated to the forecasting exercise.

While we understand that the assumption of "constant interest-rate path" is used in public presentation of policy (and on this, see below), we are not sure if it is also used, rigorously, in the internal forecasting exercise, which results in the creation of the published fan charts. Given how common 'policy smoothing'—that is, the interest hike is usually done in several installments in successive months—(in Thailand and elsewhere) this seems a poor basis for forecasting: it is unlikely that a constant interest rate, maintained over two years, will be the optimal policy.[72] If, as seems more logical and likely, the BoT forecasts are based on an internal non-constant policy path, this raises the issue of inconsistency when these forecasts (and the fan charts) are published as being based on 'constant policy'. While we understand that publishing a precise path of future policy settings may

[72] Leitimo (2003) and Giannoni and Woodford (2005) criticized the practice of the constant-interest-rate assumption then practiced by the Bank of England as a basis of projection as dynamically inconsistent. See Woodford (2007) for a succinct explanation for the logic. The Bank of England since then moved to the market-interest-rate based projection for their fan chart.

present unacceptable difficulties, we suggest a couple of alternative approaches below.

7.3. Communication and accountability

The BoT has a good array of communication vehicles, but they could be tweaked for greater effectiveness. The Press Release after the MPC meeting represents the primary opportunity to communicate with financial markets and professions about the stance of policy. It has become Best Practice elsewhere to give a reasonably clear view as to the likely future path of policy. The constraint on the Press Release is, of course, the short time available for its preparation and the need to clear it with all members of the MPC. It might be possible to add items (fan charts for inflation and activity forecasts) which could be taken from the material presented to the MPC (modified if necessary to fit the actual decision) and to have some standard 'pre-agreed' descriptions of the general direction of policy which the MPC members can approve quickly, yet which convey real information to the public. The Inflation Report is the most substantive vehicle for communication, and it is comprehensive and of high quality. It is available in a timely way for only every *second* policy decision, so there is greater pressure to find other forms of communication for the 'off' meeting. This increases the case for a more comprehensive Press Release for these meetings. Informal briefings cannot take the place of the Inflation Report, as there is no assurance that all those who are interested have access.

One area of transparency where the current information seems rather light is on the likely time-path of future policy. What is said on this topic is constrained, to some degree, by the standard wording used in public that the forecasts are based on 'no policy change'. This assumption lacks practical credibility in many circumstances, when it is clear that the BoT is part-way-through a policy-adjustment phase which still has further to run. Thailand is probably not yet ready to adopt the 'cutting edge' answer used by RBNZ and the Swedish Riksbank, of publishing a forecast policy profile. That would certainly make the decision-making process in the MPC more difficult and time-consuming. But there have been times when the likelihood of further policy adjustment was so high that the press release implied that there was further to go, even while the formal forecast was on the basis of "no policy change'. An intermediate step along what seems to be an inevitable path towards the RBNZ/Riksbank approach (publishing the internal forecasts of

the future interest rate path) would be to develop a set of clear signaling phrases that would be inserted, as appropriate, into the press release. One formula for signaling that further change was coming would be to make reference to the path of market rates, acknowledging that these incorporate an assumption of further policy adjustment and essentially endorsing this policy-path profile.

It is becoming international practice to release Minutes of the MPC meeting. This would, to some degree, change the dynamic of the meeting and over time may even influence the composition of the MPC. It is very much a cultural issue whether these changes would be positive or negative, but there should be opportunity to move cautiously in the direction of greater disclosure. The first step would be to release edited minutes after, say, two weeks (international practice suggests this is quite speedy release, but if the minutes are to be of more than historic interest, the release needs to be timely). Inclusion of voting records could come later, anonymously at first but later with individuals identified.

An important facet of communications is with the political interface: the central bank has been given its independence subject to accountability on how these independent decisions are reached. At present this communication at BOT is relatively modest by international standards. The BoT reports twice-yearly to the cabinet. As well, the MPC has agreed with the Minister of Finance that if the core inflation breaches the target, the MPC will explain the breach and set out the planned policy action, including the period within which the MPC expects inflation to return to target. The MPC will inform the progress to the Minister of Finance in a timely manner. There is clearly, on the part of the Minister of Finance and his Department, a desire for more communication, and ways could be found to provide this without infringing on the BoT's independence. One way which has proved useful in Australia is for senior officials who attended the MPC (including the Governor) to debrief the Minister soon after the MPC's decision. Different formats might suit Thailand better. Whatever the exact means, it should be possible to enlarge the lines of communication to the political interface.

Closely related to this is the need to foster lines of communication with the Ministry of Finance.

7.4. Data collection

The range of available data, and its use, is very impressive. One area where more might be done is to get a better reading of *price expectations*. This is, after all, central to effective monetary policy and one of the main motivations for putting in place an inflation targeting framework. At present there are data available on business expectations. It may be possible to collate and analyze the inflation expectations of market economists, although the collection may not be uniformly specified. There does not seem to be anything available for households whose price expectations will determine their readiness to accept (or resist) price increases. BoT could pay those who currently survey households to add questions on this. It might take some time to calibrate the answers, as most people consider that official CPIs understate the inflation in their own expenditure baskets. And in any case they will inevitably relate to headline inflation rather than core. But changes in the series will be of interest, and analytical discussion of it in the Inflation Report will underline BoT's preoccupation with stable price expectations.

Early inflation reports contained interesting analysis of the details of price formation, mainly taken from business surveys. There should be useful information here (is everyone raising their prices or are these relative price shifts? How much is driven by input cost increases?), and in any case the discussion of these issues in the Inflation Report will remind readers of BoT's preoccupations.

7.5. Managing excessive capital inflows

The experience of 2006 may have created some inhibitions about the use of measures to constrain or discourage capital inflows. The Bank of Thailand has moved away from the use of URR or other measures that might be considered to be capital controls. Rather than ruling out use of such potentially valuable policy tools, an alternative approach (consistent with the IMF's new interest in such measures) would be to re-examine the operational aspects of the range of possible measures (with their strengths and weaknesses) to see whether they might be applied more effectively, should they be needed in response to large volatile capital inflows. In Section 5 we explored various tax measures which might well be justified in principle (foreigner investors should make a fair tax contribution to the costs of government in Thailand), which will also remove distorting incentives for capital inflows.

7.6. The Exchange Rate

We note that the BoT strongly rejects any notion that it is targeting a particular level of the exchange rate, and its strong support for the idea that the exchange rate should reflect underlying fundamentals, even if this means that the rate appreciates over time. We endorse these views. There are, however, additional cross currents of arguments about intervention relating to short-term volatility and regional competitiveness. These are difficult issues to specify and clarify with full transparency, in public forums. But there may be a case for sharpening some of these issues and criteria through more internal analysis, and applying this in practical market intervention operations. A starting point might be to include in the Inflation Report some discussion of intervention, with this description being published with a short lag after the actual operations.

7.7. Financial Stability

The BoT has the great advantage of retaining bank prudential supervision, so is well placed to implement 'macro-prudential' policies, should they be needed. Many of the elements of such a policy are in place – LVRs and capital requirements. But in the past these have not been actively used due to lack of financial imbalances. The BoT should be prepared, should the opportunities arise, to use these instruments more actively, to get the banks (and financial sector more generally) accustomed to the idea that these instruments, usually thought of as being used to keep individual bank balance sheets in good order, will also be used to ensure the health of the financial system as a whole. Variation of the housing LVR would be an example of an instrument whose active use could be revived.

Section 8. Conclusion: the Terms of Reference

8.1. The inflation targeting framework

During the decade of inflation targeting, Thailand has achieved an admirable degree of price stability, substantially better than in the pre-Asian Crisis period. Inflation targeting is now practiced in nearly 30 countries and the framework which the BoT put in place in 2000 is Best Practice by international norms, and the variations within this international practice seem well suited to the specific conditions of Thailand. The existence of such international Best Practice norms has probably encouraged Thailand to implement more comprehensive governance and accountability/transparency measures than would have occurred without the formal adoption of inflation targeting. It has focused monetary policy discussion and research, and has brought the focus of public discussion onto stabilizing inflation expectations, which reduces the output-loss of maintaining price stability. Inflation fell back quite quickly after the oil price rise and fall of 2007-08, suggesting that price expectations have become well anchored inside the target range. The Bank of Thailand Act of 2008 provides a firm legal underpinning for this framework.

That said, it should be noted that other countries in the region have achieved equally good price stability performance without an inflation targeting framework, and two of the regional inflation targeters have been rather less successful in achieving a rate of inflation at around the international norm[73]. Thus the good performance of Thailand should not be attributed solely to the inflation targeting framework but to the broader acceptance in the government and the community that price stability is worthwhile.

We think the 0.5-3.0 percent target for core inflation is appropriate but recommend greater focus on the centre-point of the range. Narrowing the range from 0.0-3.5 to the current range 0.5-3.0 in September 2009 helped to anchor price expectations. Considering that the full implementation lag of monetary policy is one to two years rather than the next quarter, it is important to emphasise and communicate that the BoT is setting policy to achieve the target a year or two ahead: ‘targeting the forecast of inflation’.

[73] Felardo and Genberg conclude that there is no clear difference between the performance of the inflation targeters in the region and the non-targeters.

8.2. Implementation of the target

The BoT's implementation procedures are the well-proven universally-used conventional operational method using the short interest rate as instrument to influence interest rates right along the spectrum. These techniques have worked effectively not just in Thailand, but in other central banks, both inflation targeters and non-targeters. While the interest-rate linkages between the central bank and the commercial banks' lending rates are not mechanical or precise, there is little doubt that higher interest rates will achieve the desired effect, given time. What has not been tested, so far, is the ability of the BoT to implement unpopular tight policies if these are required. Nor has the ability of low interest rates to stimulate a lethargic economy – to 'push on a string'. Several advanced economies are facing the zero-interest rate bound and threat of deflation in the aftermath of the global financial crisis, but it is only a remote possibility that Thailand with higher growth potential as an emerging market economy would ever face this situation in the foreseeable future. These caveats are not, however, unique to inflation targeting.

8.3. The decision-making process

The monetary policy decision is in the hands of an MPC which has a majority of external members. The MPC members, with their strong legally-endowed power, should be more involved in forecasting exercise so that they can make more informed decisions. Responsibility for the detailed forecasting and technical side are conducted in the BoT. The BoT staff are outstanding and well-versed in international best-practice economics, combined with active participation in international forums such as the Bank for International Settlements, where they keep abreast of current thinking on monetary policy. This combination of BoT technical expertise and inputs from the more widely-experienced politically-astute external members seems a good formula for decision-making which suits the circumstances of Thailand. In our recommendations, we explore the possibility of at least some MPC members spending more time regularly with staff in the forecasting exercise before the MPC meeting. This can be done in the form of a pre-MPC meeting along the lines of the Bank of England, and/or extending the MPC meeting to a 2-day meeting. The reform will require these MPC members spending several more days at Bank of Thailand every month, but given the legal responsibility written in the BOT Act, this is

desirable, and the requirement for involvement will not limit the pool of potential candidates too much.

8.4. The data and models used by the MPC in its decision-making

The BoT's modeling and forecast processes are in keeping with international best practice. Production of the inflation report with fan charts shows its excellent capability. An area of possible improvement would be to expand the simulation exercise for the future path of the policy rate. The current forecasting exercise, from which the fan charts are derived, is done on the assumption of constant interest rates. However, we suggest that the forecasting exercise should also include simulations based on either the market-expected interest rate path, or even better the internal forecast path of the interest rate path. Data availability seems appropriate, although further information on price expectations would seem desirable. Constant monitoring of how expectations are behaving is important in implementation of flexible inflation targeting.

8.5. External communications

The BoT has a good array of communication vehicles with the public: press release, press conference and inflation report. *Continuous improvement* should be the watchword here, and BoT has shown its ability to do this. In our recommendations, we suggest that it might be possible to find fruitful channels of communication with the government to ensure a full flow of information, for example on forecasts, as well as informing the public about forecasts and the likely interest rate path in the future with more frequent speeches and lectures by MPC members.

8.6. The interface between monetary policy and other elements of the economic policy framework

We are impressed by the BoT's ability to successfully combine a rigorous inflation targeting framework with the achievement of other objectives, such as contributing to the stability of the exchange rate and ensuring financial sector stability. The key to managing the exchange rate successfully is to recognize the limits of policy: good macroeconomic policy management will keep the rate close to its equilibrium in regular circumstances. In many occasions with demand shocks, and even some supply shocks, an interest rate setting aimed at price stability will at the same time influence the

exchange rate in a way that is helpful for price stability. However, sometimes an external shock occurs in the form of a surge in capital inflows and subsequent sudden reversal, causing excessive appreciation and depreciation of the exchange rate—so common among emerging market economies. The domestic financial sectors and industrial sectors should be robust to endure some fluctuation, but at the edge of tolerance range, which cannot be specified ex ante, some policy actions may become necessary. Policy instruments other than the interest rate should be prepared just in case. The flexible inflation targeting framework is necessary for macroeconomic stability but may not be sufficient against shocks in asset price inflation or exchange rate fluctuations due to capital flows motivated by investors' sentiment.

8.7. Key challenges for monetary policy in the next decade

The key challenge may be provided by the inevitable (and in many ways desirable) increasing integration of the Thai economy and its financial sector with the international economy. The inflation targeting framework will still provide an appropriate basis for monetary policy, but it may be harder to achieve the degree of exchange rate stability that has been experienced over the past decade. Inflation targeting is, essentially, a framework for reconciling the technical needs of good monetary policy with the pressures (from the political system and the general public) to divert it for short-term advantage, and continuing public support for the framework is needed to protect against this inherent vulnerability of monetary policy.

The GFC demonstrated the limits to economists' ability to foresee coming problems, but we might high-light three possible vulnerabilities that we can foresee. First, a serious adverse supply-side shock (e.g. an unfavourable movement in Thailand's ToT). The initial inflationary effect of this should be accepted, because it brings about the necessary relative price shifts. But price expectations do not seem to be strongly anchored at around a particular point in Thailand, and policy may be faced with the unpopular task of reining in second-round price increases in order to preserve both its credibility and medium-term price stability. Our recommendation for more precise focus on the medium-term nature of the inflation target might help here. Second, there is some prospect that the international conjuncture may be quite deflationary, and monetary policy is not well-suited to handling this. Any spill-over into Thailand would need early and decisive action to avoid deflation taking hold. It might help to raise the lower end of the inflation

band from 0.5 to 1 per cent. Third, increased international integration may produce more foreign capital inflow than Thailand can absorb comfortably. The upward pressure on the real exchange rate will be hard to resist, and there may be a temptation to allow the policy setting to slacken in order to discourage the foreign inflows. But this would threaten medium-term price stability. Our discussion explores a range of possible measures to restrain short-term capital inflows.

In sum, the inflation targeting is still as relevant as ever in reconciling these pressures and challenges within a framework of strong governance, accountability and transparency. We strongly support its continuation in Thailand.

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Appendix 1: Institutional Comparison of Various Inflation Targeting countries

		Thailand	UK	Canada	Sweden	Australia	New Zealand	Norway	Israel	Iceland	South Korea	Indonesia	Philippines
		Bank of Thailand	Bank of England	Bank of Canad	Sveriges Riksba	Reserve Bank of	Reserve Bank of New	Norges Ba	Bank of Israel (	Central bank of	Bank of Korea (BOK)	Bank Indonesia	Bangko Sentral ng Pilipinas (BSP)
Year IT introduced		2000.05	1992.01	1991.02	1993.01	1993.06	1989.12	2001.03	1997.02	2001.03	1998.04	2005.07	2002.01
Policy objective	[F&G, Table 1]												
	Principal monetary objectives (legal)	Price stability ("to maintain monetary stability, financial institution system stability and payment systems stability")	Price stability (Note that the Banking Act 2009 added: "An objective of the Bank shall be to contribute to protecting and enhancing the stability of the financial systems of the United Kingdom".)	Regulate credit and currency in the best interests of the economic life of the nation... so far as may be possible within the scope of monetary policy	Price stability and safe and efficient payment system	Stability of the currency; the maintenance of full employment; and economic prosperity and welfare	Price stability	Low and stable inflation; stable output and unemployment	Price stability	Price stability	Price stability	Stability of currency value	Price stability conducive to balanced and sustainable economic growth
											Bank of Korea (BOK)	Bank Indonesia	Bangko Sentral ng Pilipinas (BSP)
Numerical Target (more than F&G, Table 2)	Target indicator	Core CPI (quarterly average)	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI	H CPI
	range/point (2010)	[0.5, 3.0]	2.0 ±1.0	2.0 ±1.0	2.0 ±1.0	[2.0,3.0], over the cycle	[1.0,3.0]	2.50%	[1.0,3.0]	2.50%	3.0±0.5 for 2010-2012	5.0 ±1.0	4.5 ±1.0
	range/point (history)	[0.0, 3.5], 2000.05 - 2009.08	RPIX 2.5%± 1.0% 1993.2-1997.5	always	always	always	H, [0, 2] 1990-1996 [0, 3] 1997-2002.09				healine3.0±0.5, 2007.01-2009.12 Core 3.0±0.5, 2004.01-2006.12 Core3.00±1.00 (annual) 01,02,03 Core2.5±1%, 2000 headline3±1%, 1999 headline,9±1%,1998	H, 6±1, 2005 H, 5.5±1, 2004 H, 9±1, 2003 H [9,10], 2002 HwoGov, [4,6], 2001 HwoGov [3,5] 2000	H, [5, 6] 2002, H, [4.5, 5.5], 2003 H, [4,5] 2004-05
	who sets	CB + Gov't	Gov't	CB + Gov't	CB	CB + Gov't	CB + Gov't	Gov't	CB + Gov't	CB + Gov't	CB + Gov't	CB + Gov't	CB + Gov't
	when set	Dec prev yr		1991; 1993, 1998, 2001, and in 2006									
	horizon	2 years	At all times	Six-eight quart	2 years	Medium Term	Medium Term	Medium T	Over next twel	On average	3 years	Medium Term	2 years
	what if missing target (open letter?)	Yes	Yes	No	No	No	Other; the board is re	No	Yes	Yes	No	No	Yes
Policy Instrument	policy interest rate	1-day repo rate	Bank rate (1 wk repo rate)	Overnight rate	Repo Rate	Cash rate (overnight loans between financial intermediaries)	Official Cash Rate (OCR)	Key Rate	Short-term interest rate (overnight transactions between BOI and banks)	Rate on 7-day collateral loans, current account deposit rate and rate on 28-day Central Bank Certificates of Deposits	BOK Base Rate	BI rate (This is a policy rate. BI has an interest rate corridor to guide interbank money market rates)	Key policy interest rates for: overnight borrowing or reverse repurchase (RRP) facility; overnight lending or repurchase (RP) facility; and term RRPs, RPs, and special deposit accounts (SDAs).
	history	14-day repo rate, 2000.05 - 2007.01											

		Thailand	UK	Canada	Sweden	Australia	New Zealand	Norway	Israel	Iceland	South Korea	Indonesia	Philippines
MPC	Decision-making body	MPC	MPC	Governing council	Executive Board of the Riksbank		Governor	Executive Board	Governor	MPC	MPC	Board of Governors	The Monetary Board
	full/part	parttime job	Part-time (3 days/week, on average)	No external members	No external members	Part-time (fee-based remuneration)	No MPC	Part-time	Part-time	Part-time	Full-time (but not clear if considered "external" members)	No external members	1 external member is ex officio (part-time); other 5 external members are full-time
	number of members	7	9	6	6	9	1	7	1	5	7	6 to 9	7
	internal; external	3 vs. 4	5 vs. 4	6 vs. 0	6 vs. 0	3 vs.6	1 vs. 0	2 vs. 5	1 vs. 0	3 vs. 2	2 vs. 5	6 to 9 vs. 0	7 vs. 0
	external appointed by	Board of Directors	Tres. Chancellor	NA	NA	Treasurer	NA	The King	NA.	?	?	The President	The President
	Appointment term (years)	3, renewable once	5, renewable or	7	6, renewable	up to 7, renewab	5, renewable	6, renewable	5, renewable	5, renewable or	4 , renewable	5, renewable once	6, renewable
	Freq of meeting (per year)	8	12	8	6	11	8	8	12	8	12	12	8
	Decision-making process	Vote	Vote	Vote	Vote	Consensus	Governor decides	Consensus	Governor decides	Consensus otherwise vote	Vote	Consensus	Vote
Disclosure of MPC deliberation and decision	Minutes	no	yes, detailed	no	yes	yes	no	no	yes	yes	yes	no	yes
	transcript	no	no.	no	no.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	no
	voting records	no	yes, w/names	no	yes	n/a	n/a	n/a	n/a	Balance of votes	no	n/a	no
	delay	NA	2 weeks	n/a	2 weeks	2 weeks	n/a	n/a	2 weeks	n/a	6 weeks	n/a	4 weeks
	press release	yes, 1 page	yes, 1 para	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	press conference	yes	no	yes for IR	yes	no	yes for IR	yes	no	yes	yes	no	yes
	who speaks at press conference	Assistant Governor, Monetary Policy Group	n/a	Governor and Senior Deputy Governor	Governor and Head of Monetary Policy Department	n/a	Governor	Governor or Deputy Governor	n/a	?	?	n/a	Governor
Communication with the public other than MPC-decision-related matters	main reports	Inflation Report	Inflation Report	Monetary Policy Report	Monetary Policy Report Monetary Policy Update	Statement of Monetary Policy	Monetary Policy Statement	Monetary Policy Report	Inflation Report	Monetary Bulletin	Monetary Policy Report	Monetary Policy Report	Inflation Report
	frequency	4/yr (Jan, Apr, ,,,)	4 (feb, may,,,)	4	3 plus 3	4	4	3	4	2 plus 2	2	4	4
	speeches by Governor	16 times per year (avg of last 3 years)											
	by Deputies	10 times per year (avg of last 3 years)											
	by MPC members	none											

		Thailand	UK	Canada	Sweden	Australia	New Zealand	Norway	Israel	Iceland	South Korea	Indonesia	Philippines
Forecasting	Type of models used	Suite of Models • Bank of Thailand's Macroeconomic Model (BOTMM) is used to make forecasts of economic variables relevant to monetary policy decision-making. • Other models that are currently developed include a semi-structural model and a dynamic general equilibrium model.	Statistical and theoretical Main forecasting model is DSGE	Suite of DSGE plus macro models	Time series model, indicator models, structural models (eg DSGE)	DSGE plus small models and single equations	DSGE is main forecasting model	DSGE models and a suite of forecasting models for 'nowcasting'	Suite of models	VAR, structural, macro, (DSGE being developed)	Dynamic Projection Model, DSGE model	DSGE, macro, ARIMA	Single equation, multi equation, (macro and DSGE models being developed)
	Published Forecast	Headline and Core Inflation and GDP	Inflation and GDP	GDP, Inflation and core Inflation	GDP. CPI, Core Inflation, and the repo rate	GDP, Inflation and core Inflation	GDP, Inflation and Interest rate projection	Key Policy Rate, Output Gap, CPI and Core Inflation	GDP, inflation and Key policy rate	Inflation	Inflation and GDP	Inflation, GDP and GDP component	Inflation
	techinique (Form of Presentation?)	Fan chart	Fan chart	Fan chart	Fan chart	Point	Point	Fan chart	Fan chart	?	Point+Fan Chart	Fan chart	Fan chart
	horizon	2 years	2 years	2 years	3 years	2 years	3 years	3 years	1 year	?	?	2 years	1-2 years
	Freq	quarterly	quarterly	quarterly	3 times a year	quarterly	quarterly	3 times a year	quarterly	quarterly	2 times a year	quarterly	quarterly
	ownership	MPC	MPC	Governing Cou	Board	Central Bank	MPC	Governor	Staff	Staff	Central Bank	Board	Central Bank
	interest rate path	constant	constant; & market path	Endogenous	Endogenous	Non-constant pat	Endogenous	Endogenous	Forward-looking	Generated from	Market	Scenarios and excepted inflati	Constant
Forex management	intervention authority?	yes	yes	shared	yes	yes	yes	yes	yes	yes	yes	yes	yes
	forex reserve on B/S	yes	shared	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Independence	Legal change (date of law or major amendment)	2008	1998 (also Bank	1934	1998	1998	2003	2003	2010 (March)	2009	2003 (August)	1999	1993
	Governor term (years)	5, renewable once	5, renewable once	7, renewable	6, renewable	7, renewable	5, renewable	6, renewable once	5, renewable once	5, renewable once	4, renewable once	5, renewable once	6, renewable once
	Dismissal possibility (in addition to standard conditions, such as permanent incapacity, failure to attend meetings, taking up incompatible employment, age limiations)	gross incompetence or wrongful doing	"unable or unfit to discharge functions", bankruptcy	Governor and Deputy Governor(s) are subject to "good behaviour" clause	only for serious misconduct (constitution), bankruptcy	bankruptcy, failure to comply with obligations; also "Governor and Deputy Governor hold office subject to good behaviour"	inadequate performance, serious neglect of duty or misconduct, criminal conviction, bankruptcy	no relevant provisions in central bank law	no relevant provisions in central bank law	violation of functional obligations	confiction of a felony, bankruptcy	if guilty of acts or operations which are of fraudulent or illegal character or which are manifestly opposed to the aims and interests of the central bank	
	Gov't official in MPC?	No	No (but may att	No	No (but may at	Yes (1)	not applicable (no MP	No	No	No	No (but may attend)	No	Yes (1)
	Government official has right to vote	No	No	No	No	Yes (1)	not applicable (no MP	No	No	No	No	No	Yes (1)
	Direct lending to Government	Prohibited	Prohibited	No obligation t	Intraday facilitie	None (by agreem	None (no obligation to	Seasonal or sh	Prohibited	Yes	Prohibited	Yes	
	Central bank purchases of government securities in primary market	Prohibited	Prohibited	Yes	Prohibited	Yes		Yes	Implied prohibiti	Yes	Prohibited	Prohibited	
Accountability	Report to Government/Parliament (as required in law)	Every six months	Annual Report, and report on monetary policy every three months or as often as MPC agrees	Annual Report	Annual Report, and at least two reports on monetary policy per year	Annual Report	Twice per year	Annual Report	After each Monetary Committee Meeting, quarterly (reserves management), twice annually, and Annual Report	Twice per year, to Parliament	NA	Quarterly report to Parliament, Annual Report	Quarterly and twice annual reports, Annual Report
	Testimony to Parliament?	No	yes, 3 per year	yes, twice yea	yes, twice yearl	yes, twice yearly	yes, 4 times a year	yes	yes	yes, twice yearly	yes	no	no
	Source : 1. State of Art of Inflation Targeting, Handbook 29, CCBS, Bank of England, Jan 2010 2. BIS Survey												
Footnotes											March 2008 changed the policy rate from the 'call rate target' to the 'Bank of Korea Base Rate', the reference rate applied in transactions between the Bank of Korea and financial institution counterparts such as repurchase agreements (RPs)		

Appendix 2

Appendix 2, Table 1

Table 1
Central bank policy objectives

Jurisdiction	Central Bank	Policy objective	… as stated on the central bank's official website
Australia	Reserve Bank of Australia	Price stability	….to focus on price (currency) stability while taking account of the implications of monetary policy for activity and, therefore, employment in the short term
China	The People's Bank of China	Value of the currency	The objective of the monetary policy is to maintain the stability of the value of the currency and thereby promote economic growth.
Hong Kong SAR	Hong Kong Monetary Authority	Exchange rate stability	The primary monetary policy objective of the Hong Kong Monetary Authority (HKMA) is to maintain exchange rate stability
India	Reserve Bank of India	Price stability and adequate credit supply	…maintaining price stability and ensuring adequate flow of credit to productive sectors
Indonesia	Bank Indonesia	Price stability and exchange rate stability	… Bank Indonesia has one single objective of achieving and maintaining stability of the Rupiah value. The stability of the value of the Rupiah comprises two aspects, one is stability of Rupiah value against goods and services and the other is the stability of the exchange rate of the Rupiah against other currencies.
Japan	Bank of Japan	Price stability	The Bank of Japan Law states that the Bank's monetary policy should be "aimed at, through the pursuit of price stability, contributing to the sound development of the national economy."
South Korea	The Bank of Korea	Price stability	Like other central banks, the Bank of Korea takes price stability as the most important objective of its monetary policy. The Bank of Korea Act, which came into effect in April 1998 following its revision at the end of 1997, stipulates price stability as the purpose of the Bank of Korea.
Malaysia	Bank Negara Malaysia	Price stability and exchange rate stability	To issue currency and keep reserves safeguarding the value of the currency; To promote monetary stability and a sound financial structure; To influence the credit situation to the advantage of the country.
New Zealand	Reserve Bank of New Zealand	Price stability	The Reserve Bank of New Zealand Act 1989 specifies that the primary function of the Reserve Bank shall be to deliver "stability in the general level of prices."
Philippines	Bangko Sentral Ng Pilipinas	Price stability	The primary objective of BSP's monetary policy is to promote a low and stable inflation conducive to a balanced and sustainable economic growth.
Singapore	Monetary Authority of Singapore	Price stability	The primary objective of monetary policy in Singapore is to promote price stability as a sound basis for sustainable economic growth.
Thailand	Bank of Thailand	Price stability	Setting the monetary policy direction which is consistent with the nation's economic conditions, with the ultimate objective of maintaining price stability and sustainable economic growth

Source: Adapted from Genberg and He (2009).

Filardo and Genberg 2010

Appendix 2 Table 2

Table 2
Institutional frameworks for monetary policy

	IT?	Targeting arrangement	Formal policy rate	Formal operating target
Australia	Yes, 1993	Target for headline CPI consumer price inflation of 2-3 per cent per annum on average over the business cycle	Target cash rate (=O/N rate target)	O/N cash rate
China	No	Reference to money growth targets	1-year deposit & loan reference rates	Excess reserves
Hong Kong	No	Currency board: target range centered on HKD 7.8 = USD 1		USD/HKD spot rate
India	No	Multiple objectives: price stability understanding - containing the perception of inflation in the range of 4.0-4.5% so that an inflation rate of 3.0% becomes the medium term objective.	1-day repo & reverse repo rates	No formal target
Indonesia	Yes, 2000	Inflation targeting: inflation target for 2008, 2009, and 2010 is 5±1%, 4.5±1%, and 4±1% for y-o-y CPI inflation	BI rate (= target rate for 1-month SBI)	1-month SBI rate
Japan	No	Medium- to long-term price stability expressed in terms of year on year rate of change in the CPI (approximately between 0 and 2%).	Uncollateralized O/N call rate target	O/N call rate
Korea	Yes, 1999	Inflation targeting: target range of 3±0.5% in terms of 3-year average of annual CPI inflation	O/N call rate target	O/N call rate
Malaysia	No		Overnight policy rate	Avg O/N interbank rate
New Zealand	Yes, 1990	Inflation targeting: target range of 1 to 3% on average, over the medium term, defined in terms of the All Groups Consumers Price Index (CPI)	Official cash rate (=O/N rate target)	O/N cash rate
Philippines	Yes, 2002	Inflation targeting: target range of 3.5±1% (2009), 4.5±1% (2010) for the avg year-on-year change in the CPI over the calendar year.	O/N repo & reverse repo rates	No formal target
Singapore	No	As of mid-2009, zero percent appreciation of the undisclosed S$NEER policy band	Policy band for S$ NEER	Singapore dollar NEER
Thailand	Yes, 2000	Inflation targeting: target range of 0-3.5% for quarterly average of core inflation.	1-day repo rate	1-day repo rate

Source: BIS MC Compendium: "Monetary policy frameworks and central bank market operations", June 2008; national central banks.

Filardo and Genberg 2010 (note. Indonesia now target the overnight rate)

Appendix 2 Table 3

Table 3 **Use of core inflation in external communication in selected countries**

	Excluding mesures[1]	Others[2]	No core measure
Argentina	VA		
Australia	V	T, Wm	
Brazil	VA	T	
Canada	VA, VAM	Wv	
China	V		
Euro area	V		
Indonesia	VA		
Japan	V		
Korea	V		
Mexico	VA		
Norway	VA	T, Wm	
Poland	V, A	T	
Russia	VA		
South Africa	M		
Sweden	AM, VAM	T, Wm	
Switzerland	V, VA	T	
Thailand	V		
United Kingdom			X
United States	V		

[1] V = Excluding volatile items (eg food and/or energy), A = Excluding administered prices and tax effects, M = Excluding mortgage interests, VA = Combination of V and A, VM = Combination of V and M, AM = Combination of A and M, VAM = Combination of V, A and M. [2] T = Trimmed mean, Wm = Weighted median, Wv = Weighted variance

Sources: Domanski and Sekine (2007); national data.

McCauley 2007

Appendix 2 Table 4

Table 5

Inflation targeters

	Year started inflation targeting[1]	Targeted inflation concept[2]	Policy/Official interest rate
Brazil	1999	CPI	SELIC O/N
Chile	1991	CPI	O/N discount
Colombia	1999	CPI	TBS O/N rate
Mexico	1999	CPI	1-day bank funding3
Peru	2002	CPI	O\N interbank rate
Indonesia	2000	CPI	1-month SBI
Korea	1998	CPI	O/N call
Philippines	2002	CPI	Reverse repo
Thailand	2000	Core CPI	14-day repo
Czech Republic	1998	CPI	2-week repo
Hungary	2001	CPI	2-week deposit
Poland	1998	CPI	28-day intervention
Israel	1992	CPI	Headline
South Africa	2000	CPI-X	Repo
Turkey	2006	CPI	O/N borrowing rate
Australia	1994	CPI	Cash rate
Canada	1991	CPI (CPIX)	O/N funding rate
Iceland		CPI	7-day repo
New Zealand	1990	CPIX	Cash rate
Sweden	1993	CPI (CPI ex interest and indirect tax)	Repo
Norway	2001	CPI ex tax & energy	O/N deposit rate at central bank
Switzerland	2000	CPI	3-month CHF Libor[4]
United Kingdom	1992	CPI (HCIP)	Repo

[1] According to Mishkin and Schmidt-Hebbel (2001), except for Iceland, Indonesia, the Philippines, Hungary and Norway.
[2] According to Schmidt-Hebbel and Tapia (2002), except for the latter and Korea, New Zealand and United Kingdom.
[3] Also corto. [4] Policy stance expressed as a target range for this offshore interest rate.

Sources: Mishkin and Schmidt-Hebbel (2001); Schmidt-Hebbel and Tapia (2002); national data.

McCauley 2007

Appendix 2 Table 5

Table 1: Institutional setup of monetary policy decision and operation (as of March 2007)

	Basic frequency of policy announcement	Formal policy rate	Formal operating target	Memo
Australia	Monthly	Target Cash Rate (=O/N rate target)	O/N cash rate	Inflation targeting
China	As and when required	1-year deposit and loan reference rates	Excess reserves	Ref. to M-growth targets
Eurosystem	Monthly	Minimum bid rate for the Main Refinancing Operation (1-week maturity)	No formal target	
Hong Kong[1]	–	–	USD/HKD spot rate	Currency board
India	Quarterly	1-day Repo and Reverse Repo Rates	No formal target	
Indonesia	Monthly	BI Rate (= target rate for 1-month SBI)	1-month SBI rate	Inflation targeting
Japan	Up to twice a month	Uncollateralized O/N call rate target	O/N call rate	
Korea	Monthly	O/N call rate target	O/N call rate	Inflation targeting
Macao[2]	–	–	HKD/MOP spot rate	Currency board
Malaysia	8 times a year	Overnight Policy Rate (=O/N rate target)	Average O/N interbank rate	
New Zealand	8 times a year	Official Cash Rate (=O/N rate target)	O/N cash rate	Inflation targeting
Philippines	Every 6 weeks	O/N Repo and Reverse Repo Rates	No formal target	Inflation targeting
Singapore	Semi-annually	Policy band for Singapore dollar NEER	Singapore dollar NEER	NEER-based regime[3]
Taiwan	Quarterly	Discount Rate	Reserve money	Ref. to M-growth targets
Thailand	Every 6 weeks	1-day Repo Rate	1-day Repo rate	Inflation targeting
United Kingdom	Monthly	Official Bank Rate	Short-term money market rates	Inflation targeting
United States	8 times a year	Fed funds rate target (=O/N rate target)	O/N interbank rate	

[1] Currency board regime with a US dollar anchor, thus no independent monetary policy. The central bank's lending facility rate (Base Rate) is linked to the US Fed funds rate target by formula and changes whenever the US policy rate is changed. [2] Currency board regime with a Hong Kong dollar anchor. The central bank's lending facility rate (Base Rate) is linked to Hong Kong's Base Rate. [3] The NEER band is set with reference to inflation and growth objectives.

Sources: Central banks.

Ho 2008

Appendix 2 Table 6

Table 2. Monetary Policy Decision Making

Country	Starting Date for Inflation Targeting	Decision-Making Body	Number of Members		Frequency of Meetings	Public Availability of Records
			Internal	External		
New Zealand	Mar. 1990	Governor 1/	...	...	...	...
Canada	Feb. 1991	Governing Council	6	0	8 times per year	No
United Kingdom	Oct. 1992	Monetary Policy Committee 2/	5	4	monthly	Yes 2 weeks after
Sweden	Jan. 1993	Executive Board	6	0	8 times per year	Yes 2 weeks after
Australia	Apr. 1993	Reserve Bank Board	3	6	monthly	No
Israel	Jun. 1997	Governor 1/	...	...	...	...
Czech Republic	Jan. 1998	Bank Board	7	0	monthly	Yes 11 days after
Poland	Oct. 1998	Monetary Council	1	9	monthly	Yes 6 weeks after
Brazil	Jun. 1999	Executive Board	8	0	monthly	Yes 8 days after
Chile	Sep. 1999	Executive Board	2	3	monthly	Yes 12 weeks after
Colombia	Sep. 1999	Board of Directors			monthly	No
South Africa	Feb. 2000	Monetary Policy Committee	8	0	6 times per year	No
Thailand	May 2000	Monetary Policy Committee	3	4	6 weeks	No
Korea	Jan. 2001	Monetary Policy Committee	2	5	monthly	Yes 6 weeks after
Mexico	Jan. 2001	Board of Governors	5	0	daily	No
Iceland	Mar. 2001	Board of Governors	3	0	Does not apply	Does not apply
Norway	Mar. 2001	Executive Board	2	4–6	6 weeks	No
Hungary	Jun. 2001	Monetary Council	4–6	1–3	monthly	No
Peru	Jan. 2002	Board of Directors	1	6	monthly	No
Philippines	Jan. 2002	Monetary Board	1	6	weekly	Yes 1 month after

Sources: Tuladhar (2004), Schmidt-Hebbel and Tapia (2002), and central bank websites.
1/ On advice of Monetary Policy Committee.
2/ Established after operational independence attained in 1997.

Roger and Stone (2005)

Appendix 2 Table 7

Table 1

Provision of information by central banks

	G3			Inflation targeters					
	United States	ECB	Japan	United King-dom	Canada	New Zealand	Austra-lia	Sweden	Switzer-land
Accountability									
Quantitative inflation objectives	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Reports to legislature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Policy decisions									
Decisions announced immediately	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Press conferences	No	Yes	Yes	No	No	Yes	No	Yes	Yes
Press releases	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Minutes published	Yes	No	Yes	Yes	–	–	No	Yes	No
Precise voting results published	Yes	No	Yes	Yes	–	–	No	Yes	No
Economic assessments									
Reports on monetary policy	H	M	M	Q	Q	Q	Q	Q	Q
Forecasts released	H	H	H	Q	Q	Q	Q	Q	H
Quantitative risk assess-ments	No	No	No	Yes	No	No	No	Yes	No

Notes: M = monthly; Q = quarterly; H = half-yearly.

Source: BIS, *74th Annual Report*, June 2004.

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Appendix 2 Table 8

Table 3

Provision of forecasts by central banks

Central bank	Variables forecast	Frequency	Time horizon	Presentation	Policy assumption
Federal Reserve	Nominal GDP Real GDP Inflation	Semiannual	12-18 months	Range	No change
ECB	GDP Expenditure Inflation	Semiannual (quarterly from June 2004)	12-18 months	Range	No change
Bank of Japan	GDP Inflation	Semiannual	12-18 months	Range	No change
Bank of England	GDP Inflation	Quarterly	2 years	Fan chart	No change; market forecast
Bank of Canada	GDP Expenditure Inflation	Quarterly	18-24 months	Point	No change
Reserve Bank of Australia	Inflation GDP	Quarterly Semiannual	1-2 years	Point	No change
Sveriges Riksbank	Inflation	Quarterly	2 years	Point and fan chart	No change; market forecast
RBNZ	GDP Expenditure Labour market Inflation Interest rates Exchange rate	Quarterly	2-3 years	Point	Endogenous

Source: Central banks.

Edey BIS Papers 31

Appendix 3

The typical Taylor rule equation (Taylor (1993)), with modification of replacing the inflation rate by the expected inflation rate, is as follows:

(1) $i_t = \alpha + \beta_1(\pi_t^e - \pi^*) + \beta_2(y_t - y^*) + \varepsilon_t$

Where i_t denotes the nominal policy interest rate; r^f the natural real interest rate; π^* the target inflation rate; π_t^e the expected inflation rate; and $y_t - y^*$ the output gap. For implementation of estimating this equation, rewrite (1) as

(2) $i_t = \alpha^* + (1+\beta_\pi)\cdot(\pi_t^e - \pi^*) + \beta_y \cdot (y_t - y^*)$

where $\alpha^* = r^f + \pi^*$, the sum of the natural real interest rate and the target inflation rate. We are interested in recovering structural parameters: π^*, β_π, and β_y using actual data. Therefore, estimate the following equation

(3) $i_t = \alpha + \beta_1(\pi_t^e - \pi^*) + \beta_2(y_t - y^*) + \varepsilon_t$

where the structural parameters can be recovered as follows:

(4) $\alpha^* = \alpha;\ \beta_\pi = 1 - \beta_1;\ \beta_y = \beta_2$

As the interest rate should be most likely raised when the current inflation is above the target rate and when the output gap (current minus potential) is positive, the following sign condition should hold: $\beta_\pi > 0;\ \beta_y > 0$

The policy rate adjustment often is done in consecutive steps. When tightening starts, several rounds of rate hikes occur before the tightening

stops. It is very rare that tightening complete in once-and-for-all large jump. In view of this, the lagged dependent variable can be added. This term will take care of the tendency when there was the increase in policy rate in t-1, it is more likely to have a rage increase. Add the lagged term on the right hand side of (2)

(5) $$i_t = (1-\rho)\{(\ r^f + \pi^*\ ) + (1+\beta_\pi)\cdot(\pi_t^e - \pi^*) + \beta_y \cdot (y_t - y^*)\} + \rho i_{t-1}$$

Where $0<\rho<1$ is an adjustment condition. Then the regression becomes

(6) $$i_t = \alpha + \beta_1(\pi_t^e - \pi^*) + \beta_2(y_t - y^*) + \rho_{t-1} i_{t-1} + \varepsilon_t$$

Where

$$\alpha = (1-\rho)(r^f + \pi^*);\ \ \beta_1 = (1-\rho)(1+\beta_\pi);\ \ \beta_2 = (1-\rho)\beta_y$$

In order to have right sign conditions for $\beta_\pi>0$ And $\beta_y>0$, the following condition should be satisfied

(7) $$\alpha^* = \frac{\alpha}{1-\rho};\ \ \beta_\pi = \frac{\beta_1}{1-\rho} - 1 > 0;\ \ \beta_y = \frac{\beta_2}{1-\rho} > 0$$

The Taylor rule can be estimated by conducting regressions of equations (3) and (6) and structural parameters are obtained from (4) and (7), respectively.

The inflation expectation π_t^e is taken from the three sources:

(Biz) Business expectation, 12 months ahead. Bank of Thailand's Monthly Business Sentiment Survey. Responses are compiled from a monthly business survey of approximately 800 medium and large firms, with registered capital more than 200 Million Baht, while responses received each month are approximately 60% of total survey distributed. The question asks about business respondent's expectation on inflation over the next 12 months: "What is your expected inflation over the next 12 months?".

(MPC4) Inflation Report forecast, 12 months ahead.

(MPC8) Inflation Report forecast, 24 months ahead.

Equations (3) and (6) are estimated with data from 2002 to 2010 with three different expectation variables, (Biz)(MPC4)(MPC8). Then, the structural parameters are recovered by (4) and (7). For no-lag specification regression parameters are identical with structural except for $\beta_{\pi} = 1 - \beta_1$ so that it is not separately shown. For equation (6), the separate column shows the calculated structural parameters.

Table 4-2: Case (Biz) Business Expectation

	Sample period (2002Q1-2010Q2)					
	Normal Equation (8)		Smoothing Equation (9)			
	OLS	GMM	OLS (Regression)	OLS (Structural)	GMM (Regression)	GMM (Structural)
Constants	**α =1.10** (0.00)**	α =0.35 (0.42)	α =0.09 (0.47)	**α *=0.41**	α =0.06 (0.61)	**α *=0.20**
ExInf-1.75	**β_1=0.98** (0.00)**	**β_1=1.48** (0.00)**	**β_1=0.34** (0.00)**	**β_1=1.55**	**β_1=0.49** (0.00)**	**β_π=1.63**
Output gap	β_2=-0.01 (0.85)	β_2=-0.10 (0.10)	β_2=0.04 (0.07)	β_2=**0.18**	β_2=0.02 (0.39)	β_y=**0.07**
Lagged Policy			**ρ = 0.78** (0.00)**	**ρ = 0.78**	**ρ = 0.70** (0.00)**	**ρ = 0.70**
R-squared	0.57	0.45	0.96		0.95	

Notes: Brackets are standard errors. "**" denotes significance at 1%.

Source: Authors' calculation.

Table 4-3: Case (MPC4) Inflation Report Expectation, 4 quarters ahead

t+4	Sample period (2003Q1-2009Q3)					
	Normal Equation (8)		Smoothing Equation (9)			
	OLS	GMM	OLS (Reduced)	OLS (Structural)	GMM (Reduced)	GMM (Structural)
Constants	α =2.80 (0.00)**	α =2.81 (0.00)**	α =0.55 (0.00)**	α *=3.06	α =0.62 (0.00)**	α *=2.95
Exinf-1.75	β_1 = 1.00 (0.00)**	β_1 = 1.78 (0.00)**	β_1 = 0.44 (0.00)**	β_π = 2.44	β_1 = 0.53 (0.00)**	β_π = 2.52
Output gap	β_2 = 0.07 (0.32)	β_2 = -0.02 (0.74)	β_2 = 0.07 (0.00)**	β_y = 0.39	β_2 = 0.05 (0.03)*	β_y = 0.24
Lagged Policy			ρ = 0.82 (0.00)**	ρ = 0.82	ρ = 0.79 (0.00)**	ρ = 0.79
R-squared	0.42	0.19	0.96		0.96	

Exinf= twelve month ahead inflation expectation, BOT

Notes: Brackets are standard errors. “**” denotes significance at 1%; .

Table 4-4: Case (MPC8) Inflation Report Expectation, 8 quarters ahead

t+8	Sample period (2003Q1-2008Q3)					
	Normal		Smoothing			
	OLS	GMM	OLS (Reduced)	OLS (Structural)	GMM (Reduced)	GMM (Structural)
Constants	α =2.48 (0.00)**	α =2.48 (0.00)**	α =0.37 (0.00)**	α *=2.85	α =0.44 (0.00)**	α *=3.14
Exinf-1.75	β_1 = 1.14 (0.02)**	β_1 = 2.04 (0.00)**	β_1 = 0.55 (0.00)**	β_π = 4.23	β_1 = 0.71 (0.00)**	β_π = 5.07
Output gap	β_2 = 0.37 (0.24)	β_2 = 2.56 (0.55)	β_2 = 0.03 (0.62)	β_y = 0.23	β_2 = -0.06 (0.53)	β_y = -0.43
Lagged Policy			ρ = 0.87 (0.00)**	ρ = 0.87	ρ = 0.86 (0.00)**	ρ = 0.86
R-squared	0.32	0.14	0.97		0.96	

Exinf= 8 quarter ahead inflation expectation, BOT

Notes: Brackets are standard errors. “**” denotes significance at 1%; .

Interpretations:

Using (Biz) forecasts, the sign conditions are satisfied in almost all specifications. The smoothing equation is better estimated than the normal (no lagged dependent variable) specification. The coefficient of the inflation gap is rather large in the smoothing specification. There are some unsatisfactory aspects of the regression. The constant term is not significant (implying natural interest rate is not different from zero) and the coefficient of output gap is also not significant.

Using (MPC4) the BoT internal forecast of 1-year ahead inflation rate reveal in Inflation Reports provide reasonable estimates. All four variables in Smoothing specification produce the statistically significant estimates. The magnitude of structural estimate of the constant term (natural interest rate) is also reasonable. The structural coefficient of the inflation gap is much larger than that of the GDP gap. The monetary policy conducted in the manner estimated here is consistent with a description of a standard inflation targeter with good decisions.

For estimation results using (MPC8) the forecast inflation rate of 2 year horizon show insignificant response of monetary policy to the current output gap. Other results are similar to Case (ii).

Since Case (MPC4) produces the reasonable results, we make guess that the MPC is taking the 1-year ahead forecast of inflation rate seriously and make adjustment on the interest rate. Next, the deviation from the fitted value of the Taylor Rule estimation (residual) gives information of policy deviation from the average response. Below for specification of Normal GMM and Smoothing GMM are shown.

Appendix 4

Dr. Stephen Grenville and Professor Takatoshi Ito's Meeting Schedule

26th -31st July 2010, Bangkok, Thailand

Monday, 26th July 2010

9.45 – 17.30 Meeting with Team of Secretary to MPC, Monetary Policy Group (MPG.)

1. Dr.Amporn Sangmanee, Director, Monetary Policy Department
2. Dr.Kobsak Pootrakool, Division Executive, Monetary Policy Strategy Division
3. Dr.Roong Mallikamas, Division Executive, Forecasting and Macro Surveillance Division
4. Dr.Pornpen Sodsrichai, Team Executive, Monetary Policy Strategy Team 1
5. Dr.Kajorn Thanapase, Senior Economist, Monetary Policy Strategy Team 1
6. Dr.Phurichai Rungcharoenkitkul, Senior Economist, Modeling and Forecasting Team

Tuesday, 27th July 2010

9.00 - 10.00	Meeting with Modeling and Forecasting Team, MPG. 1. Dr.Piti Disyatat, Team Executive, Modeling and Forecasting Team 2. Dr.Surach Tanboon, Senior Economist, Modeling and Forecasting Team
10.00 - 10.45	Meeting with Governor, Dr. Tarisa Watanagase
10.45 - 11.30	Meeting with Deputy Governor, Monetary Stability, Dr.Bandid Nijathaworn
11.30 - 12.00	Meeting with Mr.Korn Chatikavanij, Minister of Finance and Mr. Satit Rangkasiri, Director, Fiscal Policy Office, Ministry of Finance
12.00 -13.15	Lunch with Governor, Minister of Finance and Deputy Governors
14.00- 15.30	Meeting with Former MPC: 1. Dr. Chalongpob Susangkornkarn (Former MPC, Former Minister of Finance) 2. Prof. Ammar Siamwalla, (Former MPC)
18.30- 20.00	Dinner with Dr.Bandid Nijathaworn, Deputy Governor

Wednesday, 28th July 2010

09.30 - 10.15 Meeting with BOT Staff from Financial Institutions Policy Group (FPG.)

1. Ms.Nawaporn Maharagkaga, Senior Director, Financial Institutions Strategy Department
2. Ms.Pongpen Ruengvirayudh, Senior Director, Risk Prudential Policy Department
3. Mr.Somboon Chitphentom, Director, Risk Management Policy Office

11.00- 12.00 Meeting with Dr. Ekniti Nitithanprapas, Spokesman and Executive Director of Macroeconomic Policy Bureau, Ministry of Finance

13.00- 13.45 Meeting with Mr. Chakkamol Pasukvanij, President CIMB Bank,

15.00- 15.45 Meeting with Mr. Pattnapong Chantranontwong, Editor, Bangkok Post
Mr. Chiratas Nivatpumin, Business Editor, Bangkok Post

16.30 - 17.30 Meeting with Dr. Prasan Triratvorakul, Former President, Kasikornbank and Governor, Bank of Thailand (starting 1st October 2010)

18.00 -19.00 Meeting with Mr.Chartsiri Sophonpanich, President, Bangkok Bank and Thai Banking Association

Thursday, 29th July 2010

10:00 - 11:30 Meeting with a group of professors

1. Dr. Somchai Jitsuchon, Director, Thailand Development Research Institute
2. Dr. Pongsak Luangaram, Faculty of Economics, Chulalongkorn University
3. Dr. Yuthana Sethapramote, National Institute of Development Administration
4. Dr. Charl Kengchol, Chief Economist, Kasikornthai Research Centre

12:00 - 13:30 Lunch with Mr. Paiboon Kittisrikangwan, Assistant Governor and a group of professors

13:30 – 15.30 Meeting with Monetary Policy Committee (MPC)

1. Dr.Bandid Nijathaworn, Deputy Governor, Monetary Stability
2. Dr. Ampon Kittiampon, Secretary General, Office of the National Economic and Social Development Board
3. Mr. Krirkkrai Jirapaet, Former Minister of Commerce

4. Prof. Praipon Koomsap, Dean, Faculty of Economics, Thammasart University

5.Dr. Siri Ganjarerndee, Former Senior Assistant Governor, Bank of Thailand

16.30-17.30 Meeting with Dr. Chaiyawat Wibulswasdi, Former Governor

Friday, 30th July 2010

9.00 - 10.00 Meeting with Macro Surveillance Team, MPG

1. Dr. Roong Mallikamas, Division Executive, Forecasting and Macro Surveillance Division

2. Ms. Pranee Sutthasri, Senior Economist, Macro Surveillance Team

3. Ms. Jinnipa Sarakitphan, Economist, Macro Surveillance Team

10.00 - 11.00 Meeting with M.R. Chatu Mongol Sonakul, Chairman of Board of Directors and Former Governor)

11:00 - 12.00 Meeting with BOT Staff from Financial Markets Operations Group (FOG.)

1. Dr.Singhachai Boonyayotin, Director, Financial Markets Office

2. Mr.Wikran Nakasiri, Chief Investment Officer, FOG

12.00 - 13.00 Lunch with Dr.Thitinun Mallikamas, Director, Research Department and Senior Staff, Monetary Policy Group

13.00 -14.00 Meeting with Dr. Atchana Waiquamdee, Deputy Governor and MPC