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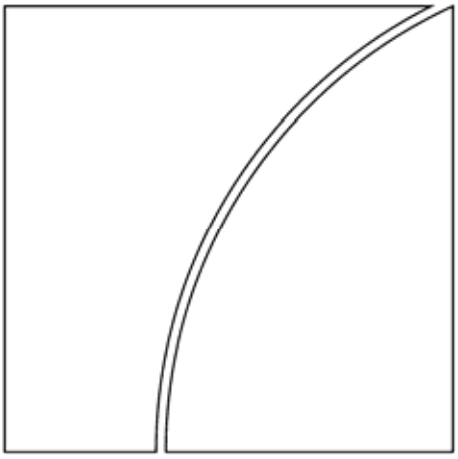

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Bank for International Settlements
Press & Communications
CH 4002 Basel, Switzerland

E-mail: publications@bis.org

Fax: +41 61 280 9100 and +41 61 280 8100

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Foreword

The papers collected in this volume were written for a conference held at the Hong Kong Monetary Authority in November 2005. It was organised jointly by the BIS Representative Office for Asia and the Pacific in Hong Kong SAR and the Hong Kong Institute for Monetary Research. The objective of the conference was to take stock of the current practice of monetary policy in a broad cross section of Asian economies. Papers on China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Thailand and Vietnam were presented and discussed at the conference and subsequently revised by the authors. In addition, the experience of a "mature" inflation targeter, the Reserve Bank of Australia, was presented. The result, we believe, is an up-to-date account and assessment of the strategies followed by the respective central banks and monetary authorities.

In a survey of monetary policy in East Asia covering the post-crisis period until 2001, McCauley (2002) concluded that "Most central banks in East Asia focus on price stability" and that "this focus entails quite a bit of attention to the exchange rate" (p 45).[1] He also found "a willingness to use restrictions on financial transactions with non-residents to limit exchange rate volatility" (p 46) and, it might be added, to gain some additional, if temporary, degree of freedom in setting domestic interest rates.

Five years on, it is possible to discern a consolidation and strengthening in the focus on price stability in the monetary policy strategies adopted by central banks in the region. On the other hand, there appears to be a marginal reduction in the emphasis on exchange rate stability and a gradual liberalisation of international capital account transactions. Price stability remains the primary objective of the majority of the central banks, and arguably it has gained both in importance as a goal and in acceptance by the public. Formal inflation targeting regimes in Indonesia, Japan, Korea, the Philippines and Thailand have secured credibility as the institutional backing has been developed, and as communication with the public has been improved and emphasised. Singapore continues with considerable success to target inflation using the effective exchange rate as the policy instrument. India, Malaysia and arguably Vietnam also target inflation although they do not call themselves inflation targeters.

It is still common among the central banks to keep a keen watch on the exchange rate because of its importance in the inflation process, but some increase in exchange rate flexibility can be observed. China and Malaysia abandoned their strict peg to the US dollar in July 2005, and de facto fluctuations of the exchange rates of several other currencies have increased. A notable development is the increased focus on the effective exchange rate as opposed to any particular bilateral rate. Hong Kong is an exception in that it continues to base its monetary policy on the linked exchange rate with the US dollar.

While restrictions on international capital account transactions remain in several jurisdictions, their coverage appears to have been reduced at least de facto, if not de jure. This is making it increasingly difficult to manage both inflation and the exchange rate in some countries. Korea is a particularly good example.

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[1] McCauley, R N: "Setting monetary policy in East Asia: goals, developments and institutions". *Occasional Papers* No 33, The South-East Asian Central Banks Research and Training Centre (The SEACEN Centre), Kuala Lumpur, Malaysia, 2002.

Even if there are still large differences remaining between central banks, from the studies collected here it is possible to discern an increasingly strong institutional backing for the conduct of monetary policy in the region as well as a clearer articulation of its objectives and implementation.

Hans Genberg
Hong Kong Monetary Authority
and Hong Kong Institute
for Monetary Research

Eli Remolona
BIS Representative Office
for Asia and the Pacific

Programme

Monday 21 November

09:15-09:30	Opening of Conference with Introductory Remarks Peter Pang, Deputy Chief Executive, Hong Kong Monetary Authority	
Session I	**Chair: Robert McCauley, Bank for International Settlements**	
09:30-10:45	Country paper:	**Japan (Japanese monetary policy: 1998-2005 and beyond)**
	Author:	Takatoshi Ito, University of Tokyo
	Discussants:	Masaru Yoshitomi, Research Institute of Economy, Trade and Industry, Japan Peter Morgan, HSBC Securities (Japan) Limited
11:00-12:15	Country paper:	**Korea (Inflation targeting in Korea: a model of success?)**
	Authors:	Yung Chul Park, Seoul National University Soyoung Kim, Korea University
	Discussants:	Tim Condon, ING Bank N V Yang-Woo Kim, Bank of Korea
Session II	**Chair: Wensheng Peng, Hong Kong Monetary Authority**	
13:30-15:00	Country paper:	**Malaysia/Thailand (Understanding monetary policy in Malaysia and Thailand: objectives, instruments and independence)**
	Author:	Robert McCauley, Bank for International Settlements
	Discussants:	Sukudhew Singh, Central Bank of Malaysia Atchana Waiquamdee, Bank of Thailand
15:00-16:00	Country paper:	**Vietnam (Monetary policy in Vietnam: the case of a transition country)**
	Author:	Ulrich Camen, Graduate Institute of International Studies, Geneva
	Discussant:	Susan Adams, International Monetary Fund
16:30-17:30	**An Australian perspective on inflation targeting, communication and transparency**	
	Author:	Malcolm Edey, Reserve Bank of Australia
	Discussant:	Marvin Goodfriend, Carnegie Mellon University
18:30-21:00	**Conference dinner hosted by the BIS**	

Tuesday 22 November

Session III	**Chair: Corrinne Ho, Bank for International Settlements**	
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	Authors:	Roberto Mariano and Delano Villanueva, Singapore Management University
	Discussants:	Francisco Jr Dakila, Bangko Sentral ng Pilipinas Akhis Hutabarat, Bank Indonesia
10:15-11:30	Country paper:	**China (Monetary policy implementation in China)**
	Author:	Marvin Goodfriend, Carnegie Mellon University Eswar Prasad, International Monetary Fund
	Discussants:	Tao Zhang, People's Bank of China Jiming Ha, China International Capital Corporation (HK) Limited
11:45-13:00	Country paper:	**Hong Kong/Singapore (Monetary policy regimes and macroeconomic outcomes: Hong Kong and Singapore)**
	Author:	Stefan Gerlach, Bank for International Settlements
	Discussants:	Hoe Ee Khor, Monetary Authority of Singapore Wensheng Peng, Hong Kong Monetary Authority

Session IV	**Chair: Hans Genberg, Hong Kong Monetary Authority/Hong Kong Institute for Monetary Research**	
14:00-15:15	Country paper:	**India (Monetary policy approaches in India)**
	Authors:	Kaushik Bhattacharya, University of Bonn
	Discussant:	Dominique Dwor-Frécaut, Barclays Capital
15:15-16:30	Panel discussion:	**The role of the exchange rate in monetary policy formulation**
	Panellists:	Hans Genberg, Hong Kong Monetary Authority/HKIMR Takatoshi Ito, University of Tokyo Hoe Ee Khor, Monetary Authority of Singapore Robert McCauley, Bank for International Settlements Sukudhew Singh, Central Bank of Malaysia

List of participants

	First name	Last name	Organisation
1.	Susan	Adams	International Monetary Fund
2.	Kaushik	Bhattacharya	University of Bonn
3.	Ulrich	Camen	Graduate Institute of International Studies
4.	Timothy	Condon	ING Bank N V
5.	David	Cook	Hong Kong University of Science & Technology
6.	Francisco Jr	Dakila	Bangko Sentral ng Pilipinas
7.	Dominique	Dwor-Frécaut	Barclays Capital
8.	Malcolm	Edey	Reserve Bank of Australia
9.	David	Fernandez	JP Morgan
10.	Joseph	Fung	Hong Kong Baptist University
11.	Hans	Genberg	Hong Kong Monetary Authority
12.	Stefan	Gerlach	Bank for International Settlements
13.	Bert	Gochet	UBS
14.	Marvin	Goodfriend	Carnegie Mellon University
15.	Paul	Gruenwald	International Monetary Fund
16.	Jiming	Ha	China International Capital Corporation (HK) Ltd
17.	Corrinne	Ho	Bank for International Settlements
18.	Akhis	Hutabarat	Bank Indonesia
19.	Takatoshi	Ito	The University of Tokyo
20.	Hoe Ee	Khor	Monetary Authority of Singapore
21.	Soyoung	Kim	Seoul National University
22.	Yang-Woo	Kim	Bank of Korea
23.	Roberto	Mariano	Singapore Management University
24.	Robert	McCauley	Bank for International Settlements
25.	Peter	Morgan	HSBC Securities (Japan) Ltd
26.	Simon	Ogus	DSG Asia
27.	Peter	Pang	Hong Kong Monetary Authority
28.	Wensheng	Peng	Hong Kong Monetary Authority
29.	Eswar	Prasad	International Monetary Fund
30.	Georg	Rich	University of Berne
31.	Sukudhew	Singh	Central Bank of Malaysia
32.	Michael	Spencer	Deutsche Bank
33.	SK	Tsang	Hong Kong Baptist University

	First name	Last name	Organisation
34.	Giorgio	Valente	Chinese University of Hong Kong
35.	Delano	Villanueva	Singapore Management University
36.	Atchana	Waiquamdee	Bank of Thailand
37.	Yit Fan	Wong	DBS Bank
38.	James	Yetman	University of Hong Kong
39.	Matthew	Yiu	Hong Kong Institute for Monetary Research
40.	Masaru	Yoshitomi	Research Institute of Economy, Trade and Industry
41.	Tao	Zhang	People's Bank of China
42.	Suchada	Kirakul	Bank of Thailand

Contents

Introductory remarks

Peter Pang[1]

Ladies and Gentlemen,

It is my pleasure to welcome you to Hong Kong and to the Hong Kong Monetary Authority.

First of all, for the benefit of those of you who are visiting us for the first time, let me briefly explain the relationship between the HKMA and the Hong Kong Institute of Monetary Research, the co-sponsor - together with the Asian Office of the BIS - of the conference. The HKIMR was established by the HKMA in 1999 to promote and conduct research in the fields of monetary policy, banking and finance with particular reference to Hong Kong and the Asian region. The Institute organises seminars and workshops for central banks in the region, and it has an active visiting-fellow programme that brings some 20 internationally respected scholars to Hong Kong each year to work on their research projects.

The HKIMR also organises regular international conferences such as this one. The theme this year, "Monetary policy approaches and implementation in Asia", is, I believe, both timely and important. Far from being a homogeneous dollar block as Ronald McKinnon has previously suggested, Asian central banks are becoming increasingly heterogeneous in their choice of monetary policy strategy. At one end of the spectrum there is Hong Kong, which has adopted a strategy based on an external anchor and hard exchange rate peg as its monetary policy. At the other end there is Japan, with a floating exchange rate and a policy strategy based on domestic economic considerations that currently dictate a zero interest rate and quantitative easing to guide the economy out of the deflation of the past.

The other countries in the region are located at various points between these two positions. Malaysia has an approach which, until recently, was similar to that of Hong Kong, whereas South Korea and Thailand are closer to Japan.

A new challenge for central banks in the region appeared in July this year when mainland China announced a new exchange rate regime, abandoning the fixed peg to the US dollar and adopting a managed floating system with reference to a basket of currencies. The main challenge, of course, is for the People's Bank of China, which over time will have to "design a framework for an independent monetary policy" - to paraphrase the title of the paper by Goodfriend and Prasad that will be presented tomorrow.

The change in the exchange rate regime of the mainland also has wider implications for other central banks in the region. The prospect of greater variability in the renminbi/US dollar exchange rate may lead to greater variability of cross-rates between Asian currencies. What is the appropriate monetary policy response to such increased variability? More generally, what should be the role of the exchange rate in the policy strategy of central banks that have opted to rely on a domestic anchor for monetary policy? These are important questions that I am sure you will debate during the coming two days, and I look forward to hearing the conclusions that you will reach.

Monetary policy is not only about setting a target for the exchange rate, the interest rate or some monetary aggregate. As recent analysis and experience have shown, communication with the public about policy goals and operational strategies is also an important element of a successful policy strategy, as it can influence the credibility of the central bank and hence the

[1] Deputy Chief Executive, Hong Kong Monetary Authority.

effectiveness of policy initiatives. I note that these aspects of monetary policy will also be discussed at the conference, and I am sure that there is a lot that we can learn from each other's experiences.

Monetary cooperation in the region is a topic that is close to the heart of us here at the HKMA, and such cooperation must always start with a thorough understanding of the challenges faced by each central bank and how it has chosen to deal with them. Conferences such as this one are a good way to improve such understanding, and I am pleased to see such a distinguished group of experts gathered here for this occasion.

Before concluding, allow me to take a few minutes to explain the institutional context in which the HKMA operates, and some aspects of our monetary policy strategy. In Hong Kong's case, the Financial Secretary is responsible for determining the government's monetary policy objective, but the Monetary Authority is, on its own, responsible for achieving this objective. In the current jargon of monetary theory, the HKMA has instrument independence but not goal independence.

The objective of monetary policy in Hong Kong was stated in a letter from the Financial Secretary to the Monetary Authority in 2003 as a stable exchange value of around 7.80 Hong Kong dollars to 1 US dollar. The letter also stated that the structure of the monetary system shall be characterised by currency board arrangements.

The Linked Exchange Rate system continues to evolve over time in response to market conditions. The latest round of refinements was introduced in May 2005 in response to the speculative pressures on the strong side of the link as the Hong Kong dollar came to be used as a proxy for speculation on a renminbi revaluation. In short, the refinements created a target zone for the Hong Kong dollar between 7.75 and 7.85, thus making our system symmetrical around the 7.80 value specified in the letter from the Financial Secretary to the Monetary Authority. The HKMA views transparency in its operations as essential for promoting confidence in the Linked Exchange Rate system among market participants and the general public. For this reason we make public all interventions in the foreign exchange market as they are carried out.

I believe that the current monetary system in Hong Kong has served our economy well. In part this is surely due to a well defined monetary policy objective that matches Hong Kong's particular circumstances. But I venture to say that the success is also in part due to the clear and transparent approach we have taken in carrying out our mandate. I will leave it to Stefan Gerlach, our former Executive Director for Research, to give you more detail about our exchange rate regime when he presents the paper on Hong Kong tomorrow.

So to conclude, it is a pleasure for me to welcome you to Hong Kong and to this conference, and I wish you success in your deliberations.

Thank you.

An Australian perspective on inflation targeting, communication and transparency

Malcolm Edey

1. Introduction

When countries began to adopt inflation targets more than a decade ago, their aim was to put in place a credible framework that avoided the drawbacks of previous policy regimes. In New Zealand, Canada and Australia, inflation targets replaced ad hoc regimes that were considered intellectually unsatisfactory and had been associated with periods of poor inflation performance. In the United Kingdom and Sweden, inflation targeting replaced failed exchange rate pegs. In each case, the designers of the new targets sought a balance between constraining the central bank in terms of policy outcomes, and allowing a realistic degree of flexibility in the setting of the policy instrument.

Kuttner (2004) notes that, even at this early stage, there was no single model as to how this balance should be achieved. Target specifications differed in a number of ways, including the inflation goal itself, the degree of flexibility they allowed for inflation to vary, and the exact accountability and communication arrangements that were put in place. Australia's targeting regime could be characterised as being at the flexible end of the spectrum, while those of New Zealand and the United Kingdom, in their initial formulations, were at the more tightly specified end. Subsequent adopters have continued to be spread out along this range.

This paper provides a perspective on Australia's experience as a flexible inflation targeter. It first reviews the historical background to Australia's adoption of inflation targeting. It then compares Australia's communication practices with those of other central banks in order to bring out the similarities and differences in current approaches. Finally, it looks in more detail at the role of inflation forecasts in communication strategy, which seems to be at the heart of current differences of approach among inflation targeting central banks. The paper argues that the flexible approach has served Australia well, and that the case for a relatively flexible approach by inflation targeters more generally is likely to strengthen as countries build up an increasing track record of low and stable inflation.

2. Historical background

The adoption of inflation targeting in Australia is traditionally dated to 1993, when Governor Fraser began to speak of the objective of holding inflation to a rate of 2-3% "over the course of the cycle". Debelle and Stevens (1995) note that this objective was adopted "without fanfare". Unlike in New Zealand and Canada, there was no attempt to signal an abrupt regime shift, and there was no formal agreement at the time between the government and the central bank (this came later, in 1996). Rather, the RBA was signalling its medium-term inflation goal within the context of existing institutional arrangements.

Intellectually, there was a lively debate at the time on alternative monetary policy regimes for Australia. Monetary targeting had been abandoned (or, officially, "suspended") in 1985, when it had become clear that, as a result of financial liberalisation and innovation, the monetary aggregates no longer bore a stable relationship to prices or nominal incomes. There had followed a period in which the RBA's policy approach was presented to the public in terms of an ad hoc "checklist" of indicators. Many commentators argued that this approach lacked coherence and failed to provide the needed discipline.

Among the alternative monetary regimes put forward in the Australian debate were a fixed exchange rate or currency board (eg Walters (1992)), introduction of a commodity-standard currency (White (1989), Evans and Dowd (1992)), a "free banking" regime with competing private currencies (Dowd (1990)), monetary base control (McTaggart and Rogers (1990)) and a return to conventional monetary targeting (Weber (1994)). In short, the debate threw up a surprisingly diverse range of proposals, indicative of widespread distrust of monetary discretion. There were, of course, counterarguments to each of these proposals.[1] A fixed exchange rate had already proven unsatisfactory given Australia's position as a commodity exporter with highly variable terms of trade. The monetary aggregates, as noted, were too unstable to serve as an intermediate policy target. And the currency reform and free banking proposals were radical and untried. In this environment, thinking within the RBA was moving towards accepting the logic of targeting the ultimate objective of policy (namely, inflation) rather than an intermediate objective like the monetary aggregates or the exchange rate.

The particular formulation adopted in 1993 reflected pragmatic considerations at the time. Inflation in Australia had already been substantially reduced as a result of tight policies in the late 1980s. With the economy now in the early stages of recovery from recession, there was no appetite for a strategy of deliberate further disinflation. Rather, the aim was to prevent inflation from rising unacceptably during the prospective expansion. The formulation of the target as "2-3% on average over the cycle" was intended to allow for unavoidable short-term variation in inflation while providing a medium-term discipline on the policy process. A noteworthy feature was that the 2-3% range was not intended to specify outer limits, but rather to convey the idea of an approximate central tendency, or "thick point" as Debelle and Stevens called it. Thus it was expected that inflation would fluctuate around the target but would average between 2% and 3% over a run of years. For technical reasons, the target was originally specified in terms of an underlying inflation measure in order to ensure that mortgage interest rates were excluded from the targeted index. When interest rates were later removed from the official CPI, the target was restated as applying to the CPI itself rather than the underlying rate.

All of these features were well established by the time the target was given formal recognition in an agreement between the Governor and Treasurer in August 1996. As well as specifying the numerical target, the agreement established standards for reporting and accountability through regular policy statements and, importantly, through twice-yearly appearances before the federal House of Representatives Economics Committee. Over the course of time, these vehicles of communication and accountability have become more highly developed. Statements have become more detailed and explicit about the inflation outlook, and the regular parliamentary appearances have gained in prominence.

In international terms, Australia's inflation targeting regime lies at the flexible end of the spectrum and has sometimes been criticised for that (particularly in its early years). It has never had the strict fluctuation bands or disciplinary procedures for breaches that were used as credibility-building devices in other countries like New Zealand. Critics from an academic perspective, such as Stemp (1997), argued that the target gave too little discipline against higher inflation. In part, this type of criticism reflected a general disaffection with discretion and the unsatisfactory results it had delivered in the 1980s. It was argued that discretion would lead to policy errors and hence macroeconomic volatility. There was also an appeal to the time consistency literature, which argued that discretion would lead to systematic policy bias, generating a higher than optimal average inflation rate. But these criticisms tended to die down as Australia's targeting regime built up a track record of inflation control.

[1] This debate is reviewed in Edey (1997).

3. Is there an optimal degree of flexibility?

Having noted that inflation targeting regimes take quite different approaches to the tolerance of inflation variability, it is interesting to consider what economic reasons might be given for preferring a greater or lesser degree of flexibility in this regard. In the terminology of Bernanke and Mishkin (1997), inflation targeting is a form of "constrained discretion", and both the constraining and the discretionary elements can be viewed as having costs and benefits that need to be balanced in designing the specifications of the policy regime. The need for a discretionary element arises from the impossibility of specifying in advance how the policy instrument should be adjusted in response to every contingency. The case for placing this within a framework of constraints is the familiar one from the time consistency literature: constraints help to establish credibility by preventing discretion from being used to permit higher than optimal inflation. Strictly speaking, of course, the time consistency literature does not require the type of simple constraint specified by inflation targeting. The key requirement of a credible policy is pre-commitment, and in principle this could be achieved by a complex or time-contingent rule rather than by a simple one. However, it may well be that in the public's minds, simple rules that provide clear guidelines as to what constitutes a breach are more readily understood and provide a more effective discipline on the policy process.

It follows from this reasoning that decisions about the appropriate degree of flexibility in an inflation targeting regime will depend on judgments as to the relative priority that needs to be given to credibility-building. Where there is a recent history of unsatisfactory performance or regime failure, greater emphasis is likely to be placed on specific credibility-building features such as tight target ranges and penalties for breaching the target. In cases where credibility is already well established, these features are likely to be less important. This is one factor that probably made it easier for Australia to adopt its flexible approach, since inflation had already been reduced to a satisfactory rate at the time the target was introduced.

The New Zealand experience provides a further case in point. As the first country to introduce inflation targeting, and with inflation still higher than desired, New Zealand initially adopted a tightly specified model with narrow and quite ambitious bands (0-2%), a fixed timetable for achieving it, and with penalties specified for a breach. Later, with low inflation expectations becoming well entrenched during the course of the 1990s, the New Zealand authorities made a number of changes to the regime specification to allow greater flexibility. These included changes to the target bands (now 1-3%), and a re-specification of the target as a medium-term average along the lines of the Australian approach. In some respects, the UK framework too, in its mature form, allowed more scope for inflation variability than did the initial formulation adopted in 1992. As a general principle, it seems that the scope for flexibility in the regime is greater where inflation expectations are well anchored.

4. Communication and transparency

Another important area for comparison among inflation targeting central banks is in their approaches to communication and transparency. There is no doubt that central banks around the world have greatly increased the volume and quality of information they provide to the public. These changes, which have generally taken place over the period since the late 1980s, have gone hand in hand with the evolution of the policy framework itself. Current reporting practices among a range of advanced-country central banks are compared in Table 2, reproduced from the 2004 Annual Report of the BIS.

Table 1

Provision of information by central banks

	G3			Inflation targeters					
	United States	**ECB**	**Japan**	**United Kingdom**	**Canada**	**New Zealand**	**Australia**	**Sweden**	**Switzerland**
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 assessments	No	No	No	Yes	No	No	No	Yes	No

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

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

A few general observations can be made about the comparisons in Table 1:

- In all cases, the major central banks publish regular reports on the economy and monetary policy, usually quarterly. While they differ somewhat in style and length, all give a fairly comprehensive review of the central bank's thinking about economic conditions and prospects.
- Similarly, all of the major central banks now publish economic forecasts, though some (Canada and the ECB) have begun to do so only quite recently. The majority

of central banks present their forecasts quarterly, though a significant minority (including the three largest) present them half-yearly. The forecasts generally focus on inflation and GDP growth, with a small number of additional macroeconomic variables also included in some cases.

- Practices on the release of minutes from the monetary policy decision-making committees differ from country to country. Australia is one of a number (along with Switzerland and the ECB) where minutes and voting records are not released. In Canada and New Zealand, the question of minutes does not arise because monetary policy decisions in those countries are not taken by a committee but are the responsibility of the Governor. In the other countries included in the table, minutes are released with lags ranging from around two to eight weeks.

- In all cases, the central banks make public announcements when a policy change is made. Even a casual perusal of these statements, however, indicates that they differ quite markedly in format and content. Federal Reserve Board and Bank of England announcements, for example, are typically brief and, in the Fed's case, make heavy use of standard verbal formulas to describe the current assessment. Those in Australia, New Zealand and some other countries generally give a fuller and less formulaic account.

- In addition to the announcement of policy changes, most central banks also make announcements when a no-change decision is made. However, not all give an accompanying statement of reasons (included in this category are the RBA and the Bank of England).[2]

These comparisons suggest three points on which significant variations in practices exist across the major central banks. The discussion below reviews two of these issues – the frequency of communication and the release of minutes and voting records – which have recently been the subject of debate in Australia. A third issue, concerning the role of inflation forecasts as a communication tool, is considered in detail in Section 5.

The first point concerns the handling of no-policy-change announcements. There have been calls recently in Australia for these to be accompanied by detailed explanatory statements, while the RBA has maintained a practice of issuing such a statement only when a change is made (in addition to the regular quarterly reporting schedule). In economic terms, the argument for existing practice is probably best viewed as part of the broader question as to the optimal frequency of communication. In Australia's case, as noted above, the explanatory statements that accompany changes in policy give a broad and somewhat fuller summary of the prevailing situation than is typical of the equivalent announcements of some of the larger central banks. A practice of issuing similar statements for no-policy-change decisions would mean issuing them at the same frequency as board meetings: ie effectively moving to a schedule of monthly commentaries in addition to the (much more detailed) quarterly reports already produced.

The economic issue here is whether the flow of genuine new information is sufficient to justify that degree of frequency. One possible response to this question would be simply to take the view that the more communication, the better. Supporters of this view would argue that since information reduces uncertainty, additional communication is always either beneficial to the public (and to financial markets) or, at worst, redundant if there is nothing of substance to communicate. However, in addition to the theoretical caveats to this view, most participants in the debate would accept that there is some limit to this argument in practice. No one argues for weekly, daily or continuous commentary from central banks, so in principle there

[2] In the Bank of England's case, there is not generally a statement of reasons for a no-change announcement, but one is sometimes provided if there is judged to be a need for it.

is some optimal frequency of communication. One important reason for this is that communication is imperfect and, therefore, inevitably noisy. The shorter the interval between communications, the less genuine information there is likely to be. At some point, excessive frequency of announcements risks generating more noise than signal.

It is not hard to think of instances where central banks have had to grapple with this problem. The recent experience of the Fed, for example, saw some delicate manoeuvring when the time came to move away from the "considerable period" rhetoric adopted in 2003.[3] The communication challenge for the FOMC during the early part of that period was to convey, essentially, that the policy assessment was not materially changing between successive meetings; in other words, to convey a lack of new information. In general, one way to approach this task would be to come up with an entirely new statement each time, aiming to create broadly the same impression with different words. However, this approach has the drawback of attracting attention to the changes in wording and inviting markets to read more into them than is really there. Presumably, this is why the FOMC opted for the alternative approach of sticking to a fixed form, though at the cost of generating even greater speculation about when and how the formula would eventually be changed. No doubt this kind of awkward communication challenge can never be entirely avoided, but it is at least arguable that problems of this nature can be amplified by too great a frequency of communication.

In the context of this debate, there is also an interesting empirical question as to whether an increase in reporting frequency would be likely to generate significant economic benefits in the form of a reduction in financial market uncertainty. In the Australian situation, where monetary policy statements appear quarterly, a simple approach to this question would be to ask whether the build-up of information between quarterly statements was generally sufficiently large that those statements would be expected to have a material impact on financial markets when released. If so, a move to more frequent statements would presumably allow that information to be incorporated into financial prices more quickly than under current practices. This question has been examined by Coppel and Connolly (2003), who show that, for maturities out to about two years, the average movements in short-term market interest rates on the days when a quarterly *Statement on monetary policy* (*SMP*) is released are not much larger than on ordinary (non-*SMP*) days. So this evidence is not consistent with a significant accumulation of pent-up information between successive quarterly reports. This result is likely to reflect the existence of other reporting vehicles such as governors' speeches, parliamentary hearings and media releases that become available in the intervening periods.

The second point concerns the varying practices with respect to the release of minutes. This has also been a subject of some debate in Australia and elsewhere, most notably in relation to the ECB. The debate concerning disclosure of minutes by the ECB is illustrative of the broad lines of argument. Observers such as Buiter (1999) have argued forcefully for disclosure of minutes and voting records by the ECB's governing council, based on a general appeal to principles of accountability and the public's right to be kept informed. In effect, this form of disclosure would shift the ECB system from one of collective accountability (through the ECB President) to one where each member would be individually accountable for his or her vote, as is the case with the Monetary Policy Committee (MPC) of the Bank of England. The argument against this form of disclosure has hinged on the possible effects it might have on the decision-making process. The ECB (Issing (1999)) defends its current practice on the basis that disclosure of voting records would expose individual members of the governing council to pressure to vote according to their national interests rather than the interests of the

[3] This refers to the series of announcements between August 2003 and January 2004 in which the FOMC stated that the accommodative stance of policy would be maintained for a "considerable period".

currency area as a whole. While not universally accepted, it is widely acknowledged that this argument has merit. For example, Blinder et al (2001), though supporting a general presumption of disclosure in their overall approach to central bank communication, do not recommend release of minutes and voting records in the ECB's case.

In Australia, the terms of the argument have been slightly different, since there is no Australian counterpart to the multinational structure of the ECB's Governing Council. The RBA situation is, however, unusual in another respect, in that policy is decided by a non-executive board where the majority of members are not technical experts on monetary policy or engaged on a full-time basis in the policy process. These points were raised at one of the RBA's recent parliamentary examinations, with the Governor noting that the Board members are chosen to reflect the broader sectors of the community and could be exposed to pressure to vote on the basis of sectional interests if their votes were disclosed.[4] Thus, while the situations of these two central banks are not the same, the general point that has been made in both cases is that questions about accountability and disclosure practices cannot be examined in isolation from the governance arrangements of each institution. A disclosure practice that makes sense for a technically focused monetary policy committee might not be well suited to alternative board structures.

Empirical evidence

There has been much debate in recent years as to whether different transparency and reporting arrangements can be shown to have significant effects on economic performance. One study to attempt a quantification of monetary policy transparency is Eijffinger and Geraats (2002), who rate nine major central banks based on the authors' assessment of their performance in relation to a range of communication criteria. These include: clarity and precision about goals; the release of minutes and voting records from policy meetings; openness in relation to the data and models used to guide economic analysis; and forthrightness in ex post examination of policy choices. Even leaving aside the unavoidable subjectivity of ratings on many of these criteria, a major issue with such an index concerns the arbitrariness of the combination of these different components into a single index, which Eijffinger and Geraats do using equal weights.

A similar index of the transparency of 20 inflation targeting central banks, again based on an equal weighting of separate ratings of various aspects of each bank's inflation report, has also been produced by Fracasso et al (2003). An innovation of their approach is their use of a group of five graduate students in economics, "familiar with broad principles but not necessarily central bank watchers", to rate each bank's report. This approach is aimed at avoiding any subconscious contamination of the results by the authors' own knowledge of the operations and performance of each central bank. Among a range of drawbacks identified by Lowe (2003), however, is that such a group may be quite unrepresentative of the intended audience of central banks' reports. Finally, an alternative index of the transparency of the central banks of 87 countries, focused on the quality of their published forecasts, has also been produced by Chortareas et al (2002).

Empirical applications of these indices have produced mixed results. Cecchetti and Krause (2002) find evidence that central bank transparency improves a measure of macroeconomic performance based on the variability of inflation and output – although not as strongly as does central bank credibility (quantified in terms of low past inflation outcomes). Demertzis and Hughes Hallett (2002) use the index of Eijffinger and Geraats to examine the impact of central bank transparency on economic outcomes, and interpret their results as suggesting

[4] See the exchange in Hansard, House of Representatives Committee on Economics, Finance and Public Administration, 8 December 2003 (EFPA 9).

that, for the nine OECD countries rated by Eijffinger and Geraats, increased transparency tends to reduce the variance of inflation but increase the variance of output deviations from trend.[5] The mean levels of inflation and output are unaffected. Finally, by contrast with Demertzis and Hughes Hallett, Chortareas et al find that greater transparency, as measured by their own index, is associated with a lower average level of inflation. Carpenter (2004), however, is critical of both of these latter studies – and indeed of most of the econometric analysis of the effects of transparency – noting that "given the differing levels, types, and definitions of transparency, clear econometric results would be more surprising than convincing".

What all of these studies have in common is that they seek to identify differences in economic performance across countries and to attribute them to the characteristics of the communication regime. Performance, in this context, is usually measured in terms of either the volatilities of, or shifts in, key variables like inflation, output and interest rates. To put these studies in perspective, therefore, it is worth looking at the gross facts that need to be explained. Some summary statistics of these variables for a group of industrial countries are shown in Table 2.

The summary statistics in Table 2 show, broadly, three things:

- Over the past two decades, there has been a substantial reduction in inflation levels in most of the selected countries, especially in those with initially high inflation rates, as well as a reduction in the variability of both inflation and output growth in most countries.
- There has been an even greater reduction in short-term interest rate volatility.
- Based on these summary measures, country performances have now become much more similar than they were in the two previous decades.

Doubtless these trends are attributable to a number of factors that we cannot address here, but which would have to include improved macroeconomic policies. The aspect of economic performance most likely to be directly related to monetary policy communication arrangements is the reduction in interest rate volatility. It is plausible to attribute this to the improvements in transparency that have occurred over the same period, and a number of more detailed studies have done so (Muller and Zelmer (1999), Haldane and Read (2000)). But remaining cross-country differences in interest rate volatility are now small, and are swamped in any of these comparisons by the much larger historical movements. Given these gross facts, attempts to identify the economic effects of current differences in communication arrangements across countries seem unlikely to be convincing.[6]

[5] These findings, however, are based purely on simple, nine data point regressions of the relevant variable on Eijffinger and Geraats's transparency measure.

[6] This is the conclusion of Coppel and Connolly (2003) in a study of the effects of transparency on financial market behaviour. Debelle (2003) similarly notes that macroeconomic outcomes in Australia since the adoption of inflation targeting have been at least as good as those in other countries.

Table 2

Macroeconomic summary indicators

	Annual CPI inflation (average, percentage points)[1]			
	1985-89	**1990-94**	**1995-99**	**2000-04**
United States	3.7	3.5	2.4	2.5
Germany	1.3	3.8	1.2	1.7
United Kingdom	4.7	4.7	2.6	2.4
Canada	4.4	2.5	1.7	2.4
Australia	7.7	3.3	2.2	2.7
New Zealand	8.6	2.6	1.7	2.6
	Year-ended CPI inflation (standard deviation, percentage points)[1]			
	1985-89	**1990-94**	**1995-99**	**2000-04**
United States	1.1	1.2	0.6	0.8
Germany	1.2	1.2	0.6	0.4
United Kingdom	0.9	2.3	0.3	0.4
Canada	0.4	2.1	0.6	0.9
Australia	1.3	1.7	0.9	0.3
New Zealand	3.6	1.4	0.5	0.7
	Year-ended real GDP growth (standard deviation, percentage points)			
	1985-89	**1990-94**	**1995-99**	**2000-04**
United States	0.6	1.6	0.9	1.4
Germany	1.1	2.6	0.8	1.4
United Kingdom	1.2	2.1	0.4	2.0
Canada	1.5	2.4	1.6	1.5
Australia	1.6	2.1	0.8	1.0
New Zealand[2]	...	3.2	2.0	1.3
	90-day bill yield (average absolute daily change, basis points)			
	1985-89	**1985-89**	**1985-89**	**1985-89**
United States	4.3	3.3	1.6	1.6
Germany	4.3	3.4	3.0	1.9
United Kingdom	8.2	4.2	1.6	0.6
Canada	2.4	2.9	2.2	1.0
Australia	12.2	3.0	1.7	1.2
New Zealand	19.4	6.9	6.5	1.6

[1] CPI excluding GST and mortgage interest payments for Australia; CPI excluding GST and credit services for New Zealand; RPIX for the United Kingdom; headline CPI elsewhere. [2] New Zealand year-ended real GDP growth data only available on a quarterly basis from 1988 Q3.

5. The role of inflation forecasts in communication strategy

The final general topic that emerges from the comparisons outlined above concerns the use of forecasts as a communication device. Some key characteristics of the forecasts published by advanced-country central banks are summarised in Table 3.

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.

The discussion below focuses on two aspects in particular: the monetary policy assumption embedded in the forecasts, and the broader question as to the degree of prominence given to inflation forecasts in the central bank's communication strategy.

5.1. The policy assumption

The question of what policy assumption is built into the published inflation forecast has been much debated and, as argued below, can have a significant bearing on the way forecasts are used in central bank communication. As can be seen from Table 3, the majority of central banks construct their forecasts on an assumption that monetary policy is unchanged. The exception is the Reserve Bank of New Zealand, which uses the alternative approach of

assuming endogenous monetary policy and therefore providing a forecast for the path of interest rates along with the other macroeconomic variables (including the exchange rate).[7]

The majority preference for the no-policy-change assumption has continued notwithstanding some criticism of that approach in the academic literature. One criticism is that the assumption is unrealistic and therefore non-transparent, since central banks will, in fact, generally expect interest rates to change over time (Martijn and Samiei (1999)). But the use of a technical assumption is not the same thing as non-transparency. If a decision-making committee does in fact make use of forecasts constructed on an unchanged policy basis, then transparency requires that it is those forecasts that should be released to the public.

A more serious point is the technical criticism of the no-policy-change assumption. The issue here is that well designed forecasting models are generally either unstable or indeterminate when interest rates are permanently fixed; this reflects the Wicksellian point that under fixed interest rates the economy itself will be unstable.[8] But while this technical point is acknowledged, its importance should not be exaggerated. It is not inherently at odds with sensible theory to assume interest rates can be kept fixed for a temporary period, and most forecasting models have no trouble accommodating this kind of exercise. Certainly central bank forecasters have generally not found the problems associated with it to be insurmountable.

Assuming these technical difficulties can be overcome, it may be conjectured that in many forecasting frameworks it would be possible to map forecasts from one approach to the other, at least over shortish forecast horizons. For example, given a set of short-term forecasts about how the economy would evolve with unchanged interest rates, one could deduce how interest rates would need to move in order to achieve a desired alternative outcome. That, presumably, is the type of mental exercise a policymaking committee might go through in using a no-policy-change forecast to inform its decisions. Viewed in this way, the two alternative forecasting approaches can be seen as two ways of summarising the same information. The information that a change in interest rates is needed could be expressed either by a forecast of the interest rate moves required to keep inflation on track or by a forecast showing the inflation rate diverging from the target if interest rates are not changed. Why, then, have the majority of central banks opted for the unchanged-policy approach?

One reason, emphasised by Goodhart (2001), is likely to be the complexity of getting any forecasting process to agree on a projected time path for interest rates that can be adequately explained to the public. It is true that such forecasts can be routinely produced from economic models, but any attempt to debate the basis of the interest rate forecasts outside a modelling framework, and to explain them to the public, will still beg the question of why interest rates have to move as projected.

Another reason is that, even if it is agreed that the two forecasting approaches can convey essentially the same information, there are important presentational differences between them. In particular, they are likely to convey different senses of the central bank's propensity towards activism. The conventional approach presents the rationale for a policy decision in terms of the counterfactual question: what would happen if interest rates were kept unchanged? In an inflation targeting context, for example, it might explain a policy decision on the basis that inflation is expected to go off track in the absence of corrective action. This approach has the effect of framing the public discussion in terms of a presumption that

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[7] The Bank of England and Sveriges Riksbank now also publish forecasts that assume interest rates follow the path embodied in market expectations.

[8] The use of a market interest rate profile does not overcome this problem since the interest rate path is still exogenous to the forecasts.

interest rates stay unchanged unless the assessment of the economic outlook makes a case to the contrary. Presentationally, this is very different from offering a forecast based on a presumption that interest rates change, which is likely to convey a stronger sense of activism in the central bank's policy approach. Since the evidence is that central banks are in fact quite gradualist relative to model predictions (Judd and Rudebusch (1998), Clarida et al (1998)), the conventional way of presenting forecasts is likely to be more in keeping with the way policy is actually conducted.

5.2. Degree of prominence of the inflation forecasts

Much of the debate in the theoretical literature assumes that all central banks have an inflation target in the sense that they must have some view of the optimum inflation rate that they are aiming for. The debate in the United States, as typified in recent speeches by Fed Governors Bernanke and Kohn, has been about whether this particular parameter should be revealed to the public.[9] This would be achieved by the Fed providing a numerical value for what it means by satisfactory price stability. As a proponent of an inflation target for the United States, Bernanke argues that a numerical target would reduce uncertainty about future inflation and confer economic benefits through reduced premiums for inflation risk. The opposing argument is that a numerical target would make the Fed's communication less effective, by oversimplifying what are in fact a more complex set of objectives and encouraging an excessive focus on short-term deviations of inflation forecasts from the target. In other words, it would give the inflation forecasts too much prominence. Embedded in all this discussion is the idea that there is an optimal degree of emphasis on inflation forecasts in a central bank's overall approach to communication. So the question arises, how much prominence is enough?

The most extreme response to this question is what might be termed the "sufficient statistic" approach to communication. This approach would assert that the job of monetary policy is to set the interest rate at the unique level which, given current circumstances and expectations, brings the forecast of inflation to the target over a fixed period of time ahead (say, two years). The central bank would simply calculate a two-year-ahead inflation forecast under the unchanged policy assumption and, using an estimate of the responsiveness of the forecast to a change in the interest rate, could then determine the interest rate that would bring inflation to the target. So the inflation forecast would be a sufficient statistic for determining today's required policy decision, and for explaining its rationale to the public.

Probably no major central bank nowadays would say that this is how monetary policy is, or should be, conducted. However, the early rhetoric of inflation targeters did come close to asserting this position. Goodhart's retrospective observation as a founding member of the MPC makes this clear:

> "When I was a member of the MPC I thought that I was trying, at each forecast round, to set the level of interest rates so that, without the need for future rate changes, prospective (forecast) inflation would on average equal the target at the policy horizon. This was, I thought, what the exercise was supposed to be". (Goodhart (2001), p 177)

[9] For a convenient summary of this debate, see the panel discussion session of the October 2003 Annual Conference of the Federal Reserve Bank of St Louis, on the topic "Inflation targeting: prospects and problems". As part of this session, Bernanke (2003) argued strongly in favour of the adoption of a formal inflation target by the Fed, while Kohn (2003) argued equally forcefully for maintenance of the status quo.

More recently, there has been greater awareness that this degree of conceptual simplification is too extreme. For one thing, there is nothing magical about a two-year forecast horizon. Central banks generally select a forecast horizon of about that length for pragmatic reasons – it reflects a view that this kind of horizon is long enough to allow for the lags in monetary policy, and is about as far ahead as forecasts can be made with any acceptable degree of confidence. Nonetheless, it is recognised (see, for example, Bean (2003)) that a much longer horizon is potentially of interest to the policymaker. Hence, central banks need to develop ways of bringing into consideration factors that may be relevant to the policy decision but which would not fit into a conventional shorter-term inflation forecast.

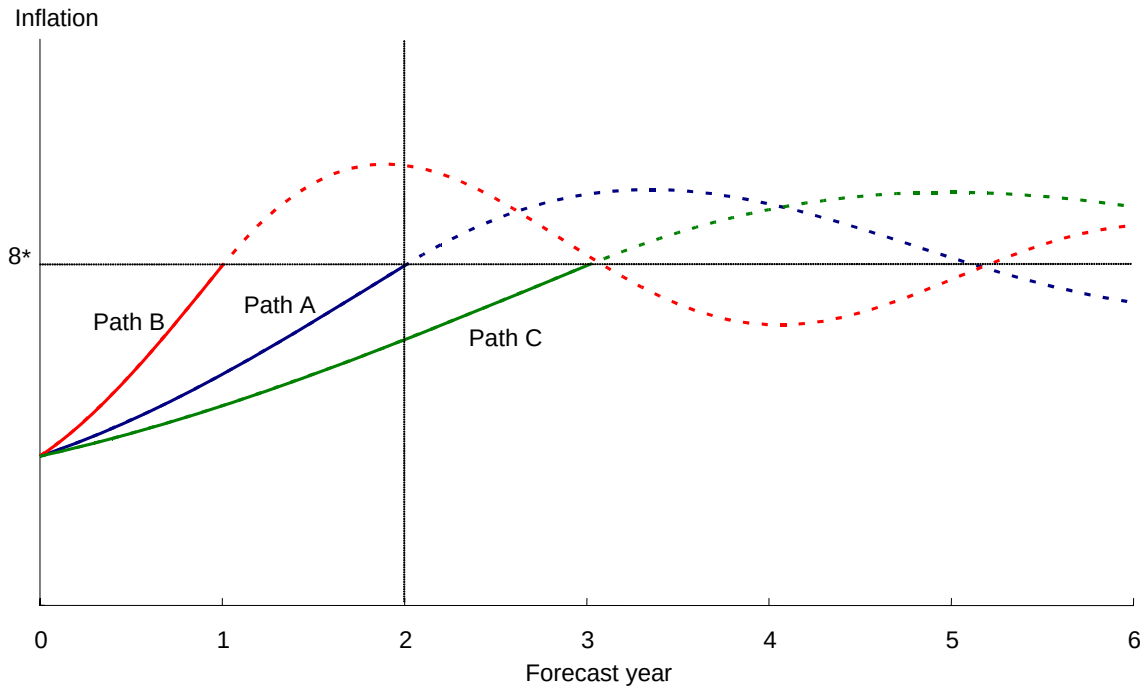
A further point is that central bank mandates do not generally stipulate the attainment of inflation targets on a fixed time horizon. Generally they allow some degree of flexibility, though the degree of flexibility does vary. Australia's mandate (and also the revised 1999 RBNZ mandate) is at the flexible end of the spectrum, and specifies that monetary policy aims to achieve the inflation target on average over the medium term.[10] The sufficient statistic approach described above is clearly incompatible with this formulation. Since the target is expressed as an average, there will at any point in time be multiple time paths for future inflation that would be consistent with it. This of course does not mean that policy is totally unconstrained, since only a course of action consistent with an expectation of achieving the target on average would be permissible.

The point can be illustrated using the following scenario (see Figure 1). The diagram shows three hypothetical inflation forecasts associated with alternative (constant) settings of the policy interest rate, starting from a position where inflation is below the target. For the sake of argument it is assumed that the current level of interest rates is on the expansionary side of neutral, and generates path A, in which inflation is forecast to rise back to the target over a period of exactly two years. Thus the sufficient statistic approach, applied using a two-year horizon, uniquely fixes the policy rate at its current level. An alternative forecast trajectory (path B), if interest rates were cut, would return inflation to the target more quickly (in, say, a year) while a small rise in interest rates would mean inflation taking longer than two years to reach the target (path C). Of course, all of these scenarios would eventually imply an unstable upward drift in inflation in the long run if interest rates were not changed further. Thus there would have to be additional adjustments to policy over time that are not incorporated in the forecast assumption. But with appropriate corrective action in due course, any one of the alternative interest rates at the present point in time might be consistent with attainment of the inflation target on average in the medium term. The alternative longer-term paths might look something like those shown by the dotted lines in Figure 1.

[10] An early source of confusion about this formulation was whether it implied a backward-looking correction of past errors. This was dealt with by Stevens (1999).

Figure 1

Alternative forecast paths for inflation



How then should a central bank decide between these alternatives? In theory, an optimising central bank would need to take into account all available information affecting the probability distribution of the variables in its objective function (inflation and output) over the foreseeable future. So the aim would be to find the optimal path consistent with meeting the inflation objective on average. In practical terms this is likely to require taking several things into account. One is the trajectory of inflation at the end of the forecast period – is it rising, falling or stable? As noted by Stevens (2004), the interest rate that returns inflation to the target over some given horizon is not necessarily the one that keeps it there. So in some instances there might be a case for moving the policy rate now, even if the forecast end-point is at the target, to ensure that the inflation rate is not rising or falling too quickly when it gets there. Other considerations are those of macroeconomic stability, more broadly defined. Starting from a position where inflation is away from the target, the optimal speed of return will depend partly on what is happening to output, and also on the broader balance of risks to the economy, including those associated with asset and credit market developments. Elements of these considerations have entered into the policy decisions of the RBA in recent years, as documented in successive *SMPs*. The general principle, which is recognised in the policy mandate, is that the inflation target is a medium-term constraint, not a deterministic formula that requires information outside the short-term inflation forecast to be ignored.

A specific point worth highlighting in this context is the relevance of the trajectory, in addition to the level, of inflation at the end of the forecast period. This is illustrated by two recent episodes in Australian monetary policy when the expected time path of inflation was being influenced by the temporary effects of large movements in the exchange rate.

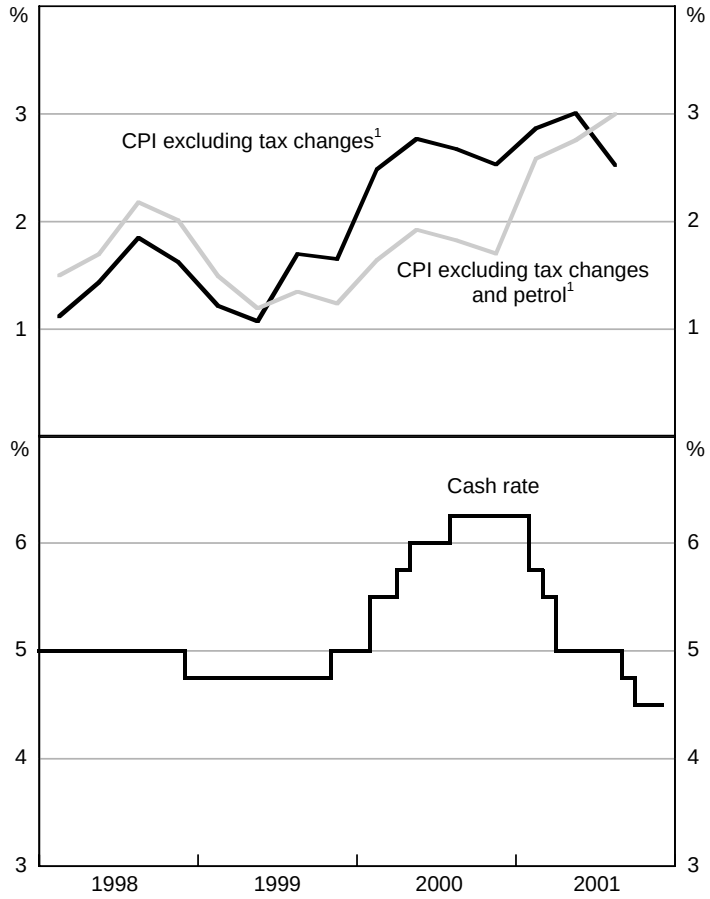
The first episode was the period around the policy easing that occurred in late 2001. Some key features of this period are summarised in Graph 1, which shows data for inflation and the cash rate as they were presented in the November 2001 *SMP*. In the early months of 2001, the cash rate had been sharply reduced, by a total of 125 basis points. This occurred against the backdrop of global economic downturn and what was assessed in the first half of that year as a prospect of relatively low inflation in Australia, with underlying inflation expected to

remain close to 2½% (this was the forecast in the May 2001 *SMP*). By the second half of the year it had become apparent that the short-term outlook was for higher inflation than previously anticipated, reflecting a larger and more extended pass-through of the earlier exchange rate depreciation into consumer prices. The August *SMP* thus revised up the short-term inflation outlook to 3%. The November *SMP* went slightly further, forecasting that underlying inflation would exceed 3% for a brief period.

Figure 2

Inflation and the cash rate

November 2001 *SMP*



[1] Year-ended percentage change, excluding interest charges prior to 1998 Q4.

Sources: ABS; RBA.

Clearly, the decisions to lower the cash rate in September and October of that year were not the result of a purely mechanical response to short-run inflation forecasts. While both the August and November *SMP*s forecast that inflation would decline from the expected near-term peak once the exchange rate effects faded, there was no suggestion that inflation would breach the target on the low side within a conventional forecast period. Rather, the rationale set out in the media statements accompanying the policy moves, and in the November *SMP*, was based on a combination of factors – the fact that inflation was expected to be declining in the latter part of the forecast period, and an assessment of more general risks to the economy, particularly those associated with the deteriorating economic situation abroad. In

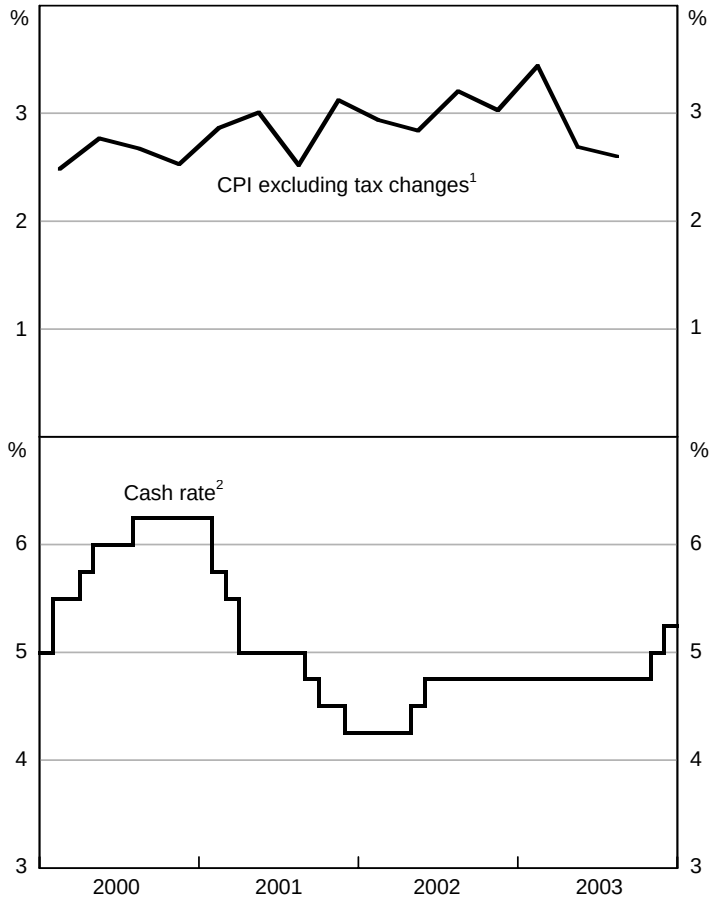
effect, a relatively benign inflation outlook beyond the near-term peak provided the flexibility for policy to respond to emerging risks to the wider economy.

The second episode, when monetary policy was tightened in late 2003, represents broadly the reverse of this situation. Some key features are summarised as before in Figure 3, using the data as presented in the November 2003 *SMP*. A feature of the second half of 2003 was that the short-term inflation forecasts were being revised downwards, as a consequence of the substantial appreciation of Australia's trade-weighted exchange rate over the previous year or so. The expected pass-through of this effect into consumer prices produced a shallow U-shaped inflation forecast so that, in the forecast reported in November 2003, inflation was expected to dip to 2% by mid 2004, subsequently rising to 2½% by the end of the forecast period. Monetary policy, in the event, was tightened in two steps, by a total of 50 basis points in November and December.

Figure 3

Inflation and the cash rate

November 2003 *SMP*



[1] Year-ended percentage change. [2] Includes December 2003 change in the cash rate.

Sources: ABS; RBA.

Once again, the rationale for these policy decisions was explained in terms of a broader set of factors than either the immediate (one or two quarters ahead) inflation outlook or the expected level of inflation at the end of the forecast period. First, the *trajectory* of inflation at

the end of the forecast period was also clearly important. The explanatory announcements that accompanied the November and December decisions, and the subsequent discussion in the February 2004 *SMP,* emphasised that the immediate decline in inflation would be only temporary, and indicated that inflation would be not only back at the target mid-point, but also on a rising path, by the end of the forecast period. The second point was that prior to these decisions the policy stance had been highly expansionary. The implication of these two points was that, despite the expectation that it would decline in the short term, inflation would eventually exceed the target in the absence of corrective policy action. A third consideration presented in the Bank's policy statements was the run-up in house prices and credit. This situation risked becoming a significant destabilising influence on the economy, in ways that could not be readily incorporated in a conventional macroeconomic forecast. Finally, there was a strong global recovery under way by that time, improving the environment for growth of the Australian economy. These additional factors argued against persisting with a highly expansionary policy setting for too long, even though the expected movement in inflation above the target was still some way off.

The general observation suggested by these experiences is that it is unrealistic to expect an inflation forecast path on its own to represent all of the information that policy needs to take into account, even though it is obviously an important component. The degree of prominence given to inflation forecasts as a communication device is thus closely tied to questions about the specification of the policy framework itself. A heavy focus on inflation forecasts in the communication strategy is likely to be a more natural fit with regimes where the target is relatively tightly specified (that is, with narrow bands, relatively low tolerance of deviations from the target, and little emphasis on broader stability objectives). It will be less well suited to more flexible regimes which are more tolerant of short-run inflation variability and give greater weight to broader macroeconomic stability goals.

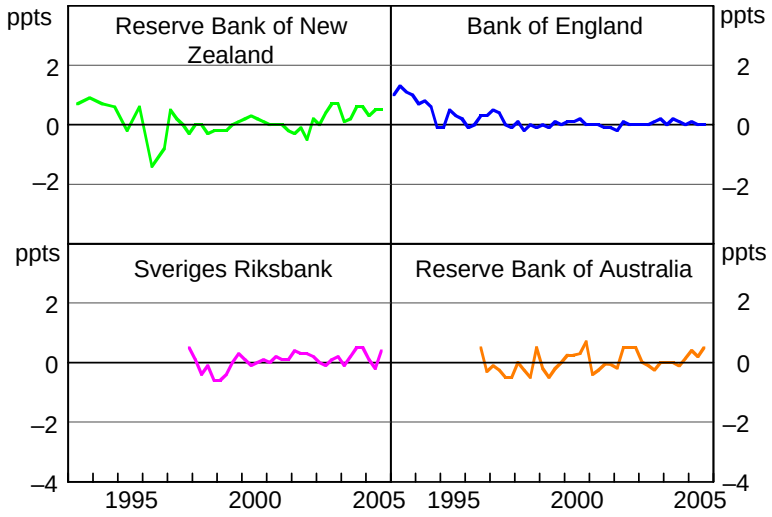
That said, it is at least open to question whether the different policy regimes are as different in practice as their rhetoric implies. The comparisons presented earlier in Table 2 show that macroeconomic performance across a range of advanced countries has become much more similar in recent years than it was in the two previous decades. This may well be partly a result of common structural changes or changes in the nature of the shocks now occurring. But it is also plausible that, notwithstanding differences in rhetoric, monetary policies have become more similar. Particularly noteworthy is the degree of similarity in inflation performances, a result which is suggestive of similar degrees of tolerance to variability of inflation around what are seen as desirable levels.

Finally, it is interesting to note that there is a high degree of similarity across countries in the inflation forecasts themselves. The statistical characteristics of published inflation forecasts for a group of inflation targeting countries are summarised below in Graph 3 and Table 4. This information shows that the forecast deviations of inflation from target are generally very small. In all these countries, inflation is virtually always forecast to be inside the target range at the end of the forecast period, and there is only one instance (in a total of over 100 forecasts) of a central bank forecasting that inflation would breach its target at that horizon.

Figure 4

Central bank inflation forecasts

Deviation from target (percentage points)



See Table 4 for notes.

Table 4

Statistical characteristics of central bank inflation forecasts

	Period beginning[1]	Number of forecasts in sample	Average difference between farthest horizon forecast and target (percentage points)	Average absolute difference between farthest-horizon forecast and target (percentage points)	Number of predicted breaches of target range	Number of predicted deviations from target mid-point greater than 0.5 percentage points
United Kingdom[2]	Aug 95	41	0.06	0.11	0	0
Canada	Jan 03	12	–0.13	0.13	0	0
Australia[3]	Aug 96	37	0.01	0.27	1	1
Sweden[4]	Dec 97	32	0.07	0.23	0	2
New Zealand	Feb 91	47	0.13	0.34	1	12

[1] For New Zealand, Sweden and Canada, the table covers the period since the central banks began publishing their inflation forecasts. For the United Kingdom, we commence in August 1995 when the revised reporting range for RPIX inflation was adopted. For Australia, the starting point is the RBA's first quarterly Statement following the adoption of the Statement on the Conduct of Monetary Policy 1996. [2] Inflation forecasts based on constant interest rate expectations. [3] Australian data in this table are calculated from unpublished point forecasts that underlie the inflation outlook presented in the RBA's quarterly Statements. The forecasts refer to underlying inflation excluding tax effects. [4] Latest forecast is based on market interest rate expectations. Previous forecasts were based on constant interest rate expectations.

Source: Central banks.

A pattern of inflation forecasts that closely hugs the target is open to several possible interpretations. One is that inflation itself is much more stable than it used to be, and inflation expectations much better anchored. This being the case, inflation forecasts should broadly reflect that characteristic: if inflation rarely breaches the target, it seems to make sense that it will rarely be forecast to do so. There is no doubt a degree of validity in this. The difficulty, however, is that in most countries, inflation is forecast on the basis of unchanged policy, and so the forecast will not include the stabilising influence of the future policy actions that help to keep inflation on track. So unless policy is close to its optimum when the forecast is made, a diverging inflation path should be expected. This suggests a second possible interpretation, namely, that policy settings generally are, in fact, judged to be close to their conditional optimum at the time when forecasts are made. This would mean that with unchanged policy, inflation is usually not expected to deviate greatly from the centre of the target. Again, there is likely to be some validity in this. If a central bank was in a position where it could confidently forecast inflation to go seriously off track, policy would already have been changed. A third possible interpretation is just that inflation is hard to forecast and so, given limited information, it is hard to come up with a medium-term forecast of inflation too far away from its statistical mean. It may, indeed, be particularly difficult to do so if a strong policy signal is likely to be inferred from such a forecast.

The point of making these observations is not to argue against forecasts per se*,* but merely to comment on the weight given to them as a communication device. Inflation forecasts in practice are highly stable around their targeted values, as the preceding discussion shows. Whatever interpretation is put on this fact, it seems unrealistic to expect forecasts of this nature to do the work of an all-encompassing summary statistic for monetary policy.

6. Conclusion

A comparison of different country experiences indicates that there is no single model for the design of an inflation target. Inflation targeting regimes differ in a number of respects, including the amount of flexibility they allow for inflation to vary around the target, the way they specify the time horizon for achieving the target, their reporting and accountability procedures, and the role of forecasts in the communication strategy. In this context, the Australian approach can be characterised as one which is relatively flexible and, in comparison with many other central banks, places less emphasis on forecasts as a communication tool.

It may be, however, that these are differences more of presentation than of substance. What all inflation targeters have in common is a public commitment to a numerical goal, the existence of some framework of accountability for achieving it, and a central role for the target as a device for explaining policy decisions to the public. This common strategic approach has brought substantial improvements in economic outcomes for all inflation targeters, in the form of reductions in both the level and variability of inflation, lower financial market volatility and consistent economic growth. Australia's performance in these respects has been at least as good as those of the other early adopters of inflation targeting.

Notwithstanding the broad similarities of approach, an important ongoing area of difference among central banks concerns the role given to inflation forecasts in the communication strategy. Economic theory suggests that a heavy emphasis on inflation forecasts, in combination with other features that enforce a tight pre-commitment to inflation control, may be useful in building credibility for a newly established policy regime. But experience also shows that monetary policy in practice needs to take into account a broader range of information than can be summarised in the inflation forecast. If so, an excessive focus on inflation forecasts as a communication tool may be misleading or unhelpful in explaining the rationale for policy decisions, or may contribute to a costly loss of flexibility.

The balance between these considerations will depend on the extent to which the specific credibility-building features of the policy regime (namely, the heavy focus on inflation forecasts and pre-commitment devices) remain a priority once low inflation expectations have been established. It is not surprising that, after the "lost decades" of the 1970s and 1980s, many central banks adopted these features to try to assist in the process of re-establishing their anti-inflation credibility. But with that battle largely won, central banks may find that they are now able to give greater weight to the broader stability objectives of monetary policy without compromising longer-term inflation control.

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Monetary policy implementation in China

Marvin Goodfriend and Eswar Prasad[1]

1. Introduction

China's rising prominence in the world economy has meant that the efficacy of its macroeconomic management has taken on considerable importance, not just from a domestic perspective but also from broader regional and international perspectives. In this paper, we review the functioning of one of the key tools of macroeconomic management – monetary policy. Although China's government deficit and public debt to GDP ratios are quite low by international standards, the existence of large contingent fiscal liabilities implies that there may be less room for maneuver on fiscal policy. Thus, monetary policy has a particularly important role to play in buffering the economy from domestic and external shocks.

We begin, in Section II, by reviewing developments in the exchange rate and capital control regimes. Although China has had a de facto fixed exchange rate regime for about a decade now, the existence of capital controls has meant that there is still some room for monetary policy manoeuvre, but this room tends to be rather limited in practice. Indeed, in recent years, controlling credit and investment growth has become especially complicated due to the large inflows of speculative capital that have been testing the exchange rate peg to the US dollar (and, since July 2005, the tightly managed peg to a currency basket that looks to all intents and purposes like a continued peg to the dollar).

Having an independent monetary policy is obviously desirable for this policy tool to be effective. But a move towards greater exchange rate flexibility is not the solution by itself. Indeed, enhancing the effectiveness of the monetary transmission mechanism poses difficult challenges independent of the constraints related to the exchange rate regime. Principal among these is the reform of the financial system, since that is the conduit through which monetary policy has an influence on economic activity. Indeed, financial sector reform is one of the most important and challenging tasks facing Chinese policymakers. In Section 3, we review the current state of the financial system, with particular emphasis on the banking system, which still dominates China's financial landscape.

We then review the People's Bank of China's (PBC) approach to the implementation of monetary policy. Given the weaknesses in the monetary transmission mechanism, the authorities have relied on a variety of direct and indirect instruments. In Section 4, we discuss these instruments, problems in using them and their relative effectiveness.

In Section 5, we discuss the direction in which, in our view, the monetary policy framework should be developed. We argue that there may be merit to using a low inflation objective as the nominal anchor. Our view is that making low inflation the main objective of monetary policy is the most reliable way to enable the PBC to stabilise domestic inflation and

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[1] Tepper School of Business (Carnegie Mellon University) and Research Department (IMF), respectively. We are grateful for comments from our discussants, Tao Zhang and Jiming Ha, and also from Hans Genberg and other participants at the HKIMR-BIS conference on "Monetary policy approaches and implementation in Asia". This paper draws extensively upon the work of the IMF's China team, whose input is gratefully acknowledged. The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the IMF. The arguments in this paper are discussed at greater length in the authors' IMF Working Paper WP/06/111 "A Framework for Independent Monetary Policy in China", available on the web at www.imf.org.

employment against macroeconomic shocks. An inflation objective would provide a firm and credible nominal anchor that would contribute to overall macroeconomic stability, which in turn would provide the basis for sustained employment growth and help safeguard financial stability.

This framework could accommodate a continued role for the monitoring and management of a monetary aggregate (and credit) by the PBC, thereby allowing for continuity in the operational approach to monetary policy. However, our view is that money would not constitute a good stand-alone nominal anchor for an economy that is undergoing major structural changes and financial innovations. We should also emphasise that we are not necessarily advocating a full-fledged inflation targeting regime, although this could serve as a useful long-term goal.

There are of course a number of institutional reforms that will be required before this framework can be put in place. We discuss some of the basic reforms that we think are essential, and may be adequate, to putting in place this alternative nominal anchor in the next few years. Exchange rate flexibility is a basic and essential requirement for the operation of independent monetary policy. However, while full modernisation of the banking system will no doubt take a long time, a more modest set of reforms that would make the banks robust to interest rate fluctuations would be adequate to enable the PBC to credibly commit to a low inflation objective as a nominal anchor.

2. The exchange rate regime and capital controls

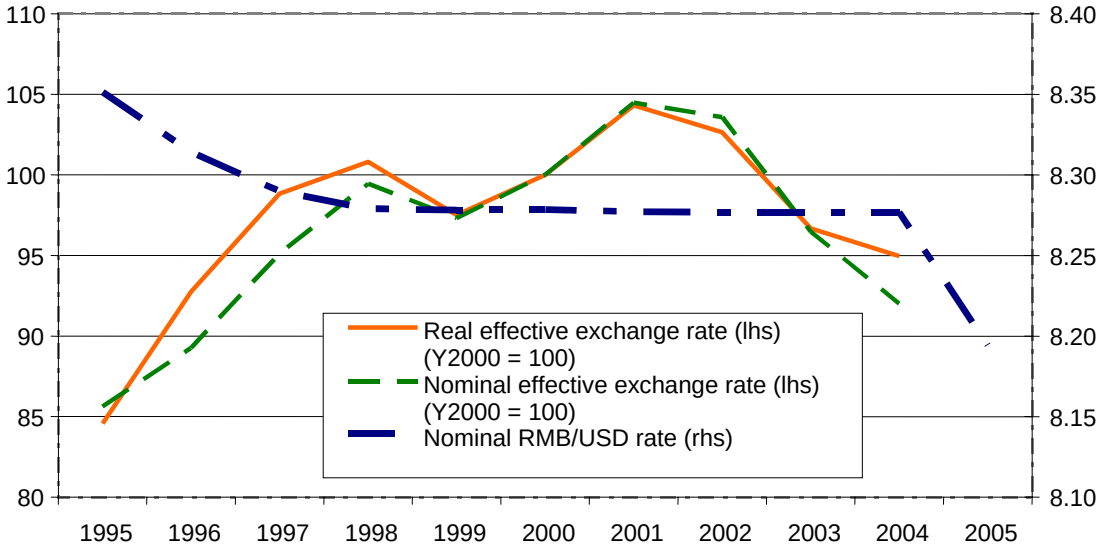
China had a dual exchange rate regime in the early 1990s. The exchange rate regime was unified in 1994 and, since 1995, the renminbi has been maintained at a fixed parity relative to the US dollar. This regime was in principle classified as a managed float since a narrow fluctuation band around the US dollar was permitted. In practice, however, the renminbi has been maintained at an essentially fixed level relative to the US dollar since the mid-1990s (Figure 1, top panel). Fluctuations in the real and nominal effective exchange rates of the renminbi have tended to be driven by fluctuations in the exchange rate of the US dollar relative to other major currencies.

On 21 July 2005, the renminbi was revalued by 2.1% relative to the US dollar, and the government announced that its value would henceforth be set with reference to a basket of currencies, although neither the currency composition of the basket nor the basket weights have been publicly disclosed.[2] The new regime also allows for fluctuations of up to 0.3% around the reference rate. In principle, this could mean that the exchange rate is allowed to drift up (or down) by 0.3% each day, which could amount to a significant appreciation (or depreciation) over a period of time. In practice, however, the renminbi has barely moved against the dollar since July 2005 (Figure 1, lower panel); its lack of movement is also not consistent with variations that may have been expected based on various plausible assumptions about the currency composition of the reference basket. Thus, the regime still qualifies as a de facto fixed exchange rate.

[2] The authorities have indicated which currencies are included in the basket but not the weights attached to each of them.

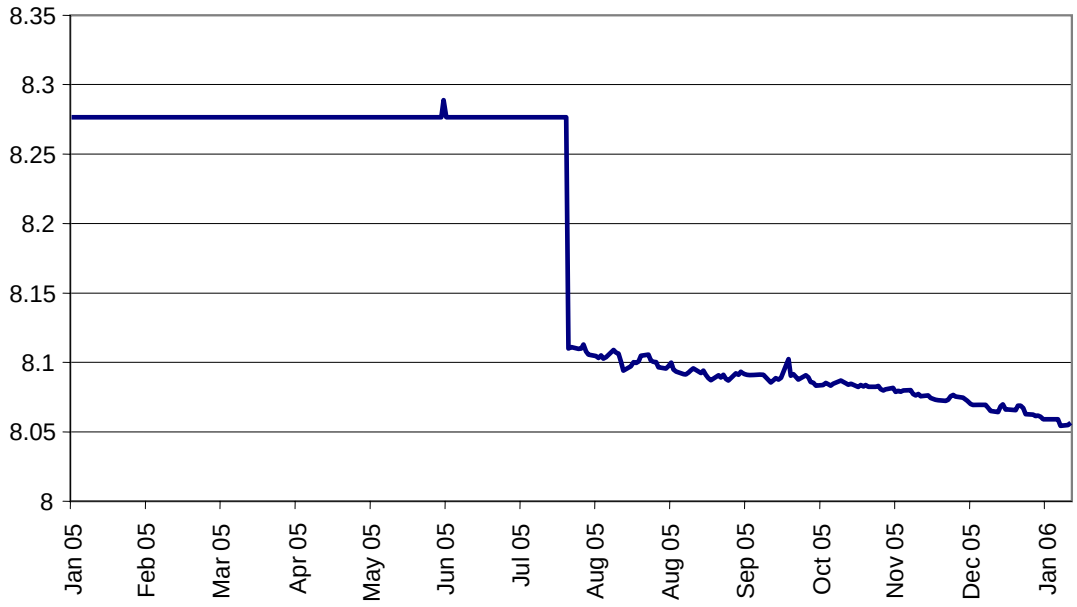
Figure 1

Exchange rates



Source: IMF, *International Financial Statistics*.

Daily RMB/USD rates



Source: Thomson Datastream.

Given the nature of the regime and a number of institutional constraints, the foreign exchange markets have remained relatively thin and underdeveloped. The number of participants in the foreign exchange market, the China Foreign Exchange Trading System (CFETS), was limited to a handful including some of the state commercial banks (SCBs). In fact, these banks acted as clearing agents for many of the trades that they settled directly without the transactions ever reaching the CFETS. In 2004, trading volume on the CFETS was only about $210 billion (as a reference point, this amounts to less than 20% of the value of China's external trade in that year). But this setup also made the mechanics of tightly

managing the exchange rate easier for the PBC since it could correct any deviations from the central parity relatively quickly and easily.

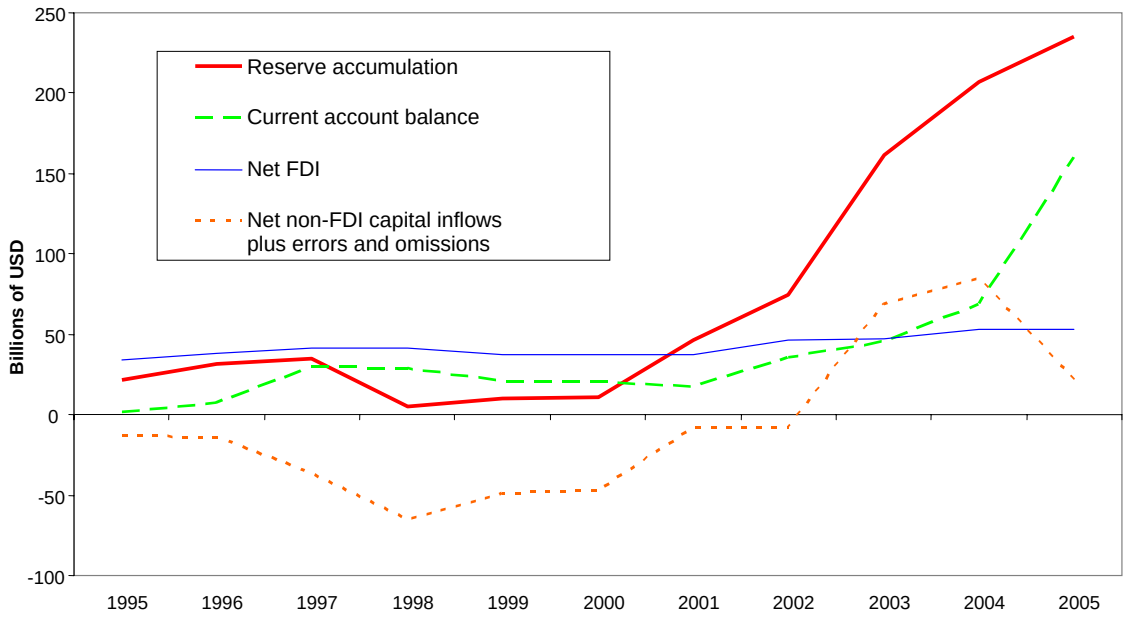
More recently, the government has taken a number of measures to improve the operations of the CFETS and increase the volume of trading. This includes permitting more financial firms to participate in the CFETS, giving the interbank market a greater role in determining the central parity rate and encouraging the development of new financial instruments for hedging foreign exchange risk.

The ability of the government to maintain a stable exchange rate is in part linked to the maintenance of capital controls. While China has actively encouraged inflows of foreign direct investment (FDI) over the last decade and a half, it has kept other parts of the capital account – both for inflows and outflows – relatively closed (see Prasad and Wei (2005)). Overseas borrowing by domestic corporates and financial firms has been actively discouraged, resulting in China's external debt amounting to only about 25% of GDP, while portfolio equity flows have been restricted in both directions.

Nevertheless, the capital account has become de facto more open over time. One indication of this phenomenon is the big role played in recent years by net errors and omissions – the category in the balance of payments that captures unrecorded capital flows (that could take place via current account as well as capital account transactions). As shown in Figure 2, the surge in the pace of reserve accumulation over the period 2001-04 is closely related to the substantial change in non-FDI capital flows, which largely reflect changes in the errors and omissions category. In 2005, however, the continued surge in reserve accumulation appears to have been driven by a surge in the current account balance, with the trade surplus itself rising to over $100 billion.

Figure 2

Components of reserve accumulation



Notes: The figures for foreign exchange reserves include the amounts used for bank recapitalisations: $45 billion in December 2003, $15 billion in April 2005, and $5 billion in September 2005, as well as a $6 billion fx swap that PBC conducted with domestic banks in November 2005.

Sources: CEIC; authors' calculations.

The increasing de facto openness of the capital account means that the independence of China's monetary policy, which is already quite limited because of the fixed exchange rate regime, is being eroded further. This has important implications for the conduct of monetary policy, which we return to later.

3. The financial system

In this section, we present a broad overview of the current state of monetary, banking, and financial markets in China. Virtually all of the formal sector financial intermediation in China takes place through the state-owned banking system, with the total deposit base amounting to about 200% of GDP.[3] Equity and bond markets remain rather underdeveloped, although the authorities are actively trying to change this concentrated structure of the financial system by promoting the restructuring and development of equity and bond markets.

In recent years, bank financing has accounted for more than four fifths of total funding provided through the formal financial sector. Stock market capitalisation amounts to only about 30% of GDP. With only a small number of enterprises permitted to list and about two thirds of shares in listed enterprises held by the state and not traded, the stock market does not play a major role in intermediating household saving into corporate investment. Efforts to reduce the overhang of non-trades shares have depressed stock price indexes, which have declined since 2000, notwithstanding the strong performance of the economy. The bond market is small and dominated by treasury and financial bonds, with corporate bonds barely on the radar screen. Thus, the banking system is crucial to the monetary policy transmission mechanism, even more so in China than in other countries that may have more balanced financial market development.

The Chinese banking system is dominated by four large SCBs, which together account for more than half of the total assets of all banking institutions.[4] The joint stock commercial banks (JSCBs) have expanded the size of their balance sheets quite rapidly in recent years and now account for about 15% of total banking system assets. There are 12 JSCBs, including the Bank of Communications, which recently did an IPO. The 89 city commercial banks account for about 5% of banking system assets. Then there are three policy banks that have explicit directed lending mandates – China Development Bank, Export-Import Bank of China and Agricultural Development Bank of China. The banking system is rounded out by a number of other smaller banks including rural credit cooperatives, urban credit cooperatives, trust and investment companies and finance companies.

Recent reform efforts have been largely focused on the SCBs (steps to reform the credit cooperatives are also under way). The shareholding reform of the four SCBs was initiated in September 2003. Carve-outs of non-performing loans (NPLs) from the banks to asset management companies, recapitalisations using foreign exchange reserves, and other reform efforts have led to substantial improvements in the capital strength, asset quality and operating results of these banks. Bank of China (BOC) and China Construction Bank (CCB) now have NPL ratios below 5% (as a ratio to total loans in each of these banks) and capital adequacy ratios of over 8%, with adequate provisioning for loan losses based on the five-tier classification of loans. Industrial and Commercial Bank of China (ICBC) is also close to achieving this capital adequacy threshold.

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[3] For a description of China's informal financial system, see Allen, Qian and Qian (2005).

[4] See Barnett (2004) for a fuller description of China's banking system.

China has also sought to actively involve foreign strategic investors in the bank restructuring process and views these investors as important agents for promoting governance reforms in the state banks (for a discussion and assessment of this strategy, see Hope and Hu (2005)). Nevertheless, the government has made it clear that it has no plans to privatise or otherwise cede control of any of the domestic banks in the foreseeable future.

Interbank markets are crucial for the effective implementation of monetary policy. China has already put in place some of the institutional arrangements necessary for the PBC to effectively manage aggregate bank reserves in the short run. It has created a deep, liquid market in PBC bills through which the central bank can manage aggregate bank reserves effectively with open market operations. There is also an active repo market that the PBC uses to manage the supply of reserves on a day-to-day basis. The infrastructure for borrowing or lending reserves among banks in the interbank market on the basis of repos or on an uncollateralised basis at the CHIBOR rate is well established. The level of interbank rates is determined flexibly to clear the market for borrowing and lending reserves, and the spread between the rates varies with such things as the nature of collateral backing the loan. This positive assessment of the functioning of interbank markets must, however, be balanced against some major weaknesses that still persist – including the relative thinness and illiquidity of interbank markets, the fact that major players may have excessive market power, and the potential that non-bank participants have to destabilise the market.

4. Monetary policy implementation – instruments and constraints

The primary instruments of monetary policy used by the PBC include open market operations, the rediscount rate and reserve requirements. These are complemented by instructive credit plans, credit policy and "window guidance", indicating the important role still played by non-market approaches in the implementation of monetary policy. Thus, the PBC uses a mix of indirect market instruments and more direct methods to control the volume and composition of credit flows (see Xie and Lou (2001) and Yi (2001) for more details).

Xie (2004) notes that the traditional approach has been to use monetary base as the operational target and money supply as the intermediate target. More recently, the PBC has been using growth rates of both money and bank lending as explicit intermediate targets. The relationship of these aggregates to real activity has not necessarily stayed stable over time. Furthermore, with the growth rate of M2 consistently being a few percentage points higher than nominal GDP growth over the last few years, there has been a trend decline in velocity, complicating things further. Yet, given their easy observability, targets for growth of these two aggregates have become an important device for the PBC to signal its monetary policy intentions and its assessments of growth and inflation prospects.

Base deposit and lending rates of the state banks have traditionally been set by the PBC, but only with prior approval of the State Council. On 1 January 2004, the PBC increased the flexibility in the lending rate to 0.9-1.7 times the base rate for commercial banks and urban credit cooperatives and 0.9-2.0 times the base rate for rural credit cooperatives. Financial institutions were also given the freedom to determine lending rates for individual borrowers based on their risk profiles and other characteristics, rather than being constrained by guidelines on pricing loans related solely to size and ownership structure of borrowers. On 29 October 2004, the ceiling on lending rates was scrapped altogether (except for urban and rural credit cooperatives).[5]

[5] See Dunaway and Prasad (2004) for an assessment of the potential benefits of this policy shift.

Reserve requirements have recently been used quite extensively as a monetary policy instrument. The required reserve ratio (required reserves expressed as a ratio to a bank's deposits) was reduced from 13% during 1988-98 to 6% in 1999, in part to allow banks to better manage their funds. This ratio was raised to 7% in 2003 and further to 7.5% in 2004, as part of a series of measures intended to control lending growth amidst concerns about the rapid pace of overall credit growth and potential overheating in the economy.

In addition to changes in reserve requirements, differentiated reserve requirements were introduced in April 2004. This affected second-tier banks, including the joint stock commercial banks that had accounted for a significant part of the surge in lending growth in 2003. Those banks in this category that did not meet certain standards in terms of the quality of their loan portfolios and capital adequacy were subjected to a reserve requirement of 8%, half a percentage point higher than the standard required reserve ratio. Rural and urban credit cooperatives were exempt from this higher reserve requirement.

Notwithstanding the apparently wide range of instruments available to the PBC, there are three major factors that have complicated the implementation of monetary policy in China. These include the exchange rate regime, institutional weaknesses in the financial and corporate sectors, and the large stocks of excess reserves that banks maintain at the PBC. We discuss these in turn.

4.1 The exchange rate regime

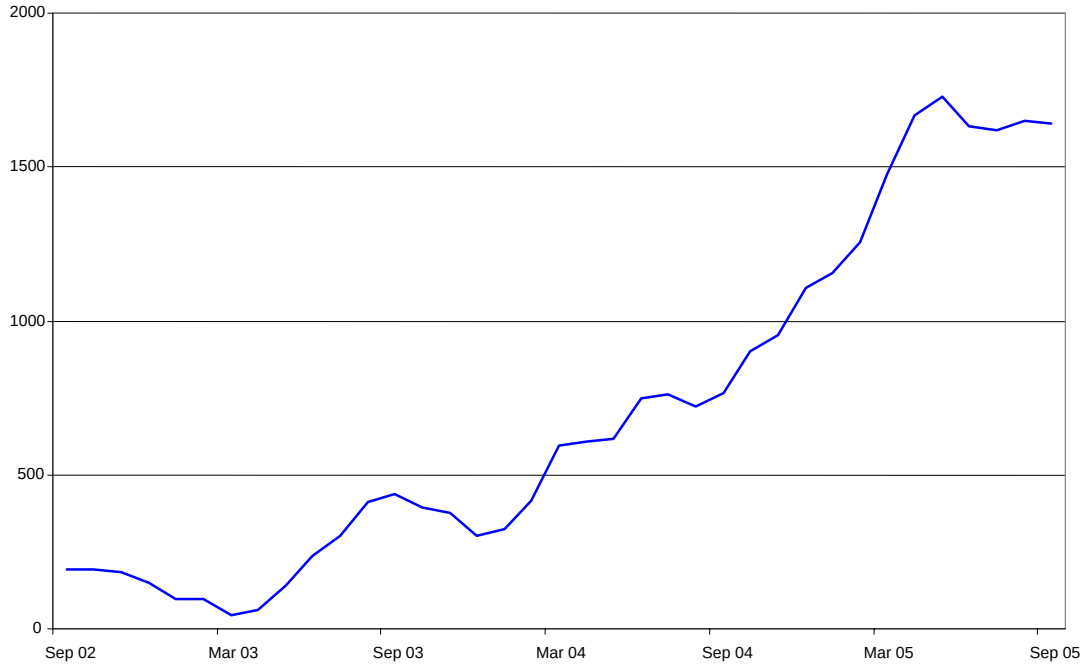
This rigidity of the exchange rate has constrained monetary policy independence by making it difficult for the PBC to use interest rates as a monetary policy instrument to meet domestic policy objectives. The complications created by a fixed exchange rate have been most evident in the remarkably rapid build-up of international reserves since 2001, when the renminbi began to come under appreciation pressures. Gross international reserves stood at 819 billion US dollars at end-2005 (excluding the amounts used for bank recapitalisations in 2003 and 2005). As noted earlier, the spike in the pace of reserve accumulation during 2001-04 is largely attributable to a surge in speculative capital inflows (through both official and unofficial channels), although a rapid expansion in the trade surplus (to over $100 billion) seems to have become a more important factor during 2005.

Until 2002, government bonds had been used as the primary instrument for sterilisation of foreign inflows. Some conversion to central bank (CB) bills took place in late 2002, when the stock of government bonds available for repo transactions had shrunk to very low levels. The first full-fledged auction of new CB bills took place in May 2003. CB bills have now become the primary instrument for sterilisation of capital inflows and, with the surge in inflows, the stock of outstanding CB bills has increased rapidly (Figure 3).

Figure 3

Stocks of central bank bills

In billions of RMB



Source: PBC reports.

The fraction of reserves sterilised by the central bank has varied over the last few years, and it is not even straightforward to assess exactly how much sterilisation has taken place.[6] By and large, the PBC seems to have had little trouble soaking up liquidity using CB bills. While a few analysts have taken the low levels of sterilisation as signalling, at least in some periods, potential problems in sterilisation operations, this is far from obvious. The rate of credit growth has, after all, come down significantly relative to the very high levels observed in 2003-04. Furthermore, the interest rate on CB bills remains quite low. At the end of 2005, the yield on three-month and one-year PBC bills was below 2%, more than two percentage points below comparable US Treasury rates.

Given the success that the PBC has had in sterilising foreign exchange inflows and containing inflation to date, is there any reason to question the sustainability of the current policy regime in which the tightly managed exchange rate serves as the nominal anchor for monetary policy? We believe there are significant costs and risks to maintaining the current regime, especially if it requires continued sterilisation of capital inflows on a massive scale.

First, consider the issue of sustainability. The current configuration of domestic and foreign interest rates implies that the PBC actually "makes money" from its acquisition of dollar assets, implying that the traditional quasi-fiscal costs of sterilisation are apparently nonexistent. However, the PBC's investment in dollar assets involves exchange rate risk (if

[6] Stephen Green has estimated that, in 2004, the PBC sterilised about half of total net foreign exchange inflows.

the RMB were to appreciate against the dollar) as well as interest rate risk (if the industrial country yield curve, which determines returns on China's reserve holdings, were to shift up further). The PBC's assumption of these risks onto its balance sheet in effect exposes the Chinese taxpayers to substantial fiscal losses if things go wrong.

There is another important (but hidden) cost of defending the tightly managed exchange rate system separate from the risks associated with potential capital losses due to movements in the exchange rate or shifts in industrial country interest rates. Controls on capital outflows and domestic financial repression are required to help maintain at low levels the rate of interest paid on central bank bills. To maintain bank profits, the government must then mandate low interest rates on deposits. Thus, the cost of these distortions is ultimately borne by depositors in the banking system – which includes most households, given the lack of alternative investment opportunities – in the form of very low real rates of return on their deposits (Prasad and Ranjan (2005)).

However, incomplete sterilisation is costly in terms of macroeconomic adjustment, too. If capital inflows are significant, and especially if they are expected to persist, banks would be likely to react to the relaxation of reserve positions and the expected persistent fall in interbank rates by significantly increasing loan growth. Moral suasion would only be temporarily effective in deterring the expansion of loans in this case. In the absence of any expected response of the PBC, inflation expectations would rise, nominal interest rates would reflect an increased inflation premium, and more capital would eventually be attracted into the country by the prospect of higher RMB yields and the likelihood of an eventual appreciation of the RMB. In short, incomplete sterilisation is costly because it risks creating an inflation scare and a recession when followed by the inevitable tightening of monetary policy to restore exchange rate stability and credibility for low inflation.

Somewhat paradoxically, another equally valid concern is that credit growth may be leading to excess capacity and eventual deflationary pressures in the future. The recent investment boom is occurring not so much as a consequence of monetary policy, however, but because the government has implicitly encouraged bank funding of high investment to substitute for the low Chinese consumption in aggregate demand. Of course, the saving rate may be unusually high in China because the public is nervous about the sustainability of stable growth due to the monetary policy and banking sector problems that are the focus of our paper.

The main point is that a continuation of monetary policy geared to maintaining a tightly managed foreign exchange rate as the nominal anchor carries substantial risks. This policy option comes, with major risks in terms of deadweight costs associated with excess/ inefficient investment (see Goldstein and Lardy (2004)), fiscal costs to Chinese taxpayers, or an inflation scare followed by a recession. In different circumstances, the tightly managed foreign exchange rate could precipitate the risk of a deflationary recession.

4.2 Institutional weaknesses in the financial system

The Chinese state-owned banking system had laboured under the legacy of directed lending until the late 1990s. Progress has been made since then in terms of improving the commercial orientation of some of the key parts of the banking sector, and significant strides have been made in improving banking supervision and regulation. But Chinese banks are still far from being robust commercially driven financial entities.

Notwithstanding the termination of the official policy of directed lending to state enterprises, the imperative of allowing for unviable state enterprises to continue their operations has continued to sap the banks, which are implicitly forced to continue financing the operation of these enterprises. And the lack of alternative investment opportunities for households and alternative sources of financing for firms has meant that the banking sector has had less incentive to improve its performance.

Thus, an important priority is to transform the banking system from an arm of off-budget fiscal policy using captive savings of households that support transfers to state enterprises into a banking system that can direct credit to its most valued uses given correct interest rate signals. This means that ultimately banks must compete for funds freely in deposit, managed liability and interbank markets against other credit opportunities made available to households and firms. This is a necessary condition for pricing loans efficiently.

Of course, other necessary conditions must be met for banks to provide efficient intermediation – management/owners must have their own capital at risk with the freedom to direct credit to borrowers of their choice without pressure or incentive to make loans favoured by government. And banks must have systems in place to evaluate creditworthiness and to price loans appropriately. Finally, a reasonably competitive banking system is necessary so that packages of loan rates and covenants follow closely the risk-adjusted cost of making loans.

Putting in place the components of a modern banking system as described above is not only difficult, but could entail considerable risks during the transition. This is especially so when one recognises that the transition must be supervised and regulated with great care to preserve the public's confidence in the banks and guard against moral hazard problems associated with the explicit or implicit insurance of bank deposits by the government. Moreover, even if all of the above conditions were met, the consequences of the legacy of directed lending would further complicate the transition.

One additional point worth mentioning is that state enterprises that do make profits are generally not required to pay dividends to the state, so they can use retained earnings to finance requirements for working capital and new investments, making them less sensitive to interest rate changes. Furthermore, it is interesting to note that the liberalisation of lending rates has not resulted in substantially more lending going to the private sector. In part, this is because the incentive structure is such that lending to state enterprises is still seen by bank managers and loan officers as safer, especially from a reputational perspective. Ultimately, more basic reforms will be required to get the incentives right, and it will then be essential to provide appropriate supervisory and regulatory frameworks to avoid moral hazard and agency problems.

4.3 Excess reserves

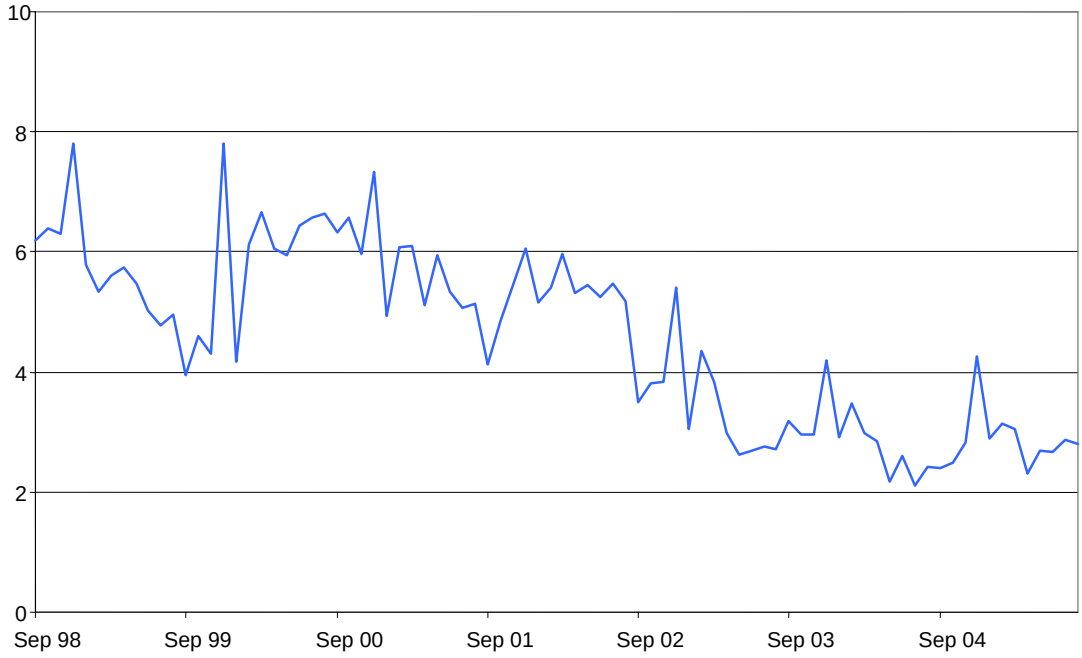
A major complication in using the reserve requirement ratio as an instrument of monetary policy is that the state banks, especially the SCBs, have tended to maintain substantial amounts of excess reserves at the PBC. Some of these excess reserves are believed to be held for interbank settlement and liquidity management purposes, but it is difficult to discern how large the banks' perceived need for excess reserves for this purpose is. The PBC clearly has a concern that a significant amount of excess reserves makes the banks less sensitive to changes in its policy interest rates in the interbank market, thereby reducing the effectiveness of another of its instruments. Indeed, the existence of substantial excess reserves makes policy instruments such as the rediscount rate and reserve requirements not only less effective but also less predictable in their outcomes.

These concerns led the PBC to reduce the rate of remuneration on excess reserves to 1.62% in December 2003 and further to 0.99% in April 2005 (compared to the unchanged rate on required reserves of 1.89%). With these cuts in the rate of remuneration and at the encouragement of the PBC, the amount of excess reserves maintained by banks (as a ratio to total deposits in the banking system) has declined from 7.3% at the end of 2000 to about 3% at end-2005 (Figure 4). Although lower than in the past, this level of excess reserves complicates the use of indirect instruments of monetary policy.

Figure 4

Excess reserves ratio

As a percentage of total deposits in the banking system



Sources: CEIC; authors' calculations.

How can all of these complications be dealt with in setting up an effective monetary policy framework that can respond flexibly to shocks? We now turn to our view of what nominal anchor would serve China best and how these complications could be handled in making the transition to a new nominal anchor.

5. An alternative nominal anchor[7]

Our view is that making low inflation the main objective of monetary policy is the most reliable way to enable the PBC to stabilise domestic inflation and employment against macroeconomic shocks. It is by providing a firm and credible nominal anchor that the PBC can best contribute to overall macroeconomic stability, which would provide the basis for sustained employment growth and help safeguard financial stability.

An inflation objective has the virtues of flexibility and easy communicability. It can also accommodate fluctuations in productivity growth and changing relationships between monetary or credit aggregates and inflation, all of which are relevant considerations for a developing economy. This framework could accommodate a continued role for the monitoring and management of a monetary aggregate (and credit) by the PBC, thereby allowing for continuity in the operational approach to monetary policy. However, our view is

[7] We plan to develop in greater detail in future work the arguments outlined in this section.

that money would not constitute a good standalone nominal anchor since the rate of money growth consistent with a stable level of inflation is likely to be highly variable. We are also not advocating a full-fledged inflation targeting regime in the foreseeable future since there may be various technical and institutional constraints that would hinder its effective operation.

What would it take to put in place a low inflation objective as an effective nominal anchor? Exchange rate flexibility is of course a prerequisite for an independent monetary policy regime. It will also be necessary to put in place banking reforms to facilitate the effective transmission of monetary policy and to enable the banking system to endure the fluctuations in interest rates necessary to stabilise inflation. Finally, effective communications on the part of the PBC will play an important role in the effective operation of monetary policy under the new nominal anchor.

Even though the modernisation of the banking system will take years to complete, a relatively minimal set of banking reforms essential for the transmission of monetary policy could be accomplished in a much shorter period. We believe that China could put in place a basic set of financial sector reforms and regulations that would enable the adoption of an inflation objective as a nominal anchor. These reforms would help give the PBC unconditional control of the monetary base and aggregate bank reserves. Reforms and regulations would also be needed to ensure that banks could withstand the financial stresses resulting from fluctuations in interest rates that may be required from time to time to sustain price stability. We believe that this minimal set of reforms could be put in place in the next few years and would be adequate for instituting a low inflation objective.

China has already taken a number of steps to modernise its banking system, but much remains to be done. The question is how much more modernisation is needed to support independent monetary policy. China has already created some of the institutional flexibility necessary for the PBC to transmit monetary policy actions effectively to aggregate demand – through a liquid bank reserves market, and with fully flexible, competitively determined interbank interest rates. China has allowed deposit and lending rates to be more responsive to the interbank rate; although there continues to be a ceiling on deposit rates and a floor on lending rates. A relaxation of these remaining rate restrictions would help complete the monetary policy transmission mechanism. We believe that it only remains for the PBC to be willing and able to exploit the monetary transmission mechanism to move short-term interest rates in a wide range to target inflation effectively. In particular, it is not necessary to fully modernise China's banking system before moving to independent monetary policy. It is necessary, however, to make the banking and exchange rate system robust to interest rate fluctuations.

One of the main priorities towards this end is that Chinese banking authorities must complete the removal of NPLs from Chinese banks in order to fortify the banking system against flexible interest rate policy. Those banks that are relatively more encumbered by a legacy of NPLs than others would be at a competitive disadvantage in offering interest on deposits, especially if the PBC was required to raise short-term interest rates to stabilise inflation, thereby putting weaker banks in financial distress. The prospect of such financial distress would threaten the entire banking system and could make the PBC reluctant to raise interest rates to fight inflation.

NPLs must, however, be removed in a way that avoids moral hazard problems, ie, that gives the management of recapitalised banks the incentive to manage banks prudently. It is critically important that the removal of NPLs is accompanied by improved bank supervision and regulation. Furthermore, the government must obviate the potential problem of new lending likely to end up as NPLs since, even if explicitly directed lending is forbidden, incentives may be skewed toward implicitly directed lending if bank managers perceive political pressure to lend to the state sector, or for that matter, to favoured sectors or projects elsewhere in the economy. Bank supervisors and regulators must give managers protection against such political pressures. Recapitalised banks should be free of directed lending so

that owners and managers are given strong incentives to manage their banks prudently on commercial considerations. To facilitate these reforms, the government should undertake any future transfers to state-owned enterprises outside the banking system.

Even if these reforms were put in place, it would take a long time for Chinese banks to modernise, ie, to learn to price loans efficiently according to risk, and to design and monitor loan covenants efficiently. Nevertheless, we believe that Chinese monetary policy can be effectively transmitted even through a banking system that may not be fully efficient, as long as the banking system is financially robust against interest rate fluctuations and Chinese exchange rate policy does not inhibit monetary policy actions.

We noted in Section 4 that the level of excess reserves maintained by banks at the PBC is high and variable. Moreover, Chinese banks are said to react to changes in aggregate reserve supply by absorbing or releasing excess reserves to some degree, short-circuiting somewhat the PBC's leverage to influence pressure on reserve positions. Wouldn't such behaviour greatly hinder the adoption of independent monetary policy in China? We think not.

The relative insensitivity of Chinese banks to incremental changes in PBC-managed pressure on reserve positions is to be expected given the fact that banks know that the PBC has little leeway with which to pursue independent monetary policy when the foreign exchange rate has to be tightly managed. The banks are thus understandably reluctant to respond much to an incremental tightening or easing of reserve pressures by the PBC because they doubt there can be much follow-through. In the absence of the managed foreign exchange constraint, the PBC could overcome such complications with more aggressive, sustained open market operations that credibly moved interbank rates in a wider range.

In any case, two reforms could be used to stabilise and reduce excess reserve demand. First, the PBC should in general refrain from discretionary reserve requirement adjustments because these induce volatility in excess reserve demand as banks prepare for and try to anticipate changes in reserve requirements. Second, the PBC should encourage banks to economise on excess reserves by discontinuing the payment of interest on them. To the extent that the banking system chooses to reduce excess reserves, the PBC should be prepared to soak them up by selling PBC bills.

It may take time for excess reserve demand in China to fall to minimums held by banks in those countries with the most modern banking systems and more efficient payment settlement mechanisms. Nevertheless, as the Chinese financial system develops, we would expect the precautionary demand for excess reserves to decline as it has elsewhere, thereby improving the transmission of monetary policy.

An effective communication strategy, to convey clearly to the market the PBC's monetary policy intentions, would be an important element of a new monetary policy framework. The PBC must also have comprehensive, reliable and timely statistics on money, banking, financial markets and the macroeconomy in China to guide independent monetary policy.

6. Concluding thoughts

An independent and effective monetary policy is essential for effective macroeconomic management in China. The Chinese economy is becoming increasingly developed and market-oriented, necessitating a shift from inflexible direct methods of allocating credit and implementing monetary policy, to flexible indirect methods using a liberalised banking system and the management of bank reserves by the central bank.

Although China has a de facto fixed exchange rate, the existence of capital controls – even though they may not be fully effective – implies that there is some room for monetary policy

independence. But the financial repression and capital controls needed to maintain positive cash flow in the banks has affected bank efficiency and has other serious costs. Indeed, the maintenance of a tightly managed foreign exchange rate as the nominal anchor for monetary policy has subjected the PBC to having to deal with enormous capital inflows in recent years that threaten to overwhelm its control of aggregate bank reserves.

In this paper, we have provided a description of China's financial and banking systems, monetary policy operations and exchange rate regime. We have also tried to make the case for replacing the current exchange rate regime with a low inflation objective as the nominal anchor. This would, in our view, be the best way to enable the PBC to stabilise domestic inflation and employment against macroeconomic shocks. This framework could accommodate a continued role for the monitoring and management of a monetary aggregate (and credit) by the PBC, thereby allowing for continuity in the operational approach to monetary policy. However, our view is that money would not constitute a good stand-alone nominal anchor. We are also not advocating a full-fledged inflation targeting regime since the requirements for that regime are much greater and may not be realistic over the next few years.

A robust and efficient financial sector would greatly improve the effectiveness of monetary policy transmission. The full modernisation of China's banking system is of course a distant goal. But we have argued that a relatively modest set of reforms, principally to make the banking system robust to large interest rate fluctuations, would be sufficient to put in place this alternative nominal anchor. Along with the current favourable domestic circumstances – high growth and low inflation – this strengthens the case for moving to a new nominal anchor relatively soon.

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Monetary policy regimes and macroeconomic outcomes: Hong Kong and Singapore

Stefan Gerlach[1] and Petra Gerlach-Kristen[2, 3]

1. Introduction

The Hong Kong Monetary Authority (HKMA) and the Monetary Authority of Singapore (MAS) have been strikingly successful in delivering on their monetary policy objectives. Following the introduction of a currency board in October 1983, the Hong Kong dollar (HKD) has been rigidly linked to the USD at the rate of 7.8 HKD/USD. While admittedly there are other episodes in which central banks have managed to maintain a fixed exchange rate for more than 20 years, this performance is remarkable given the openness of the Hong Kong economy, the absence of any restrictions on capital flows and the fact that Asia in this period experienced several large economic shocks that were associated with intense speculative pressures on the HKD. Notably, these shocks included the Asian financial crisis, which led to broadly-based reconsideration of exchange rate policies elsewhere in Asia.

Similarly, following the shift in 1981 to a monetary policy framework centred on the management of the Singapore dollar (SGD) against a basket of currencies, with the objective "*to promote price stability as a sound basis for sustainable economic growth*", inflation in Singapore has averaged 1.7%.[4] Furthermore and in contrast to many, if not most, other economies, inflation in Singapore has been strongly mean-reverting, indicating that policy makers' efforts to guide inflation back to the desired rate after shocks have been successful. This record is impressive as the Singapore economy, which is also extremely open, has experienced much the same shocks as the Hong Kong economy.

However, even though monetary policy makers in both economies have enviable records in delivering on their objectives, macroeconomic outcomes have differed and have at times been adverse. Since the objective of the HKMA has been to stabilise the nominal exchange rate against the USD while the MAS has focussed on controlling inflation, inflation has been more variable in Hong Kong. Cyclical movements on the real side of the economy, however, have been comparable. For instance, the volatility of real GDP growth is similar in the two economies.[5] Moreover, both economies have experienced adverse outcomes in periods of large contractionary external shocks. Thus, real GDP growth collapsed during the Asian financial crisis in 1997-98, following the US recession in 2001-02 and during the episode of severe acute respiratory syndrome (SARS) in 2003.

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1 Committee on the Global Financial System, Bank for International Settlements.

2 Research Department, Swiss National Bank.

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4 See MAS (2001, p 2). Inflation is here defined as the four-quarter rate of change of consumer prices.

5 One difference is that Singapore has experienced somewhat higher trend growth of real GDP than Hong Kong. Wensheng Peng, in his discussion of the paper, pointed out that real GDP per capita has grown faster in Hong Kong than in Singapore. Of course, it is unclear whether the choice of monetary framework has any implication for the average real growth rate as long as inflation is low.

The observation that monetary policy strategies and nominal outcomes differ but that real developments, at least at business cycle frequencies, have been broadly similar raises a number of issues regarding the functioning of the Hong Kong and Singapore economies and what the MAS's reaction function looks like. How sensitive are inflation and output to economic disturbances? How do changes in external demand and exchange rates impact on the economy? How has the MAS moved the exchange rate in response to the economy? Have the MAS's policy reactions tended to reduce the impact of shocks, sped up the economy's adjustment to them, or both?

The purposes of this paper are to address these questions and to explore the potential role of the monetary regime in accounting for any differences in macroeconomic outcomes. We highlight from the outset that it is not possible on the basis of our analysis to infer whether one policy regime is preferable to the other, since this depends on policy makers' objectives, which, as noted above, differ,

The paper is structured as follows. Section 2 provides an overview of the structure of the Hong Kong and Singapore economies. We argue that while there are some differences, these are not significant. Next, we study macroeconomic outcomes since the early 1980s. We find that the difference in the monetary policy regimes is reflected in the behaviour of nominal variables. In particular, Hong Kong has had higher and more variable inflation than Singapore. Conversely, the behaviour of real variables has been quite similar, with the exception that unemployment in Singapore has responded less to contractionary shocks, and has declined more rapidly in their aftermath.

However, it is difficult to determine to what extent business cycles in the two economies differ using time series plots. In Section 3, we therefore go on to estimate a small econometric model for each economy. The model consists of a standard, backward-looking Phillips curve, an IS curve and an equation for changes in the nominal effective exchange rate (NEER).

We first compare the parameter estimates for the two economies and argue that these are strikingly similar, with two exceptions. First, we find that the NEER appreciates strongly in response to inflation in Singapore but not in Hong Kong. This is evidence of the MAS's policy reaction function. Second, we find that the autoregressive parameter for the output gap is larger in Singapore than in Hong Kong. As we argue below, it is possible that this also reflects the MAS's active monetary policy strategy. Thus, seeking to mitigate the inflationary consequences of shocks may have led to more protracted movements in real economic activity.

The fact that the parameter estimates are so similar raises again the issue of whether the responses of real economic activity to shocks have been different in the two economies, and whether the observed differences in macroeconomic outcomes could have arisen because of differences in the shocks the two economies have been subject to. Since the dynamic behaviour of the economy depends on all equations, in Section 4 we perform simulations to explore how the models respond to economic disturbances. In brief, we conclude that while the two economies respond in similar ways to shocks, the MAS's policy reactions have facilitated the adjustment of the Singapore economy to disturbances and have prevented these from having persistent effects on the inflation rate.

Finally, Section 5 concludes.

2. The economies of Hong Kong and Singapore

2.1. Economic structure

As a first step, we review briefly the main features of the Hong Kong and Singapore economies. The data in Table 1 show that the economies are similar in important ways: they

are extremely small, highly open to international trade and very advanced. However, there are differences that may be germane when discussing macroeconomic fluctuations in the two economies.

First, manufacturing is more important in Singapore than in Hong Kong. This largely reflects the fact that much of the manufacturing industry in Hong Kong has moved to the surrounding Pearl River delta as a consequence of the ever growing economic integration with Guangdong province. Since that integration has been associated with tighter links between economic cycles of the neighbouring economies, it is doubtful that this process has significantly dampened the sensitivity of the Hong Kong economy to manufacturing cycles. Furthermore, the sample used in the empirical analysis below starts in 1983, when light industry was still important for the Hong Kong economy. Thus, this difference in structure should not be overemphasised.

Table 1

Overview statistics on Hong Kong and Singapore

	Hong Kong	**Singapore**
Population	6.9 million	4.0 million
Population per km^2	6,564	6,502
GDP per head	USD 23930	USD 22960
Industry	14.1% of GDP	34.2% of GDP
Services	85.8% of GDP	65.8% of GDP
Visible exports	124.3% of GDP*	150.5% of GDP*
Visible imports	129.4% of GDP#	138.1% of GDP*
Services inflows	58.2% of GDP	45.8% of GDP
Services outflows	46.7% of GDP	33.0% of GDP
Main export destinations (including re-exports)	1. China (34.5%) 2. US (23.2%) 3. Japan (5.5%)	1. Malaysia (18.2%) 2. US (17.3%) 3. Hong Kong (7.9%)
Main origins of imports	1. China (43.1%) 2. Japan (12.0%) 3. Taiwan (7.5%)	1. Japan (17.2%) 2. Malaysia (17.0%) 3. US (14.8%)

Note: Data from Economist (2003). * denotes fob, # cif.

Second and as suggested by the gravity theory of international trade, both economies trade intensively with their immediate neighbours, mainland China and Malaysia, respectively. Although changes in demand in one economy are rapidly transmitted through the international trading system to the regional economies, the fact that Hong Kong's and Singapore's trade patterns differ suggests that the two economies have experienced somewhat different economic disturbances. Indeed, the close proximity of Hong Kong to mainland China played a critical role when Hong Kong abandoned the floating exchange rate regime in 1983. The currency board was introduced against a backdrop of high and variable

inflation in the 1970s and in response to the sharp depreciation of the HKD in the early 1980s. Thus, between June 1982 and June 1983, the currency fell from 5.9 per USD to 7.2 because of weak economic fundamentals.[6] The exchange rate continued to depreciate during the summer of 1983 largely due to concerns arising from mainland China's announcement that it intended to regain sovereignty over Hong Kong in 1997. After the exchange rate fell by 10% in a single day's trading to 9.6 HKD/USD in late September, the currency board was introduced in the middle of October when the (at that time) two note-issuing banks were required to back the note issue by depositing an equivalent amount in USD, using a conversion rate of 7.8 HKD/USD, with the Exchange Fund.[7] This reintroduced the currency board regime, which subsequently has been seen as essential to ensuring monetary and financial stability.[8]

2.2. Macroeconomic fluctuations

Next we provide a short overview of macroeconomic developments in the two economies using, where available, quarterly data for the period 1983:1 to 2005:3.[9] Table 2 and Figure 1 show that the CPI inflation rate in Hong Kong was on average higher than that of Singapore. Furthermore, the swings in inflation in Hong Kong were generally much larger than in Singapore. Most notably, while Singapore experienced three quarters of deflation around the time of the Asian financial crisis, Hong Kong underwent 23 quarters of deflation. Of course, the differences in the behaviour of inflation are likely to be related to the choice of monetary policy framework. Thus, the lower volatility of inflation in Singapore reflects the fact that the MAS lets the nominal exchange rate respond to movements of inflation away from the desired level, which ensures that shocks to inflation are temporary. By contrast, the policy framework in Hong Kong is completely geared to ensuring stability of the nominal exchange rate against the USD, implying that there are no monetary policy responses to inflation. As a consequence, movements in inflation are larger and more protracted in Hong Kong than in Singapore.

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[6] See Jao (1990) or Gerlach (2005).

[7] To understand why a fixed exchange rate was attractive in the environment of policy uncertainty at that time, suppose that the economy is in equilibrium and that the exchange rate depreciates because of political developments. Since this will stimulate the economy and raise inflation pressures, fixing the exchange rate is desirable. Note that, by contrast, if most shocks affecting the exchange rate come from real side developments, it will be desirable to let the exchange rate function as a shock absorber.

[8] Singapore's monetary history is in many ways similar to that of Hong Kong. From the 1930s, Singapore's currency was pegged to sterling. The devaluation of sterling in 1972 led the monetary arrangements in Singapore to be changed to a peg to the USD, which in turn was abandoned in 1973 following the breakdown of the Bretton Woods system. With the exchange rate floating, monetary policy was aimed at limiting inflation, and was conducted using a range of intermediate targets and direct controls. In the early 1980s, the MAS adopted the current framework in which the inflation objective is pursued by managing the exchange rate. See MAS (2000) for a review of Singapore's monetary history.

[9] The consumer price index, real GDP, the unemployment rate for Hong Kong and Singapore, as well as the Hong Kong short-term interest rate are from the BIS database. The long-term interest rate for both economies and the real and nominal effective exchange rates for Hong Kong are from the HKMA database. The Singapore nominal and real effective exchange rates and short-term interest rate are from the IFS database, while US CPI inflation, the federal funds rate and US import demand are from the FRED database. All series are seasonally adjusted.

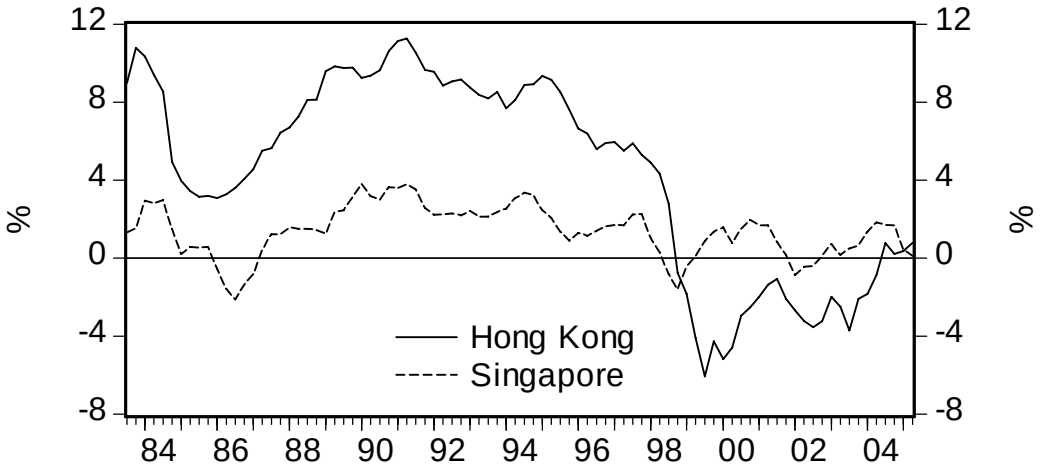
Table 2

Mean and standard deviations of key macroeconomic variables

	Hong Kong			Singapore		
	Data	**Mean**	**Std dev**	**Data**	**Mean**	**Std dev**
CPI inflation	83:1-05:3	4.50	4.99	83:1-05:3	1.37	1.31
Output gap	83:1-05:2	0	3.03	83:1-05:2	0	2.79
Unemployment rate	83:1-05:3	3.65	2.07	87:1-05:1	2.78	1.07
Output growth	83:1-05:2	5.06	4.52	83:1-05:2	6.21	4.61
Short-term interest rate	83:1-05:3	5.75	3.01	83:1-05:3	3.68	2.01
Long-term interest rate	84:1-05:3	7.26	2.45	87:2-05:2	3.65	1.10
Real effective exchange rate*	84:1-05:3	132.34	23.48	83:1-04:3	91.59	7.18
Nominal effective exchange rate*	83:1-04:3	86.46	6.97	83:1-04:3	109.37	12.08

Note: * Normalised such that 1983:1 = 100.

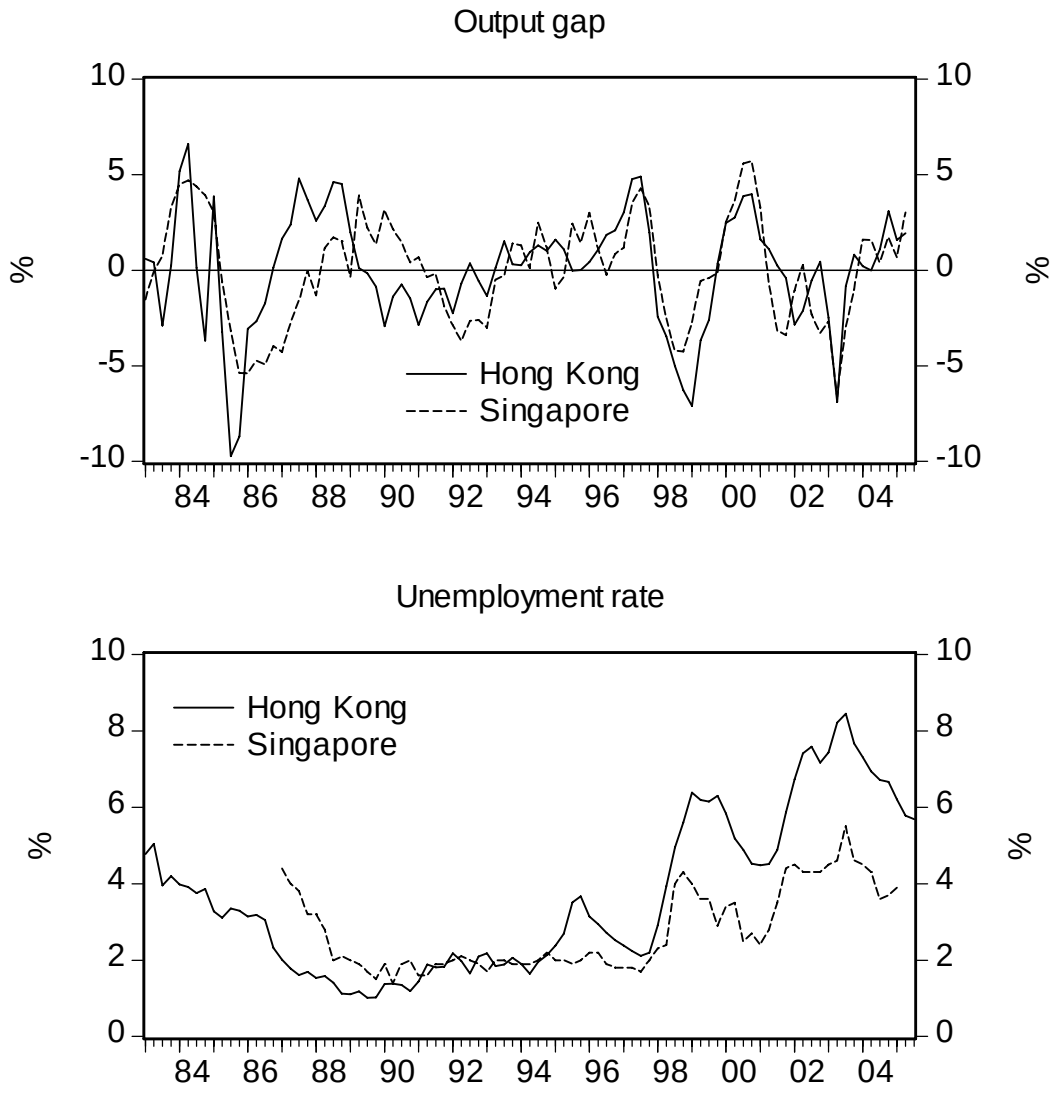
Figure 1



In Figure 2 we plot output gaps, constructed using the Hodrick-Prescott filter (with the smoothing parameter set equal to 1600), and unemployment rates for the two economies.

Figure 2

Output gaps and unemployment



The graph shows that the output gaps are moving closely together after 1997, no doubt because the two economies were exposed to common shocks in the form of the Asian financial crisis in 1997-98, the US slowdown in 2001 and SARS in 2003. Both also experienced large negative output gaps around 1985. Surprisingly, however, neither economy shows a large, persistent output gap after the Asian financial crisis, despite the collapse in property prices. One possible explanation for this may be that the effects on output were so protracted that the Hodrick-Prescott filter attributes them to a decline in the growth rate of potential.

The unemployment rates provide further information about business cycle fluctuations in the two economies. While unemployment was roughly the same in 1997, it rose more sharply, and was slower to decline toward the original level, in Hong Kong than in Singapore following the contractionary shocks of 1997, 2001 and 2003. Overall, these results are compatible with

the notion that, on the whole, external shocks had less persistent effects on the Singapore economy.[10]

In Figure 3, we plot short- and long-term interest rates in the two economies. Of course, because of the currency board, short-term rates in Hong Kong are largely determined by USD interest rates, except during periods of speculative outflows when rates rise to compensate for the perceived exchange rate risk. By contrast, the active monetary policy strategy used by the MAS and the resulting lower inflation rate have led short and long interest rates to stay below HKD rates. Interestingly, however, the HKD and SGD short-term interest rates are strongly correlated at business cycle horizons, which suggests that the difference in monetary policy strategy may not be so important in determining the short-run responses of the real economy to shocks.

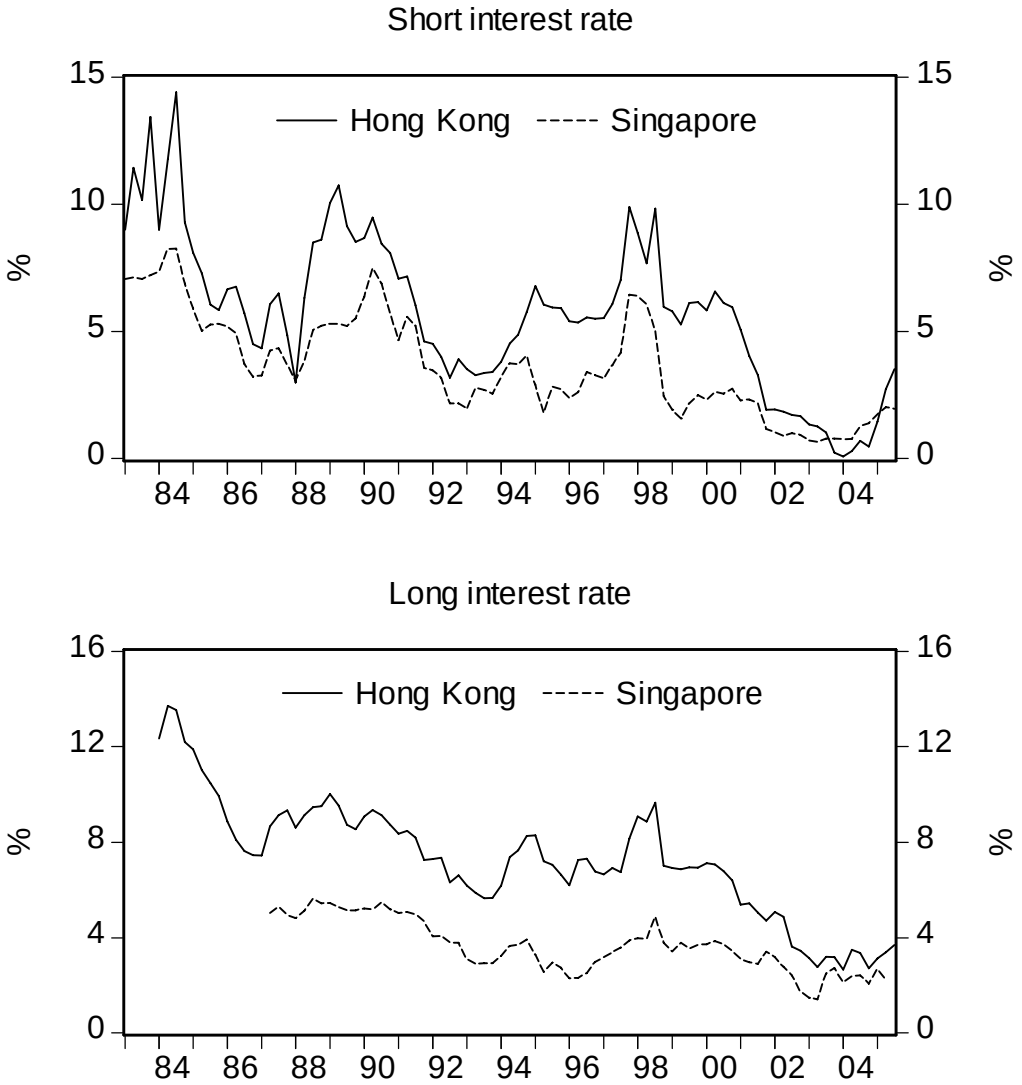
Finally, we consider the behaviour of the effective exchange rates in Hong Kong and Singapore. Figure 4 displays in the upper plot the real effective exchange rate (REER), and the lower plot the NEER, both of which we have normalised to 100 in the second quarter of 1994, that is, in the middle of the sample.

The figure shows that the HKD appreciated (rose) more in real terms than the SGD before the Asian financial crisis, and that it depreciated (declined) more thereafter. For Singapore, the graph indicates that the MAS loosened monetary policy by letting the REER depreciate in 1985 when the economy was in recession. From the end of the 1980s until the Asian financial crisis, the REER for Singapore appreciated due to the Balassa-Samuelson effect (see eg Devereux, 2003). In 1998, monetary policy was again relaxed, reflected by a renewed decline in the effective exchange rate.

[10] It should be noted that the Singapore authorities have made active use of labour market measures, including cuts in employers' contributions to the Central Provident Fund, to maintain competitiveness in the face of adverse shocks.

Figure 3

Interest rates

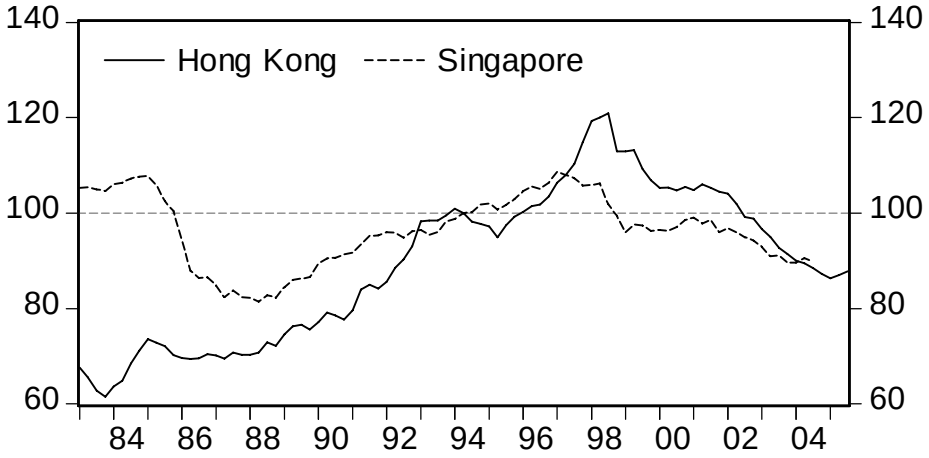


The REER of Hong Kong also shows a trend appreciation until the onset of the Asian financial crisis. However, because of the peg against the USD, the NEER could not absorb the entire burden of adjustment arising from the Balassa-Samuelson effect, as is shown in the lower plot of Figure 4. Instead, prices had to adjust. This explains at least in part why inflation in Hong Kong was on average higher than in Singapore when a real appreciation of the two currencies was warranted, and why Hong Kong experienced deflation following the Asian financial crisis.

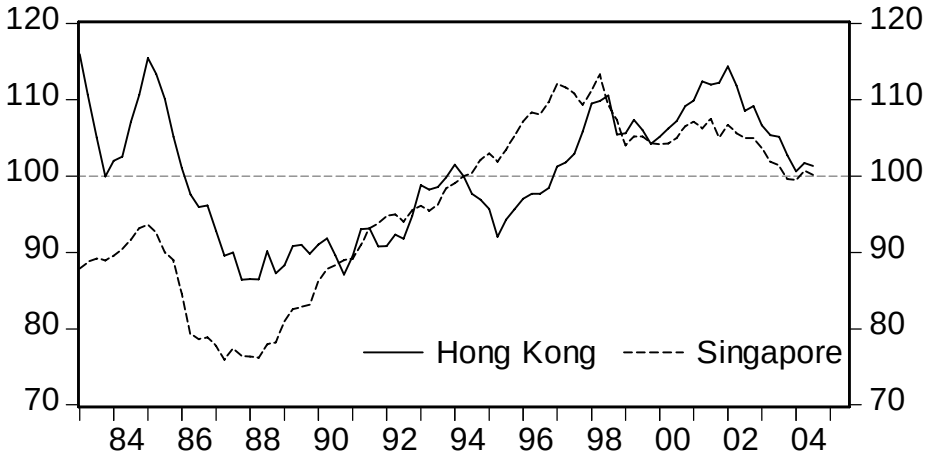
Figure 4

Effective exchange rates

Real effective exchange rate



Nominal effective exchange rate



2.3. Literature

The fact that Hong Kong and Singapore have opted for different monetary policy setups in spite of the similarities between their economies has given rise to a number of studies that compare the economic performance of the two economies. In an early paper, Moreno (1988) analyses differences in annual GDP growth and inflation in Hong Kong and Singapore before 1985. He finds a high correlation between the business cycles of the two economies, which he argues is due to the impact of global factors on markets in Hong Kong and Singapore. He also reports that inflation was lower in Singapore over the period 1971 to 1985, and attributes this to the strong SGD policy pursued by the MAS.

Rajan and Siregar (2002) and Gerlach-Kristen (2006) consider the period since the introduction of the currency board in Hong Kong in 1983. Rajan and Siregar use quarterly data spanning the period 1984 to 2000 and find that, since the 1990s, Singapore has seen higher growth and lower inflation rates than Hong Kong. They interpret this, and the fact that Singapore's economy was less affected by the Asian financial crisis than Hong Kong's, as

evidence that the MAS's policy has been successful. Gerlach-Kristen estimates structural vector autoregressions (VARs) for the two economies on quarterly data from 1990 to 2002. To address the question of how the Singapore policy framework would have performed in Hong Kong, she simulates the model under the counterfactual assumption that changes in the NEER are determined using the policy reaction function of the MAS. The results suggest that this policy approach might have limited the deflation Hong Kong experienced after 1998, but could not have averted the recession caused by the Asian financial crisis.

Genberg (2005) estimates unrestricted VARs for a number of small Asian economies, including Hong Kong and Singapore. Using quarterly data between 1990 and 2002, he finds that inflation and output growth in these economies depend to a large extent on developments in the US. He furthermore reports that roughly a tenth of the movements in inflation in Hong Kong, and in output growth in Singapore, is due to mainland China.

Devereux (2003) presents evidence that Hong Kong experienced higher volatility of GDP growth but less variation in the REER than Singapore between 1983 and 1998. He shows that a micro-founded model predicts exactly this pattern as a consequence of the different monetary policy strategies in the two economies. Tse and Yip (2002), finally, study the interest rate behaviour in Hong Kong and Singapore and argue that the Singapore framework gave the MAS flexibility during the Asian financial crisis.

3. A model of business cycles in Hong Kong and Singapore

To better understand the nature of business cycles in Hong Kong and Singapore and, in particular, the effects of the monetary policy strategy of the MAS, we turn to the econometric work. Since many authors have estimated VARs, we conduct the analysis by estimating a simple, "semi-structural" model for inflation, π_t, the output gap, y_t, and the change in the NEER, Δe_t, in Hong Kong and Singapore. Such models have the advantage over VARs that it is possible to interpret the estimated equations. For instance, we can compare the degrees of mean reversion of the endogenous variables, or the short- and long-run effects of one variable on another. This is helpful since it gives us a "feel" for the nature of the differences between the two economies. While the model is intended to be "semi-structural", allowing us to interpret the equations for inflation and the output gap as being independent of the policy rule in force, in fact and as is clear from the discussion below, we do not believe that this aim is achieved. Despite this, the model is useful since it serves to structure the discussion.

We first estimate a standard backward-looking Phillips curve for each economy of the form:[11]

$$\pi_t = a + a_\pi \pi_{t-1} + a_y y_t + a_q q_t + z_t \,. \qquad (1)$$

This specification implies that inflation depends on the current output gap and on the lagged inflation rate.[12] The latter variable is arguably best interpreted as capturing inflation expectations, leading us to believe that is probably not independent of the policy rule in force. Thus, one would expect that the mean reversion of inflation induced by the MAS's focus on price stability makes it rational for the public to expect future inflation to decline (rise) when current inflation is high (low), implying that a_π is less than unity. By contrast, the fact that

[11] This specification follows that of Gerlach et al (2005).

[12] Inflation is here measured as the change in the CPI over four quarters. We also estimated the model using the quarterly change in inflation, but found that the regressors were then much less significant. We view this as merely reflecting the fact that quarterly changes in prices are much more volatile than annual changes.

shocks to inflation in Hong Kong have been much more persistent implies that current inflation is probably a good predictor of future inflation, so that a_π may well be close to unity.

To capture import price shocks, we incorporate the (logarithm of the) REER, q_t, in the analysis. Since a depreciation of the real exchange (that is, a decline in q_t) raises the prices of imported goods, we expect a_q to be negative. As is clear from graphs inspected earlier, both economies have experienced a gradual real appreciation as a consequence of rapid and far-reaching economic development in the period under study. Thus, the real exchange rate evolves over time in response to gradual structural changes and macroeconomic shocks. Since the focus of the econometric work is to analyse the effect of the latter, we use the detrended logarithm of the REER, $q_t \equiv e_t + p_t - p_t^{World} - q_t^*$, where q_t^* denotes the equilibrium real exchange rate, the logarithm of the domestic price level and p_t^{World} that abroad, in the econometric analysis below.[13] This leaves us with one composite exogenous variable, $p_t^{World} + q_t^*$, which we use to capture foreign price disturbances in the analysis below.

In order to account for potential simultaneity that arises from the fact that the current price level appears both on the left-hand side of equation (1) and, implicitly, in the definition of the real exchange rate, in estimating the model we instrument y_t and q_t with their own once-lagged values and current US inflation and the federal funds rate.

The second equation of the model is a standard backward-looking IS curve of the form:

$$y_t = b + b_y y_{t-1} + b_q q_t + b_r r_t + b_{imp} imp_t + u_t . \qquad (2)$$

The current output gap thus depends on its lagged value and on the (detrended) real exchange rate, which enters because of competitiveness effects. We also let the real interest rate enter among the regressors. However, given the far-reaching changes in the real and financial sectors the two economies have seen in the more than 20 years of data that we use, it seems implausible that the equilibrium real interest rate has remained constant. To account for this, we use the detrended real interest, r_t, in the IS curve.[14] Finally, to capture changes in the global demand for goods, we incorporate the growth rate of US imports of goods, services and income, imp_t, which Gerlach et al. (2005) find played an important role in driving the output gap in ten Asian economies between 1990 and 2003. In the estimation below, we instrument the current regressors with their own once-lagged values, current US inflation and the current federal funds rate to deal with any simultaneity problems.

It should be noted that the specification of the IS curve used above disregards the role played by movements in property prices in economic fluctuations in Hong Kong and Singapore. However, this omission, which is made in the interest of limiting the complexity of the model, can be seen as implicitly treating changes in property prices as determined by the same factors as, and as impacting without lag on, the output gap. Under this interpretation, property prices still play a role in the model by influencing the sensitivity of the output gap to interest rates, exchange rates and external demand.

[13] We constructed the equilibrium real exchange rate by applying the Hodrick-Prescott filter, with a smoothing parameter of 1600, to the logarithm of the REER.

[14] The detrended real interest rate is calculated by means of the Hodrick-Prescott filter, with a smoothing parameter of 1600, from the difference between the current nominal three-month interest rate and inflation.

Table 3

Estimation output for equations (1) and (3)

	Hong Kong	Singapore	Wald test for short-run equality (p-values)	Wald test for long-run equality (p-values)
$\pi_1 = a + a_\pi \pi_{t-1} + a_y y_t + a_q q_t + z_1$				
a	0.000 (0.001)	0.002* (0.001)	0.222	0.844
a_π	0.970*** (0.019)	0.883*** (0.059)	0.000	
a_y	0.113** (0.045)	0.073** (0.030)	0.377	0.231
a_q	–0.069* (0.038)	–0.062*** (0.022)	0.845	0.360
$\overline{R}^2$	0.971	0.830		
$y_t = b + b_y y_{t-1} + b_q q_t + b_r r_t + b_{imp} imp_t + u_t$				
b	–0.006* (0.003)	–0.004 (0.003)	0.598	0.193
b_y	0.685*** (0.066)	0.862*** (0.077)	0.007	
b_q	–0.246*** (0.065)	–0.189*** (0.072)	0.383	0.021
b_r	–0.112 (0.093)	–0.184 (0.167)	0.998	0.001
b_{imp}	0.053** (0.025)	0.053** (0.026)	0.989	0.006
$\overline{R}^2$	0.697	0.699		
$\Delta e_t = c + c_e \Delta e_{t-1} + c_\pi \pi_t + c_y y_t + v_t$				
c	-0.002 (0.003)	-0.006** (0.003)	0.261	0.563
c_e	0.294*** (0.100)	-0.007 (0.115)	0.993	
c_π	0.040 (0.049)	0.517*** (0.171)	0.000	0.000
c_y	0.234** (0.107)	0.191*** (0.087)	0.688	0.354
$\overline{R}^2$	0.137	0.335		

Note: Two-stage least squares estimates. Sample period 1983Q3 to 2004Q3. Standard errors in parentheses. * / ** / *** denotes significance at the 10% / 5% / 1% level.

3.1. Estimates of the inflation and output gap equations

We estimated the model with OLS and with 2SLS. Not surprisingly, the parameter estimates were quite different, as our concern about simultaneity suggested should be the case. Since system estimates are more efficient than single-equation estimates, we also estimated the equations with 3SLS. However, that adds the assumption that all equations are correctly specified, which may or may not be the case. In the end, the results obtained with 3SLS estimates were broadly similar to those obtained with 2SLS, and we therefore focus on the latter here.

Table 3 shows the results. Considering first the estimates of the Phillips curves, we find that the parameter on lagged inflation, a_π, is 0.88 in Singapore and 0.97 for Hong Kong. This difference is likely to be due to the fact that the MAS manages the effective exchange rate in response to economic developments, implying that shocks to inflation are less persistent in Singapore than in Hong Kong, as the simple time series plots considered above suggested.

The estimates also show that a rise in the output gap raises inflation in both economies and that an appreciation of the REER (which is defined such that an appreciation is an increase) reduces inflation.

Given our interest in comparing the two economies, we also test the hypothesis that the short- and long-run effects of the regressors are the same.[15] The p-values for Wald tests of this hypothesis are provided in Table 3, and show that while the parameters on the lagged dependent variable are significantly different, we cannot in fact reject the hypotheses that the short- and long-run effects of the output gap and the real exchange rate are the same. While this may merely reflect the fact that the parameters are not precisely estimated, it nevertheless suggests that the economic structures of Hong Kong and Singapore are similar.

Turning to the estimates of the output gap equations, we note that the lagged dependent variable is significantly smaller in Hong Kong than in Singapore (b_y = 0.68 vs 0.86), implying that shocks to output are more persistent in Singapore than in Hong Kong. One possible explanation for this finding is that seeking to stabilise inflation leads to more protracted output movements.

The estimates of b_q indicate that a rise in the REER reduces activity somewhat more in Hong Kong than in Singapore, although we do not reject the hypothesis that the short-run effects are similar. In the long run, however, the impact of the real exchange is significantly larger in Singapore than in Hong Kong. The same is true for the growth rate of US import demand: in the long run an increase in imp_t raises output in Hong Kong more than in Singapore, whereas in the short run the two economies respond virtually identically. Finally, we note that a rise in the real interest rate depresses activity by about the same amount in Hong Kong and Singapore in the short run (b_r is borderline insignificant), but that the long-run effect is significantly larger in Singapore.[16]

The parameter estimates of the equations for the output gap are thus generally quite similar, except for that on the lagged output gap, which is larger in Singapore than in Hong Kong. These findings suggest that the short-run effects of movements in the real exchange rate, real interest rate and US real import demand are similar, while the long-run effects are much larger in Singapore. However, the full effect of a shock depends also on the persistence of inflation since movements in prices impact on real interest and real exchange rates and thus play a role in restoring macroeconomic equilibrium. For this reason, we perform an impulse response analysis below.

Despite the fact that the differences in the persistence of the shocks may not carry over to the full model, it is of interest to contemplate why the parameter on the lagged output gap is larger in Singapore than in Hong Kong. There are at least two possible explanations. First, it may be that Hong Kong has been more exposed than Singapore to temporary shocks to aggregate demand, perhaps because of its closer proximity to mainland China. Second, it may be that the MAS's policy of stabilising inflation has led it to slow down shifts in aggregate demand, leaving them to have more protracted effects on the output gap. Of course, under this interpretation the equation estimates are in fact not structural.

The parameter estimates suggest that there are differences in the Phillips and IS curves, but these do not necessarily appear to be very large. We therefore next turn to the equations for the change in the NEER, which might differ considerably between the two economies in light of their contrasting policy strategies.

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[15] For an equation $yt = \alpha y_{t-1} + \beta x_t + \varepsilon_t$, we have that the short-run impact of x_t is given by β, and the long-run impact by $\beta/(1 - \alpha)$.

[16] Interestingly, Khor et al (2004) state that the interest rate channel of the monetary transmission mechanism is much weaker than the exchange rate channel in the case of Singapore.

3.2. Monetary policy reactions in Singapore

As is well known, whereas Hong Kong's currency board regime does not permit any discretionary policy in response to changes in inflation and activity, the MAS lets the nominal exchange rate move to mitigate the effects of economic disturbances.[17] While many observers have studied the conduct of monetary policy in various economies by estimating empirical reaction functions in which the central bank is seen as changing or influencing a short-term interest rate in response to the deviation of inflation from some explicit target (or implicit objective) and to the output gap and with reference to the lagged interest rate, this specification is not relevant in the case of the MAS.[18]

However, several authors have modified these reaction functions for Singapore by using the change in the effective exchange rate as a measure of the stance of monetary policy. Since the MAS has not disclosed the exact currency composition of the exchange rate basket it uses as an instrument, the literature typically uses the NEER as a proxy (eg Parrado, 2004).[19] We follow this approach and fit:

$$\Delta e_t = c + c_e \Delta e_{t-1} + c_\pi \pi_t + c_y y_t + v_t, \quad (3)$$

where e_t is the logarithm of the NEER. This reaction function states that the rate of appreciation depends on its own past value, on inflation and on the output gap. Assuming that the average value of the output gap and the parameter on the lagged change in the NEER are zero, we can compute the implied inflation objective as $\pi_t^T = -c/c_\pi$.

The bottom panel of Table 3 reports estimates of equation (3) for Singapore. For comparison purposes, we also present estimates for Hong Kong. Turning first to the results for Singapore, we note that both c_π and c_y are highly significant, but that the lagged change in Δe_t is not. Thus, there is no evidence of policy smoothing. Instead, the Singapore dollar has appreciated immediately in nominal effective terms in response to inflation above the MAS's objective and the state of the business cycle as captured by the output gap.[20] Interestingly, the implied estimate of the inflation objective is about 1.2%. These results are very similar to those obtained elsewhere in the literature.

For Hong Kong, the parameter on the lagged dependent variable is positive and highly significant, indicating that changes in the NEER have been serially correlated. Furthermore, the estimate of c_π is insignificant and close to zero as could be expected, suggesting that the NEER has not moved in response to changes in the rate of inflation. By contrast, c_y is highly significant and roughly as large as in the case of Singapore. This finding, which is somewhat surprising, and which plainly does *not* capture monetary policy reactions by the HKMA, indicates that weakness in the Hong Kong economy has tended to coincide with a depreciation of the NEER. Figure 5 plots Δe_t and y_t and shows that the NEER of the HKD depreciated during the recessions of 1985-86 and 1998-99. Since the correlation between the NEERs of the HKD and of the USD is positive and quite large ($\rho = 0.46$), it appears that the positive contemporaneous correlation between and reflects the fact that strength in the

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[17] However, there may be indirect and automatic responses by the currency board mechanism in Hong Kong to the extent that movements in inflation and the output gap lead to strong capital flows.

[18] These empirical reaction functions are sometimes interpreted as empirical generalisations of the Taylor rule; see Taylor (1993). Corbo (2002) and Mohanty and Klau (2005) estimate monetary reaction functions for a number of emerging market economies.

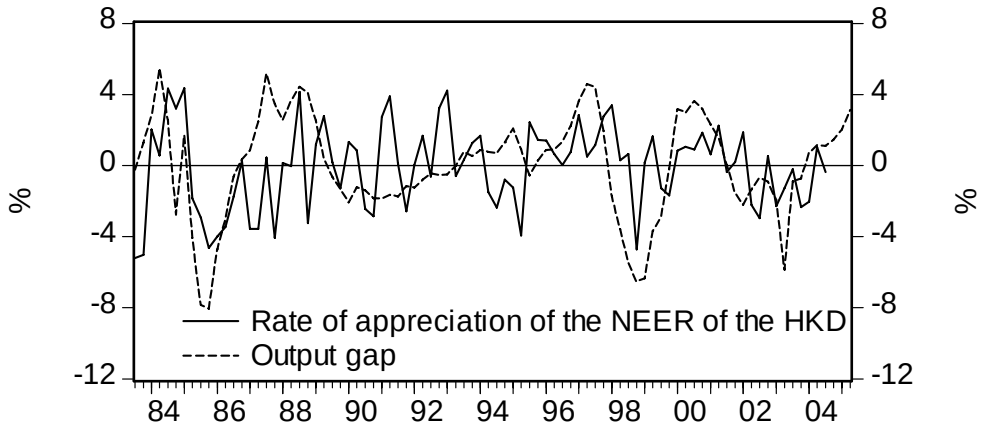
[19] See also McCauley (2001) and Khor et al (2004) for discussions of the MAS's reaction function.

[20] See MAS (2001) for a general discussion of Singapore exchange rate policy. MAS (2003) contains a technical exposition of the MAS's exchange rate management.

global economy, and therefore in the Hong Kong economy, has coincided with episodes of a strong USD.[21]

Figure 5

NEER of the HKD and output gap



3.3. The residuals

Assuming that equations (1) to (3) capture the dynamics of inflation, the output gap and the rate of appreciation of the NEER, we can examine the residuals of these equations to compare the shocks affecting π_t, y_t and e_t. Since the residuals by construction have a zero mean, we concentrate on their standard deviation. For the inflation equation, the residuals have a standard deviation of 0.008 for Hong Kong and 0.005 for Singapore. A formal F-test rejects the hypothesis that the variance is the same (p-value of 0.000). This indicates that Hong Kong has experienced larger shocks to inflation. While the sudden drop from inflation to deflation after the Asian financial crisis may account for this finding, it is likely that the MAS's commitment to maintaining low and stable inflation has anchored inflation expectations, which may have made inflation less sensitive to shocks.

Interestingly, the output gap shock has a standard deviation of 0.015 for both Hong Kong and Singapore, and the hypothesis that they are the same cannot consequently be rejected (p-value of 0.998). Thus, the shocks affecting the output gaps in these two economies seem to be drawn from the same distribution.[22] This supports the earlier hypothesis that the main impact of the MAS's policy strategy has been to dampen shocks to inflation.

Finally, we consider the shocks to the rate of appreciation of the NEER. Not surprisingly given that the MAS stabilises the NEER in order to control inflation, these do seem to arise from different distributions in that the standard deviation is 0.022 in Hong Kong and 0.013 for Singapore. A test rejects the null hypothesis that the variances of these residuals are equal (p-value of 0.000).

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[21] This hypothesis is supported by a closer analysis which shows that the US and HK NEERs tend to appreciate about four quarters after a rise in the US output gap. Furthermore, Hong Kong typically experiences an increase in the output gap following a rise in the US output gap (the peak correlation, which occurs with a lag of one quarter, is 0.32).

[22] It is worth noting that, in spite of this finding, the correlation between innovations to the output gaps in Hong Kong and Singapore is low ($\rho = 0.25$).

4. Simulations

To shed light on the question of whether differences in economic performance are due to the choice of policy regime, we proceed by simulating the paths of (changes in) the NEER, the rate of inflation and the output gap to a set of economic disturbances.[23] The first three of these are a 1% increase in (i) the residual in the inflation equation, (ii) the residual in the output gap equation and (iii) the residual in the NEER equation. Of course, it is difficult to give meaning to shocks to endogenous variables, and one is tempted to treat them as reduced form and seek to identify them by looking at their contemporaneous correlations. However, the three shocks are essentially uncorrelated (the highest correlation, –0.15, is between the residuals for the inflation and exchange rate equation in Hong Kong). The remaining two shocks we consider are unit increases in world prices and US import demand.

4.1. Inflation shocks

Figure 6 shows the impulse responses to a unit shock in the residual of the inflation equation. The responses of the Hong Kong economy are in the upper three plots, and those of the Singapore economy in the lower plots. We show 80% confidence bands that have been obtained using Monte Carlo methods.[24]

The responses of inflation are shown in the second column of the figure: inflation rises by 1 percentage point and falls to zero after about three quarters in both economies, drops to roughly –0.4% after about seven quarters and then approaches zero in an oscillating manner. The main differences between the responses in the two economies are in the first column: while the NEER does not change in Hong Kong, it appreciates by almost 0.5% in Singapore as policy is tightened to mitigate the effect of the shock. Subsequently, the NEER depreciates in both economies in response to higher domestic inflation.

Since the increase in inflation causes a real appreciation in the currency, which in turn reduces domestic aggregate demand, the output gap turns negative after the shock. Of course, with monetary policy in Singapore trying to offset the inflation shock by appreciating the NEER, it is not surprising that the output gap declines to about –1.4% while in Hong Kong it only falls by about 1%.

4.2. Output gap shocks

Figure 7 plots the reactions to a unit shock to the output gap. While the responses of the NEER in the first column are very similar, the simulations show that the shocks have a less lasting impact on the output gap in Hong Kong than in Singapore, as suggested by the parameter estimates discussed above. However, the impact of the output gap shock on inflation is smaller in Singapore, perhaps because inflation expectations are firmly anchored by a history of low and stable inflation.

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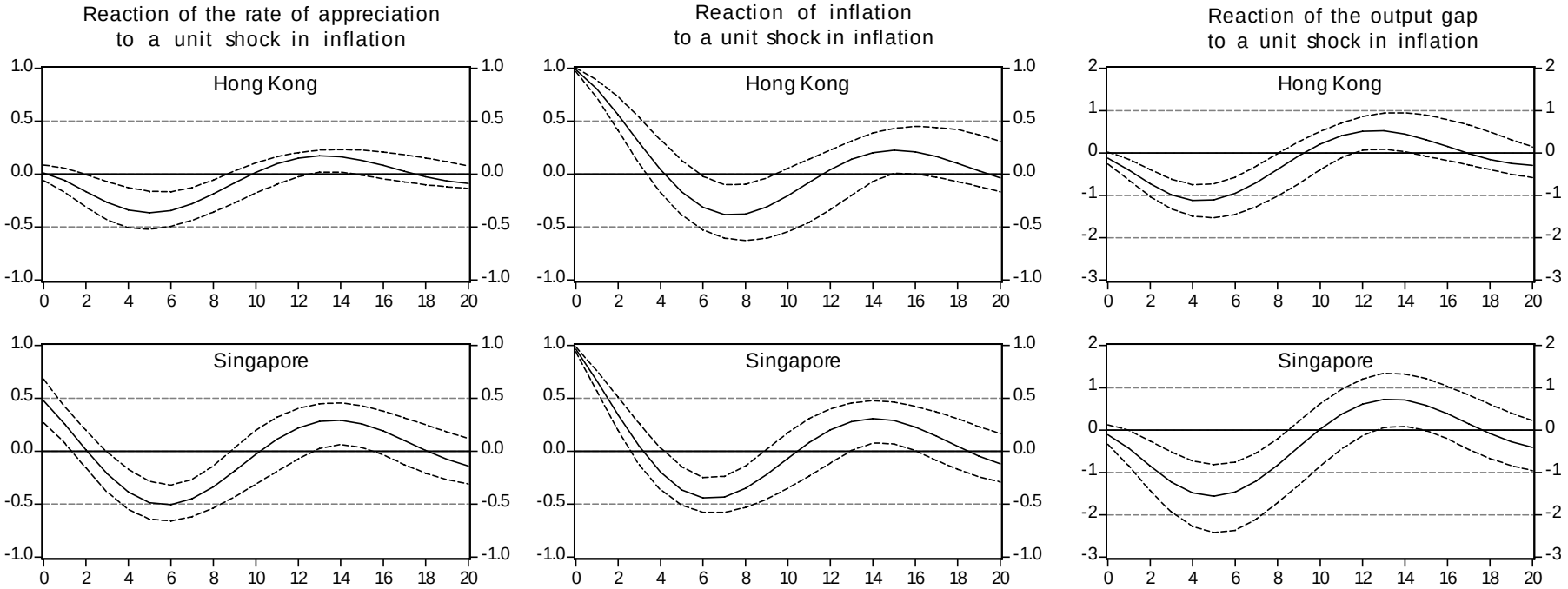
[23] The simulations below take into account that inflation enters the real interest rate and that the price level enters the REER.

[24] To calculate the confidence bands, we draw a vector from a multivariate normal distribution with the same mean and covariance matrix as the parameters estimated from the data and calculate a new impulse response function. The confidence band is obtained by repeating the procedure 10,000 times and retaining the 10th and 90th percentile.

Figure 6

Shock to inflation



4.3. NEER shocks

Figure 8 shows the impulse responses to a unit increase in the rate of appreciation, which causes a fall in inflation and the output gap. While the autocorrelation of the rate of appreciation found for Hong Kong leads to a gradual return of Δe_t to zero, monetary policy in Singapore responds actively by a depreciation in period 1. As a consequence, the reactions of inflation and the output gap to the initial shock are considerably smaller in Singapore than in Hong Kong.

4.4. World price/equilibrium exchange rate shocks

Next we turn to the impact of the REER, which is defined as $q_t = e_t + p_t - p_t^{World} - q_t^*$; we consider in Figure 9 the effect of a unit increase in foreign prices, which corresponds to a unit depreciation of the equilibrium REER.

This disturbance increases inflation and the output gap in both economies. Since the increase in inflation leads to an appreciation of the exchange rate, aggregate demand and inflation start to decline. Overall, the movements in the output gap are larger and faster in Hong Kong than in Singapore. By contrast, the movements in inflation are smaller in Hong Kong, while the movements in the NEER are quite similar in the two economies.

4.5. US import demand shocks

Finally, we consider the impact of a unit shock to the growth rate of US import demand. Figure 10 indicates that in both economies economic activity reacts with a significant, and inflation with a borderline significant, increase to this shock. As a consequence, the rate of appreciation rises, thereby causing inflation and the output gap to decline below their equilibrium levels. Again we find that the movements in the NEER are longer-lasting in Singapore than in Hong Kong. In particular, the rate of change of the NEER in Singapore falls below zero from the fourth to the 12th quarter, while we observe depreciation of the HKD only between the fourth and the ninth quarter.

Figure 7

Shock to the output gap

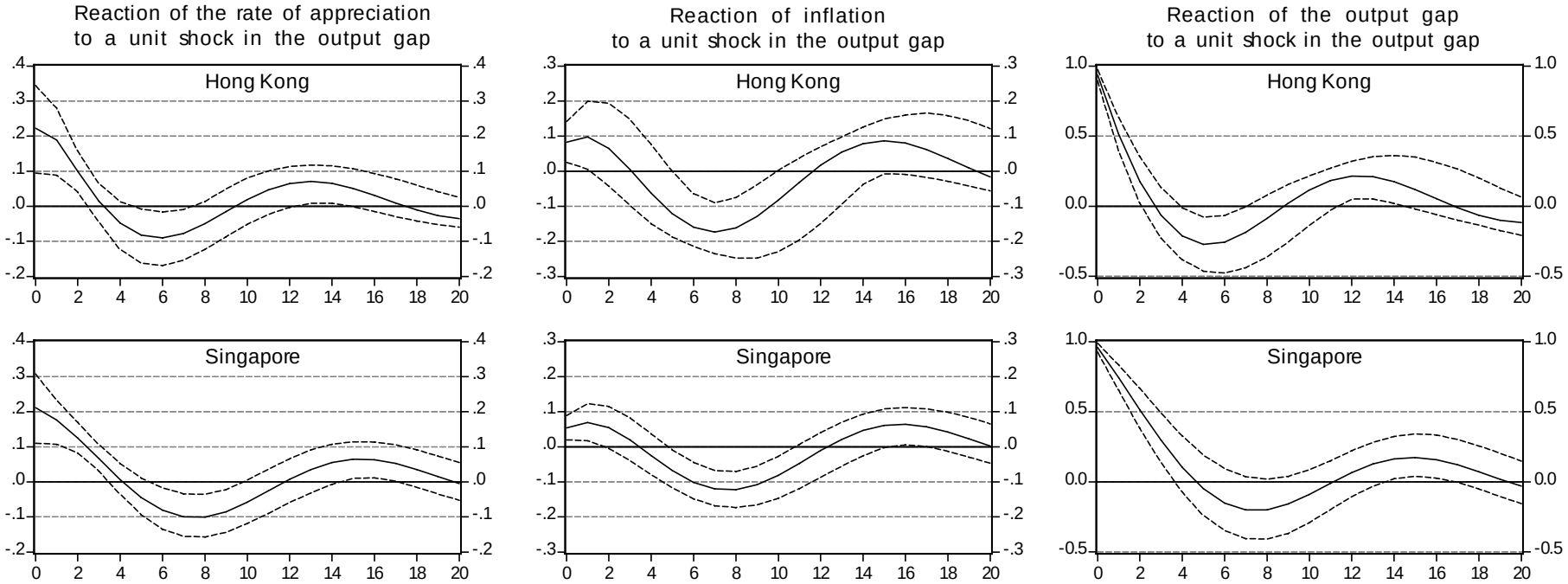


Figure 8

Shock to the rate of appreciation

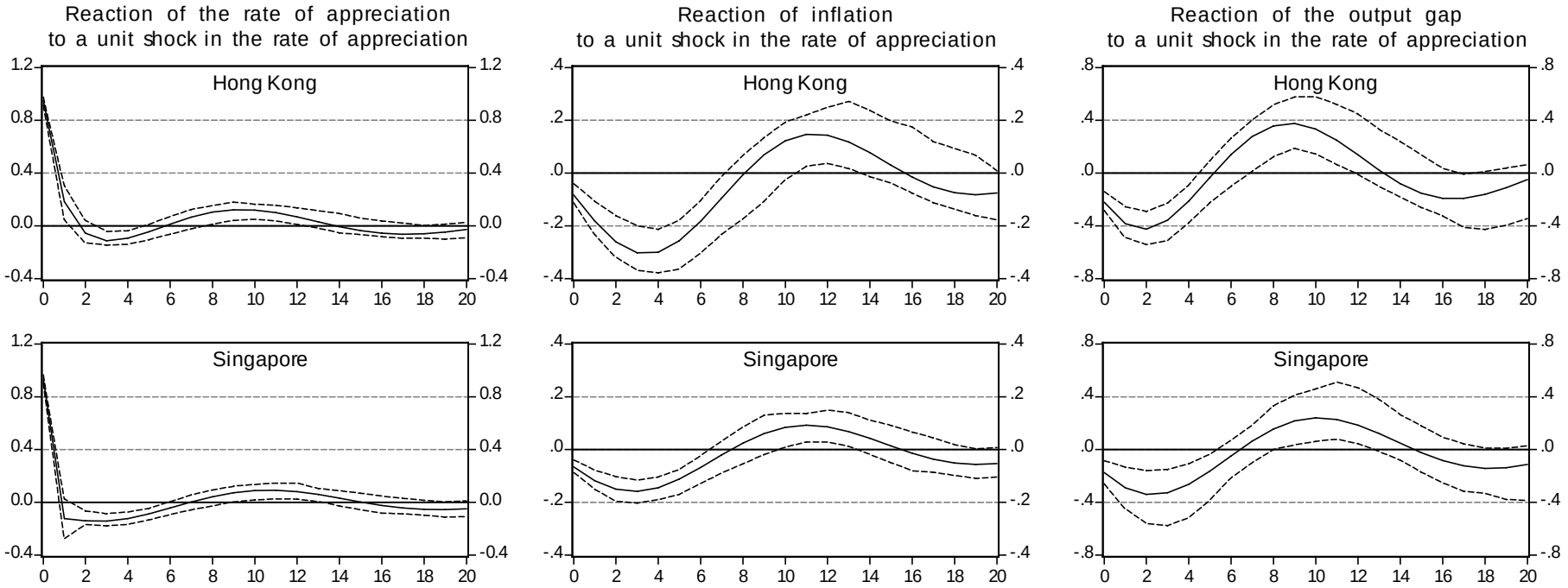


Figure 9

Shock to world prices

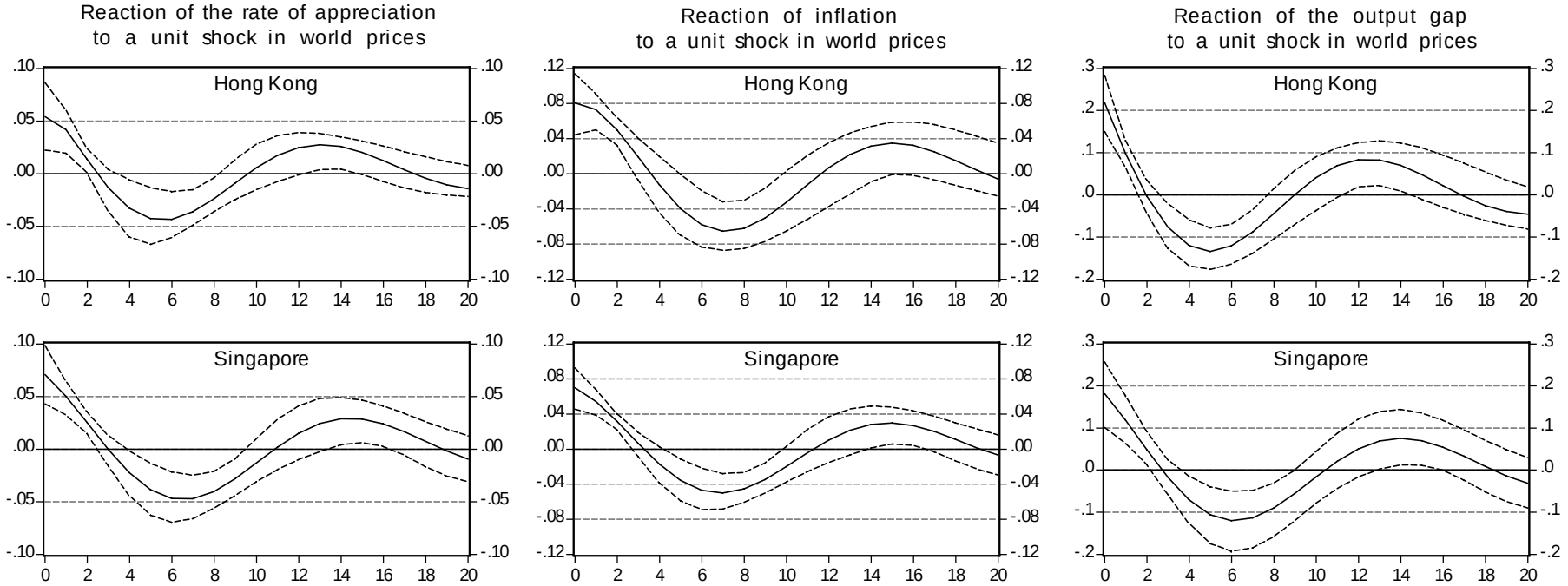
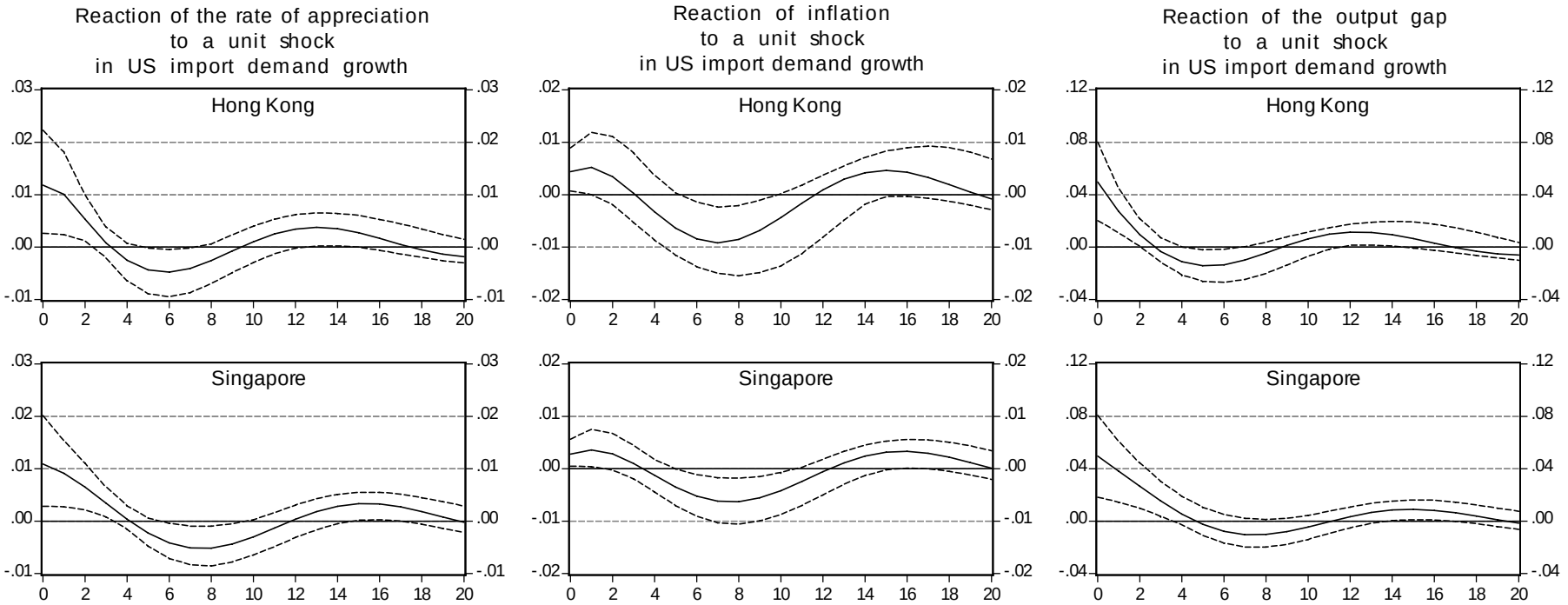


Figure 10

Shock to the growth rate of US import demand



4.6. Discussion

One striking aspect of the simulation results above is that the impulse responses generally look similar for the two countries. In particular, the impact effect on inflation, the output gap and the NEER are very similar, as are the dynamic responses. One reason for the similarity of the impulse responses may be that the policy reactions of the MAS have been less strong than commonly believed.[25]

While overall the impulse responses show no large differences, there are three notable exceptions. The first of these is the marked and immediate response of the NEER in Singapore to inflation shocks, which is due to the MAS's efforts to maintain inflation control. The second difference is that the output gap appears to be more rapidly mean-reverting in Hong Kong than in Singapore. This finding is compatible with the notion that Hong Kong may have been exposed to a larger number of temporary shocks or that the MAS's efforts to stabilise inflation have led to more protracted responses of output. The last difference is that the responses of inflation to the different disturbances, and the related confidence bands, are typically smaller in Singapore than in Hong Kong, again no doubt due to the authorities' successful efforts to stabilise inflation.

These findings suggest that the different policy frameworks adopted in the two economies have had little impact on the behaviour of the real economy. However, there are at least two reasons for believing that we may underestimate the impact of the MAS's active monetary policy strategy on the real economy. First, little is known about the exact definition of the NEER basket (particularly in the early part of the sample) used by the MAS to steer policy. The difference between our and the correct measure of the NEER introduces a bias in the estimates of unknown magnitude. Second and probably more importantly, the estimates assume that the MAS's policy regime was operational through the entire estimation period. If instead policy was passive under "normal" economic conditions and only turned active in response to occasional large shocks, the estimates may be biased. Assessing the latter hypothesis would require more data about the MAS's conduct of monetary policy than are currently available.

5. Conclusions

The main conclusions from the analysis above are twofold. First, inflation in Singapore has been lower and less volatile, and inflation shocks have been less persistent than in Hong Kong. Of course, this finding reflects the fact that the MAS has adopted an active monetary policy strategy in an effort to stabilise inflation while the HKMA has linked the nominal exchange rate of the HKD to the USD to ensure monetary and financial stability in the face of large external shocks.

Second, despite the different monetary policy frameworks, real economic behaviour has been similar in the two economies. One potential explanation for that finding is that the impact of monetary policy on real economic behaviour has been dwarfed by the effects of the large external shocks Hong Kong and Singapore have experienced in the sample period.

We end by reiterating that the purpose of the analysis has been to assess macroeconomic responses in Hong Kong and Singapore to economic shocks and to explore the potential role of choice of monetary policy strategy in conditioning these reactions. It should be re-emphasised that it is not possible to infer on the basis of these findings whether one policy

[25] Since the MAS's policy objectives for the NEER have not been released, it is difficult to explore this hypothesis further.

was more successful than the other. Such a judgement would depend on the objectives of policy makers in the two economies. Given the focus on nominal exchange rate fixity in Hong Kong and on inflation control in Singapore, these preferences appear to have been different.

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Comments on "Monetary policy regimes and macroeconomic outcomes: Hong Kong and Singapore" by Stefan Gerlach and Petra Gerlach-Kristen

Khor Hoe Ee[1]

Stefan and Petra's comparative study of the performance of Singapore and Hong Kong has improved our understanding of the likely response of a small open economy to shocks under different exchange rate regimes. However, it has also raised a number of interesting analytical questions with regard to the similarities and differences in the response of the two economies to various shocks.

In my view, the findings in the study on the startling similarity in the response of the two economies to various shocks reflect, to a large extent, the methodology used, that is, the use of a Hodrick-Prescott filter to extract the behavioral response of the economies to shocks. I have therefore found it useful to study not only the filtered data but also the underlying raw data for both Singapore (SG) and Hong Kong (HK), in order to better understand the results of the study.

First, a summary of some of the key macroeconomic indicators of the two economies is shown in Table 1, followed by a description of the authors' main findings. In the next section, I will seek to provide some insights on some of the issues raised in the paper.

Table 1

Comparison of key macroeconomic indicators of Singapore and Hong Kong

	Singapore	**Hong Kong**
Exchange rate regime	Managed float	Currency board
Inflation outcome	Low and stable	Higher and more variable
GDP	Higher average growth	Lower average growth
Output gap	Slower adjustment to mean; Std deviation 0.015	Faster adjustment to mean; Std deviation of 0.015
Interest rate	Lower than US rate	Close to US rate
Unemployment	Lower in 1998-2004	Higher in 1998-2005

Main findings of the paper

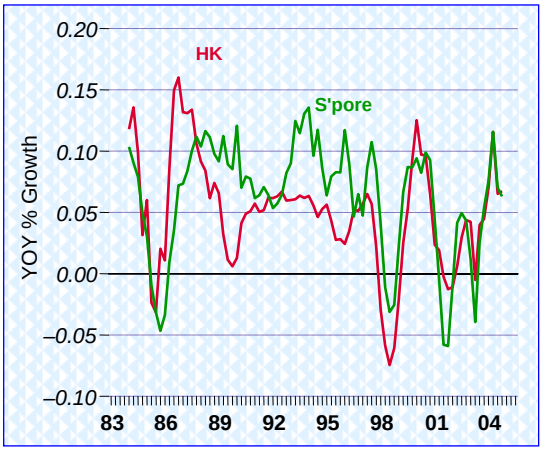
- Inflation was lower and more stable in Singapore than in Hong Kong.

[1] The author would like to express his appreciation to Saktiandi Supaat and Cyrene Chew for their research assistance.

- Singapore's inflation averaged 1.7% from 1981-2004, compared with 5.2% in HK over the same period.
- Interest rates were generally lower in Singapore than Hong Kong but the series are strongly correlated.
- Average growth of GDP in Singapore was higher than in Hong Kong (see Chart 1).
- The unemployment rate was lower in Singapore than in Hong Kong in the post-1997 period.
- Volatilities of output gaps were very similar in Singapore and Hong Kong.
- The output gap adjusts more slowly in Singapore than in Hong Kong.
- The nominal effective exchange rate (NEER) responds to inflation in Singapore but not in Hong Kong.

Chart 1

Output growth (YOY)



Comments on the paper

Before I proceed to comment on the issues raised in the paper, it is useful to note that studies have shown that in Singapore's case, the S$NEER responds to both inflation and the output gap - a form of Taylor rule. The policy response to the output gap is a derived one; in other words, it depends on the relationship between inflation and the output gap. For example, if an increase in the output gap can cause a rise in inflation, then policy will respond to a rise in the output gap in order to dampen inflation (see Chart 2).

Chart 2A

HK output gap vs HK$NEER (YOY)

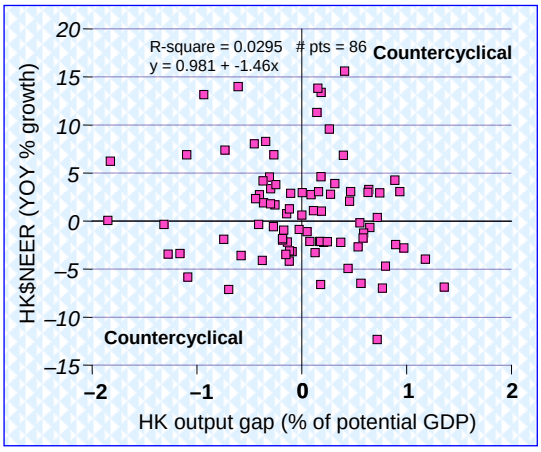
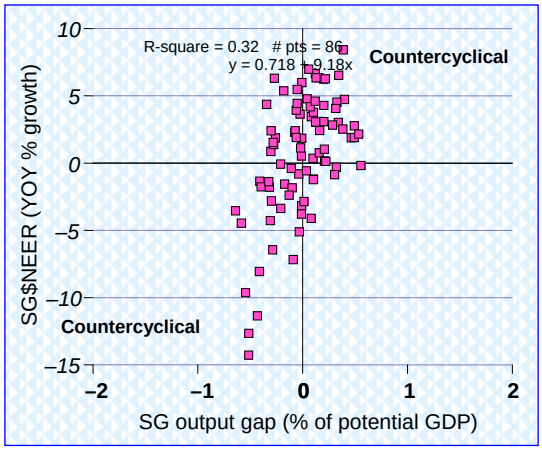


Chart 2B

SG output gap vs SG$NEER (YOY)



In general, policy must take into account the leads and lags of macroeconomic responses to changes in policy. At the Monetary Authority of Singapore (MAS), the leads and lags are captured in its Monetary Model of Singapore (MMS) model, which is used to help formulate the optimal path of S$NEER in our policy review.

Next, it is also useful to highlight that the findings reflect the method of analysis that was used. In particular, the use of the Hodrick-Prescott (HP) filter to create the output gap series brings with it certain implicit assumptions, in particular that potential output adjusts relatively quickly to shocks. The HP filter is basically a statistical technique which assumes that the potential output is equal to the trend line.

I now provide brief comments on some of the findings or issues raised in the paper.

1. The average inflation rate in Singapore was lower than in Hong Kong.

   - This finding is not unexpected as Singapore was able to effectively use the exchange rate as a nominal anchor to counter inflationary pressures and thereby achieve a lower and more stable rate of inflation. Indeed, the monetary policy objective in Singapore is to attain low inflation in order to promote sustained non-inflationary economic growth.

2. Why was the average growth rate during 1983-97 higher in Singapore?

   - During that period, the external environment for Singapore was conducive to rapid economic growth. In particular, Singapore was able to ride on the boom in the global electronics industry, whereas Hong Kong shifted most of its manufacturing industries to Shenzhen.

3. Why was the unemployment rate higher in Hong Kong during 1997-2005?

   - As mentioned in the paper, Hong Kong faced sharper adjustment in real output and employment because the exchange rate was fixed against the US dollar. In Singapore, the depreciation of the exchange rate and decline in wages helped to cushion the impact of the shock on the real sector.

4. Why is the volatility of the output gap so similar between Singapore and Hong Kong?

   - It is hard to reconcile this finding that volatility of the output gap is similar between the two countries when the unemployment rates in the two

economies are so different. In particular, the unemployment rate in Hong Kong was much higher than in Singapore over the period 1997-2005.

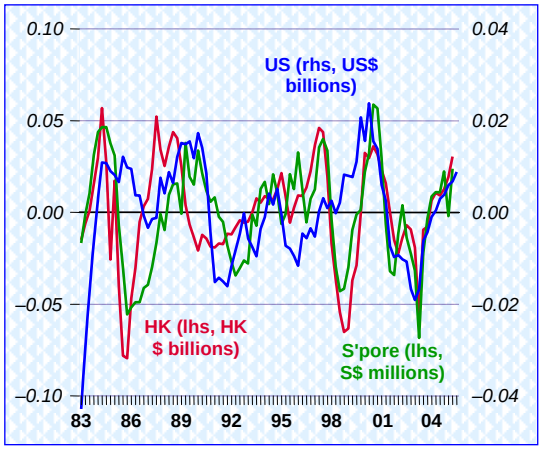
- As the authors suggested, for this finding to make sense, one must assume that potential outputs and natural rates of unemployment adjust rapidly to their new equilibrium levels. As noted above, this reflects the use of HP filters to derive the output gaps. Otherwise, it is difficult to explain how output gaps can be positive when unemployment rates were so high.
- Nevertheless, despite the inherent bias, HP filter results still provide useful insights into the dynamics of the two economies.

5. Why are the output gaps of Hong Kong and Singapore so highly correlated?

- As shown in the paper, other key macroeconomic variables of the two economies, such as interest rates and unemployment rates, are also highly correlated.
- A possible reason for these observations is that both countries face similar global shocks and capital flows. Interestingly, the output gaps of both Hong Kong and Singapore are highly correlated with that of the United States (see Chart 3).

Chart 3

Comparisons of output gap (HP filtered)

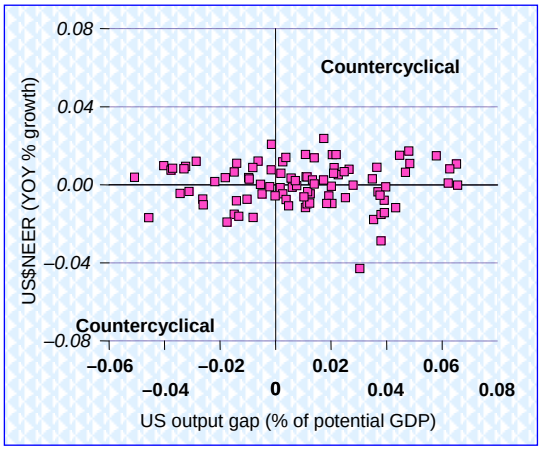


6. Another interesting finding is that the HK$NEER reacts to the output gap in a countercyclical fashion (Table 3 in the paper).

- This finding raises the question as to whether HK$NEER reaction to changes in output gap was due to policy.
- As Hong Kong's exchange rate regime is a currency board, it is puzzling that the HK$NEER can respond in a systematic way to changes in its domestic output gap.
- HK$NEER can react to the output gap in a countercyclical fashion only if the US$NEER moves countercyclically to the US output gap. However, this is not evident, as shown in Chart 4. In fact, US$NEER movements in recent periods (2002-05) have been procyclical and led to some inflationary effects in Hong Kong after a relatively deflationary period (2000-04).

Chart 4

Comparisons of output gap (HP filtered)



Why is the impact of the output gap shock on inflation smaller in Singapore than in Hong Kong? (Refer to Figure 7 in the paper)

- This finding is not surprising since the MAS is likely to tighten its policy stance in response to an increase in the output gap, as indicated by its policy reaction function.
- Furthermore, the MAS's credibility in policymaking enables inflation expectation to be firmly anchored.
- In contrast, changes in the output gap in Hong Kong do not trigger any countervailing policy reaction and hence are likely to lead to stronger response in the inflation rate.

Why is the adjustment in the output gap slower in Singapore than in Hong Kong? (Refer to Figure 7 in the paper.)

- In the case of Singapore, the MAS's policy reaction function puts greater emphasis on price stability than on changes in the output gap.
- In addition, the slower adjustment can be attributed to the countercyclical behaviour of S$REER to the output gap.
  - When the output gap increases, the MAS would appreciate S$NEER to dampen any rise in inflationary pressures, unlike in Hong Kong, where prices are allowed to adjust freely to changes in the output gap without any policy reaction. As a result, the increase in Singapore's inflation is likely to be more muted in Singapore than in Hong Kong.
  - Reflecting this, the increase in S$REER is likely to be smaller in Singapore compared to Hong Kong. The smaller increase in S$REER implies that the output gap would take longer to revert to mean (see Chart 5).

Chart 5A

HK output gap vs HK$REER (YOY)

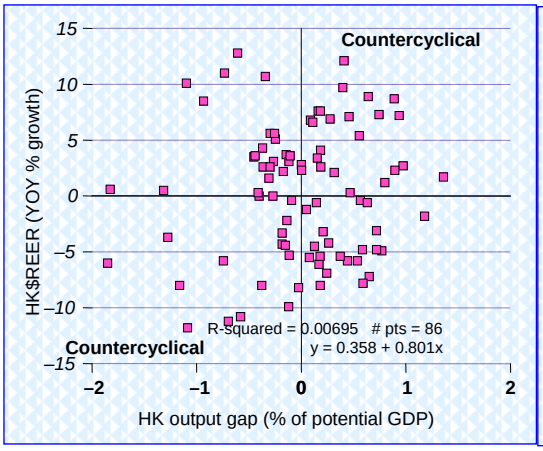
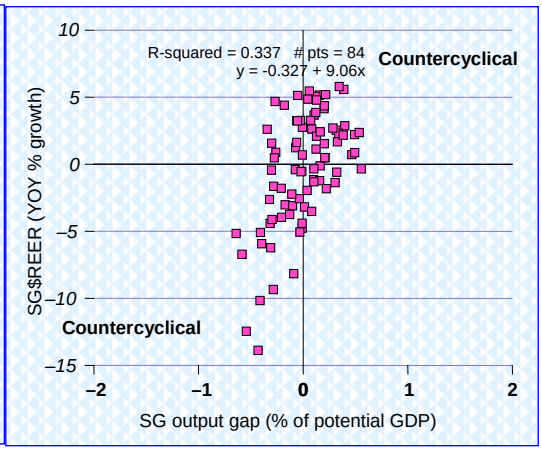


Chart 5B

SG output gap vs SG$REER (YOY)



Comments on "Monetary policy regimes and macroeconomic outcomes: Hong Kong and Singapore" by Stefan Gerlach and Petra Gerlach-Kristen

Wensheng Peng[1]

Introduction

This is a very interesting paper, comparing macroeconomic outcomes between Hong Kong and Singapore in the past decades and their possible association with the monetary policy regime in the two economies. The paper employs an econometric model comprising a Phillips curve, an IS curve and an equation for the nominal effective exchange rate (NEER) for Hong Kong and Singapore. The NEER equation for Singapore is treated as a monetary policy reaction function for the Monetary Authority of Singapore (MAS). The technical work is carefully done, as is the usual case for the authors.

The main conclusion of the paper is that consumer price inflation was better controlled (in the sense of being lower and less persistent) in Singapore than in Hong Kong, but movements in real activity (as measured by the output gap) were similar. The difference in inflation is attributed mainly to the different monetary policy regimes in the two economies.

Results that conform to expectations

The empirical estimation and simulation results conform to general expectations about the key macroeconomic variables given the different monetary policy regime. First, shocks to inflation are less persistent in Singapore than in Hong Kong; this reflects partly monetary policy reaction by the MAS to changes in inflation and the effectiveness of such reactions.

Second, the NEER appreciates in response to above target inflation and changes in the output gap in Singapore, reflecting the role of the NEER as the operating target for monetary policy.

Third, changes in the NEER are serially correlated, and do not respond to changes in inflation in Hong Kong. This is not surprising given that under the Linked Exchange Rate system, the Hong Kong dollar NEER is exogenously determined by movements in the US dollar exchange rates against other major currencies.

Fourth, the rise in the output gap raises inflation in both economies and an appreciation of the real effective exchange rate (REER) reduces inflation, consistent with general economic theory.

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[1] Hong Kong Monetary Authority.

Results that are "more interesting" and might warrant further investigation

First, shocks to output appear to be more persistent in Singapore than in Hong Kong. The authors attribute this to two possible factors. One is that Hong Kong has been more exposed to large but temporary demand shocks. Another is related to the MAS policy of inflation stabilisation, which leads to more protracted movement in output. One more consideration is possible differences in supply shocks to the two economies, although this is difficult to assess in the current empirical setup.

Second, there is a significant correlation between changes in the NEER and the output gap in both economies, suggesting that strength in the economy tends to be associated with an appreciation of the NEER. This is somewhat surprising in the case of Hong Kong, as it clearly cannot be explained by monetary policy reactions of the Monetary Authority. The authors attribute this finding to the positive correlation between changes in US dollar NEER (to which the Hong Kong dollar NEER is positively correlated) and US economic growth, which affects US demand for Hong Kong's goods and services. There are two other possible explanations. One is that a strong US dollar raises US demand for imports, including those from mainland China and Hong Kong. Furthermore, appreciation of the Hong Kong dollar in nominal effective terms tends to be associated with an improvement in the terms of trade, which has a positive income effect on domestic demand given the high degree of openness of the Hong Kong economy.

Third, the estimated impact of changes in REER and the real interest rate on the output gap are quite similar for both economies (in both cases only REER is significant). This is somewhat surprising in the case of Hong Kong, as other studies suggest that the real interest rate is a significant variable affecting output growth (Peng (2000), and Ha et al (2002)). Indeed, real interest rates are likely to be a more important force (relative to REER) in Hong Kong than in Singapore for output growth, as shocks to the Hong Kong dollar exchange rate tend to be reflected in changes in the risk premium of interest rates.

Conclusions

By policy design, inflation in Singapore should be less persistent than that in Hong Kong. The empirical analysis of this paper confirms that the difference in inflation patterns in the two economies reflects in part the choice of monetary policy regime. However, the results indicate similar dynamics in the output gap in the two economies. Indeed, the exchange rate regime does not appear to have produced any significant difference in the long-term economic growth performance, as indicated by the following table.

Sample 1984-2004	Hong Kong		Singapore	
	Mean	Std dev	Mean	Std dev
Per capita GDP growth				
- in USD	7.4	7.9	7.0	10.1
- in PPP	6.4	4.5	6.7	4.7

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Monetary policy approaches in India

Kaushik Bhattacharya[1]

1. Introduction

Among country-specific studies on monetary policy frameworks, a study on India would be important. This is not only because of the large size of its population or economy, but because a few specific features make India a unique case study among countries. Although India consistently maintained a democratic form of governance, prior to the 1990s its economic framework was largely similar to that of a command and control economy. During the past 20 years or so, the Indian economy has oriented itself towards market forces, with a healthy rate of GDP growth and a modest rate of inflation. This change had been gradual and except for the balance of payments crisis during 1990-91, has come with minor hiccups. Given that this period is characterised by frequent financial crises in large parts of the world, the Indian experience and the role played by the monetary framework in it can be a valuable lesson in preventing financial crises, and also in pacing and sequencing economic reforms.

The story of economic reforms in India has been discussed in detail by several researchers from different perspectives (Joshi and Little (1996); Ahluwalia (2002); Pangariya (2004); Rodrik and Subramanian (2004)). Specific aspects like reforms in monetary and financial sectors in India and the role played by the Reserve Bank of India (RBI) in this endeavour have also been reviewed in some of these studies. Some reviews, like Reddy (1999), were specifically devoted to the financial sector reforms and listed the changes in detail. A few studies have also documented the evolution of monetary policy frameworks and taken a view on the applicability of specific frameworks in the Indian context (Mohanty and Mitra (1999); Kannan (1999); McKibbin and Singh (2000); Jadhav (2003)). Of late, some studies - mostly by current and ex central bankers - have begun to take a futuristic look, critically assessing the changes and raising issues of concern (Rangarajan (2001); Mohan (2005a,c)). Aspects of the past and future of monetary policy in India and the framework under which it operates can also be gleaned from the speeches of the RBI management, sometimes on a general note (Reddy (2001a, 2005)) and sometimes on more specialised areas like central bank independence (Reddy (2001b)) or communication strategies (Mohan (2005b)). Reports of different advisory groups appointed by the RBI also summarise the changes in specialised areas like transparency in monetary and financial policies (RBI (2000a)), or data dissemination (RBI (2001a)). These reports often review country experiences and are valuable sources to analyse India's relative strengths and weaknesses among countries.

With such a plethora of information, the purpose of this paper is neither to repeat the story of Indian financial sector reforms, nor to tell the story of the evolution of its monetary policy framework. Although aspects of these will inevitably crop up in what follows, they are discussed from the perspective of identifying new lessons on the grey areas of economic theory.

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[1] An earlier draft of the paper was prepared when the author was a post-doctoral fellow at the University of Bonn, Germany. Detailed comments and suggestions by Hans Genberg, Eli Remolona, Dominique Dwor-Frécaut, R B Barman and Dipankor Coondoo substantially improved the exposition. The author is also grateful to conference participants in Hong Kong for raising a few relevant issues not discussed in sufficient detail in an earlier draft. Views expressed in this paper are strictly personal and may not be those of the institution to which the author belongs.

The paper argues that the Indian experience could be of help in expanding our knowledge on two problems. The first relates to the choice of monetary policy strategy by a central bank. In the theoretical literature, the choice of monetary policy strategy is often seen as part of an optimal control problem (Poole (1970)). The optimal strategy in this problem depends on issues like the stability of demand for money and the relative variances of shocks to the real and the financial sector. Empirical observations, however, do not match this theory. Central banks that swear to different monetary policy strategies have been found to use similar instruments and to react to shocks in a similar manner. The puzzle could be resolved either by admitting the possibility that central banks do not practice what they preach, or by incorporating "closed-loop" strategies in place of "open-loop" ones.[2] These explanations, however, do not provide the answer to the question why central banks do make efforts to identify their monetary policy strategy in the first place. Citing the example of Germany, Hagen (1999) suggested the possibility that monetary strategies are helpful in solving internal and external coordination problems for the central bank. A major purpose of this paper is to examine whether the Indian experience is consistent with this theory.

What makes India an especially attractive case to examine the generality of the theory is the fact that the monetary policy framework in India has changed twice since the 1980s. The paper attempts to show that, from both a theoretical and a cross-country perspective, the changes occurred at interesting points. In both cases, the change in monetary policy framework in India took place without substantial changes in the RBI Act, so that apparently the stated objectives of monetary policy in India remained the same. However, the operating environments at those two points in time were sharply different. The first change occurred during the heyday of command and control era, while the second took place when the so-called first-generation reform in India was near completion. Interestingly, in each case, the change occurred at points where it is possible to argue that there was no immediate urgency to act. The RBI's motivation for the change in both cases, therefore, could throw up some interesting insights on the central bank's strategic preferences in diverse conditions.

The second grey area in literature where the Indian experience could be of additional help is in understanding to what extent the monetary policy framework helps in improving economic performance. Both country-specific and cross-country experiences do not provide clear answers to this problem (Mishkin 1999)). Country-specific studies indicate that switching to inflation targeting (IT) has sometimes been followed by a dramatic reduction in inflation. However, due to post hoc fallacy, to what extent the change in monetary framework is responsible for this reduction is not easy to answer.[3] The general conclusion appears to be that both transparency and accountability are crucial to constraining discretionary monetary policy so that it produces the desired long-run outcome (Mishkin (1999)). As the details of transparency and accountability are difficult to quantify, this is a serious impediment in obtaining definitive results.

The Indian experience might throw up some interesting insights on the role of the monetary framework because rather than a dramatic cutoff, the fall in inflation in India had been gradual. Among emerging market countries, its performance in containing inflation - especially after the adoption of MIA (the multiple indicator approach, see below for details),

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[2] An open-loop monetary policy strategy is one that fixes an intermediate target during a given period with no regard to incoming information during that period. A closed-loop strategy, in contrast, continuously revises the intermediate target (which may be explicit or implicit) based on incoming information to achieve better control over the ultimate targets of monetary policy. Admitting closed-loop strategies implies that central bank behaviour is similar under different strategies and that the performance of monetary strategies in terms of the target variables of monetary policy becomes very similar, provided the ultimate goals of monetary policy are the same.

[3] For example, in the case of New Zealand, there is evidence that inflation was already falling sharply before the final change to IT occurred (Brash 1999)).

appears to be good. As India is not a formally declared inflation targeting economy, this observation assumes additional importance. A juxtaposition of the Indian versions of transparency and accountability to other economies with diverse monetary policy frameworks may perhaps extract what aspects of them are essential for better economic performance.

The paper is organised as follows: Section 2 provides a brief review of the evolution of the monetary policy framework in India. Our special emphasis in this review is on the possible motivations that have led Indian policymakers to change the framework twice since the 1980s, culminating in the MIA. Section 3 examines to what extent the Indian experience can extend our knowledge about the role of the monetary policy framework in economic performance. Finally, Section 4 concludes the paper.

2. Evolution of the monetary policy framework in India

The first and most important part of the monetary policy framework in a country is the task mandated to the monetary authorities. In a democracy, this task is typically specified in the central bank act. It is interesting to note that despite overwhelming changes in the financial sector in India, the mandate to the monetary authorities in India mentioned in the Reserve Bank of India Act 1934 has remained unchanged.

Subsection 2.1 discusses specific aspects of this act. In particular, it examines the different interpretations of the mandated tasks and their implications for central bank independence and transparency of monetary policy in India. Subsection 2.2 briefly reviews the evolution of the framework around this act. Subsection 2.3 then compares different aspects of the current framework to those of a few benchmark central banks like the Federal Reserve (Fed) or the European Central Bank (ECB).

2.1. The RBI Act 1934: different interpretations and implications for central bank independence and transparency

The preliminaries of the Reserve Bank of India Act 1934 set the mandated tasks as

> "...to regulate the issue of Bank Notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage."

The tasks mandated to the RBI can, however, be interpreted in several ways. In particular, the words "monetary stability" may mean both internal and external stability. If it is interpreted in the narrow sense of internal stability, then price stability becomes a major objective. If, in contrast, the interpretation also includes external stability, financial stability as a whole (including price stability) becomes the mandated task. The RBI website interprets the objective of the RBI as monetary authority as: "maintaining price stability and ensuring adequate flow of credit to productive sectors" (http://www.rbi.org.in/scripts/AboutusDisplay.aspx#EP1) Alternatively, Rangarajan, one of the main architects of economic reforms in India, interprets the objectives as:

> "(1) to maintain a reasonable degree of price stability and (2) to help accelerate the rate of economic growth." (Rangarajan (2001))

It may be noted that though the interpretations of the RBI and Rangarajan (2001) are largely similar, they are not same. Credit growth in an economy is likely to be positively associated with GDP growth, but the strength of association between them may vary over time. In Section 3, this aspect will be discussed further.

The additional emphasis on credit growth by the RBI gives Indian monetary policy objectives a distinct feature that is not typically discussed in standard textbooks.[4] In most cases, however, the objective is stated with an additional "for sustaining overall economic growth" (Reddy 2005)) or simply "to support growth" (Mohan (2005a), p 1119) in the end. Therefore, in a broad sense, the additional monetary policy objective (besides price stability) in India is to support or to facilitate GDP growth.

The relative emphasis on price stability versus growth is, once again, subject to interpretation. It is interpreted that the objective would depend on underlying macroeconomic conditions. Monetary policy in India, therefore, strives for a "judicious balance between price stability and growth" (Reddy 2005)). Reddy (2005), however, observes that due to the democratic process of governance in India, the "judicious balance" is heavily tilted towards price stability, which, in some ways, amounts to an "informal mandate" to the central bank for maintaining an "acceptable" level of inflation.

An interesting question here is: who sets these objectives? In a democratic framework, the power to set the target typically rests with the elected representatives. In monetary policy frameworks like IT, this target is revealed to the public in the form of a transparent contract between the government and the central bank. In the Indian case, there is no such explicit contract. Rather, Section 7 of the RBI Act 1934 stipulates that the central government may from time to time give such directions to the Bank as it may, after consultation with the governor of the Bank, consider necessary in the public interest. The RBI Act does not stipulate that such directions should be in the public domain or should need the approval of Parliament (or at least, be put before Parliament).

Subject to any such directions, clause (2) of Section 7 of the same Act stipulates that all other powers on the general superintendence and direction of the affairs and business of the Bank shall be entrusted to a central board of directors. The central government, however, enjoys wide power to nominate these directors. Further, the duration of office of governors and deputy governors is for such terms not exceeding five years as the central government may fix while appointing them.[5] They are, however, eligible for reappointment. Further, Section 30 of the RBI Act stipulates that if the Bank fails to carry out any of the obligations imposed on it or under the RBI Act, the central government may, by notification in the Gazette of India, declare the central board to be superseded and may entrust the general superintendence and direction of affairs at the Bank to any agency of its choice. When action is taken under this section of the act, the central government must, however, submit a full report to Parliament within three months from the issue of the notification.

So far as the autonomy of the central bank is concerned, the RBI had been ranked marginally below the median level among a list of 70 countries (Cukierman (1992)). It may be noted that this performance was based on the policy framework during the 1980s and Cukierman's list included 21 industrial countries as well. The institutional arrangement, therefore, represented a reasonable degree of statutory autonomy in the case of India - at least within the group of developing countries whose overall policy framework yielded little operational independence to their respective central banks at that time.

Interestingly, the Advisory Group on Transparency in Monetary and Financial Policies (2000) appointed by the RBI sharply criticised the institutional arrangements on the process of monetary policy formulation in the RBI Act. It went so far as to term the act "anachronistic" (Para 3.7) and urged the government to make an early move to amend the necessary

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[4] For example, Mishkin (2001, Sixth Edition, pp 454-57) lists six goals of monetary policy (eg high employment, economic growth, price stability, interest rate stability, stability of financial markets and stability in foreign exchange markets), among which "provision of adequate credit" is conspicuous by its absence.

[5] It may be noted that the parliamentary elections in India are held every five years.

sections that do not provide for a systematic and transparent setting of the objectives of monetary policy. The Group, however, observed that the act provided adequate powers to the RBI to use various instruments of monetary policy.

2.2. Evolution of the framework

Until the early 1980s, the Indian economy was virtually a closed one. Prices of a significant number of commodities were administered in India at that time. To sustain these prices at a steady level, government subsidies were often necessary and this was one of the factors that led to a chronic budget deficit. These deficits were either financed through ad hoc treasury bills[6] or through indirect borrowings, mostly from nationalised banks. The first led to more or less automatic monetisation. Net RBI credit to the government was the dominant factor behind reserve money expansion and the consequent expansion in money supply. To control the money supply, the RBI had to increase the cash reserve ratio (CRR) from time to time. So far as the market borrowing is concerned, to facilitate the process, interest rates were administered and were kept at an artifically low level. The entire structure of interest rates was complicated and had multiple layers. Thus, the financial markets were highly segmented and lacked depth. The administered interest rate regime was an impediment to the use of indirect tools like open market operations (OMO). The only way to finance the borrowing programme of the government was to increase the statutory liquidity ratio (SLR) from time to time. The exchange rate was not market-determined and movements of foreign exchange in and out of India were tightly regulated. In short, monetary policy in India during this period was completely subservient to the fiscal stance of the central government. Figure 1 illustrates this point. In Figure 1, the variable CGRMRAT reflects the ratio of net RBI credit to government and reserve money, and NFARMRAT reflects that of net foreign assets of RBI and reserve money.[7] In Figure 1, the variable CGRMRAT displays an increasing trend between the years 1978-79 and 1982-83. In 1984-85, CGRMRAT was nearly unity, at 0.98.

India's formal change to "monetary targeting with feedback" in 1985 should be understood against this background. The recommendation for the change was made in the *Report of the Committee to Review the Working of the Monetary System* (RBI (1985), popularly known as the Chakravarty Committee Report) in 1985. The economic performance of India immediately preceding the report is interesting. After the second oil shock in 1979-80, the economy was on the path of recovery. In fact, between 1980-81 and 1984-85, the average annual GDP growth rate and the rate of inflation in India were 5.6% and 9.2% respectively.[8] It may be noted that given India's earlier achievements (especially with respect to its low GDP growth rate, often castigated as "the Hindu growth rate"), these figures should be considered as good. A crucial question then remains: why was it necessary to change the policy stance to monetary targeting (MT) at that point, when evidence of its failure in the industrial economies was already known?

The traditional way of examination as in Poole (1970) would be to look at the stability of demand for money and also the relative magnitudes of shocks to the financial and the real sector in a country. India's shift to MT appears to be consistent with this theory. The early literature on demand for money in India generally indicated its stability (Vasudevan (1977)). At the same time, the administered interest rate structure, the absence of significant

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[6] Rangarajan (2001) snidely observed that "Those bills were 'ad hoc' only in name. These treasury bills had to be rolled over indefinitely".

[7] Both CGRMRAT and NFARMRAT are ratios of levels of the respective variables.

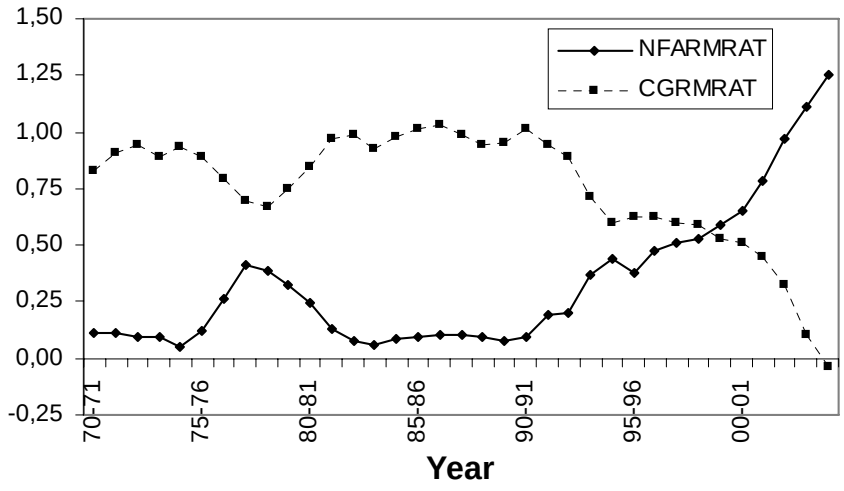
[8] These figures quoted are not "real-time" figures, but are based on final data prepared later. In the reported figures, for GDP, the base year is 1993-94. For inflation rates, the figures up to 1981-82 are with respect to 1970-71 as base and the same from 1982-83 onwards are with respect to the year 1981-82 as base.

innovations in the financial sector and the lack of large cross-border capital flows ruled out large shocks in the financial sector relative to the real sector. Further, studies like Chitre (1986) that appeared approximately at the same time pointed out that the money multiplier in India could be predicted with a fair degree of accuracy. This stable relationship between the operating target of reserve money and the intermediate target of money supply was another crucial piece of evidence that led to the adoption of this approach.

Figure 1

Movements in net RBI credit to government and net foreign assets of RBI

As ratio of reserve money



It may be noted that studies based on Germany have pointed out that MT could facilitate internal and external coordination problems for the central bank (Hagen (1999)). Interestingly, as our earlier discussion reveals, India's adoption of MT also supports this theory. The Chakravarty Committee, in fact, suggested a formal structure of coordination, proposing an agreement between the central government and the RBI on the level of monetary expansion and the extent of monetisation of the fiscal deficit. It also observed that without such coordination, the RBI's efforts to contain money supply within the limit set by the expected increase in output could become impossible.

The concept of "monetary targeting with feedback" recommended by the Chakravarty Committee was also different from traditional MT with fixed monetary growth as a rule. It recommended that the targeted monetary growth should be modified based on the information available on expected increase in output and a tolerable rate of inflation. Thus the monetary policy framework in India between 1985-86 and 1997-98 could broadly be classified as a "flexible monetary targeting approach", with M3 growth as a nominal anchor, reserve money as the operating target and bank reserves as the operating instrument (Mohan (2005c)).

It is interesting to note that despite the move towards MT, no specific monetary target in India was set during the second half of the 1980s, except for fixing a ceiling linked to the average growth of broad money in the previous years (Mohanty and Mitra (1999)). Further, in its early years, MT in India was carried out in an environment where the interest rates were also administered. Theoretically, as in Poole (1970), combinations of controls on prices and quantities can serve as a strategy, but if pursued arbitrarily, such a strategy is fraught with danger. India's initial half-hearted attempt to liberalise interest rates started approximately during this period. Freedom was given to banks to fix their own interest rates (subject to some restrictions) but it had to be withdrawn, as banks were unable to handle even this reform (Rangarajan 2001)). This experience showed that a lot more preparation would be

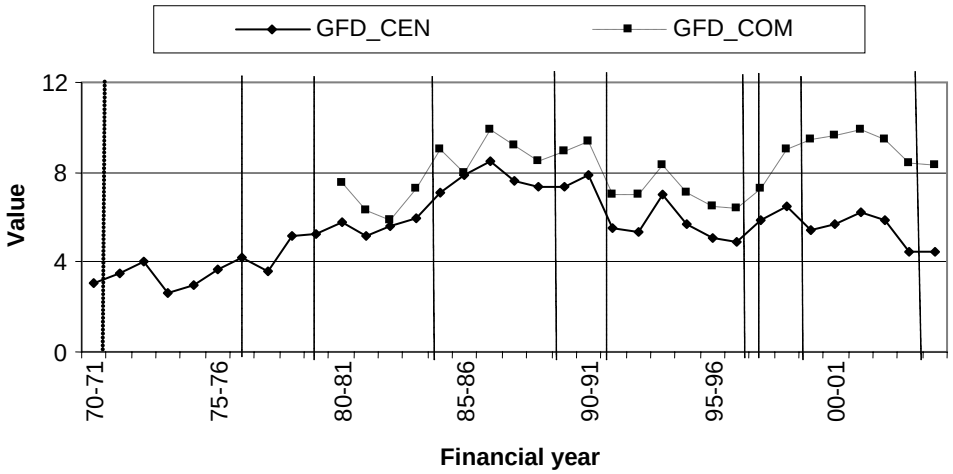
needed for gradual deregulation of interest rates. The early attempts at reforms in this area failed because necessary reforms in other sectors were not carried out simultaneously (Malhotra (1997)).

Following this, reforms during the late 1980s were devoted to creating an active money market. To activate the shorter end of the money market, treasury bills of 182 days' duration were introduced. This period also saw the introduction of financial instruments such as certificates of deposit and commercial paper. In addition, the Discount and Finance House of India (DFHI) was set up to provide liquidity to these instruments by creating a secondary market.

While these structural changes were going on, the deficit situation in India did not improve. In Figure 2, GFD_CEN presents the gross fiscal deficit of the central government, while GFD_COM presents the combined figure for the central and the state governments. The broken vertical lines indicate the time points of parliamentary elections in India. The chronically high fiscal deficit was one of the major causes that led to the balance of payments crisis of the Indian economy in 1990-91. To help the government's borrowing programme, the RBI had to increase SLR while to mitigate the deleterious effect on prices, the only effective tool it had in its possession was CRR. By the end of the year 1990-91, the CRR and the SLR were 15.0% respectively.[9]

Figure 2

Movements in gross fiscal deficit as a percentage of GDP



The balance of payments crisis in 1990-91 shook the Indian economy. Besides the mandated objectives, the major challenges were to restore stability as quickly as possible and, once that was achieved, to develop and integrate different financial markets and increase the competitiveness and efficiency of the financial system. For stabilisation, coordination of monetary and fiscal policy was absolutely necessary. Figure 2 reveals a sharp fall in gross fiscal deficit (as a percentage of GDP) immediately after the crisis.

One of the first important financial reforms that India introduced after the balance of payments crisis in 1990-91 was to change to a market-determined exchange rate system and to introduce current account convertibility in a phased manner. This change was one of the striking successes of the early years of economic reforms. The balance of payments

[9] The figure corresponding to CRR excludes additional reserve requirements or release/exemption on incremental net demand and time liabilities (NDTL).

crisis was also largely mitigated by the end of 1992-93. The phase from 1993-94 to 1997-98 (Phase 2), therefore, is the phase where MT was attempted in a comparatively stable environment.

After stabilisation of the balance of payments crisis, the liberalisation of interest rates in India gathered momentum. Drawing lessons from the previous experience, the liberalisation measures were adopted slowly but steadily, with the idea that the changes in the short-term official interest rates would translate towards the longer end through the yield curve, facilitating their emergence as effective policy instruments. A significant development in this area with far-reaching implications was the reactivation of the Bank Rate, which was linked to all other interest rates, including the Reserve Bank's refinance rate.

Three other related changes should also be highlighted in this context. First, significant changes took place in the Indian capital market during this period, leading to a substantial improvement in market capitalisation, liquidity and efficiency of the Indian capital market (Misra (1997), Endo (1998)). Second, the agreement between the RBI and the government of India to curb monetisation was signed during this period. It was decided to implement the agreement in a phased manner over a period of three years. Third, policies began to be more and more closed-loop in nature. This was imperative because of the flexible exchange rate regime, which required continuous monitoring. A major consequence of this change was in transparency and communication strategy, and also in data dissemination. The market-determined system required transparency and clarity of policy objectives. The RBI's published reports began to change qualitatively around this period, often focusing more on cross-country experiences on specific aspects.

MT was actively and vigorously pursued during this period. MT, even in this period, was, however, constrained by the fiscal stance of the government. Further, with the opening-up of the economy, increasing capital flows compounded the constraints. The successful stabilisation policy and gradual opening-up of the economy with a market-determined exchange rate led to huge capital flows. To maintain the monetary target, it was necessary to sterilise these flows. This led to changes in the structure of the RBI balance sheet. Figure 1 depicts these changes. It reveals that from 1990-91, NFARMRAT - except during the year 1995-96 - increased continuously. Concurrently, with the changes in the administered interest rate regime and other consequent financial innovations, the stability of money demand in India became a matter of concern. Some of the studies that attempted to examine this aspect during the 1990s were Nag and Upadhyay (1993), Jadhav (1994), Arif (1996) and Mohanty and Mitra (1999). The *Report of the Working Group on Money Supply: Analytics and Methodology of Compilation* (RBI (1998), popularly known as the Reddy Committee Report) in June 1998 also examined this aspect. The evidence from these studies was, at best, mixed.

India's second change of monetary policy framework to MIA should be understood with this background. Once again, the economic performance immediately preceding the change to MIA was not bad. After the effective handling of the balance of payments crisis, the economy was recovering. During Phase 2 of MT, the average annual rate of inflation and GDP growth were 7.6% and 6.6% respectively. Given that the rate of inflation was moderate, the central bank's credibility in maintaining the monetary target was, arguably, not a serious issue. Once again, an interesting question is: why did India change its monetary policy framework in 1998-99?

As in the earlier case, stability of demand for money (or lack of it) was once again an issue. So far as relative sizes of shocks were concerned, in contrast to the early 1980s, market-friendly policies during the 1990s warranted that, compared to the earlier periods, the sizes and frequencies of shocks to the financial system would increase compared to the shocks in the real sector. However, a debate on the relative sizes of financial and real sector shocks was largely absent during this period. The traditional theory of Poole (1970) could, therefore, offer a partial answer to this question.

So far as the coordination aspect of MT is concerned, it is interesting to note that India's tryst with MT ended almost immediately after the agreement between the government and the RBI (to check automatic monetisation within a defined limit) was operationalised. It could be argued that the major need was not the monetary target *per se*, but coordination. When the required coordination was achieved, which was earlier considered a necessary precondition for MT, a change to other framework became affordable. Figure 1 reveals a clear decreasing trend in CGRMRAT approximately from this time. Thus the internal coordination theory also offers a partial answer to the change in strategy.

Rather than predictability of money growth or coordination problems, the key to understanding the change in framework perhaps lies in the signalling aspect of policy. The RBI wanted to communicate a strong signal to the market that it was changing the way it would implement monetary policy. The signal was to prepare the market for a gradual move from quantity-based signals to price-based signals. In this context, it is interesting to note that the Reddy Committee Report proposed a set of broader monetary measures that were supposed to capture the effects of new financial innovations better. However, unlike the US case, no attempt was made to shift to alternative monetary measures as targets.

The change in framework was thus an official recognition of a phase in which monetary authorities were constrained to work on both the quantities (money) and the prices (interest rates) front, despite its well known limitations. To increase the efficiency of the banking sector, further reductions in CRR were necessary. This itself was a constraint that prevented a fully fledged change to signal solely through interest rates. Yet, cross-country experiences revealed distinct advantages of interest rate signals. It may be noted that while many of the necessary reforms in the financial sector were complete or near completion at that stage, the necessary operational infrastructure (ie existence of clear corridors for short-term interest rates) to impart clear interest rate signals were not fully ready at that time. Due to short history, the precise relationships between short-term and long-term interest rates and the role of market-determined interest rates in the real sector were also far less understood. The move towards price-based signals was primarily motivated by cross-country experience and judgment.

Abandonment of the MT framework, however, required an alternative. India adopted the multiple indicator framework. The possible other candidates were exchange rate targeting, interest rate targeting and IT. In the Indian context, exchange rate targeting was not appropriate due to the relatively closed nature and large size of the economy. Similarly, stickiness in long-term rates was a major impediment to considering an interest rate targeting framework seriously. IT, in contrast, was a serious option. It is, therefore, relevant to discuss why India did not adopt IT at that time.

The success of many developed and emerging market economies under an IT framework was keenly followed in India. While appreciating many advantages of the IT framework, its critics raised three major concerns in the Indian context. First, fiscal dominance was considered a serious problem. Second, supply shocks and the role played by prices of a few crucial administered commodities in overall price formation were perceived as important. Lack of an official core inflation measure further compounded the problem. The third and final concern was that a move to IT might be too early. Most of the countries that had formally adopted IT approach had not completed a full business cycle by that time. Summarising these concerns, Kannan (1999), in one such article, suggested a "wait and watch" policy.

It may be noted that the problems identified by those arguing against the adoption of IT were not insurmountable. Fiscal dominance, for example, was also an important factor behind

failures to meet monetary targets.[10] In the Indian case, the problem could have been solved by clearly mentioning in the IT contract that if the government's budget exceeded a certain limit, then the RBI would not be held responsible if inflation overshot the target within a stated time period. Similarly, the problem of supply shocks could also have been tackled - at least initially - by adopting a broader range for the acceptable rate of inflation than that practiced by the developed countries. Interestingly, the Advisory Group on Transparency in Monetary and Financial Policy suggested formal acceptance of the IT framework approximately at the same time.

Rather than the concerns for fiscal dominance or supply shocks, India's decision not to adopt IT during 1998-99 could perhaps be explained from the political economy angle. In many inflation targeting economies, people were fed up with a chronically and persistently high rate of inflation and this created an environment that facilitated formal acceptance of that framework, especially after its startling success in the first few economies that adopted it. In contrast, as inflation in India was moderate all along, the political desire for a major change in the framework was conspicuously absent during the late 1990s. The late 1990s was a politically volatile period in India, with successive unstable governments. As Figure 2 demonstrates, three parliamentary elections were held in qick succession during this period. To incorporate the radical changes that the IT framework demanded, a fair degree of political consensus in India was necessary.

The transition to MIA was arguably a compromise outcome of monetary policy reforms. This approach has been followed since April 1998. In this approach, besides monetary aggregates, information pertaining to a range of rates of return in different financial market segments along with the movements in currency, credit, the fiscal position, merchandise trade, capital flows, the inflation rate, the exchange rate, refinancing and transactions in foreign exchange - which are available on a high frequency basis - is juxtaposed with data on output and the real sector activity for drawing policy perspectives. In a medium- to long-term perspective, the impact of money supply on inflation, however, cannot be ignored and for the purposes of policy, the RBI still continues to announce projections of money supply compatible with the outlook on GDP growth and expected inflation. It may be noted that though India did not formally adopt an IT framework and practiced monetary policies in the subsequent period that are by and large discretionary in nature, it attempted to assimilate many of its desirable features (especially with respect to transparency) in the MIA. This aspect will be reviewed further in Subsection 2.3.

Since the adoption of the MIA, there have been four major changes. The first related to the signalling aspect of monetary policy. The RBI once again undertook the task of creating a corridor for the short-term money market rate in a phased manner, finally enabling to carry out liquidity management in India through open market operations (OMO) and reverse repo/repo operations.

The second major change was in the evolution of policy coordination, culminating in the Fiscal Responsibility and Budget Management Legislation. The objective of the legislation was to impose fiscal discipline on government spending and ensure a transparent and accountable fiscal system.

The third major change was in clearer demarcation of stabilisation policies from structural policies. Earlier, major monetary policy announcements in India used to take place twice a year. As stabilisation of financial markets often needed quick and immediate action, it was repeatedly articulated by the RBI management that necessary policies for that purpose would

[10] Failure to meet the monetary target and failure to meet the inflation target would perhaps result in different types of credibility problems. For example, internationally, the Bundesbank's reputation was in controlling inflation and not necessarily in maintaining its monetary targets.

be taken immediately and certainly not after a long wait of six months. This, however, did not apply to policies that had long-run structural implications.

The fourth major change was the result of the changed approach regarding the second and the third. It concerned the way these long-run structural aspects were handled. Coordinated efforts were necessary to examine and implement international best practices. Along with other significant market players and other experts (especially those in the academia), both the government of India and the RBI jointly attempted to implement the International Financial Standards and Codes.

2.3. Multiple indicator approach: the current monetary policy framework

Although the RBI refers to its current monetary policy framework as the MIA, internationally the more familiar term would perhaps be an implicit nominal anchor approach. Abandonment of an MT framework implied the loss of broad money (M3) as the nominal anchor. Since changing the policy framework, the RBI has not categorically mentioned its nominal anchor.

Internationally, the limitations of the implicit nominal anchor approach are well known. The two central banks that are often benchmarks for the rest of the world, the Federal Reserve (Fed) and the ECB, both seem to follow this approach. In both cases, there is overriding concern for inflation, though there appears to be no explicit public commitment in the case of the United States.[11] In both the United States and the Eurpean Union, the rate of inflation thus works like an implicit, but not formally declared nominal anchor. Further, especially in case of the United States, its careful monitoring of signs of inflation and forward-looking actions under the leadership of Alan Greenspan appear to have yielded excellent results.

In his review of international experiences with different monetary policy regimes, Mishkin (1999) has observed similarity in the forward-looking strategic actions of the Fed with inflation targeting economies. Mishkin (1999), however, has severely criticised this approach for its lack of transparency, categorising it as a "just do it" approach. He further observed that the success in this approach would strongly depend on the preferences, skills and trustworthiness of the individuals in charge of the central bank.[12]

The current Indian monetary policy framework looks remarkably similar to the frameworks of both the Fed and the ECB in this respect. In the Indian case, though the relative emphasis between price stability and growth depends on the underlying macroeconomic conditions, the RBI management has publicly acknowledged price stability as being the overriding concern. In fact, Reddy (2005) has acknowledged price stability as a kind of "informal mandate".

In the MIA framework, the RBI mentions its own projections with respect to the mandated tasks in any given year.[13] *None of these projections, including that on inflation, are worded as "targets", although that pertaining to the rate of inflation could be thus interpreted by economic agents.* Apparently, these "projections" are self-imposed and informal. However,

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[11] The ECB has clarified that its long-term price stability goal should be interpreted as a range for inflation of 0-2%, but is not willing to call its framework an IT framework. This approach has drawn flak from certain quarters. For example, Mishkin (2001) comments "The ECB seems to have decided to try to have its cake and eat it too by not committing too strongly to either a monetary or an inflation targeting strategy" (Box 2, p 518, Sixth Edition)

[12] Mishkin (2000) wryly observes that "I think it is fair to say that right now the nominal anchor in the United States is Alan Greenspan".

[13] It may be noted that RBI projections include both GDP growth rate and growth in non-bank credit. Thus, its projections encompass the various ways the mandated task can be interpreted. It also generally declares in a routine fashion that the projected credit growth would be "adequate" for the productive sectors of the economy. Deposit growths and M3 growths are also projected.

given the power of the central government in India, it is imperative that they are set after consultations with the elected representatives.

It may be noted that this form of soft wording that makes the target implicit is not uncommon. In its gradual shift towards IT, Chile had followed this approach. Initially, inflation targets were announced and worded as official projections, rather than hard targets. However, over time as inflation fell, the procedure was changed and inflation targets came to be viewed by the central bank and the markets as hard targets. Mishkin (1999) observed a similar approach in the case of industrial countries as well. The RBI's current approach, therefore, looks similar to a soft and flexible version of IT.

A relevant question that occurs here is: how are these projections made in India? Central bank projections, in most cases, are initially carried out by the staff members, using different statistical or econometric techniques. Results of these models are then combined with the judgments of the policymakers. It is difficult to judge from the predicted figures to what extent a particular projection has been influenced by the "superiority" of judgment, unless the models are publicly disseminated with all relevant data and other related information. In the case of India, individual reviews like Barman (2002) have summarised the forecast efforts of the RBI staff. However, there is no separate official document like "Economic Models at the Reserve Bank of India" à la Bank of England (2000). Rather, these efforts remain scattered across official documents.

The models in central banks, however, could serve an alternative purpose. These models - especially the macroeconometric ones - serve as communication channels to explain to economic agents the official views on transmission of the monetary policy. In fact, many central banks have their own official views on monetary policy transmission process and this view is articulated in a separate document, eg, Bank of England (1999). In the case of India, once again, the official view remains scattered across documents.

Among the four traditional channels of monetary policy transmission, common sense suggests that the exchange rate channel and the asset prices channel would play a limited role in India. The role of the exchange rate channel is limited because of India's relatively closed nature. Though the degree of openness of the Indian economy has increased substantially compared to the 1980s, the large size of the domestic market compared to total exports or imports suggests that the exchange rate channel may not be an influential channel. So far as the asset price channel is concerned, compared to the developed economies, the financial system in India has a relatively low vulnerability to asset bubbles. There is limited exposure of bank lending to the sensitive sectors, including real estate. The share of housing loans in the overall loan portfolio stood at about 10% in March 2004 and net non-performing assets were 1.4% of the net outstanding loans as compared with 2.8% of the aggregate portfolio (Reddy (2005)). This suggests a limited role for the asset price channel as well.

The major uncertainty on monetary policy transmission in India is, therefore, on the relative roles of the quantum channel (especially relating to money supply or credit) and the interest rate channel. Earlier, the MT paradigm implicitly took into account the transmission mechanism through the credit channel, as implicit in the targeted monetary growth was also a credit growth target (Rangarajan (2001)).

The many macroeconometric models prepared before the adoption of the MIA in India (eg Pani (1984); Bhattacharya et al (1994); Rao and Singh (1995)) attempted to study the relationships among money, price and output with the implicit recognition of the dominance of the credit channel in India. Alternative policy simulations were also tuned to find out the optimal rate of money or credit growth in specific circumstances and to what extent the changes in CRR would lead the economy to the desired trajectory. This trend was continued

during the late 1990s (Rangarajan and Mohanty (1997); Palanivel and Klein (1999)).[14] The so-called atheoretical vector autoregressive models specified during this period were also not exceptions. In the Indian context, Srimany and Samanta (1998) attempted to study the interrelationship among money, price and output by specifying a three-variable structural VAR model.

Despite serious attempts, the model-based exercises to understand the transmission mechanism were severely constrained in India by the lack of comprehensive and timely information in some areas. Conceptually, the entire process of monetary policy transmission through the interest rate channel can be divided into four phases. In the first phase, central bank policy rates affect the explicit or implicit operating target, often the overnight rate. In the next stage, the short-term rates lead to changes in the long-term rates through the yield curve. In the third stage, these long-term rates lead to changes in aggregate demand. In the fourth stage, interactions of aggregate demand and aggregate supply lead to the determination of prices and output.

In the Indian case, clear evidence is at least available for the first three phases. Successful implementation of the corridor for the overnight rates has enabled the RBI to give policy signals through official interest rates that form the bounds of the corridor (eg the repo rate). The adjustments in the short-term money market rates in response to the policy rates are quick and generally take place within a single reserve maintenance period (ie a fortnight). So far as the second phase is concerned, studies like Sastry et al (2001) have found evidence that despite the stickiness, long-term interest rates (eg lending rates) also begin to change, often after a lag of one month. The evidence on the third phase is comparatively recent. Panel studies by Prasad and Ghosh (2005a) on corporate behaviour confirm the importance of the interest rate channel in the case of India. Further, they highlight that the interest rate channel has strengthened considerably post-1998.

Despite progress in understanding, it is the fourth stage in the transmission channel that still leaves many questions unanswered and the paucity of relevant data and information is most serious in this case. For example, until the mid-1990s at least, data on GDP in India were unavailable at quarterly frequency. Further, estimation of crucial measures such as potential output is not easy in the Indian case, notwithstanding some recent efforts. The quality of these estimates would improve if more data on the unorganised sector, employment and capacity utilisation were available. In this context, a major lacuna in India is that the data on employment essentially pertain to the organised sector, which constitutes less than 10% of the total labour force. It is important to stress that this is a severe constraint under which monetary policy in India is still being carried out.[15] Further, a lack of reliable wage data is an impediment in determining the relative roles of cost-push and demand-pull factors in specific situations.

Additionally, an assessment of the inflationary conditions in the economy is constrained by the lack of a comprehensive measure of consumer price inflation. The multiple consumer price indices in India, on the basis of occupational classification and residence (rural/urban), compound the problem, especially when differences in weighting diagrams of the commodity baskets lead to differences in inflation numbers.

To illustrate this aspect, Figure 3 reveals the movements of different price indices in India.[16] In Figure 3, WPI is the annual rate of inflation based on WPI. AL, UNME and IW are all CPI-

[14] Krishnamurty (2002) provides a detailed review of the history of macroeconometric modelling in India at least until the end of the 1990s.

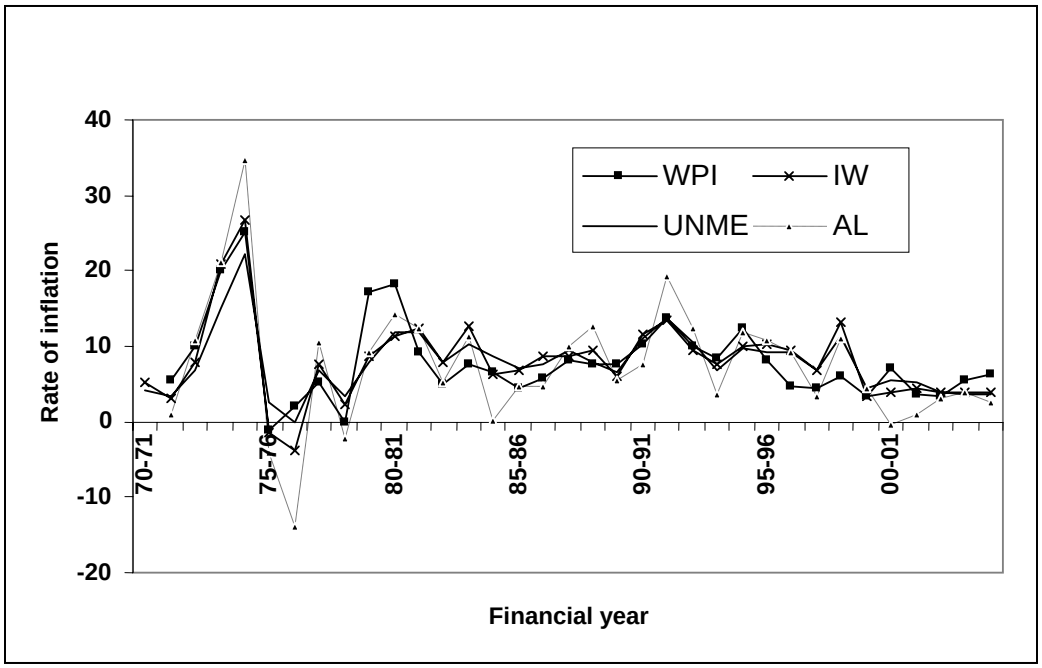
[15] In RBI official publications, discussions on the labour market are generally conspicuous only by their absence.

[16] Even the determination of real equilibrium interest rates for India may not be easy because of the absence of agreement on the price measures to be utilised.

based measures, for agricultural labourers, urban non-manual employees and industrial workers respectively. A casual glance at Figure 3 conveys that in any given year, the rates could be sharply different. However, Figure 3 suggests that their long-term relationships are unlikely to be seriously affected, despite findings to the contrary (Samanta and Mitra (1998)). In fact, Figure 3 also suggests that the three- or five-year moving averages of these rates of inflation are likely to be closer, as shocks to specific commodity groups are averaged out in this process.

Figure 3

Different measures of the rate of inflation in India



So far as other informational requirements are concerned, it may also be noted that India, even at this stage, also lacks a comprehensive service price index. Expectation or outlook surveys are also nascent. As a consequence the time series properties of different series from these surveys cannot be estimated well.

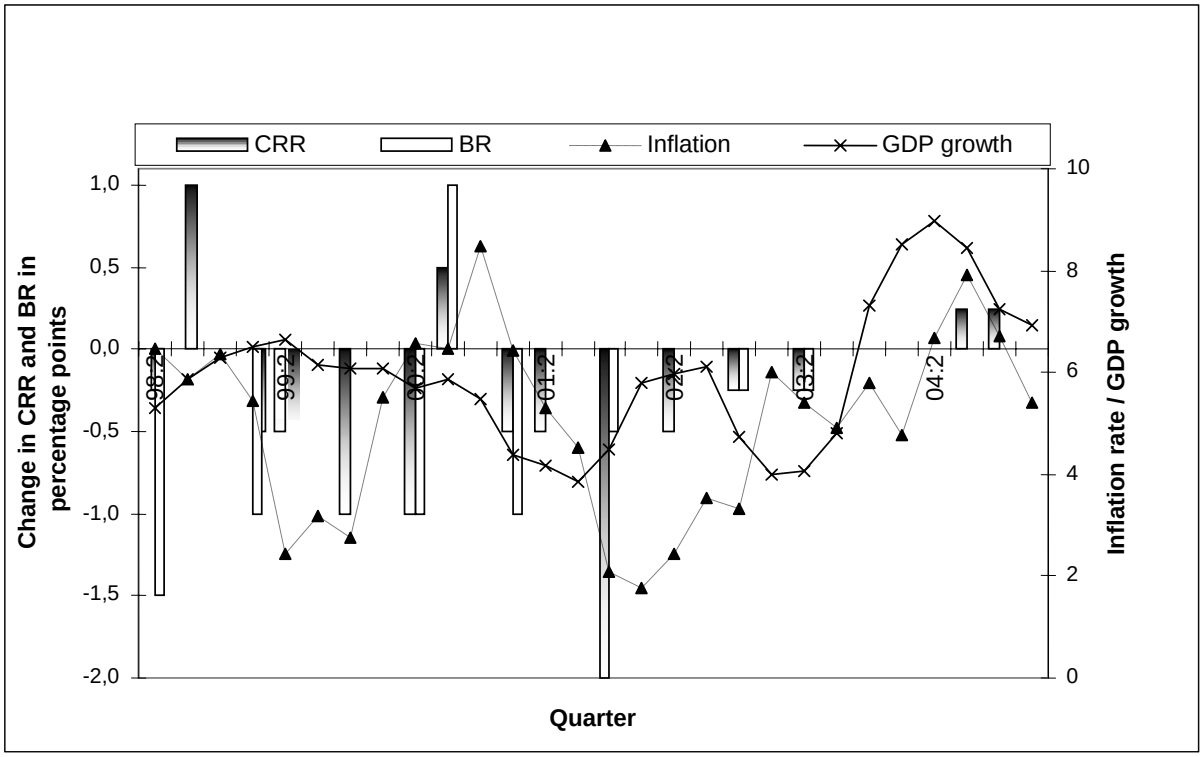
As the transmission mechanism is relatively less understood in India, a natural question is: how does the RBI decide to make changes in the CRR or the official interest rates in the multiple indicator regime? Figure 4 presents the quarterly changes in the Bank Rate (BR) and the CRR since the adoption of the MIA and juxtaposes these changes with the rate of inflation and GDP growth. Figure 4 reveals a few important features of the Indian economy. First, it establishes the "efficiency" compulsion of the Indian policymakers: a typical reduction in the BR or the CRR, even during the late 1990s, may not necessarily reflect "easy" monetary policy.[17] In fact, there appears to be an asymmetry in the impacts of a CRR (or BR) rise and that of a CRR reduction. Given the constraints of the policy authorities, an increase in CRR or BR would indicate the monetary authority's signal of tightening, but relaxing them may not be necessarily so. Three instances of an increase in either CRR or BR are shown in Figure 3, among which the first, during 1998, was a signal of tightening in the context of the

[17] The RBI had repeatedly stressed its long-run commitment of reducing the CRR to the statutory minimum level of 3.0%. The value of CRR as at October 31 2005 is, however, 5.0%, implying that the agenda is, as yet, unfinished.

Southeast Asian financial crisis. It may be noted that in each case, the rate of inflation started to change course after about another quarter, despite relaxations of these measures afterwards. Given that CRR or Bank Rate changes were often initiated at the beginning of a quarter (ie in April or October), Figure 3 seems to suggest that monetary policy measures in India typically begin to affect the real sector with a lag of about six months, a lag that is generally in tune with cross-country findings.

Figure 4

Movements in inflation and output and the RBI policy signals



Working with both CRR and BR is a major impediment to having a clear policy reaction function in India.[18] In fact, as late as in the year 2000, the RBI (2000b) suggested that a consequence of the lack of a clear policy reaction function in India could be that policy rules (eg Taylor rule) that could guide discretionary policy of the authorities in stabilising business cycles had not emerged in India. Interestingly, the RBI (2002) attempted to rectify this problem by specifying a policy reaction function in its model for the Indian economy.

So far as individual attempts at finding policy rules are concerned, in an interesting study Rao (2003) attempted an innovative solution. Generalising the concept of a monetary conditions index, Rao proposed a macroeconomic condition index comprising 10 macroeconomic indicators. He normalised each indicator on a scale of 0 to 1 and took a weighted average of these indicators; the weight accorded to each normalised variable was the inverse of its standard deviation over the sample period of 1990-91 to 2001-02. Rao's technique, therefore, is similar to that of the principal component analysis in multivariate

[18] In the *Handbook of statistics on Indian economy* (13 September 2005), Table 45 (p 96) for Bank Rate, CRR and SLR mentions only the effective date of the change. It does not give the date of announcement of the policy. It is important to have these dates to study the announcement effect of RBI policies on financial markets.

statistics. Rao used this indicator to explain changes in the official interest rates, and thus obtained a policy rule for the Indian economy. Given that this rule was based on most of the indicators listed by the RBI in the MIA, this is probably the only unofficial attempt to extract rules from apparently discretionary policies that characterised the 1990s.

Given the limitations in understanding the transmission channels and limitations in macroeconometric models in a radically changing environment, research, both within and out of RBI, often focussed on single equation techniques, especially in case of inflation.[19] Among studies in this category, Callen and Chang (1999) attempted to explain and forecast the rate of inflation in India by alternative techniques. Their study revealed that among alternative indicators, M3 remained an important determinant of inflation. In fact, they observed an increase in the information content of the monetary aggregates since the financial deregulations. Callen and Chang (1999), however, found that an output gap specification did not work well on Indian data.

Besides limitations in the statistical infrastructure that put severe constraints on modelling exercises, three other major differences distinguish the Indian monetary policy framework from that of the developed economies. The first difference is the importance of fiscal dominance in the Indian context. Figure 2 reveals that in many instances, the variable GFD_CEN either peaked or displayed an increasing trend near parliamentary elections, highlighting the existence of the classical time-inconsistency problem. Although numerical values of GFD_CEN have come down sharply from 1998-99 onwards, its value still hovers around 4.0%. The deficits and the consequent borrowing programmes of the government puts serious constraints on the RBI's monetary management. This is because, as the debt manager of the government, its monetary and debt management activities could sometimes be in conflict.

The second difference is the predominance of publicly owned financial intermediaries in India. Cross holdings and inter-relationships among these organisations could be a problem. In the context of central bank independence, Reddy (2001b) had sharply criticised this "joint family approach" that "ignores the basic tenets of accounting principles".

The third difference is in the operating target. So far as the tactical aspect of monetary policy is concerned, the operating target in India has - until now - not been clearly mentioned. However, observers of the Indian market would readily verify the increasing inclination of the Indian monetary authorities to keep the short-term interest rate within a given corridor, which suggests that the call money rate in the Indian market could be taken as an informal operating target.[20]

An important question is: how has the Indian framework performed in terms of transparency and communication of policy? An international benchmark document in this area is the Code of Good Practices on Transparency in Monetary and Financial Policies prepared by the International Monetary Fund (IMF). This document is a development of the late 1990s. The Indian observance of these codes was reviewed by the Advisory Group on Transparency in Monetary and Financial Policies. The Group took a holistic approach and, other than a few lacunae already mentioned, found India to be compliant with most of these codes.

The Advisory Group's major concern was about the apparent lack of transparency in the setting of monetary policy objectives. In this context, it must be stressed that, for its part, the RBI had clearly mentioned its projections of a few crucial macroeconomic indicators in its policy statements. It can be argued that these projections also reflect the policy priorities at a certain point of time.

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[19] Barman (2002) provides a review of the forecasting approach within the RBI.

[20] For example, Hawkins (2005, Table 1, p 60) has characterised the overnight rate in the money market as India's operating target.

In a typical financial year (from April to March), these projections first appear in the annual policy statement. Generally these statements are given by the second half of April or first half of May. The projections may be revised in the Mid-Term Review, which typically occurs in the second half of October or the first half of November. These reports are lengthy and often consist of about 60 pages. As there are no sections devoted to these projections alone, a search for them could be tedious unless the concerned person reads at least a few of these reports to understand the way they are organised. The projections are made available in the part devoted to the monetary policy stance for the coming year. This part (often about two to three pages) not only provides the projections but also attempts to explain the rationale behind them. To examine the "judicious balance" between the objectives mandated to the RBI, one must read this part of the policy statement carefully.

Besides the projections, the long lists of RBI publications, the frequency of the speeches of its top management and its data dissemination appear to be consistent with the international standards in general. It may, however, be pointed out that RBI reports and reviews are often too long. With such a plethora of information dissemination, the very purpose of information dissemination and communication may be lost. For example, the need to prepare a 95-page quarterly report (Macroeconomic and Monetary Development 2004-05) can be questioned, especially when many other central banks can manage that task within about 60 pages (eg the August 2005 Inflation Report of the Bank of England consists of 59 pages, all-inclusive).[21] The RBI website, however, appears to be in tune with the international benchmark.

Given all these, an important question is to what extent the RBI had been able to establish credibility. As policies during the 1990s were often discretionary and based on judgment, this question becomes crucial in understanding its role in guiding market expectations - a crucial feature in an IT framework. The question is also important in the Indian context, because if in future the RBI changes its framework to IT, the quality of its own assessments would play a significant role.

In this paper, we attempt to answer this question by examining to what extent the RBI outlook had actually materialised. The quality of assessments of the RBI during the MT period has already been examined by Mohanty and Mitra (1999). Further, Barman (2002) has reviewed the quality of RBI projections of the rate of inflation and GDP growth rates in the post-MT period from 1998-99 to 2001-02. The MIA approach, however, is based on several indicators. Therefore, it is important to review all RBI projections. In this paper, we examine the RBI projections on five variables, viz, the annual rate of inflation and annual growth rates of GDP, M3, bank deposits and non-food bank credit from the years 1999-00 to 2004-05. Table 1 reports the performance of RBI projections for these five variables.

Table 1 reveals a few important aspects regarding credibility. First, the quality of RBI projections had generally been good. If we allow a 2.0 percentage point band on either side, the major divergence in case of inflation has occurred only once, in the year 2000-01 when the projected rate was about 4.5% whereas the actual turned out to be 7.2%. Its outlook regarding the other variables also reflects a moderate to good performance.

A few general aspects, however, are important to note. First, the projections came at different time during the year. Although sufficient advance notice is given to the general public for the date of the annual policy statements and also for the mid-term review, so far these dates do not follow a clear pattern. For example, in the case of annual policy statements, differences in these dates could be as high as one full month (April 20 in 1999-2000 and May 18 in 2004-05). Hence, the information content that went in these projections and the time horizons of these projections were also different for different years.

[21] One way to make a brief report is to make available a few background or survey papers on specific areas by individual staff members. The Bank's report may either refer these papers or quote from them liberally.

Table 1

RBI projections of indicators and actuals

Financial year (date and paragraph)	Variable	Outlook of the RBI: value/range (%)	Actual (%)
1999-00 (20 April 1999; paras 35 and 36)	Real GDP growth	6 to 7	6.1
	Rate of inflation	about 5	3.3
	M3 growth	15.5 to 16.0	14.6
	Growth in aggregate deposits	16.5	13.9
	Non-food bank credit growth	about 18	16.6
2000-01 (3 May 2000; para 31)	Real GDP growth	6.5 to 7.0	4.4
	Rate of inflation	4.5	7.2
	M3 growth	about 15.0	16.8
	Growth in aggregate deposits	about 15.5	18.4
	Non-food bank credit growth	around 16	14.9
2001-02 (19 April 2001; para 45)	Real GDP growth	6.0 to 6.5	5.8
	Rate of inflation	within 5.0	3.6
	M3 growth	about 14.5	14.1
	Growth in aggregate deposits	about 14.5	14.6
	Non-food bank credit growth	16.0 to 17.0	13.6
2002-03 (29 April 2002; para 42)	Real GDP growth	6.0 to 6.5	4.0
	Rate of inflation	Assumed to be slightly lower than 4.0	3.4
	M3 growth	about 14.0	14.7
	Growth in aggregate deposits	about 14.0	16.1
	Non-food bank credit growth	15.0 to 15.5	26.9
2003-04 (29 April 2003; paras 59-61)	Real GDP growth	about 6.0	8.5
	Rate of inflation	5.0 to 5.5	5.4
	M3 growth	at 14.0	16.7
	Growth in aggregate deposits	at 14.0	17.5
	Non-food bank credit growth	15.5 to 16.0	18.4
2004-05 (18 May 2004; paras 57-60)	Real GDP growth	6.5 to 7.0	6.9
	Rate of inflation	around 5	6.4
	M3 growth	at 14.0	12.4
	Growth in aggregate deposits	at 14.5	13.0
	Non-food bank credit growth	16.0 to 16.5	31.6

Note: The actual figures for non-food bank credit growth for the years 2002-03 and 2004-05 include the impact of mergers and conversion of a non-banking entity to a bank. Hence, they are not comparable to the projections.

Second, the wordings of the outlooks do not follow any clear pattern. Sometimes, they are point projections, sometimes expressed with clear upper and lower bounds, sometimes with only one-sided bounds and sometimes with fuzzy words like "about" or "around". Therefore, if one wants to examine whether the RBI's projections of specific variables are improving or deteriorating over time, there is no easy quantitative measure (eg average absolute error in projection) to summarise the performance.

Third, the projections that provide clear lower and upper bounds appear to be too narrow vis-à-vis international standards. For example, the range in one-year-ahead forecasts in a fan chart provided by many central banks could be higher than the range provided by the RBI, despite inflation rates in some of these countries being lower and less volatile. The thin range in some of these projections, therefore, could usher in unwarranted credibility problems.

Fourth, despite moving away from monetary targets, the projections for M3 under MIA appear to be good.

Fifth, the apparently high forecast errors in the case of non-food bank credit growth in the years 2002-03 and 2004-05 are due to mergers as well as conversion of a non-banking entity to a bank. In this paper, the figures for that variable corresponding to the "Actual" column in Table 1 have been taken from Table 230 of the *Handbook of statistics on Indian economy* (13 September 2005) disseminated by the RBI. The notes at the end of the table explain why the growth rates in non-food bank credit have suddenly jumped in those years, but unfortunately do not mention the comparable figures.

3. Performance under different monetary policy frameworks

Earlier, Mohanty and Mitra (1999)'s review compared the performance of MT to that of earlier frameworks. However, being an early study, it could not include observations after the adoption of MIA. Further, Mohanty and Mitra (1999) did not distinguish the performance by breaking the entire MT period into subperiods. In this section, we attempt to extend their findings by focusing on these two tasks. We also attempt to assess the role of monetary policy in these changes. Subsection 3.1 examines the performance, while Subsection 3.2 is devoted to the second objective.

3.1. Performance of the Indian economy under different monetary policy frameworks

In Section 2 it was discussed that the way RBI words its monetary policy objectives makes it difficult to judge its performance against a well defined benchmark. This is for at least three reasons. First, to arrive at the benchmark for "adequate" credit, one would require an accurate estimation of demand for credit in the economy. Second, even if this demand is correctly estimated, the cutoff line for "adequate" may still change depending upon one's perception of and aversion to risk.[22] Third, credit extended "to support growth" may have a time-varying relationship with GDP growth. The strength of association between the two would depend on the efficiency of the banking system, the availability of funds from non-bank sources and corporate behaviour in raising finances for projects. Gauging the "adequate" level of credit is, therefore, not an easy task.

[22] For example, results in Banerjee and Duflo (2004) suggest that during the second half of the 1990s, many small firms in India were severely credit constrained. While credit extended in the economy may not be "adequate" from these firms' perspective, the same may not hold from the point of view of the banking sector or the central bank.

To illustrate the third point, the time-varying correlation coefficient between GDP growth and non-food credit growth is plotted in Figure 5.[23] In Figure 5, NCORR (RCORR) denotes the correlation between nominal (real) credit growth and growth in nominal (real) GDP at factor cost. The time-varying correlation coefficients have been calculated with a moving window of 15 years. Thus, the figures pertaining to 1985-86 correspond to correlations between variables from 1971-72 to 1985-86.

Figure 5

Time-varying correlation between growth rates of GDP and non-food credit

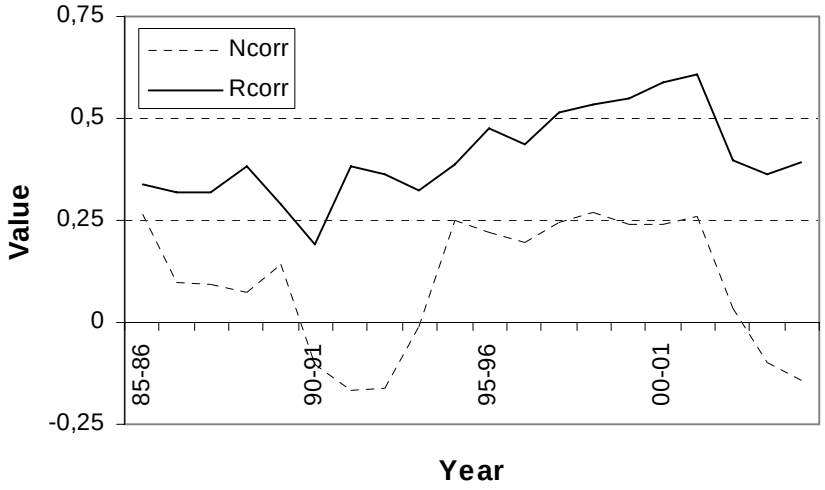

Figure 5 reveals considerable variations in the strength of association between credit growth and GDP growth over time in India. Several aspects of the relationship can be gleaned from Figure 5. First, there appear to be two periods that experienced a sharp fall in both NCORR and RCORR, the first during 1990-92, and the second in 2002-04, as a result of crisis points in the ends of the moving window. While these were due to directed lending programmes, credit growth did not suffer during these points; other factors led to a sharp fall in GDP growth. Second, between 1994-95 and 2001-02, NCORR in Figure 5 is fairly stable, while RCORR displays a clear trend. Interestingly, the moving windows during this period do not contain any data points from the volatile 1970s. The trend in RCORR during this period seems to be consistent with the findings of Rodrik and Subramanian (2004). The pro-business policies pursued by the government since the early 1980s led to more productive use of credit. Third, the sharp fall in NCORR and RCORR after 2001-02 reflects measurement problems. During the years 2002-03 and 2004-05, the RBI data on credit growth included the impact of a merger as well as conversion of a non-banking entity into a banking entity. While ideally one should use data excluding the impact of the merger and the conversion to obtain comparable figures for these years, the point that we want to establish is the importance of non-banking sources in the demand for funds. Worldwide, the distinction between banks and non-banking financial companies became narrower during the 1990s. Indian experience is also consistent with this trend. Fourth, the trend in RCORR reflects a paradox. Although during the 1970s and 1980s the credit channel was thought to be the only effective channel for monetary policy transmission, the inefficiency in the directed lending programmes did not necessarily lead to growth. While economic reforms opened up other channels, the increased efficiency in the banking sector led to a closer association between

[23] The choice of non-food credit growth is made because it is quoted by the RBI in its different policy statements.

credit growth and GDP growth. Fifth, despite the increase in the strength of association, the correlation figures are still moderate. The above observations appear to be consistent with the findings of Misra (2003), who analysed the relationship between credit off-take and growth in 25 states in India from 1980-81 to 2000 and concluded that lack of credit off-take should not be seen as a problem in itself, but should be seen in conjunction with what is happening on the growth front.

A broader interpretation of the objectives of monetary policy in India, however, includes price stability and GDP growth. We therefore examine performance with respect to these two variables. Table 2 presents the summary statistics corresponding to performance in specific periods from 1970-71 to 2004-05. For expository purposes, the period 1970-71 to 2004-05 has been divided into four phases: (i) 1970-71 to 1984-85 (Pre-MT), (ii) 1985-86 to 1992-93 (MT: Phase 1), (iii) 1993-94 to 1997-98 (MT: Phase 2) and (iv) 1998-99 to 2004-05 (MIA).

Table 2

Performance under different monetary policy frameworks

Period	Annual average		Standard deviation	
	Inflation	GDP growth	Inflation	GDP growth
Pre-MT (1970-71 to 1984-85)	**8.4**	**3.8**	**8.0**	**3.8**
MT (1985-86 to 1997-98)	**8.1**	**5.7**	**3.0**	**2.3**
Phase 1 (1985-86 to 1992-93)	8.4	5.2	2.9	2.6
Phase 2 (1993-94 to 1997-98)	7.6	6.6	3.3	1.2
MIA (1998-99 to 2004-05)	**5.0**	**6.0**	**1.6**	**1.5**

Framework-wise, there appears to be a clear picture. Inflation in India has fallen gradually. The GDP growth rate has increased and volatilities in both variables have demonstrably declined under the MIA. The performance with respect to inflation is all the more noteworthy because during the pre-reform period, prices of a lot of commodities were administered. As these prices were not market-determined and were often kept steady artificially with budget support, the problem of controlling price rises was not relevant.

Thus, apparently, the MIA in India has served its purpose well. However, before jumping to this conclusion, two caveats should be remembered. First, better performance under the later framework does not prove that it is the change of the framework or monetary policy alone that has *caused* the better performance. Performance with respect to both inflation and growth under a particular framework is the result of many other policies. As monetary policy affects the real sector with a long and variable lag, any assessment of a particular policy on this performance is likely to suffer from the classical post hoc fallacy. Second, the performance comparison should ideally take place in a ceteris paribus condition. For example, a major change that could have affected the performance during the MT period is the agreement between the central government and the RBI on curbing monetisation. That agreement was signed only in 1997, during the last days of MT in India. Similarly, comparisons would be meaningful only if supply shocks are comparable across periods. Subsection 3.2 examines the role of monetary policy in ushering in these changes further.

The relative efficacy of frameworks can also be questioned if we break the MT period into two phases. During phase 2 of the MT approach, GDP growth had been about 0.6 percentage point per annum more than that in the MIA. Its volatility is also slightly less than that observed in the MIA. The inflation rate, in contrast, is markedly less during MIA. It

has fallen by 2.6 percentage points per annum more and its volatility (measured in terms of standard deviation) has also nearly halved compared to the second phase of MT.

3.2. role of monetary policy in the observed performance

We now attempt to assess the role of monetary policy in India in bringing about the changes in economic performance. The first question before us is: to what extent is monetary policy responsible for the improvement in economic performance? We attempt to answer this question by assessing the contribution of shocks other than monetary policy shocks to inflation in India.

The Indian monetary authorities have repeatedly stressed the importance of supply shocks in the Indian context. In fact, the perceived dominance of supply shocks was one factor besides fiscal dominance that led India not to opt for IT. Among other determinants, the role of supply shocks in inflation in India, therefore, needs careful scrutiny.

The annual rates of inflation observed from 1970-71 onwards seem to confirm the important role of supply shocks. From 1970-71, the Indian economy experienced three high inflation episodes, viz, 1972-75, 1979-81 and 1990-95, leading to double digit inflation rates.[24] The first two episodes were clearly due to the increase in international oil prices that had devastating consequences for the Indian economy. Even in the last episode during 1990-95, the role of supply factors cannot be ignored. Though fiscal profligacy and the balance of payments crisis were responsible for the higher rate of inflation during this episode, one incident that triggered the crisis was the Gulf war.

One way to examine the role of monetary policy would be to examine core inflation rates. In the Indian context, though official core estimates are not available, core inflation measures have been estimated by Samanta (1999) and Mohanty et al (2000) based on different principles.[25] These studies once again confirm the importance of supply shocks in India. Core inflation estimated by these studies tended to be lower, especially during high inflation episodes. For example, during the high inflation episode of 1990-95, while the average annual rate of inflation based on WPI was 10.7%, core inflation measured using a trimmed mean approach was 9.9% (Mohanty et al, 2000). So far as the contribution of oil shocks is concerned, Bhattacharya and Bhattacharyya (2001) examined the role of oil prices on other commodities in a VAR framework. Their results, largely pertaining to the data on the second half of the 1990s, revealed that a 20 percentage point shock in domestically administered oil prices led to about a 1.3 percentage point price increase in other commodities at its peak, which typically occurred five to seven months after the shock.

Unfortunately, the reference periods in these studies either do not include any observations after the adoption of MIA or include only a few. However, the performance of inflation in India since 1998-99 seems to further corroborate the importance of supply shocks. If, as per Rangarajan (2001), one considers 5.0-6.0% as the tolerable range for inflation in the Indian context, there had been two instances where the rate had overshot, eg 7.2% in 2000-01 and 6.4% in 2004-05. In each case, the increase was due to that in the fuel, power, light and lubricants (FPLL) group (28.5% and 10.1% respectively). The average rate of annual inflation

[24] The rate of inflation (based on WPI) in the year 1993-94 was 8.4%.

[25] The RBI should prepare a few "official" measures of core inflation. Efforts in this direction so far have come at the initiative of individual staff. While the appropriateness of a specific core inflation measure in the Indian context may always be questioned, there is no harm in providing more than a single official measure. The debate on the appropriateness of a core inflation measure is primarily an empirical one and unless at least a few such measures are made available, cannot be resolved satisfactorily.

in manufactured commodities, a very crude estimate of core inflation based on exclusion principles, had been only 3.8% per annum since 1998-99.

These observations are generally supportive of the importance of supply shocks. Their implications being that even if the monetary policy framework in India is changed to formal IT, the band of the tolerable range - at least during the initial years - needs to be higher than that in the developed countries.

It may, however, be noted that supply shocks may not necessarily lead to high inflation; they can reduce the rate of inflation as well. Inflation reducing supply shocks occur when technological progress makes the economy more efficient, or when competitive pressure in the economy increases. These changes are generally slow, so the fall in inflation is also likely to be slow.

The Indian experience seems to be supportive of the existence of positive supply shocks as well. For example, studies like Poddar (2004) have found evidence that the liberalisation process in India had resulted in greater domestic competition, increasing firms' efficiency and India's ability to export in international markets. This increase in efficiency was achieved by combinations of monetary, fiscal, competition and administrative policies and not by monetary policies alone. One can argue that some of these policies initiated during the economic reforms led to a shift in the aggregate supply curve, giving rise to difficulties in estimating the likely contribution of monetary policy in the reduction of inflation.

Although the precise contribution of monetary policy in reducing the rate of inflation is difficult to arrive at, monetary policy in India facilitated the process of raising competitiveness and efficiency. There is evidence that policies adopted by the RBI led to an increase in the efficiency and competitiveness of the financial sector. For example, Bhattacharya and Das (2003) have observed a clear downward trend in different measures of spreads in the banking sector in the 1990s. Further results in Prasad and Ghosh (2005b) pertaining to the period 1996-2004 suggest that Indian banks had operated during that period under competitive conditions. It is likely that the increase in competitiveness in the financial sector, inter alia, created the background for the increase in competition in other sectors by reducing entry and exit barriers.

The next question that we ask is: whether the rate of inflation in India has fallen to the desired level? Arriving at a socially optimal rate of inflation is not an easy task. Interestingly, the Chakravarty Committee, while highlighting the importance of price stability as the dominant objective of monetary policy, considered the desirable rate of inflation in India to be about 4.0%. Rangarajan (2001), in the case of India, suggested an alternative acceptable range as 5.0 to 6.0%. The figures of both the Chakravarty Committee and Rangarajan (2001) are based on judgments, as it was felt that econometric models could not clearly indicate all the costs of inflation. Interestingly, in the case of India, empirical estimates of the threshold rate of inflation - beyond which it has a negative effect on growth - generally vary between 3 and 7%, although the official estimate is about 5% (RBI (2002)).[26]

In the developed countries, the current desirable rate typically considered is around 1.0-2.0%. If we allow a 2.0 percentage point band on either side, 0.0-4.0% seems to be the general tolerable range. Thus, since 1998-99 the average annual rate of inflation in India (measured in terms of WPI) has not been too much out of alignment with that in developed countries. It may be noted that in the Indian context, the rates of inflation based on WPI and CPI had sometimes yielded significantly different estimates and even their long-term relationships had been found to be susceptible (Samanta and Mitra (1998)). Incidentally, the

[26] One of the latest estimates of the threshold rate of inflation is about 3.5% (Rao (2003)).

annual average rate of inflation in India based on CPI had been 5.1 during the same period, not much different from the estimates based on WPI.

The next question that we ask is: had monetary policy in India been too tight in introducing these changes? Measuring monetary policy, despite the fundamental contributions of Bernanke and Mihov (1998), is not an easy task. This is especially difficult in the Indian context due to the interim shifts from quantity-based to price-based signals.

The history of the 1990s at least indicates one episode where the criticism of "too tight" monetary policy merits scrutiny. The episode occurred during the year 1995-96, when the flexible exchange rate regime adopted during the early 1990s met its first test. The RBI was not committed to any specific values of the exchange rate, but consistently maintained its stand on fighting volatilities. A major test came when after a long period of remarkable stability the INR-USD rate depreciated substantially.

During the first half of 1993, the rupee experienced some minor fluctuations against the US dollar. However, throughout the second half of 1993 and for the almost entirety of 1994-95, the rupee remained stable at 31.37. From September 1995 onwards, the INR-USD market in India experienced wide volatility. Such wide fluctuations continued until February 1996, and the value of the rupee against the US dollar fell as low as 37.40. However, the RBI intervention to stabilise the market was successful. By April 1996, the rupee stabilised at around 34.23. The RBI intervention in the foreign exchange market was one reason behind the so-called "liquidity crunch". This "liquidity crunch" might have choked GDP growth in 1997-98 to 4.8% from 7.8% in the year 1996-97. Studies like Srimany and Samanta (1998) have found evidence of tight monetary policy during October 1995 to March 1996. Some researchers like Balakrishnan (2005), citing the evidence of high real PLR during this episode, held the RBI responsible for the liquidity crunch, calling it a "bizarre case of no monetary policy".

Though questions may be raised whether the RBI had acted too cautiously, it may be noted that in a nascent market-driven economy, unwarranted volatility in the foreign exchange market could have created havoc. The Mexican crisis was still fresh and the RBI certainly needed to invest in credibility. It can be argued that though GDP growth for one single year suffered, successful management of the volatility in the foreign exchange market helped to establish the credibility of the RBI. This credibility was enhanced substantially after the successful handling of the Southeast Asian financial crisis. Thus, even if monetary policy had been "too tight", the RBI action revealed a marked preference in favour of financial stability. Incidentally, 1995-96 is the year when the rate of inflation in India, after the high inflation episode of 1990-95, began to fall.

A final important question is: how can the rate of inflation in India be reduced further and brought completely into line with that of the developed economies, and has monetary policy any role in this process? An examination of the figures relating to core inflation suggests that other than ensuring financial stability, monetary policy will have a limited *additional* role in this process. The task for aligning the rate of inflation further primarily rests on fiscal, administrative and competition policies that should orient more and more towards the micro level.

The paper, in this context, highlights a specific aspect of inflation that has so far been ignored by the literature that addressed structural aspects of inflation formation in India. India being a large country, shocks to prices in a particular area could be local. Unfortunately, the WPI data that are used by the Indian monetary authorities for policy purposes cannot be used to examine this aspect. However, CPI data (for industrial workers) that are available for 76 separate cities in India help us to assess the importance of this problem.

In a recent study, Das and Bhattacharya (2005) have studied the features of the spatial distribution from 1996 to 2004. Some of the results that emerge from this study are startling and reveal that the range over which regional inflation rates vary could be as high as about 20.0 percentage points in a single year, as in the calendar year 1998. It may be noted that

during the same year the average rate of inflation based on CPI was 13.4%. The standard deviations of the rate of inflation across regions generally varied between 2.0 and 2.5 percentage points. Further, though in general the spatial distribution was found to be close to the normal distribution, in high inflation years, it tended to become skewed and leptokurtic, with an increase in standard deviation as well. This level of high spatial variation of inflation in India, despite a common monetary policy, highlights the importance of local supply shocks that monetary policy cannot address. Rather, if India opts for formal IT in the near future, the existence of significant local shocks in prices is one aspect that would also need further careful scrutiny. The key is to remove local monopolies and facilitate inter-regional trade to the extent possible.

4. Conclusion

In our endeavour to understand the role of monetary policy and monetary frameworks in the light of the Indian experience, it is observed that monetary policy in India so far had largely been discretionary. The discretionary policies, at least during the 1990s, were unavoidable due to the immense structural changes that were required to transform a command and control economy to a market-based one. However, consistent with international trends during the 1990s, the motivations that led to such discretionary practices in India had generally been explained to economic agents in detail. Despite crucial differences in a few areas, the monetary policy framework in India has assimilated many of the best international practices. The RBI's overall performance in transparency and data dissemination were also satisfactory. Its performance in assessing the outlook - in full view of public knowledge - had also been good and this perhaps helped to guide expectations of economic agents along the desired trajectory. Together these features indicate the adoption of a soft, informal and flexible version of the IT framework similar to that practiced by many economies before their formal switch to IT. The Indian experience, therefore, further strengthens the observation of Mishkin (1999) that rather than the formal adoption of a target, "the devil is in the details in achieving transparency and accountability".

While monetary policy played an important role in reducing the rate of inflation in India, the paper argues that this achievement was due to combinations of monetary, fiscal, competition and administrative policies. It may be noted that some of these policies, by enhancing efficiency and competition, usher shifts in the aggregate supply curve. As a result, to isolate the likely contribution of monetary policy in reducing the rate of inflation becomes a difficult task, especially in a situation where the relevant statistics pertaining to aggregate supply situations are unavailable. The paper, however, observes that even in this area, monetary policy in India played an important role. It facilitated the increase in efficiency and competitiveness in the overall economy by sharply focusing its attention on efficiency and competitiveness in the financial sector.

A defining feature of the Indian approach to financial sector reforms is gradualism. This is in sharp contrast to some of the emerging market economies that adopted shock therapy. To quote Reddy (2005), policymakers in India had been engaged "in the development of sound and efficient financial intermediaries and markets so as to provide solid foundations for effective transmission of monetary policy". So far as monetary policy is concerned, an important lesson in this context is that a careful demarcation of structural policy measures from typical stabilisation measures could be helpful. Common sense suggests that for financial stability, the second set of measures should be speedy, but a juxtaposition of the Indian experience to other emerging market economies seems to suggest that undue haste in initiating structural changes - while not necessarily bad - could be risky.

It is this last observation that highlights the importance of perspectives in reviewing Indian performance. So far, the paper has consciously attempted to avoid the use of normative

words like “good”, “bad”, “sound” or “desirable” in reviewing the actions of Indian monetary policymakers, as these words often reflect one’s strong normative preferences between high growth and financial stability. A striking contrast in perspectives in this context is worth mentioning. In describing the Indian experience, Reddy (2005) does not rule out “an element of luck”, but opines that investment in institution-building was an “exercise of sound judgment and enhancement of skills at all levels”. At the other extreme, Balakrishnan (2005) perceives the same experience as a “less than imaginative support to growth”, “a failure to show acceleration” and a “bizarre case of a missing monetary policy”, with a grudging approval that “this does not warrant the conclusion that the reforms failed”. Thus, like the proverbial story of the Indian elephant which would look different to different people, the actions of Indian policymakers would perhaps attract different adjectives from different persons or organisations.

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Comments on: "Monetary policy approaches in India" by Kaushik Bhattacharya

Dominique Dwor-Frécaut

This interesting and well written paper duly gives credit to the Reserve Bank of India for successfully shepherding the Indian economy through major financial and economic liberalisation while avoiding damaging financial volatility, and for presiding over disinflation and growth acceleration since the mid-1990s. However, the Indian economy is becoming more globalised and its financial markets are deepening. As India is considering further liberalisation of its capital account, it might find it beneficial to move the mechanics of its monetary policy implementation closer to global practices. Irrespective of its formal framework, implementation of monetary policy would, in our view, be greatly facilitated by the development of an effective communication strategy, that would, in effect, make the private sector a partner in the policymaking process.[1] We believe this would entail a better statistical basis, more structured and predictable policymaking, clearer policy objectives, and more market-friendly reporting.

Data

As the paper points out, India does not have a comprehensive measure of inflation, it publishes very little available data on formal labour market conditions and there are no reliable indicators of wages and employment in the informal sector. Other data not currently available that would support policymaking, and stabilise market expectations, include: quarterly data on GDP by demand component; some index of real estate and land prices; more detailed data on the sectoral distribution of domestic credit; and monthly data on consolidated state-level fiscal performance. In addition, India's balance of payments data do not follow the IMF Balance of Payments Manual 5 standard, and there are issues with the coverage of the international trade data.[2]

More structured and predictable policymaking

The RBI has recently moved to four monetary policy statements a year, from two previously. But, as stressed by Governor Reddy, rates can be hiked at any time.[3] For instance, after surprising the market by not hiking rates in April 2006, the RBI surprised again by raising rates between meetings on 8 June 2006. Policy implementation could gain in efficiency if rate decisions took place at preannounced meetings, perhaps held on a monthly basis to reflect India's complex and fast-changing economy. In addition, India does not have a formal monetary policy committee. The establishment of such a committee could increase policy transparency and predictability, which would be further enhanced if the policy setting committee published the minutes of its meetings.

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1 See Ben S Bernanke, "A perspective on inflation targeting", Federal Reserve Board, 25 March 2003.

2 See IMF, "Staff report for the Article IV consultation", Washington DC, December 2005.

3 See "RBI, markets take global clue", *Business Standard*, 12 June 2006.

Clearer policy objectives

The RBI routinely adds to its policy statements the objective of "provision of adequate credit to the productive sectors of the economy". This is a bit confusing since it could be interpreted as suggesting that monetary policy also targets the credit relationship between banks and their borrowers. Yet financial sector efficiency is more likely to improve through structural policies than through changes in aggregate monetary conditions. Although improving the efficiency of the financial sector is part of the RBI's mandate as regulator and supervisor, it belongs more to structural than to cyclical policy. As stressed by the paper, the credit objective could be restated as one of supporting medium-term GDP growth.

Stronger demarcation of macroeconomic and policy updates and of structural studies

As highlighted by the paper, the RBI quarterly policy statements are "lengthy and often consist of about 60 pages".[4] They tend to include a long list of developmental and regulatory measures. Since these are not intended to support the cyclical management of the economy, they could be communicated to the markets in a separate document. This would allow the pace of release of cyclical policy statements to be consistent with the pace of cyclical developments, which tends to be faster than the pace of structural developments. At the same time, as stressed by the paper, macroeconomic projections and modelling that many central banks use as channels of communication with the market are not readily available in the quarterly policy statements. A quarterly macroeconomic report could play a useful role in helping the market better understand the RBI views on the economy and on the monetary transmission mechanism. Finally, the paper also states that the RBI has a long publication list, and that "RBI reports and reviews are often too long". While the quality of these reports attests to the strength of the RBI research department, they may be more than most market participants can absorb. Communications with the market could be facilitated by a clearer demarcation between in-depth analysis and broader research on the one hand, and shorter, macroeconomic and policy updates on the other.

[4] At the same time, the RBI can also be surprisingly concise. For instance, the 8 June 2006 surprise hike in the policy rate was explained only by "a review of current macroeconomic and overall monetary conditions".

Japanese monetary policy: 1998-2005 and beyond

Takatoshi Ito[1]

1. Introduction

The objective of this paper is to review critically policy actions of the Bank of Japan under a deflationary environment from 1998 to 2005. The economic environment was unfavourable from 1998 to 2004. Output activities were stagnating at best. The deflation, in the sense of a negative inflation rate, was getting worse and the unemployment rate was increasing. Confidence in the financial system was quite weak as several banks failed. During the period, the Bank, having become legally independent in March 1998, aimed at stimulating the economy, ending deflation and stabilizing the financial system. The availability and effectiveness of traditional policy instruments was severely constrained as the policy interest rate was already virtually at zero, and the nominal interest rate could not become negative (the zero bound problem). Worsening deflation means that the real interest rate (the nominal interest rate minus the inflation rate) has to rise. Therefore a deteriorating economy, putting pressure to lower prices, would reinforce itself by increasing the real interest rate.

The actions and decisions of the Bank of Japan have become a focus of policy debate in Japan, as well as the theme of many academic papers, since the experience of deflation combined with the zero bound problem was quite unique in postwar history. Some papers examined Japanese monetary policy in the period since the early 1990s with the view that the Bank might have been too eager to burst the bubble and allow a sharp decline and slow recovery in output activities. The mistake was to allow deflation to occur in the first place. Other papers put the emphasis on how to affect expectations of the future inflation rate once the general price level had started to decline and the interest rate had become zero. This paper focuses on the period after 1998, when the Bank gained legal independence and the economy fell into deflation (ie, the CPI inflation rate became negative).

Several key decisions from 1998 to 2005 will be examined in this paper. First, the decision to move to the zero interest rate policy (ZIRP) in the spring of 1999 will be examined as to whether it was taken later than would have been desirable. Second, the judiciousness of the decision to lift the ZIRP (ie, raise the interest rate) in August 2000 will be examined. At the time, the inflation rate was still negative and the prospect of economic recovery was nascent at best. Third, the effectiveness of quantitative easing (QE) that was introduced in March 2001, along with the decision to go back to a zero interest rate, will be examined. Quantitative easing means that the Bank of Japan provides enough liquidity to financial markets so that commercial banks will pile up excess reserves at the Bank of Japan. The policy interest rate in the interbank market naturally becomes zero. The balance of the current account at the Bank of Japan becomes the policy variable. The effectiveness of QE, or any additional effects to ZIRP, has been debated. Fourth, the Bank did not adopt proposals for non-conventional monetary policy measures, including to purchase foreign

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[1] Graduate School of Economics, University of Tokyo. This paper was originally submitted to the Hong Kong Institute for Monetary Research conference on "Monetary Policy Approaches and Implementation in Asia", 21-22 November 2005. It was substantially revised in light of developments of the Japanese monetary policy since then. The author is grateful for comments from Hans Genberg, Robert McCauley, Masaru Yoshitomi and other participants in the conference.

bonds, to purchase equities (as a monetary policy), to purchase real estate (funds), to adopt inflation targeting, and to cooperate with the Ministry of Finance to carry out nonsterilised interventions. Fifth, the policy switch from QE back to ZIRP and announcement of a desirable inflation rate range (although not as a target) in March 2006 will be briefly touched upon. The exit from the QE framework in March 2006 was made smoothly, as the Bank of Japan decided to lower the excess reserves gradually. The range of inflation that is called the "understanding" of policy board members about price stability was disclosed at the same time. The paper will examine whether this is a first step towards inflation targeting.

All of these issues will be examined in the light of the political economy of an independent central bank. The 1998 Bank of Japan law enhanced independence and increased transparency. The Policy Board members include the Governor and the two Deputy Governors and six members appointed as monetary experts. The Governor has a five-year term, during which he/she will not be fired unless determined by the House of Representatives to be physically incapacitated.

Section 2 will review chronologically how the Bank of Japan operated from 1998 to 2003, the era under Governor Hayami's leadership. Section 3 will review the Bank's policy under Governor Fukui's leadership. Section 3 examines the debate on inflation targeting in Japan. Section 4 discusses the exit conditions of QE, and Section 5 discusses the exit from QE in March 2006.

2. Japanese monetary policy, 1998-2003

2.1. New Bank of Japan, 1998

Although it is interesting to examine the monetary policy that led to the difficult position of 1998, those policy issues are yielded to the rich literature of the bubble and burst of the Japanese economy from mid-1980s to mid-1990s. See Cargill et al (1997) and Ito and Mishkin (2006) for a summary and assessments of Japanese monetary policy since the mid-1980s. See also Ito (2004a) for reasons for the long stagnation of the Japanese economy. In this section, monetary policy since 1998 will be discussed.

The Bank of Japan law was revised in 1997 and became effective on 1 April 1998. Due to a corruption scandal, the Governor was replaced just before the new law took place. The new Governor Yujiro Hayami, when appointed in March 1998, was 72 years old. He was originally on the Bank of Japan staff, but had left the Bank 17 years earlier as an executive. The two Deputy Governors were Mr Yamaguchi, a long-time Bank employee, and Mr Fujiwara, a journalist. The latter was a surprising appointment.

The Bank of Japan Law of 1998 is in every sense a state-of-the-art modern central banking law. The central bank is given a mandate of price stability (Article 2), and there is no mention of aggregate demand or full employment as part of its objective. Institutional independence is guaranteed in the sense that Governors as well as Policy Board members will not be dismissed unless physically or mentally incapacitated; their terms of appointment are five years; government officials attend Board meetings only as non-voting members. See Cargill et al (2000, chapter 4) for a detailed comparison of the old and new Bank of Japan Laws. Cargill et al (1997, ch 4) concluded that the score of independence, developed by Cukierman et al (1993), rose substantially for the Bank of Japan with the new BoJ law, from near bottom among 18 advanced countries to the middle of the pack.

Monetary policy decisions are made by majority vote at the Monetary Policy Meetings (MPMs) of the Policy Board. (Note that the Policy Board will decide many other policy and internal administration matters. The MPMs are only part of the Policy Board's tasks at the Bank of Japan.) The new law states that members of the Policy Board are appointed on the basis of their expertise. Two government representatives attend the MPM but as non-voting

members. The Board is composed of nine members: the Governor, two Deputy Governors and six experts on monetary affairs and economics.

The transparency of monetary policy decision-making was greatly enhanced under the new regime supported by the new law. It was often said that real decision-making was done internally (internal executive meeting) and the MP Board was rubber-stamping the decision that was already made. Under the old regime, there was no disclosure of minutes or transcript. The Monetary Policy Board was revamped in the appointment criteria. In April 1998, the Bank under the new law started to announce the decision on the day of meeting and the Governor gives a press conference on the decision within a few days. Detailed minutes are publicly disclosed several weeks after the meeting - comparable to the Federal Reserve Board, and the meeting minutes in about a month and a half. It was decided that the transcript would be disclosed in later years.

2.2. Zero interest rate policy

The new team of members in the Policy Board installed in April 1998 immediately faced a challenging situation: the average growth rate had been extremely low, at around 1% since 1992, and the financial institutions had become very weak. In particular, a major financial institution failed in November 1997, and the psychology of the financial market turned extremely negative in the spring of 1998. The growth rate turned negative in the first quarter of 1998, the fragile financial institutions were downgraded by credit rating agencies and obliged to pay a higher interest rate in the interbank market ("Japan premium"), and prices started to decline.

Three events contributed to a weakening of the Japanese economy in 1997-98: the consumption tax (VAT) rate was increased in April 1997; Japan's banking crisis erupted in November 1997 and continued to the spring of 1999; and the Asian currency crisis started in July 1997 and continued to the spring of 1998. The Japanese financial institutions had to pay the Japan premium (see Ito and Harada (2005)) when they borrowed dollars in the London offshore markets. The growth rates were quickly going down and so was the inflation rate.

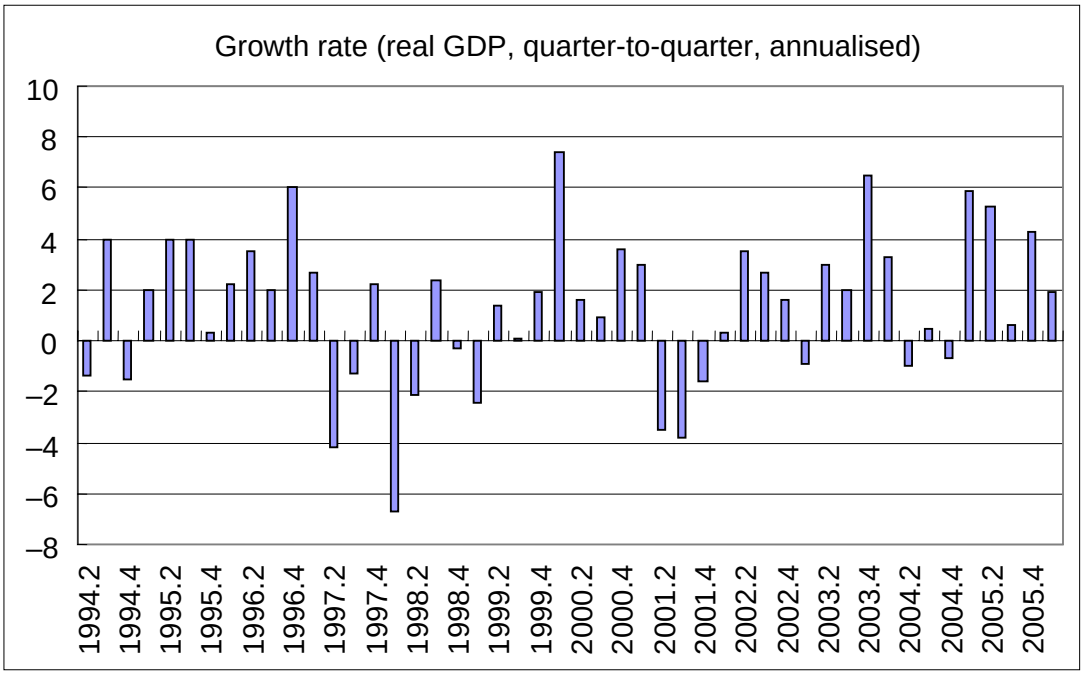
The textbook policy response to this kind of economic weakness would be to relax both fiscal and monetary policy. The fiscal position changed from tightening with the April 1997 tax hike to relaxing with a large stimulus expenditure package in the autumn of 1997. But monetary policy could not be relaxed substantially, because the official discount rate was already at a historical low of 0.50% and the policy interest rate (uncollateralised call rate) was slightly below the official discount rate in the spring of 1998. Monetary policy basically did not change in 1998, except for lowering the call rate from just below 0.50% to 0.25% 9 September, and making a decision to allow commercial paper (CP) monetary policy operation instruments 13 November.

See Figure 1 for the GDP growth rate and Figure 2 for the inflation rate. Note that the GDP numbers in Figure 1 are the new estimates as of November 2005. The real-time growth rate published by the Cabinet Office and used as a basis of policymaking as of 1998 was different, due to the different estimation method and available statistics.

The Bank of Japan started to fight deflation, but it was more tentative than decisive. Governor Hayami repeatedly suggested that he regarded deflation as not necessarily a bad thing and that aggressive monetary policy might not be called for. See Ito (2004b) for quotes from the MPM discussions and speeches for these views.

Figure 1

Growth rate, 1994:II-2006:I

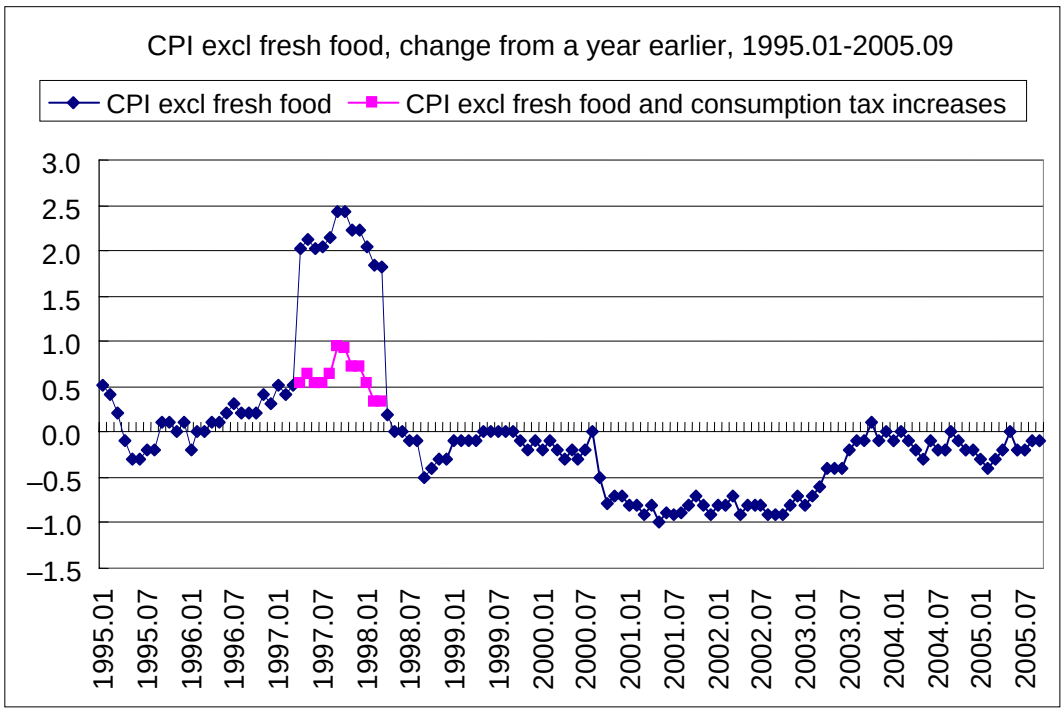


Note: Chain index, quarter-to-quarter growth rate, annualised.

Source: Cabinet Office, Japan.

Figure 2

Inflation rate



Note: Inflation rate of CPI excluding fresh food (and consumption tax increases of April 1997), percentage change from the same month a year earlier. The influence of the consumption tax increase is estimated as 1.5 percentage points.

Source: Statistics Bureau, Ministry of Internal Affairs and Communications.

After statistics showed that the Japanese economy was experiencing negative growth for several quarters and deflation was getting worse, the Bank of Japan adopted the zero interest rate policy (ZIRP). On 12 February 1999, the MPM passed the zero interest rate decision with 8:1 votes, with Ms Shinotsuka dissenting. From March 1999 to July 2000, a similar split occurred. Mr Nakahara argued that the ZIRP was not enough and proposed more actions including quantitative easing, while Ms Shinotsuka argued in favour of terminating the ZIRP.

The precise statement said that "The Bank of Japan will provide more ample funds and encourage the uncollateralised overnight call rate to move as low as possible". The Bank of Japan planned to lower the interest rate to 0.15% immediately, and would then lower it to zero in a few weeks. (See Appendix 1 for the precise language.) So, it took a few weeks to get to zero. In April, Governor Hayami mentioned that the ZIRP would continue "until deflationary concerns are dispelled". (See Okina and Shiratsuka (2004) for dating Governor Hayami's words as April.) However, the precise definition of "deflationary concerns are dispelled" was not clarified.

2.3. Was ZIRP introduced too late?

In order to answer the question of whether it was too late to introduce the ZIRP in the spring of 1999, the scope should be expanded to a period before the birth of the new Bank of Japan in March 1998. Several studies, such as Bernanke and Gertler (1999), Jinushi et al (2000), McCallum (2003) and Taylor (2001), show that the Bank of Japan should have eased quite aggressively in the early stages of the bursting of a bubble, 1991-92. Clouse et al (2000) and Ahearne et al (2002) were two studies at the Federal Reserve Board on the experience of the onset of deflation in Japan. In order to avoid deflation, the Bank of Japan should have eased much more aggressively before 1995, as by that time the effectiveness of conventional policy instruments had become weak. Both studies can be interpreted such that, learning from the Japanese experience, policy actions to ease aggressively if and when the inflation rate becomes alarmingly low are endorsed.

Harrigan and Kuttner (2005) did an exercise using two sets of Taylor-rule coefficients, one estimated from the Japanese experience and one estimated from FRB experience, in order to evaluate the Bank of Japan's actual policy from 1990 to end-1995. The one with Japanese coefficients obviously tracks the actual call rate quite well in the period 1990 to 1993. Then the Taylor-rule simulated value deviates from the actual path, showing that it would drive the interest rate to zero by early 1995. Namely, the Bank of Japan's hesitation in easing in 1994-95 was not typical even from its own reaction function. The FRB coefficients were obtained from the Volcker-Greenspan period, 1979:III to 1996:IV. When the FRB coefficients are used, the simulated interest rate was driven down to zero by 1993:II. Had Mr Greenspan taken charge of the Bank of Japan, the Bank would have adopted ZIRP much earlier.

It might be possible that the Bank of Japan hesitated to move aggressively in cutting the interest rate when it was not legally independent because it would be politically difficult to raise the interest once lowered. Was the behavior any different once the independence is obtained? Let us examine the behaviour of the Bank of Japan after April 1998.

Signs of the weakening economy were widespread in 1998, so why did it take so long to make a decision on introducing ZIRP? In 1998, the Bank of Japan made two small changes towards easing. First, on 9 September, the Bank of Japan decided to lower the call rate (policy interest rate) from below but near 0.50% to 0.25%. This was a clear step of monetary easing. On 13 November, the Bank of Japan decided to help financing corporations by using open market operations in CP. This broadening of operation instruments had both monetary policy and financial stability purposes.

One possible explanation why ZIRP was not introduced until February 1999 was that it was regarded as the last card, since no further interest rate cut is possible after the nominal

interest rate hits zero, the lower bound. (The nominal interest rate cannot be negative, otherwise cash hoarding will replace bank deposits, and the financial system will suffer massive disintermediation.) The last card should be kept for a sharp, abrupt decline in economic activities or a near meltdown of the financial system. However, keeping the last card in hand may have resulted in a slow, but steady decline in economic activities, and over time it had similar effects of not helping a stagnating economy.

In order to gain some insights on why ZIRP was not introduced in 1998, we can check the voting record of Policy Board members. It is quite revealing how the Policy Board members were divided over whether a step of additional easing was needed. From June to August, 1998, the no-change decision was made with 8 votes in favour and 1 vote against by Mr Nakahara. He argued that additional easing was needed. When the lowering of the policy interest rate was decided in the MPM of 9 September 1998, Ms Shinotsuka dissented, arguing that lowering the interest rate would hurt households by depriving them of interest income. She continued to cast a dissenting vote from September 1998 to February 1999. Even Mr Nakahara did not dissent from the no-change decision from 9 September to 13 November 1998, that is, he was content with the policy interest rate of 0.25%. But Mr Nakahara started to demand further easing from 28 November 1998 to January 1999, just before ZIRP was introduced. Therefore, in the MPMs of 28 November, 15 December 1998 and 19 January 1999, two dissenting votes were recorded, but one leaning towards easing, and another leaning towards tightening. The logic of Ms Shinotsuka's opposition to 0.25% was that it was on extraordinarily low interest rate and hurt households' interest income. In the January meeting, she also suggested that the low interest rate constituted a subsidy to commercial banks. See Table 1 for the voting record of MPM Board members.

Ms Shinotsuka's argument seems to reflect a popular confusion among the public that the zero interest rate hurt the elderly and pensioners. In fact, persons or households with nominally fixed assets (bank deposits) will have higher purchasing power as prices go down. They will be better off in deflation rather than inflation. Moreover, at the time, a political decision froze an inflation slide clause of pensions in order to prevent the nominal amount of pensions from decreasing. Therefore, nominally rigid pensions make pensioners better off in the deflationary environment. Anyway, between the two extremes, one proposing an interest hike and another proposing an interest decline, most members took the wait-and-see position from September 1998 to February 1999. The Governor's view, that was expressed in speeches and press conferences, was also similar to Ms. Shinotsuka in that deflation was not something serious and worrisome.

2.4. Termination of ZIRP

After the zero interest rate was introduced in the spring of 1999, the economy started to recover. The Japanese financial system was stabilised by the second capital injection to large banks at the end of March 1999. The Japan premium that Japanese banks had to pay to western banks in the interbank market disappeared in April 1999. (See Ito and Harada (2004, 2005).) The worldwide IT stock price increases (later labelled as the IT stock price bubble) boosted confidence thus stimulating consumption and investment. The recovery was partly supported by the information, communication and technology (ICT) stock price increases. Stock prices of ICT-related companies rose sharply from the spring of 1999 to the beginning of 2000. The ICT stock price boom also spilled over to other sectors. The mood became bright by the end of 1999. The GDP growth rate rose in 1999 Q2 into positive territory, and after a slight dip in 1999 Q3, the growth rate became convincingly high in 1999 Q4. The inflation rate also showed some signs of increasing (but was still negative) in the spring of 2000.

Table 1

Voting record

Month/date	Unanimous?	Votes	Decision	Bias in Dissent
1998/4/9	◯ = yes		near 0.5%	
1998/4/24	◯			
1998/5/19	◯			
1998/6/12	× = no	7-2		++ (more easing)
1998/6/25	×	8-1		+
1998/7/16	×	8-1		+
1998/7/28	×	8-1		+
1998/8/11	×	8-1		+
1998/9/9	×	8-1	0.25%	– (more tightening)
1998/9/24	×	8-1		–
1998/10/13	×	8-1		–
1998/10/28	×	8-1		–
1998/11/13	×	8-1		–
1998/11/28	×	7-2	Lower to 0.25%	+ and –
1998/12/15	×	7-2	"	+ and –
1999/1/19	×	7-2	"	+ and –
1999/2/12	×	8-1	Toward 0.15%	–
1999/2/25	×	7-2	Toward 0.15%	+ and –
1999/3/12	×	7-2	"	+ and –
1999/3/25	×	7-2	"	+ and –
1999/4/9	×	7-2	"	+ and –
1999/4/22	×	7-2	"	+ and –
1999/5/18	×	7-2	"	+ and –
1999/6/14	×	7-2	"	+ and –
1999/6/28	×	7-2	"	+ and –
1999/7/16	×	7-2	"	+ and –
1999/8/13	×	7-2	"	+ and –
1999/9/9	×	7-2	"	+ and –
1999/9/21	×	7-2	"	+ and –
1999/10/13	×	6-2	0%	+ and –
1999/10/27	×	6-2	0%	+ and –
1999/11/12	×	6-2	"	+ and –
1999/11/26	×	6-2	"	+ and –
1999/12/17	×	6-2	"	+ and –
2000/1/17	×	7-2	"	+ and –
2000/2/10	×	7-2	"	+ and –
2000/2/24	×	7-2	"	+ and –
2000/3/8	×	7-2	"	+ and –
2000/3/24	×	7-2	"	+ and –
2000/4/10	×	7-2	"	+ and –
2000/4/27	×	7-2	"	+ and –
2000/5/17	×	7-2	"	+ and –
2000/6/12	×		"	+ and –
2000/6/28	×	7-2	"	+ and –
2000/7/17	×	7-2	"	+ and –
2000/8/11	×	7-2	Raise to 0.25%	– and –
2000/10/13	×	8-1	0.25%	+
2000/10/30	×	8-1	"	+
2000/11/17	×	8-1	0.25%	+
2000/11/30	×	8-1		+
2000/12/15	×	8-1	"	+

When Governor Hayami and some Board members started to suggest in the spring of 2000 that ZIRP might be terminated soon, many economists and government officials questioned the basis for early tightening. The economy was only on a fragile recovery path, and the internal and external environment was turning worse, as the IT stock bubble had burst. The US economy was slowing down due to the collapse of IT stock prices. Domestic consumption and investment were also slowing down. However, the Bank of Japan pushed the agenda. It is said that the Bank wanted to raise the interest rate in the July MPM meeting, but that this was pushed back by one month because it feared a negative impact of the failure of the Sogo Department Store. As the department store failure turned out to be not so negative for the overall economy, the motion was tabled in the MPM of August 2000.

In the 11 August MP meeting, the government officials who attended the meeting without voting power argued that it would be too early to raise the interest rate. The government officials, based on a clause in the Bank of Japan law, submitted a motion to delay the voting on the interest rate hike by one month. This is the maximum resistance and show of displeasure that the government can make against the independent central bank. The delay motion was voted down by the votes of 1 in favour to 8 against. Then, the motion for an interest rate hike was passed by 7 in favour and 2 against. Mr Nakahara sided with the government proposal to table the vote for the termination, and also opposed to the termination of ZIRP. Mr Ueda, who had always voted with the majority since his appointment in April 1998, dissented from the termination of ZIRP saying that it might be too early to tell the economy was on firm ground and that the cost of a wait-and-see attitude to ZIRP would not be so high.

The MPM decision was to raise the call rate from 0% to 0.25%, showing the majority of the Board members' confidence that the economy was on a firm recovery path: "At present, Japan's economy is showing clearer signs of recovery, and this gradual upturn, led mainly by business fixed investment, is likely to continue. Under such circumstances, the downward pressure on prices stemming from weak demand has markedly receded." (See, for the full text concerning the policy decision, Appendix 2.)

However, what followed in the economy in the autumn of 2000 confirmed the fears of the critics of the Bank decision. The recession started two months after the interest rate hike, and the CPI inflation rate turned sharply negative (see Figure 2). Economic conditions deteriorated towards the end of 2000.

2.5. The termination of ZIRP a mistake

When ZIRP was introduced for the first time in March 1999, the exit condition from ZIRP had not been explicit - no precise definition of "deflation concerns" or "dispelled" was available. It was not clear at all which price indicator would be used and which rate of change would be regarded as deflation.

When the economic recovery became stronger in autumn 1999 to spring 2000, the Bank of Japan became eager to terminate ZIRP. Governor Hayami indicated an early termination through several speeches. The first indication appeared in the Policy Board Minutes of April 2000. Indeed, the economic growth rate was higher, partly fuelled by the global ICT boom. ICT stock prices increased sharply from autumn 1999 to spring 2000. It looked likely that higher growth would fill the GDP gap and soon prices would start to rise. CPI inflation was still negative, but the degree of deflation was becoming less.

To be fair, the economy did look good in the spring of 2000. The GDP growth rate of the fourth quarter 1999 was –2.4% (that became known in April 2000), but the first quarter numbers were all good. The Bank of Japan, in the opening sentences of its monthly outlook reports, changed its overall assessment of the economy from "clear signs of a self-sustained recovery in private demand have not been observed yet" to "recovery started in some areas of private demand, as seen in a gradual upturn in business fixed investment" in April 2000,

and then to “Japan’s economy is recovering gradually, with corporate profits and business fixed investment continuing to increase” in July 2000. The same wording appeared in August 2000.

However, ICT stock prices had been declining since March, and the prospects for the US economy were weakening. The two engines of recovery, exports and investment, could be forecasted to slow down soon.

Let us examine these issues more quantitatively. The following Taylor rule equation is considered to evaluate Japan’s monetary policy. The specification follows Clarida (1999), which is a variant of Taylor (1993):

$$i_t = r^f + \pi^* + \beta_y \cdot y_t + \beta_\pi \cdot \left(\pi_t - \pi^* \right) \tag{1}$$

where i_t is the short-term interest rate, r^f is the long-term equilibrium real rate, y_t is the GDP gap, and π_1 and π^* are the inflation rate (defined by the GDP deflator) and the target inflation rate (defined by the GDP deflator), respectively. Parameters β_y and β_π are to be estimated by the data. For the interest rate, the call rate is used. The GDP gap is defined as the log difference between potential GDP and actual GDP. The potential GDP level is estimated by the following equation:

$$Y_t^* = (1 + g_{t-1}) \cdot \exp\left[\lambda \cdot \ln Y_{t-1}^* + (1 - \lambda) \cdot \ln Y_{t-1} \right] \tag{2}$$

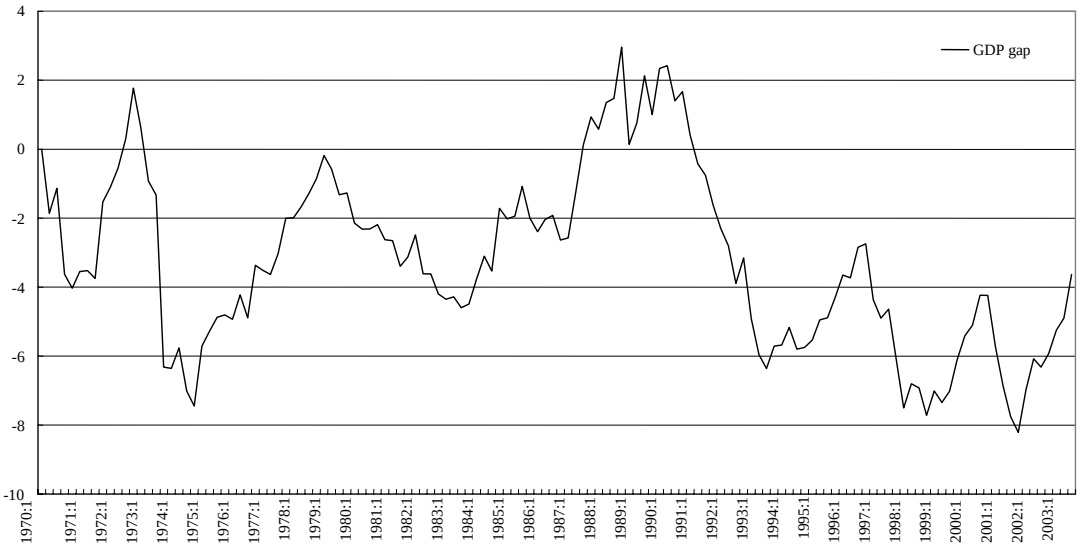
where, Y_{t-1} is the level of real GDP in the preceding period, λ is a weight parameter and set to be 0.9, and g_{t-1} is defined by the following formula:

$$g_{t-1} = \frac{1}{t-1} \cdot \sum_{j=0}^{t-1} g_j \tag{3}$$

The GDP gap is shown in Figure 3.

Figure 3

GDP gap (fixed lambda)



The Taylor rule described above is estimated for the period from 1981 to 1998 and results are presented in Table 2. The coefficient on the GDP deflator is above 1 and comparable to

a typical value in the existing literature, while the coefficient on the GDP gap is smaller than the comparable one in the literature.

Table 2

Taylor equation

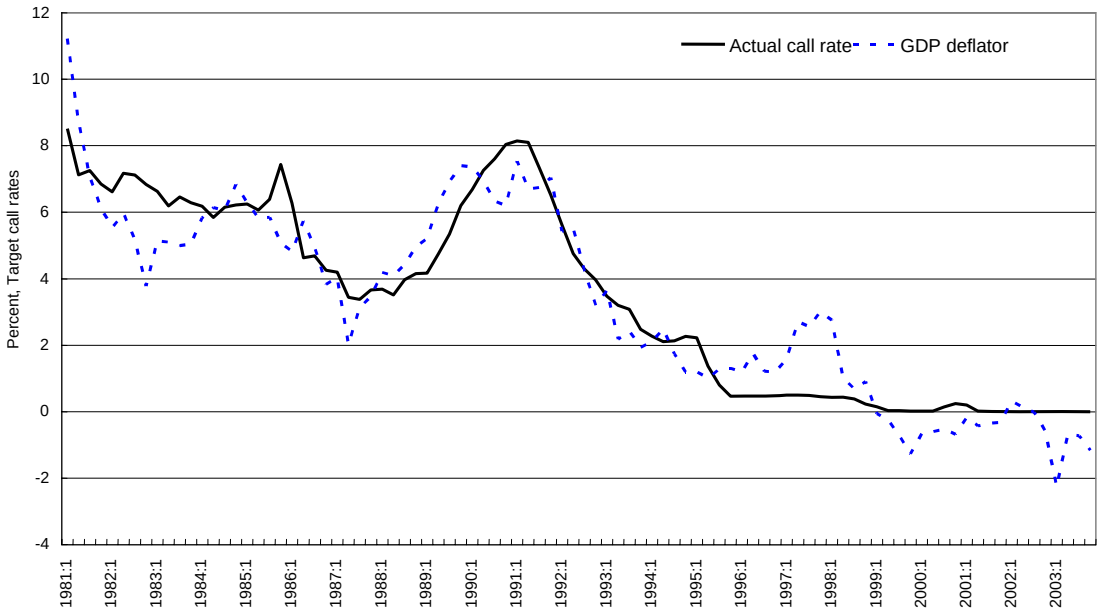
Dependent variable: call rate	
Sample period	**1981:1-1998:4**
Constant	5.717***
(s.e.)	0.184
GDP deflator	1.264***
(s.e.)	0.136
GDP gap	0.257***
(s.e.)	0.058
R^2	0.786
D.W.	0.497

*, ** and *** mean that the null hypotheses are rejected by 10%,5% and 1% respectively.

Figure 4 shows the in-sample and out-of-sample fitted values of the Taylor equations using the estimated coefficients above. These are interpreted as the normal responses of the Bank of Japan, given the behaviour in 1981-98. The interest rate increase from 1998 to 1990 was much quicker and the lowering in 1991-93 would also have been quicker. According to this estimate, the call rate would go to zero precisely at the same time as the actual rate did, while there would not have the termination of ZIRP in the second quarter of 2000.

Figure 4

Target call rate by Clarida's formulation (Taylor (1999, p 342)), estimation sample 1981-98



As discussed, there have been several different kinds of Taylor rule estimations for the 1990s. The estimates presented here broadly agree with others, but what is peculiar (ie different from other estimates) about this estimation is that the simulation value is much higher than the actual in 1997.

This result can be interpreted such that using a simple rule equation with GDP deflator, one can conclude that the lifting of the zero interest rate policy deviated from the past policy setting of the Bank of Japan. Of course the Taylor rule has some shortcomings (see Ito and Mishkin (2006) for cautionary notes), and results cannot be overly played up. However, the decision of August 2000 to end ZIRP was certainly a controversial one.

Kamada (2005) presents a careful analysis of the policy evaluation, with real-time estimation - preparing the data set known at the time of the policy decision, rather than relying on the data base that are available at the time of analysis much later. He constructed several output gap measures and applied the Taylor rule equations. He tried several different ways in presentation of the deviation of the Taylor rule type estimated gap and actual rate. First, he concluded that Bank of Japan policy in the late 1980s could have been tighter and that in the early 1990s could have been relaxed sooner. Second, most of the results, including the conventional and standard cases in Kamada (2005, p 326), show that the zero interest rate should not have been lifted in 2000. It may not be incorrect to interpret his result as support to a view that the target rate in 2000 remained negative, suggesting that lifting ZIRP in August 2000 was a mistake, although he refrains from such an interpretation.

In sum, there is little question that the decision to terminate ZIRP was a mistake ex post, since the economy turned into recession only two months later, and deflation got much worse in the following months. Moreover, the policy to raise the interest rate had to be reversed only seven months later in view of the deteriorating economy. An interesting question is whether the decision was a mistake ex ante. The economy did look to be on a recovery path in the first quarter of 2000, and an interest hike by 0.25% was small enough not to disturb investment or consumption. On the other hand, the ICT bubble was already on the way of bursting, and the US economy was slowing down. There were many forecasts that predicted slower growth in both the United States and Japan. The exit was attempted when the CPI inflation rate was still negative, without any clear sign that deflation would be ending soon. In the midst of deflation with weak forecasts ahead, the judgment on lifting the ZIRP can be considered a mistake, even in the ex ante sense.

2.6. Quantitative easing

By the end of 2000, economic activities had slowed down considerably, and stock prices had declined substantially. The MP Board members, realizing that something had to be done, started to explore ways to stimulate the economy. Many outsiders speculated that the Bank would revert to ZIRP. The Governor issued “instructions to the Bank’s staff” (MPM document) on 19 January 2001, asking the staff to come up with an idea how to “examine the possible room for further improvements in the way of liquidity provision to the market, with a view to ensuring the smooth functioning and stability of the financial market”. In the 9 February MPM, the official discount rate was cut from 0.5% to 0.35% and the so-called lombard-type lending scheme was introduced (namely, capping the interbank rate at 0.35% for anyone who has collateral). In the 28 February MPM, the official discount rate was cut to 0.25%, and the policy interest rate was cut from 0.25% to 0.10%. However, these changes did not make any impact on the market.

The Bank of Japan made a substantial policy change in the MPM meeting of 19 March 2001. The Bank decided that the policy instrument would be changed from the interest rate to current accounts at the Bank of Japan, the sum of required and excess reserves, and that excess reserves would be maintained. The Bank emphasised that the decision was extraordinary under extraordinary circumstances: “[T]he Bank has come to a conclusion that

the economic conditions warrant monetary easing as drastic as is unlikely to be taken under ordinary circumstances."(This quote is translated by the Bank of Japan. See Appendix 3 for a full text.) The required reserve was about 4 trillion yen at the time, and the target was set to be 5 trillion yen. Enough liquidity to the market is provided to the system, so that the banks would place excess funds in the Bank of Japan account that bears zero interest. By implication, the zero interest rate would result.

The change of instrument was a radical move towards quantitative easing (QE). Whether providing higher monetary base at the zero interest rate made any difference was, and still is, controversial. However, at least it had the psychological effect that the Bank of Japan had become more serious about exploring ways to fight deflation.

What monetary policy can do under deflation and ZIRP has become a hotly debated question in policy as well as academic circles. Several non-conventional monetary policy measures were proposed and debated. One such measure was to increase the amount of long-term bond purchases. The Bank increased the amount of monthly purchases of government bonds (JGB) from 400 billion yen in 1998, in several steps, to 1,200 billion yen by October 2002.

The decision of 19 March 2001 was also accompanied by a more explicit condition on when quantitative easing would end. Conditions for making a decision to exit from QE and ZIRP were clarified as follows: "The new procedures for money market operations continue to be in place until the consumer price index (excluding perishables, on a nationwide basis) registers stably 0% or an increase year on year." This was innovative in two respects. First, the exit condition clearly stated that the CPI (excluding fresh food) was a measure to watch. This was a reversal of the position mentioned in the October 2000 document. Second, the new exit condition was much clearer than the earlier exit condition ("until the deflationary concerns are dispelled"), in that the numerical condition, "0% or an increase year on year", was mentioned. This can be seen as a step toward inflation targeting (but still far away from a full-fledged inflation targeting framework). However, how "stably" was defined remained ambiguous.

The Bank of Japan also announced in the March 2001 decision that it would increase the amount of monthly JGB purchases that was set to be 400 million at the time. This decision was to answer calls for additional measures even at the zero interest rate. Purchasing assets that are riskier than short-term government paper would help asset reallocation in the economy, so that the private sector would take more risk. It was also expected that the Bank of Japan purchasing longer-term assets would flatten the yield curve, so that investment that is sensitive to a long-term interest rate, rather than a short-term interest rate, would be stimulated. This was an additional policy the central bank could implement even under ZIRP.

Figure 5 shows how the amount of long-term JGB purchases and the target amount of current accounts at the Bank of Japan were increased since the introduction of QE in March 2001. Figure 6 shows the decline in the interest rate towards zero since 1998.

The economy remained weak in 2001. The economic growth rate registered four consecutive quarters of negative growth from 2001 Q2, and the inflation rate remained about –1% from early 2001 to early 2003. The Bank of Japan tried several steps to enhance QE. First, it increased the target amount of current account balances in several steps (August 2001, December 2001 and October 2002). Second, the Bank increased the purchase of JGB in four steps (August 2001, December 2001, February 2003 and October 2002) from 400 million yen to 1.2 trillion yen. Third, the official interest rate was reduced from 0.50% to 0.35% in February 2001, then to 0.25% in March 2001, and to 0.10% in September 2001.

Figure 5

JGB purchase and current account balance target

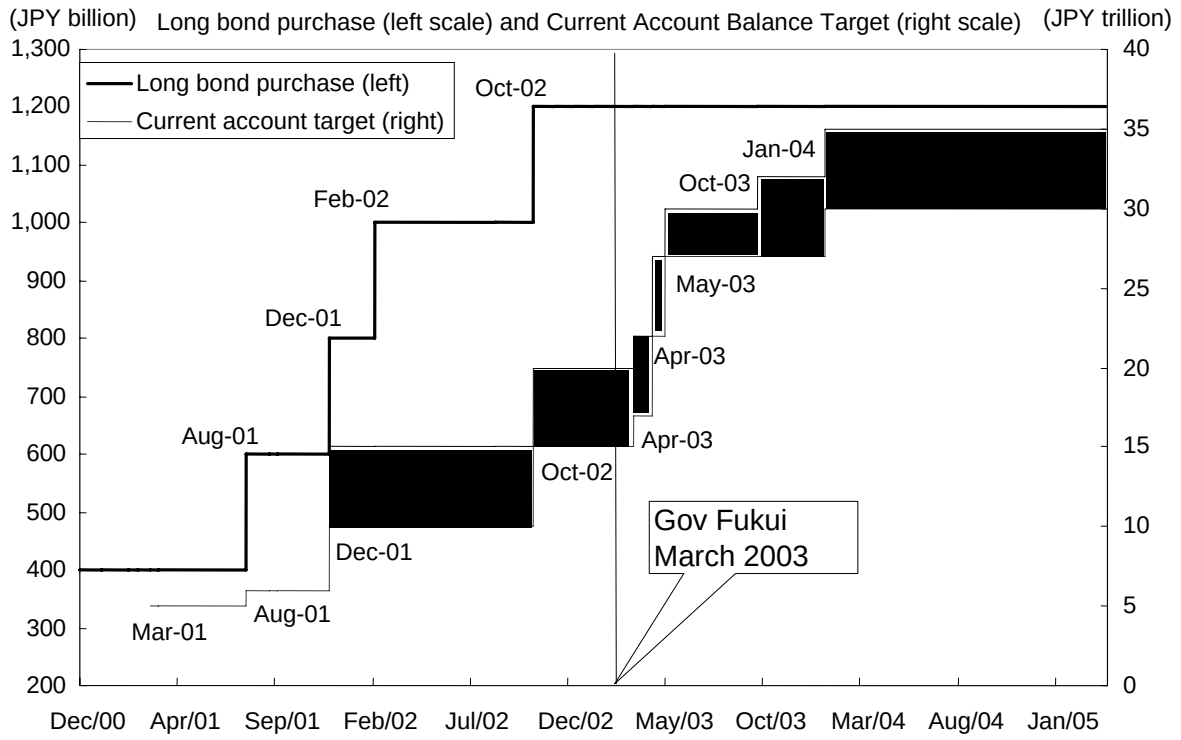
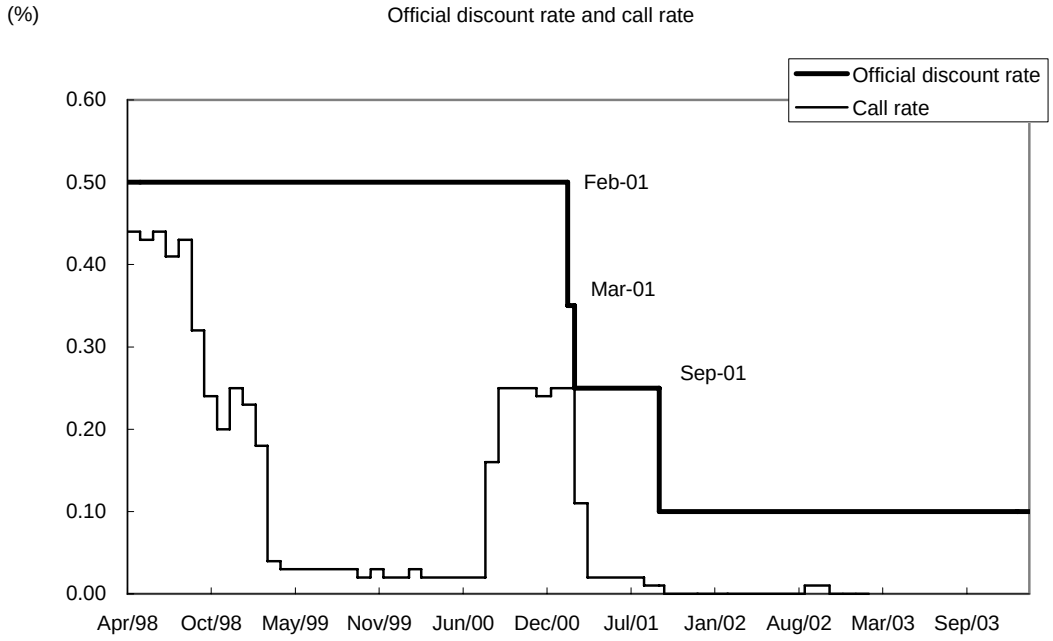


Figure 6

Movement of the official discount rate and the call rate



3. Inflation targeting

Many critics were calling for the Bank of Japan to adopt inflation targeting in order to show its resolve to fight deflation. Adoption of an inflation targeting framework with decisive actions may influence inflation expectations. Ito (2004b) examined the MPM minutes to see whether the MPM came close to adopting inflation targeting during the course of fighting deflation. Inflation target advocates argued that the inflation targeting framework would have a positive influence on inflation expectations, which would help fight against deflation by changing the forward-looking real interest rate. Moreover, clarifying the goal of the policy might be necessary for an independent central bank to be accountable for its action.

There are several arguments opposing the inflation targeting framework. First, the most commonly heard argument against inflation targeting was that credibility would be lost, rather than built, if inflation targeting was announced when there was no instrument to get out of deflation. Second, inflation targeting would not influence inflation expectations, since these are backward-looking. Third, some regarded inflation targeting as a way to increase the inflation rate no matter what, in order to help debtors in the economy - large indebted corporations and the national government with large fiscal debts. Once generated, inflation would be difficult to stop. Fourth, if inflation targeting was credible, then the long-term interest rate would go up immediately (via the Fischer equation) and that would be bad for the economy. Mr Hayami also argued, at an early stage of his regime, that restoring inflation would delay structural reform. (See Ito (2004b, pp 246-51) for pros and cons of inflation targeting.)

The discussion on inflation targeting in MPMs, measured by "word counts" in the Minutes, peaked in the autumn of 1999, responding to the critics outside the Bank. But the discussion was shelved in the spring of 2000, as it was decided to commission a study from the staff on price stability. After six months, the Bank of Japan issued a report called "On Price Stability" in October 2000. In this report, the Bank was quite negative on defining numerically an appropriate inflation rate: the Bank refused to endorse any price index as an appropriate measure of inflation; and it refused to define price stability, saying price stability is defined "as a situation which is neither inflationary nor deflationary". It sounds like a tautology, since inflation and deflation cannot be defined without defining price stability. The report stated that: "In view of current development of prices in Japan, it is difficult to set specific numerical values to the definition of price stability that are consistent with the sound development of the economy. Furthermore, even if some numerical values were announced, they would not serve as a reliable guidepost in the conduct of monetary policy, and the exercise would not likely contribute to enhancing transparency of the conduct of monetary policy. Therefore, it is not deemed appropriate to define price stability by numerical values." This kind of assessment is quite far from conventional wisdom in the literature of inflation targeting. By this negative assessment, inflation targeting was not discussed at all in MPMs in 2000 and the first half of 2001. See Ito (2004b: pp 245-46) for the second wave and third wave of inflation targeting discussions in MPMs, mostly in negative tones, in the second half of 2001 and late 2002.

Monetary policy during the Hayami regime gives an impression that it was behind the curve in easing monetary policy, and timid in trying non-conventional policies, not to mention mistaken in tightening in August 2000. (Cargill et al (2000) called this an independence trap, namely, the Bank tried to be less active in order to lower the probability of mistakes, so that it could quickly establish credibility after obtaining independence. However, the attempt did not succeed.) Mr Hayami and the majority of the Board rejected several measures, and then switched position, without ample explanations for the switch. For example, an increase in the purchase of government bonds was rejected earlier as an option, but was implemented later. Quantitative easing, an increase in excess reserves, was also rejected earlier, but suddenly adopted in March 2001. These switches gave an impression that the Bank of Japan was trying to do something, but only reluctantly. The failure was not tactical, but strategic. There was no firm framework to guide the policy, such as an inflation targeting framework. (For details of discussions on policy board discussions of inflation targeting, see Ito (2004b).)

4. Monetary policy, 2003-05

4.1. Commitment effect

A new Governor and two Deputy Governors were appointed in March 2003, upon expiration of the five-year term for the previous team of top management. The newly appointed Governor Fukui used to be Deputy Governor of the Bank of Japan, before he resigned and took a position in the private sector in 1998. Once appointed, Governor Fukui was keen on building a better relationship with the government and was skilful in communicating to the public that he would be fighting deflation with commitment. The rhetoric of fighting deflation was much better in his speeches soon after he took office. He argued that he would be patient before terminating quantitative easing (see Fukui (2003)).

The Japanese economy in the spring of 2003 was considered to be very weak. The Nikkei stock price index fell below 8,000, merely one fifth of its peak 13 years before. The government became tough on the treatment of accounting standard for the balance sheets of major banks in 2002-03, and many banks had to declare heavy losses in the spring of 2003. Some banks had to be rescued by the government. The systemic stability of the financial markets was regarded as threatened.

The Bank of Japan, under the leadership of Mr Fukui, explored ways to stimulate the economy and stabilise the financial system, although the room to manoeuvre was very much limited. The policy interest rate had been lowered to zero, and it cannot become negative. The two prominent measures of quantitative easing were the increase in the monthly purchase of long bonds and the target for current account balances (namely, excess reserves). The Bank of Japan decided to raise the current account balance target to show it further supported the fight against deflation. The target was raised from 17-22 trillion yen to 22-27 trillion yen in April, just one month after the new team of the Governor and two Deputy Governors took office. The decision was unanimous among the nine voting members of the Monetary Policy Meeting.

The target level of current account balances was increased three more times in the next nine months: In May, it was increased from 22-27 trillion to 27-30 trillion; in October, to 27-32 trillion; and finally in January 2004, to 30-35 trillion.

The May 2003, October 2003 and January 2004 decisions were not unanimous. The May decision was opposed by two members; the October decision was opposed by three members; and the January decision was opposed by two members. Opposition was based on the uncertain effects of raising the target level on the economy, while there was no imminent risk in the financial markets.

Indeed, the effect of having excess reserves was not seriously debated at the time. Some seem to have believed that it is good to provide more than enough liquidity to prevent sudden failure of banks. Since several banks were rumoured to be very weak in their capital position, providing excess liquidity was considered to be a safety measure.

However, the increase of the target level for current account balances was decided as a monetary policy measure, in addition to any stabilizing effect on the financial market and institutions. The transmission channel from excess reserves to output is a subject of discussion. Several channels were thought to be possible. First, providing more liquidity to the banking system leads to the expansion of monetary base and then money supply. This channel is important if the bottleneck for recovery was a credit rationing or bank loan problem. However, this did not prove to be an effective channel. Bank lending continued to decline during the ZIRP and QE period.

Second, providing liquidity worked as a safety valve for a possible, sudden liquidity squeeze that would jeopardise systemic stability. For financial stability purposes, an expansion of liquidity worked well.

Third, QE was a signal that the Bank of Japan would continue monetary easing. Since it would take time to reduce liquidity without disruption, the Bank of Japan was committed to easing and ZIRP into future by providing excess reserves. It was called the policy "duration effect" in Japan. Therefore, the more excess reserves, the stronger the commitment. Hence, the increase of the target for current account balances at the Bank of Japan made an impact on the economy to flatten the yield curve. Oda and Ueda (2005) argue that increasing amounts of current account target helped keeping the yield curve flatter, since QE influenced expectations of how long ZIRP would continue in the future.

4.2. Exit condition elaborated

In October 2003, the MPM issued the document on improving transparency, in which the exit condition was clarified. Earlier, the inflation rate (excl fresh food) be zero or above, stably. The document defined the meaning of "stably". There were two criteria for judgment. First, the backward-looking inflation rate had to be on average at zero or above. Second, the forward-looking inflation rate had to be forecast by the Board members to be at zero or above. Details will be described in the next section on exit conditions. But, even under the new definition, it was far from full-fledged inflation targeting, since the time frame for overcoming deflation was not committed, and no upper bound for tolerance was given.

Stock prices had declined significantly in 2002 and again in the spring of 2003. The Nikkei 225 index recorded a low of 7,600 in April 2003, less than one fifth of the peak at the end of 1989. But the stock market regained confidence for the rest of the year, as did the economy as a whole. The growth rate increased to close to 6% (quarter to quarter rate, annualised) in 2003 Q4 and 2004 Q1. Optimism spread to the economy. The size of deflation shrank from about 1% to near zero by the end of 2004.

The Bank of Japan adopted some of the non-conventional measures proposed by critics, including purchases of long bonds. However, other measures were not tried, including purchases of foreign currency denominated bonds, equities (indexed equity funds listed on the exchange) and real estate (funds); the adoption of inflation targeting; and cooperation with the Ministry of Finance to carry out non-sterilised interventions.

Two quick notes on these non-conventional measures may be added. First, although the Bank of Japan bought equities from commercial banks in 2002, it was stated as a measure to stabilise the financial system and not part of monetary policy. Commercial banks had substantial holdings of equities on their books, and as the stock prices declined, they had become burdens as some marking-to-market had to be done and any losses had to be deducted from bank capital positions. However, selling stocks in the market would further drive the prices down, with a negative impact on the balance sheet. Therefore the Bank of Japan decided to purchase those equities from commercial banks outside the market. The Bank took pains to exclude the measure from the agenda of MPM. It was decided in the "regular" Board meeting. The Bank was afraid that once the purchase of equities was regarded as part of monetary policy, the pressure to do more might increase.

Second, the increase in monetary base during calendar year 2003 roughly equalled the cumulative amount of intervention, mostly because of the target amount for current accounts. However, the suggestion of unsterilised interventions was rebuffed as "mere coincidence" by Deputy Governor Iwata. (See Ito (2004c) for a detailed description.)

Of course, in effect, any simultaneous increase in intervention and monetary base can be viewed as unsterilised intervention by definition. The reason that the Bank of Japan was reluctant to play that up was that it wished to avoid its monetary policy being ruled by the exchange rate policy (in the jurisdiction of the Ministry of Finance). Bank of Japan economists often cite the period in the late 1980s bubble when there was pressure to lower the interest rate to stem yen appreciation pressure.

Another reason why the Bank of Japan was reluctant to engage in unsterilised intervention was that the traditional benefits of unsterilised intervention as opposed to sterilised intervention disappear at the zero interest rate bound. In the usual setting of positive interest rates, an unsterilised intervention is more potent than a sterilised intervention since unsterilised intervention will lower the interest rate, which would be stimulative for the economy. However, under ZIRP, there is no difference in the interest rate consequence between an unsterilised intervention and a sterilised intervention. In 2003 the Bank of Japan was operating under QE, which is ZIRP with excess reserves. Unsterilised interventions will expand the monetary base faster than sterilised interventions. If QE is more powerful than ZIRP, which the Bank of Japan must have believed at the time of its introduction, unsterilised interventions would be more expansionary.

5. The exit

5.1. Exit conditions: a review

The Bank of Japan had articulated conditions for terminating ZIRP or QE, along with its policy implementation. The first commitment was made when ZIRP was introduced in February 1999, when the policy was to continue until deflation concerns were dispelled. However, ZIRP was terminated in August 2000 amid deflation. The decision was based on the hope of getting out of deflation if the economy continued its expansion. As argued above, this turned out to be a mistake, at least in judgment.

The second commitment was made when ZIRP was readopted with an additional policy measure, quantitative easing (QE), in March 2001. this time the exit condition was much clearer. QE was to continue "until the consumer price index (excluding perishables, on a nationwide basis) registers stably above 0% year on year". CPI (excluding fresh food) was mentioned as a price index for judging inflation and deflation. Also, the numerical condition, zero or above, was mentioned as an exit condition. These were advances compared to the experience of the earlier ZIRP episode. The only ambiguity was "stably".

The third occasion was to clarify what "stably" means in a numerical manner. In October 2003, the Policy Board issued the following three conditions for terminating QE in the future: "(1) the most recently published core CPI should register 0% or above, but also that such tendency should be confirmed over a few months; (2) the Bank needs to be convinced that the prospective core CPI will not be expected to register below 0%; and (3) the above conditions are only the necessary condition. There may be cases, however, that the Bank will judge it appropriate to continue with quantitative easing even if these two conditions are fulfilled."

As an important footnote, it should be pointed out here that "core CPI" is the CPI excluding fresh food, but including energy prices. (The Bank of Japan changed the translation from "CPI, excluding fresh food (or perishables)", to "core CPI", but the definition is the same.)

The first condition was to confirm a positive rate of inflation, for a few months, with a backward-looking definition (actual core-CPI rate, over the 12-month period). The second was to confirm a positive rate of inflation for the forward-looking manner. The third condition states that the backward and forward conditions were only a set of necessary conditions. Even when the two conditions were satisfied, QE might not be terminated.

The second condition could be tricky, if forecasts are not specified as whose forecasts. The decision also states that, for (2), "many Policy Board members need to make the forecasts that the core CPI will register above 0% during the forecasting period". The forecasts are made public twice a year in the "Outlook".

These three conditions (or two numerical necessary conditions and a judgmental condition) made it much clearer that both backward-looking and forward-looking inflation rates had to be zero or above. Although these exit conditions were far more transparent than before, there remained several questions: Why not 1% or above instead of 0% or above? Why not announce a ceiling on the desirable inflation rate in addition to the floor? When were these conditions likely to be achieved? Would the Bank introduce measures with a view to achieving these conditions faster?

The floor of 0% was first used in March 2001, probably because that was the least controversial condition as stable price level. The Policy Board was operating on the basis of consensus, and to bring in the numerical condition a broadly acceptable condition was needed. By stating it must be "stably" above zero, there was discretionally room to wait for some positive number, rather than just above zero. The upward tolerance was not mentioned.

The Bank of Japan rejects the interpretation that the March 2001 condition was inflation targeting or that the October 2003 clarification was a form of inflation targeting. Objectively speaking, these numerical conditions were steps towards inflation targeting. However, important ingredients were still missing if they were to be interpreted as an inflation targeting framework. The ceiling was not announced, as zero percent seems to be a floor. The framework was only an exit condition, and not a permanent framework. The commitment to overcome the deflationary state was less clear, as the horizon and instruments to achieve the exit conditions were not clarified. The conditions read like a set of circumstances that the Bank of Japan would sit and wait for rather than something the Bank intended to achieve. For these reasons, it is far-fetched to interpret these conditions as constituting inflation targeting.

5.2. Preparation for the exit

As signs of economic recovery became clearer, an exit from QE became a popular topic in 2005. Starting in April 2005, some Board members proposed lowering the target amount for current account balances at the Bank of Japan. The market started to expect that the Bank would make a move to exit from QE and raise the interest rate by the summer of 2006. From the spring of 2005, the Governor and many Bank Board members gave speeches and press interviews, arguing that the economy was recovering and deflation would end by mid-2006. Obviously, high GDP growth rates and strong profit figures of major corporations gave support to the view that deflation would end soon.

In the Outlook of April 2005, the Bank changed the coverage of inflation expectations to include the range of forecasts of the inflation rate for FY 2006 (the inflation rate 12-24 months later) expressed by the Board members. This may have been due to the desire to show that the second exit condition could be satisfied immediately. The median view was that deflation would finally be over by FY 2006. The view was reflected in the voting results in MPMs.

Until March 2005, the decision to target current account balances at 30-35 trillion yen was carried unanimously in the MPM meetings (since February 2004 when the target was raised). On 6 April, one dissenting vote (Mr Fukuma) appeared, and the opposition increased to two votes (Messrs Fukuma and Mizuno) in the 28 April and 20 May MPMs. They proposed that the current account balance target should be lowered to 27-32 trillion yen. Then one member (Mr Mizuno) went a step further and proposed lowering the target to 25-30 trillion yen, while the other member (Mr Fukuma) maintained his proposal of moving the target to 27-32 trillion yen. Their earlier arguments, in April and May, were as follows. First, since financial market stability was restored, excess liquidity would no longer be necessary. Second, reducing the huge balance would take time; therefore when raising the policy interest rate would finally be required, it might be unnecessarily delayed unless the target current account balance had been reduced beforehand. Third, by maintaining the zero interest rate without excess

reserves, the same stimulative effect could be achieved. Fourth, demand for liquidity was declining, so that lowering the target would not disrupt the market. (See Minutes of MPM on 28 April 2005, available on the Bank of Japan homepage.)

The dissenters' reasons for the proposal to lower the target amount had changed slightly by September 2005. First, it was argued that the zero interest rate had distorted the market mechanism and made market participants unaware of the possible risk of interest rate volatility. Second, in order to maintain the high balance, it had become necessary to conduct market operations with relatively long maturities, implying that it would take time to lower the target amount before raising the interest rate, thereby reducing the timeliness and flexibility of the Bank's conduct of monetary policy. Third, gradual reduction of the target amount was appropriate. Fourth, maintaining the zero interest rate without excess liquidity was enough to support economic recovery. Fifth, financial institutions' precautionary demand for liquidity had become lower. (The first four reasons were mentioned by Mr Fukuma and the third and fifth reasons by Mr Mizuno. See Minutes of MPM on 8 September 2005, available on the Bank of Japan homepage.)

Although the inflation rate measured against a year earlier was still negative, it was expected to turn to positive in the following several months. First, the month-to-month inflation rates had registered positive rates in recent months, as shown in Table 3. Second, one-off effects of the rice and utilities price decline of the autumn of the previous year would be out of the range of 12 months by end-2005. Third, the past forecasts of Monetary Policy Board members may have had a bias towards lower inflation (ie overestimating the degree of deflation). If the downward bias were to persist even once the inflation rate turned positive, the actual inflation rate might turn out to be higher than 0.5% in 2006. It is also the case that the Policy Board members underestimated the strength of the economy in terms of the GDP growth rate.

Table 3

CPI inflation rate (ex fresh food)

	Month-to-month, annualised	**Over the same month a year earlier**
Jan 2005	–0.8	–0.3
Feb	–0.1	–0.4
Mar	+0.3	–0.3
Apr	+0.3	–0.2
May	+0.2	0.0
Jun	–0.1	–0.2
July	–0.1	–0.2
Aug	+0.2	–0.1
Sep	+0.2	–0.1
Oct	+0.1	0.0
Nov	–0.2	0.1
Dec	+0.1	0.1
Jan 2006	–0.4	0.5
Feb	–0.1	0.5
Mar	+0.3	0.5
Apr	+0.3	0.5

According to this view, the inflation rate would certainly be positive in 2006. Those who favoured tightening in the spring of 2006 also cited the past performance of forecasts of inflation and GDP growth by the Board members. The Board members tended to be more pessimistic than warranted by the subsequent outturn in 2004. The economy was stronger than the Board had forecast.

The views expressed by Messrs Fukuma and Mizuno can be critically reviewed. First of all, why hurry? The inflation rate in September 2005 was –0.1% (compared to 12 months earlier), and the median of MPC members' forecasts of the inflation rate in FY 2006 was a mere 0.5%. Should this be a concern for a central bank with a mandate of price stability? Second, the concern over the Bank possibly becoming "behind the curve" because of large current account balances was unwarranted. In order to get out of deflation, it is critically important to conduct monetary policy so as to convince the public that deflation will be ending soon (see eg Bernanke (2000, 2003), Krugman (1998) and Eggertsson and Woodford (2003)). In other words, it is important to send a signal that the central bank is in control and has a strategy that cannot be ended prematurely. A credible way to do so is to pile up excess liquidity. Therefore, while Mr Fukuma's analysis was correct in that it would take time to take out liquidity from the system, his conclusion did not necessarily follow. The point is that he thought that getting out of deflation was a foregone conclusion and that there was a risk that the inflation rate would become unacceptably high. Many critics, on the other hand, thought that maintaining the higher balances was still useful as it would strengthen expectations that deflation would finally end. The critics also argued that there was little risk that the inflation rate would become excessive.

There were substantial voices that opposed an early termination, or preparation for termination, of quantitative easing in 2005. First, the CPI inflation rate was still negative. Even if the CPI inflation rate did turn positive, it might have been due to energy price increases, and it is debatable whether a supply shock (oil price increases) should be countered by monetary tightening. It is unfortunate that no CPI inflation rate excluding both fresh food and energy is published in Japan.

5.3. The exit, March 2006

The Bank of Japan finally terminated QE on 9 March 2006, citing that the QE conditions had been satisfied. The Bank of Japan switched the policy instrument from the target for current account balances with the Bank to the interest rate. This is a return to ZIRP. However, since the excess reserves could not be brought down to zero at once without disruption to the financial market, ZIRP had to continue for several months. When the amount is brought down to near the amount of required reserves, then ZIRP could be terminated.

The first condition, backward inflation rates being above zero for a few months, was considered to be satisfied, since the inflation rate had been positive since October (data until January 2006 had been available at that point). The second condition, forward-looking inflation as forecast by the Policy Board members, had been positive for 2006-07 since April 2005.

Some sceptics pointed out that the inflation rate had been positive only three months, and there was some downside risk. The US economy might slow down towards the second half of the year. But, in general the decision was accepted calmly.

There was one other twist to this exit. The Bank of Japan disclosed the "understanding" of price stability as interpreted by the Policy Board members. The range was disclosed to be 0-2% measured by CPI inflation. It was considered to be a medium-term inflation rate. Was this an introduction of inflation targeting? The Bank of Japan said this would not constitute inflation targeting, since it was not billed as a target. However, this could become an important step towards genuine inflation targeting further down the road. This was a positive development at the time of exit from QE.

6. Concluding remarks

This paper has reviewed Japanese monetary policy from 1998 to the present. The beginning year of analysis was set at 1998 because it was the year the Bank of Japan gained legal independence. Transparency, such as MPM minutes disclosure, has been greatly enhanced since 1998. The critical review of the first five years of its independence reveals that the Bank's policies were not aggressive enough to ease monetary policy. Moreover, it made a mistake of tightening amid deflation in August 2000. Adoption of quantitative easing in March 2001 was significant, but could not prevent the economy from sliding into deflation and economic stagnation in 2001 and 2002.

Governor Fukui took office in March 2003. He quickly changed the course towards more aggressive fighting of deflation by expanding the monetary base. He also used better rhetoric in convincing the public that the Bank of Japan would be patient, ie not raise the interest rate on the way out of deflation. The economy gained momentum in 2004 and into 2005. The decision to exit from quantitative easing was finally taken in March 2006 as the monetary Policy Board members concluded that the conditions for its ending had been fulfilled. Now the debate is about when the Bank of Japan will also exit from the zero interest rate policy.

Appendix 1:
Zero interest rate policy (ZIRP), 12 February 1999

"(1) The Bank of Japan today held a Monetary Policy Meeting, a regular meeting of the Policy Board on monetary policy. By majority vote, the Policy Board determined to ease further the stance of money market operations for the inter-meeting period ahead as follows:

> The Bank of Japan will provide more ample funds and encourage the uncollateralized overnight call rate to move as low as possible.
>
> To avoid excessive volatility in the short-term financial markets, the Bank of Japan will, by paying due consideration to maintaining market function, initially aim to guide the above call rate to move around 0.15%, and subsequently induce further decline in view of the market developments."

Appendix 2:
Termination of ZIRP, 11 August 2000

"1. In February 1999, the Bank of Japan adopted the zero interest rate policy, unprecedented both in and out of Japan, to counter the possibility of mounting deflationary pressure and prevent further deterioration in economic conditions. Furthermore, it announced in April 1999 to continue the zero interest rate policy until deflationary concern is dispelled.

2. Over the past one year and a half, Japan's economy has substantially improved, due to such factors as support from macroeconomic policy, recovery of the world economy, diminishing concerns over the financial system, and technological innovation in the broad information and communications area. At present, Japan's economy is showing clearer signs of recovery, and this gradual upturn, led mainly by business fixed investment, is likely to continue. Under such circumstances, the downward pressure on prices stemming from weak demand has markedly receded.

Considering these developments, the Bank of Japan feels confident that Japan's economy has reached the stage where deflationary concern has been dispelled, the condition for lifting the zero interest rate policy."

Appendix 3:
Quantitative easing, introduced on 19 March 2001

"3. In light of this, the Bank has come to a conclusion that the economic conditions warrant monetary easing as drastic as is unlikely to be taken under ordinary circumstances. Accordingly, the Bank decided at its Monetary Policy Meeting of today to take the following policy actions.

(i) Change in the operating target for money market operations

The main operating target for money market operations be changed from the current uncollateralized overnight call rate to the outstanding balance of the current accounts at the Bank of Japan. Under the new procedures, the Bank provides ample liquidity, and the uncollateralized overnight call rate will be determined in the market at a certain level below the ceiling set by the Lombard-type lending facility.

(ii) CPI guideline for the duration of the new procedures

The new procedures for money market operations continue to be in place until the consumer price index (excluding perishables, on a nationwide statistics) registers stably a zero percent or an increase year on year.

(iii) Increase in the current-account balance at the Bank of Japan and declines in interest rates

For the time being, the balance outstanding at the Bank's current accounts be increased to around 5 trillion yen, or 1 trillion yen increase from the average outstanding of 4 trillion yen in February 2001 … . As a consequence, it is anticipated that the uncollateralized overnight call rate will significantly decline from the current target level of 0.15 percent and stay close to zero percent under normal circumstances.

(iv) Increase in outright purchase of long-term government bonds

The Bank will increase the amount of its outright purchase of long-term government bonds from the current 400 billion yen per month, in case it considers that increase to be necessary for providing liquidity smoothly. The outright purchase is, on the other hand, subject to the limitation that the outstanding amount of long-term government bonds effectively held by the Bank, ie, after taking account of the government bond sales under gensaki repurchase agreements, be kept below the outstanding balance of banknotes issued."

Appendix 4:
Clarification on the exit condition, 10 October 2003

"2. More Detailed Description of the Commitment to Maintaining the Quantitative Easing Policy

With the aim of laying the foundation for sustainable growth of Japan's economy, the Bank is currently committed to maintaining the quantitative easing policy until the consumer price index (excluding fresh food, on a nationwide basis, hereafter the core CPI) registers stably a zero percent or an increase year on year. Such commitment is underpinned by the following two conditions.

First, it requires not only that the most recently published core CPI should register a zero percent or above, but also that such tendency should be confirmed over a few months.

Second, the Bank needs to be convinced that the prospective core CPI will not be expected to register below a zero percent. This point will be described in such materials as the analysis and the forecasts of Policy Board members in the Outlook Report. To be more specific, many Policy Board members need to make the forecasts that the core CPI will register above a zero percent during the forecasting period.

The above conditions are the necessary condition. There may be cases, however, that the Bank will judge it appropriate to continue with quantitative easing even if these two conditions are fulfilled."

Appendix 5:
Dissenting voices in the stay-the-course decision of the MPM (Minutes, 8 September 2005)

Mr T Fukuma dissented from the above proposal for the following reasons. First, as market participants' views on the economy and interest rates were changing, provision of massive amounts of funds based on the current target range for the outstanding balance of current accounts at the Bank was hindering smooth formation of interest rates based on the market mechanism, and could also increase interest rate volatility risk. Therefore, the Bank should correct this situation as long as the maintenance of the current framework of the quantitative easing policy would not be hindered. Second, if the Bank continued to conduct market operations with relatively long maturities in order to maintain the outstanding balance of current accounts at the Bank within the target range, a longer period of time would be needed for the process of termination of the quantitative easing policy, thereby reducing the timeliness and flexibility of the Bank's conduct of monetary policy. Third, termination of the quantitative easing policy should be done gradually in a step-by-step manner, while carefully examining economic and financial developments. And fourth, it was possible to support the ongoing economic recovery and thereby emergence from the current situation of slight price declines by maintaining the zero interest rate environment based on the Bank's commitment in terms of policy duration.

Mr A Mizuno dissented from the proposal for the following reasons. First, there had been no change from the downtrend in financial institutions' precautionary demand for liquidity, and thus lowering the outstanding balance of current accounts at the Bank as a response to this was reasonable policy conduct. And second, to ensure financial market stability in the period around the termination of the quantitative easing policy, it would be appropriate to start lowering the outstanding balance in line with developments in the market, rather than lowering it intensively over a short period of time.

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Comments on: "Japanese monetary policy: 1998-2005 and beyond" by Takatoshi Ito

Peter J Morgan[1]

Professor Ito's paper is a very thorough and balanced review and assessment of the development of Bank of Japan (BOJ) policy during the period of deflation from 1998, when the BOJ obtained legal independence, to the present. This period coincided with the terms of BOJ governors Hayami and Fukui and a number of important policy innovations. The experience of this period certainly provides important lessons for the conduct of monetary policy.

The paper divides into three main parts:

1. A description of the major developments of Japanese monetary policy through 2003 including the adoption and ending of the zero interest rate policy (ZIRP), and the implementation of quantitative easing (QE);
2. A review of the debate in the monetary policy meeting (MPM) on inflation targeting;
3. A description of monetary policy in 2003-06, focusing on the evolution of the QE policy, the refinement of the BOJ's criteria for exiting from QE, the debate about the process for ending QE, and the actual exit in March 2006.

Professor Ito's paper raises, either implicitly or explicitly, a number of very significant issues, and I would like to focus on these issues in my comments.

I. Determinants of monetary policy responses

The first issue is the choice of policy responses by the Bank of Japan in the case of a liquidity trap, or what Prof Ito prefers to call a deflationary trap, when short-term interest rates have already been lowered to zero. By definition then, these are unconventional policy measures.

The table below shows the menu of alternatives suggested in Prof Ito's paper, plus a couple of additional suggestions from the widely cited speech by the current Fed chairman Ben Bernanke (2002) on this subject.

Table 1

Unconventional monetary policy measures

		BOJ	Ito	
1.	Commitment to keep short-term interest rates low	x	x	Weak
2.	Explicit ceilings on long-term rates			
3.	Monetise domestic government debt	x	x	
4.	Expand the size of the balance sheet - QE	x	x	
5.	Coordinated fiscal and monetary policy			Strong
6	Foreign exchange intervention		x	
7.	Real asset purchases		x	

Sources: Bernanke (2002); Ito (2005); Svensson (2000).

[1] Chief Economist, Asia-Pacific HSBC.

The first four options are fairly straightforward extensions of conventional monetary policy, including various ways to influence the level of interest rates further out the curve and to expand the size of the central bank's balance sheet. Their chief virtue is that they can be carried out in a straightforward manner using the same kinds of operations that central banks use anyway, and they do not require cooperation from other parts of the government. Their main disadvantage is that their impact is very likely to be limited in a situation of deflation, where interest rates all along the curve generally are already very low, precisely because the demand for funds is weak. In these conditions, the impact on portfolio behaviour or aggregate demand of a further decline of interest rates is likely to be very small. Therefore, I have classified these as "weak" policy options.

I have classified the options 5-7 as "strong", because they all have a much clearer transmission mechanism for boosting aggregate demand. Coordinated fiscal and monetary policy uses monetary policy to monetise government debt issuance resulting either from higher expenditures or tax cuts. Foreign exchange intervention, as advocated perhaps most strongly by Lars Svensson, increases export demand by lowering the exchange rate and raises the price level via higher import prices. Finally, real asset purchases raise private sector wealth, thereby encouraging consumption and investment.

The main disadvantage of the first two strong options is that they require coordination with other government entities. In particular, foreign exchange intervention requires at least passive acquiescence by Japan's trading partners, especially the United States, not necessarily easy to obtain. Real asset purchases do not require coordination, but they have significant consequences for income distribution, asset allocation and politics, which makes them difficult to adopt without some broader consensus being achieved.

From this classification, it is clear that the BOJ chose only weak options, and perhaps the key question is: why was this the case? (Technically, the BOJ did buy small amounts of equities and private debt, but these operations were explicitly divorced from monetary policy.)

Prof Ito suggests that the choice of only weak policies, and the slow pace of doing even that, partly reflected a bias against inflation. There certainly is evidence to support such a conclusion, which he cites, including the BOJ's reluctance and tardiness in adopting unconventional measures, its frequently voiced concerns that low interest rates retard the restructuring process and distort asset allocation, and various comments about "good deflation". Prof Ito suggests that the independence acquired by the BOJ following the adoption of the new Bank of Japan Law in 1998 creates a bias towards hawkishness as a way to display that independence, and this seems quite possible.

The second issue is that of accountability. The BOJ evidently did not perceive itself as having a strong mandate to "own" the problem of deflation, that is, to firmly commit to taking necessary steps to achieve positive inflation in a timely way. Instead, it tended to react tactically and reluctantly. Prof Ito suggests that this problem could be cured by the BOJ having an explicit inflation target. However, it is not clear that the BOJ could achieve an inflation target using only weak unconventional policies. Ultimately, this is probably the main reason why the BOJ strongly resisted adopting an inflation target.

As mentioned above, the first two strong policy options require some sort of policy coordination. The Japanese government clearly has not wanted to expand fiscal policy, given its worries about the high government debt level. However, if the BOJ can monetise the debt, then it is not obvious that this concern is rational. Regarding currency intervention, the BOJ cited the legal primacy of the Ministry of Finance in setting foreign exchange policy, but comments by the Ministry did not suggest it was opposed to activity by the BOJ in this area. However, one can imagine that the US government would not have been too enthusiastic about this. To be sure, it did acquiesce when the Ministry bought a total of JPY 35 trillion of dollars between January 2003 and March 2004. However, this intervention was aimed mainly at stemming the rise of the yen during a period when the private sector signally failed to

recycle the current account surplus, and the intervention stopped when normal private capital outflows resumed. This is somewhat different from an attempt to substantially devalue the yen.

Regarding asset purchases, the BOJ seems to have regarded these as possible, but only to be used in the case of a deflationary spiral. However, in the absence of policy coordination, the implication of strong accountability is that the BOJ should be prepared to adopt such policies if needed to fulfil its mandate. Therefore, the extent of the BOJ's mandate remains unclear, and a shift to an inflation target could clarify this.

II. Quantitative easing - impact and exit conditions

Much of the paper is devoted to issues concerned with the timing and method of the ending of quantitative easing. Prof Ito is generally critical that the BOJ may have exited too soon. However, all of this discussion begs the more fundamental question of whether or not quantitative easing had a significant impact. If not, then this debate is beside the point. The paper would benefit from a more thorough discussion of this issue.

Professor Ito suggests that quantitative easing may have had some impact, but I believe the evidence for this is pretty scant. The basic theoretical reason for scepticism is the widely cited point that, under zero interest rates, short-term paper is equivalent to cash. Therefore, operations to increase the level of current accounts at the Bank of Japan simply involve swapping different cash equivalents, with no impact on the liquidity of banks' balance sheets. Ito cites one study (Oda and Ueda (2005)) that found only modest evidence of an effect of the level of excess reserves on short-term interest rates, and they speculated that even this impact could be transitory. Former Bank of Japan Deputy Governor Yutaka Yamaguchi, who was one of those who initially voted to adopt quantitative easing, later expressed his view that quantitative easing had little or no impact. There is no evidence of a portfolio rebalancing effect toward risky assets, or of impacts on credit growth or inflation expectations. It is widely acknowledged that the injection of high levels of liquidity reduced the perception of financial sector risk, but it is difficult to claim much beyond this. Although the economy ultimately did recover, this appears to have been due to a recovery of exports and progress of other structural adjustments. Therefore, it seems that the BOJ was mainly lucky in terms of timing in adopting quantitative easing.

III. Recommendations for the post-QE policy framework

If quantitative easing did not work, then the BOJ has misallocated scarce resources by going to great lengths to specify the criteria for ending quantitative easing, but saying comparatively little about the conditions for ending the ZIRP, which is almost certainly a more important issue. Prof Ito notes that the BOJ's "understanding" of price stability of 0-2% for the CPI in its new policy framework could eventually evolve into a full-fledged inflation targeting framework, and this makes a lot of sense as a communication device. It also would tend to curb the bias of the BOJ against inflation. However, the BOJ shows little inclination at this stage to go beyond the present framework.

IV. Conclusions

One has to agree with Prof Ito's conclusion that the BOJ's policy during the period after 1998 was often "too little too late" and that a number of errors were made. The ending of the ZIRP

in 2000 was the biggest error, and was pretty clearly a mistake ex ante as well as ex post, given that the economy was still experiencing deflation at the time, and that there was uncertainty about the outlook. The communication of the BOJ's policy goals and criteria also could have been better. In contrast, the BOJ seemed to rush too fast to exit from quantitative easing and the ZIRP. The big question is why the BOJ only adopted "weak" policy options unlikely to be very effective in a liquidity trap environment. It clearly did not regard itself as "accountable" for maintaining price stability in any strong sense. Adoption of inflation targeting could help to remedy these shortcomings.

Despite all the debate about the timing and method of quantitative easing, it is difficult, and perhaps beside the point, to evaluate these arguments in the absence of an overall assessment of the effect of this policy. This aspect needs to be explored more fully. The evidence in my opinion does not support the view that quantitative easing had a significant impact, and therefore the ending of quantitative easing is not likely to have much impact either.

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Comments on: "Japanese monetary policy: 1998-2005 and beyond" by Takatoshi Ito

Masaru Yoshitomi[1]

During 1998-2005, the Bank of Japan (BOJ) conducted a historically unprecedented and extraordinary monetary policy: both the zero interest rate policy (ZIRP) and quantitative easing (QE) on top of ZIRP. In spring 1999, ZIRP was introduced but it was constrained by the so-called zero bound problem. Therefore, worsening deflation meant the real interest rate would rise, aggravating recession and hence deflation. In order to fend off this problem, QE was introduced in March 2001 on top of ZIRP, but deflation remained at between –1 and –0.6% during 2001-02 (Figure 2 in Prof Ito's paper). Despite the continued deflation, however, the Japanese economy started to recover steadily after July-September 2002, by registering annual growth rates of 1.8%, 2.3% and 2.6% in 2003, 2004 and 2005, respectively. The Bank of Japan exited from QE in March 2006 and also terminated ZIRP in June 2006.

The objective of Prof Ito's paper is to critically review the BOJ Board members' discussions and decisions about policy actions taken during this fascinating period, the beginning of which almost coincided with the timing of the BOJ's legal independence in March 1998, Prof Ito examined the timing of the introduction of ZIRP, its temporary termination (between August 2000 and March 2001) and the effectiveness of QE.

In light of the well defined objective of the paper, Prof Ito focuses on the recent history of BOJ monetary policy, and provides us with extremely useful descriptions of pros and cons debates among the Board members at the critical times of policy changes. However, his paper hardly examines the effectiveness of ZIRP or QE nor the robust recovery of the Japanese economy since mid-2002 which took place even under the deflationary environment. If accompanied by examining the effectiveness of ZIRP and QE, Prof Ito's critical review of BOJ's policy actions would be much more convincing and powerful. Let me give several important examples on this last point.

Prof Ito claimed that ZIRP could have been introduced by early 1995, a judgment based on the Taylor-rule simulated call rate. Furthermore, he claimed that the BOJ's hesitation in the adoption of ZIRP was attributable to Japanese politics since the BOJ was not legally independent at that time. However, Prof Ito did not concretely explain the characteristics of the political pressure. During 1995-96, the Japanese economy recovered rather strongly, registering actual growth of about 2.5% per year. Only after the banking system crisis took place in November 1997 did the economic and political environment vastly change. Therefore, Prof Ito could strongly claim that the BOJ should rather immediately introduce ZIRP after the banking crisis which deepened a recession and hence created deflation. The BOJ did not introduce ZIRP until March 1999 because Governor Hayami held the view that deflation was not something worrisome and that ZIRP might hurt households' interest income, as Prof Ito mentioned in the paper.

Prof Ito's second criticism was against the BOJ's temporary termination of ZIRP (raising the interest rate from 0% to 0.25%) between August 2000 and March 2001. While he admitted that this interest increase by 0.25% was small enough not to disturb investment or consumption, Prof Ito considered this BOJ judgment was a mistake, simply because CPI

[1] President and CRO, Research Institute of Economy, Trade and Industry (RIETI).

deflation continued and because many predicted slower economic growth in the United States and Japan due to the bursting of the ICT bubble. In this argument, Prof Ito took it for granted that ZIRP should be effective in overcoming deflation, but no theoretical or empirical evidence is provided throughout his paper.

Prof Ito's third critical review on QE, ie increases in excess reserves, appears twofold. One is that the BOJ did not adopt a non-conventional monetary policy in addition to the actually adopted purchase of long-term Japanese government bonds (JGB). The other was that the BOJ did not explicitly spell out economic conditions under which it would exit from QE, nor did it adopt inflation targeting. Here again, Prof Ito took it for granted that QE should be effective, without discussing the transmission channels whereby QE could contribute to overcoming deflation, or providing any evidence on them.

The BOJ's monetary policy mix of ZIRP and QE can be disentangled into the effectiveness of three policy instruments: (1) ZIRP per se without QE, (2) ZIRP with QE and (3) QE per se, whose effectiveness goes beyond the effectiveness of ZIRP per se. Let me briefly discuss each of them.

First, the effectiveness of ZIRP per se without QE (actually adopted in February 1999) was viewed with scepticism by many academics for the following reason. If the zero bound problem was combined with the downward spiral expectations of deflation, the interest rate would get increasingly higher in real terms, causing deeper recession and hence deflation. Indeed, the actual deflation of core CPI (excluding fresh foods only) worsened from 0% to –1% (at maximum) during early 1999- early 2002. However, no empirical evidence has been given by any academics about the downward spiral of deflation expectations. Hence, no evidence has been provided about the increasingly higher interest rate in real terms under the zero bound problem. In contrast, Hori and Shimizutani (2004) showed there were no such downward deflation expectations by the Japanese household sector, which anticipated future deflation only by less than half of the actual deflation a year ahead.

A deeper question is whether QE introduced in March 2001 contributed to such deflation-mitigating expectations, but this question can be answered only through analysing the transmission channels of QE. Two channels are conceivable. One is the straight impact of the increased excess reserves, while the other is through influencing the future course of the expectations on the short-term interest rate.

The possible transmission channel of the increased excess reserves is the impact of an increase in the monetary base on the rate of return on financial assets which are imperfect substitutes for money (unlike government short-term securities under zero interest rate). Many empirical studies indicated that the estimated impact was not statistically significant or extremely small even if statistically significant (for example, a 10 trillion (about 2% of GDP) increase in excess reserves affects only 1-4 basis points of Aa bonds (Kimura and Small, 2006)).

In contrast, increased excess reserves are found to impact on the future course of short-term interest rate expectations. The estimated impacts on flattening the yield curve are found for three- to five-year maturity bonds, and a 0.4-0.5 percentage decline at maximum on five-year bonds (Baba et al (2005), Oda and Ueda (2005), Okina and Shiratuska (2004)).

Given these rather positive impacts of QE on the medium-term yield curve, there remains an important puzzle about the actual channels through which QE contributed to the recovery of the Japanese economy from mid-2002. Actual business investment started to expand rather strongly after 2003 but such a demand effect of QE through stimulating investment has not been detected empirically. It has been suggested by many researchers that such a potential positive impact of QE was offset by balance sheet restructuring by companies which were engaged in reducing large excess debt and increasing cash flows (ie operational profits minus business investment).

Furthermore, in academic discussions of the effectiveness of QE, the definition of QE has become blurred, that is, whether QE means increases in excess reserves or high levels of excess reserves. This question arises because excess reserves stopped increasing in March 2004 at the level of about 30 trillion yen (6% of GDP) after having increased by 15 trillion yen in one year under the new Governor Fukui, who took office in March 2003, following about a 15 trillion yen increase in two years under the previous Governor Hayami (see Figure 5 in Prof Ito's paper). It remains unclear which matters: increases, or high levels of excess reserves. Another puzzle is the continued recovery and expansion of the Japanese economy during the latest few years (2004-06) even after excess reserves stopped increasing. Eventually such economic expansion contributed to reducing deflationary pressure, resulting in the exit from QE in March 2006.

Yet another related but unsettled issue is how QE actually contributed to stabilising the banking system. The resolution of this issue requires careful estimates of private banks' demand for excess reserves in the face of the possible bank run on deposits. Banks' demand for excess reserves may have changed over time, reflecting capital injection by the government in 1999, the establishment of the Financial Supervisory Agency (FSA) in 2001, the tough measures enforced by the FSA to reduce non-performing loans (NPLs) in 2003, the rescue operation of one relatively large bank, Resona, in 2004, the introduction of the ceiling on the amount of the government guaranteed deposits in 2005, etc. Only by estimating the changing demand for excess reserves will we understand how QE contributed to the stability of the banking system by allowing private financial institutions to freely dispose of excess reserves in case of deposit runs.

The last important analytical issue to be settled is the causality between deflation and recession. Many academics claimed that without overcoming deflation, recession would deepen through increasingly higher real interest rates, but the reality is that the economic recovery and expansion after mid-2002 was in fact sustained under declining public works expenditure, which was traditional Keynesian fiscal policy in Japan, and reduced deflation by narrowing the GDP gap towards zero by the end of 2005.

In sum, Prof Ito's critical review on monetary policy in Japan under deflation is very useful in deepening our understanding how the BOJ Board members actually debated and divided in opinion regarding ZIRP and QE. However, this critical review appears to be based on the presumption that both ZIRP and QE were effective in overcoming deflation and contributing to the economic recovery. Unfortunately, however, the absence of his own evaluation on the effectiveness of ZIRP and QE weakens his criticism against policy actions of the BOJ during 1998-2006.

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Inflation targeting in Korea: a model of success?

Soyoung Kim[1] and Yung Chul Park[2]

I. Introduction

Korea has managed inflation targeting as a framework for monetary policy since 1998. In this policy setting, core inflation is the target, and the call money market rate, which the Bank of Korea (BOK) can control, is the operational target of monetary policy. Prior to the adoption of the call money market rate and inflation targeting, the BOK had exploited a variety of monetary aggregates ranging from the reserve base to M3 as an intermediate target.

After a few years of inflation averaging more than 5% per year, the rate of change of the CPI decelerated sharply to a little over 1% in 1999 - the first year of inflation targeting. Since then, the annual rates of inflation in terms of the CPI and core CPI have remained around 3-4%, mostly within the target ranges. On the surface, this record suggests that inflation targeting has been effective in sustaining price stability in Korea. However, delving deep into the operations of monetary policy, such an evaluation calls for qualifications. Since the 1997-98 financial crisis, economic downturn, instead of inflation, may have been the main concern. In addition, there has been a sharp appreciation of the won-dollar exchange rate, which has helped keep prices of imported goods, and thus price levels, low. One may claim that the new framework has not been subject to a real test of controlling inflation in such an environment with low inflationary pressure.

The BOK lowered the call money market rate continuously from 5% in February 2000 to 3.25% in November 2004. Subsequently it remained unchanged until October 2005, when it was raised by 0.25 percentage points. Understandably, monetary policy has been expansionary since 2000. However, the expansionary monetary policy has not been effective in bringing about economic recovery. Loose monetary policy appears to have done little in the way of stimulating domestic demand, specifically investment demand. Although the real interest rate has fallen and the availability of credit has increased, business firms have shown little sign of taking advantage of the low cost of financing to increase their capital investment.

The purpose of this paper is to analyse the extent to which inflation targeting has contributed to stabilising prices in Korea since 1999 when it was introduced. To this end, the paper examines the mode of operation, channels of transmission and effects on macroeconomic variables of monetary policy. Before discussing these issues, this paper summarises the history of monetary policy in Section II.

Section III is devoted to an empirical examination of the extent to which inflation targeting has contributed to sustaining price stability. To this end, raw data on the rates of inflation

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[1] Associate Professor, Department of Economics, Korea University, Seoul, Korea. E-mail: soyoungkim@korea.ac.kr.

[2] Director, Center for International Trade and Finance, Seoul National University, Seoul, Korea. E-mail: yungcp@snu.ac.kr.

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measured by the CPI and core CPI during the periods of and before inflation targeting are presented for a visual inspection. Then, following Levin, Natalucci and Piger (2004), time series models are estimated to gauge the relative role of the size of inflation shocks and the propagation of inflation shocks in explaining the volatility of inflation. This examination will help us determine whether the decrease in inflation volatility during the periods of inflation targeting is due to the fall in the size of inflation shocks or inflation targeting itself. Finally, the sensitivity of changes in inflation expectations to changes in actual inflation is estimated in terms of the method suggested by Levin, Natalucci and Piger (2004) in order to analyse whether the formation of inflation expectations changed after the introduction of inflation targeting.

In Section IV, a monetary reaction function is estimated to infer the way in which monetary policy was conducted during the period of inflation targeting. In order to account for the forward-looking nature of monetary policy, which appears to be characteristic of the monetary policy of the BOK, a modified version of the methodology suggested by Clarida, Gali and Gertler (1998, 2000) is used. This estimation will help us better understand the importance of changes in inflationary pressure and the output gap in the policy responses of the BOK.

In Section V, the transmission mechanism of monetary policy is investigated in terms of structural VAR models developed by Christiano, Eichenbaum and Evans (1996). Concluding remarks are in Section VI.

II. History of monetary policy in Korea

Before the currency crisis in 1997, the intermediate target of monetary policy of the Bank of Korea was a monetary aggregate such as M1or M2. This aggregate was then adjusted to achieve the BOK's policy objectives. After the 1997-98 financial crisis, the Bank of Korea adopted inflation targeting and began using the interest rate as the operational target. After some years of a two-pillar system in which a monetary aggregate also served as an operational target, pure inflation targeting was established in 2004. This section briefly summarises the history of monetary policy in Korea.[3]

II.1. Monetary targeting

Monetary policy in Korea has been conducted in various systematic frameworks since 1957, when the "Fiscal Financial Stabilisation Plan" was first introduced as an overall framework of macroeconomic policy in order to curb high rates of inflation resulting from the large fiscal deficit the government ran during the Korean War and the post-war reconstruction period. Under the plan, the limit for the rate of growth of M1 was pre-announced quarterly or yearly. After running current account deficits for a number of years, Korea had to accept a standby credit agreement with the IMF (March 1965). This agreement required Korea to set up a concrete value of monetary target in consultation with the IMF, which marked an important change in monetary policy operations in Korea.

In 1976, the Bank of Korea began setting its own M1 growth rate target as the current account started to improve. Three years later, the Bank changed the monetary target to a M2 growth rate since the demand for M1 became much less stable than before. In setting the target value of money supply, the BOK used the EU method of the quantity equation of money.

[3] Most of this section follows the descriptions in Bank of Korea (2002a, 2002b).

The Bank of Korea maintained monetary targeting until the mid-1990s. Largely because of the stability of M2 demand, the Bank was able to keep the M2 growth rate closer to the target value. However, changes in the trust account system in 1996 had made M2 demand unstable. As a result, from 1997 the Bank of Korea used two monetary aggregates: M2 and MCT, which is a broader measure of money that includes CDs and trust cash funds. However, the usefulness of MCT as a monetary target declined with a change in the required reserve system.[4]

After the 1997-98 crisis that forced Korea to accept IMF rescue financing with policy conditionality, the Bank of Korea adopted a broad measure of money, M3, as a reference value together with a corresponding supply limit of the monetary base. At the same time, the Bank revised the Bank of Korea law in late 1997 to adopt inflation targeting and to explicitly announce the target rate of inflation. The Bank introduced a system of monetary policy operations in which a target of inflation was made public and the growth rate of M3 was the operational target, similar to the two-pillar system of the European Central Bank.

Although the Bank of Korea did not need to consult the IMF in deciding the target rate of growth of M3 from 1999, the Bank kept the two-pillar system, setting the target rate of growth of M3, because it was concerned about the possible confusion in financial markets a sudden dropping of M3 could cause. For the two years beginning in 2001, a target M3 growth rate was not set, but only monitored. In 2003, the monitoring of M3 growth was brought to an end. This change has completed the transition from the two-pillar to a pure inflation targeting system.

II.2. Interest rate as an operational target

There had been a debate on whether the interest rate could be a more reliable operational target than a monetary aggregate since the mid-1990s. However, it was only after the 1997-98 financial crisis that the interest rate was accepted as an operational target. The BOK used the interest rate as an explicit operational target on 30 September 1998, when it lowered the call money market interest rate from 8.1% to 7%. Since 1999, the BOK's Monetary Policy Committee (MPC) has indicated the general direction of monetary policy by announcing the target call rate.

II.3. Inflation targeting

During the early years of inflation targeting (1998-99), the CPI inflation rate was adopted as the benchmark indicator because it was familiar to the Korean public and the IMF policy conditionality required such an adoption. Since 2000, the underlying or core CPI inflation rate has been chosen as the benchmark inflation indicator, which leaves out the prices of petroleum and agricultural products except cereals. One of the major reasons for excluding these prices is that it is difficult to control them through an aggregate demand policy such as monetary policy, and these prices are greatly affected by exogenous factors including the international price of oil and the weather.

The target inflation rate has been determined annually in consideration of expected changes in domestic and international economic as well as financial market conditions. The target range of ±1% is allowed to take into account various economic uncertainties. In 1998, the initial year of inflation targeting, the target had been set at 9 ± 1%. It was lowered to 3 ± 1% in 1999 and again to 2.5 ± 1% in 2000 before being raised to 3 ± 1% in 2001. Since 2000, the Bank of Korea has announced a medium-run inflation target to account for the lag in monetary policy. The medium-run target was 2.5% and 2.5-3.5% for 2002 and 2003 respectively. For the 2004-06 period, the medium-run inflation target was set at 2.5-3.5%.

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[4] Required reserves were imposed on CDs.

In setting the call rate target every month, the Monetary Policy Committee follows the look-at-everything approach that monitors movements of many variables such as production, demand, prices, real estate prices, the GDP gap, NAIRU and the P* ratio.[5] In addition to price stabilisation, economic growth, balance of payments and financial market stability are also important objectives of monetary policy. In this sense, "flexible" inflation targeting rather than strict inflation targeting and an eclectic approach characterise Korea's monetary policy. Like Greenspan's baby steps, the target call rate is adjusted gradually (0.25-0.5%), and when it has been set, open market operations are carried out to keep the rate close to the target.

In the past, much of the monetary policy process was kept in secret, but since the introduction of inflation targeting, monetary policy operations have become much more transparent than before. The Monetary Policy Committee announces the direction of monetary policy as soon as a decision is reached. The chairman publicly explains the content and background of the decision in detail. The monetary policy report is submitted to Congress every year. In addition, the chairman, MPC members and other relevant officials try to inform the public on pending monetary policy issues and future policy directions through various means such as public addresses, interviews and conferences.

III. How successful has inflation targeting been?

III.1. Basic statistics

One of the easiest ways to evaluate inflation targeting is to examine whether the actual inflation rate has remained close to or within the range of the target. Figure 1 shows the rates of CPI and core inflation rates as well as the ranges of the target since 1997. The vertical line indicates the starting date of inflation targeting (the second quarter of 1998). The inflation rates shown in Figure 1 are annualised quarterly rates. During the initial years of inflation targeting (1998-99), when the CPI was used as the benchmark index, actual inflation rates were higher than the target rates. Beginning in 2000, when the core CPI inflation rate was chosen as the benchmark, actual inflation rates have been closer to the target ranges, but in quite a few instances they moved out of the ranges.

Based on this record, inflation targeting does not appear to have been entirely successful. However, under inflation targeting, the central bank does not have to keep a short-term inflation rate such as a quarterly inflation rate within the range. Rather, it tries to keep inflation within the target range over a longer horizon. Therefore, to provide a better picture of how successful inflation targeting has been, it is more instructive to observe changes in the annual inflation rate as shown in Figure 2 (on a monthly basis). The vertical line indicates the starting month of inflation targeting (April 1998). During the initial period of inflation targeting, when CPI inflation was used as the benchmark (1998-99), actual CPI inflation rates were often outside of the target ranges. However, since 2000, when core CPI inflation was used as the benchmark, the actual core CPI inflation rate has been mostly within the range of the target. That is, in about two years after the adoption of inflation targeting, the Bank of Korea was able to keep inflation within the range.

[5] The P* ratio is the ratio of the long-run equilibrium price level to the current price level.

Figure 1

Inflation rates

Quarterly inflation rates using quarterly data

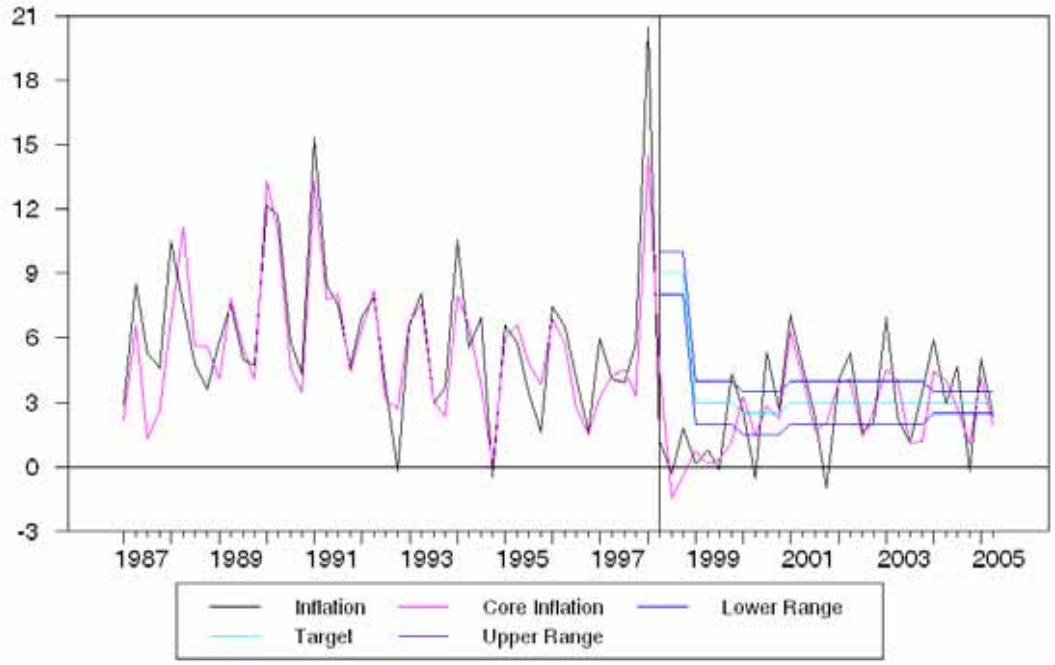
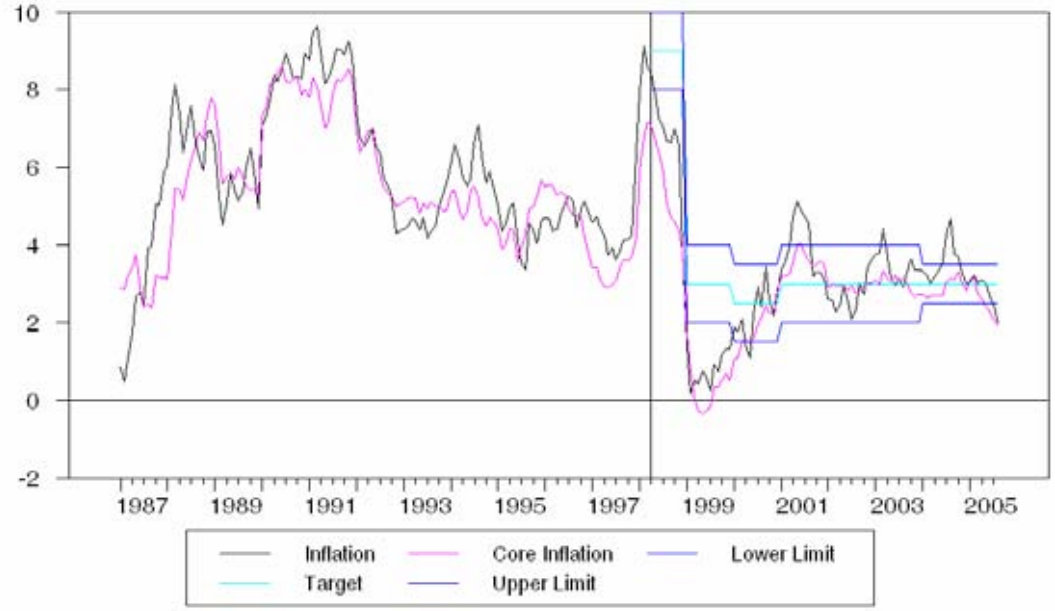


Figure 2

Inflation rates

Annual inflation rates using monthly data



Figures 1 and 2 show that the average rates of inflation have come down since the introduction of inflation targeting. In addition, the volatility of inflation has decreased. To examine these developments further, the sample means and standard deviations of inflation before and after inflation targeting are calculated. The two different periods before inflation

targeting, the 10-year period from 1987 to 1996 and the seven-year period from 1990 to 1996, are considered. In both cases, 1997 and 1998 are excluded from the samples to eliminate the bias caused by the financial crisis and the announcement of inflation targeting. For the inflation targeting periods, two periods, one from April 1998 to August 2005 and the other from January 1999 to August 2005, are considered. Again, 1998 is excluded in the latter period to avoid the effects of the financial crisis and to account for the fact that price increases in 1997 (when inflation targeting was neither announced nor adopted) are counted in measuring the annual inflation rates in 1998.

Table 1 confirms that the inflation rate has been lower and less volatile during than prior to the period of inflation targeting. Note that the reduction in the sample mean and volatility of inflation tends to be larger for the core than the CPI inflation rate, which is related to the fact that the Bank of Korea targeted the core CPI inflation rate during the periods of inflation targeting. From these simple plots and data, the BOK was able to bring inflation down and keep it within the target range after a few years of learning.

Table 1

Sample mean and standard deviation of the inflation rate

(1) Mean

	Quarterly rate (quarterly)		**Annual rate (monthly)**	
	CPI	**Core CPI**	**CPI**	**Core CPI**
1987-96	6.0	5.6	5.9	6.2
1990-96	6.1	5.8	5.6	5.9
Apr 1998-Aug 2005	2.7	2.4	3.2	2.7
1999-Aug 2005	2.9	2.6	2.8	2.4

(2) Standard deviation

	Quarterly rate (quarterly)		**Annual rate (monthly)**	
	CPI	**Core CPI**	**CPI**	**Core CPI**
1987-96	3.2	3.0	1.9	1.6
1990-96	3.6	3.2	1.8	1.5
Apr 1998-Aug 2005	2.3	1.8	1.7	1.1
1999-Aug 2005	2.3	1.6	1.4	1.1

However, the lower mean and volatility of inflation may not necessarily have been the consequences of successful inflation targeting. Weaker and less frequent shocks that change the rate of inflation may have been responsible for its lower volatility. In order to shed light on the causes of the lower and less volatile inflation rate during the periods of inflation targeting, first time series models of inflation are estimated to examine the relative role of the size and propagation of inflationary shocks in explaining the volatility of inflation. If the size of the shocks was smaller during rather than prior to the periods of inflation targeting, it is difficult to conclude that the reduction in the volatility of inflation is a result of inflation targeting. Second, data on inflation expectation are used to investigate how the private sector adjusts its expectations on inflation during and prior to the period of inflation targeting.

III.2. Inflation persistence and inflation shocks

Inflation targeting, if successful, should reduce the persistence of the inflation rate and weaken the propagation of inflation shocks. By being more eager to achieve the target inflation rate and actively stabilising the inflation rate around the target rate, the monetary policy's countering actions to inflation shocks may reduce inflation persistence and weaken the propagation of inflation shocks. In addition, to the extent that policy operations of the monetary authority to achieve the target inflation are perceived to be credible, economic agents may respond less sensitively to inflation shocks as they are less likely to change their expectation on inflation rates.

This section first examines the persistence of inflation. Then, simple time series models are estimated to examine the relative role of shocks to inflation and propagation of these shocks in generating inflation volatility. This examination may explain the relative roles of monetary policy and the size of inflation shocks in reducing inflation volatility during periods of inflation targeting. For example, if the decrease in inflation volatility is mostly due to a decrease in the size of inflation shocks, then one cannot conclude that inflation targeting has been effective.[6]

Table 2 reports autocorrelations of the two inflation rates. For the quarterly inflation data, the fourth quarter autocorrelations are lower during the periods of inflation targeting than those during the periods before inflation targeting in the case of CPI inflation, but they are similar in the case of core CPI inflation. For the annual inflation rates on a monthly basis, the autocorrelations at most horizons are lower during the periods of than prior to inflation targeting. The reduction in autocorrelation tends to be larger for longer horizons. Overall, the persistence of inflation is lower during the periods of inflation targeting.

Table 2

Autocorrelation

(1) Quarterly inflation rate (quarterly data)

	CPI				Core CPI			
Quarter	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
1987-96	0.07	–0.23	0.12	0.51	0.14	–0.28	0.06	0.51
1990-96	0.13	–0.16	0.10	0.61	0.23	–0.28	0.02	0.65
Feb 1998-Feb 2005	–0.02	–0.06	0.05	0.28	0.25	-0.09	0.13	0.46
1999-Feb 2005	–0.11	–0.16	–0.10	0.20	0.23	–0.20	–0.04	0.50

(2) Annual inflation rate (monthly data)

	CPI				Core CPI			
Month	**1**	**3**	**5**	**12**	**1**	**3**	**6**	**12**
1987-96	0.95	0.84	0.67	0.15	0.96	0.85	0.70	0.38
1990-96	0.96	0.87	0.78	0.43	0.97	0.89	0.81	0.60
Apr 1998-Aug 2005	0.93	0.70	0.35	–0.40	0.97	0.80	0.44	–0.39
1999-Aug 2005	0.91	0.75	0.53	0.09	0.97	0.87	0.65	0.14

[6] Levin, Natalucci and Piger (2004) used similar methods.

As for the relative role of shocks to inflation and their propagation, a univariate AR process for inflation of the following form is estimated:

$$\pi_t = \mu + \sum_{j=1}^{K} \alpha_j \pi_{t-j} + \varepsilon_t \quad (1)$$

where π_t is inflation rate at time t, μ and α_j are constants, and ε_t is a serially uncorrelated error term, which is interpreted as shocks to inflation. The order (K) of the AR process is determined by the Akaike criterion. The total variance of inflation can be decomposed into the part due to inflation shocks ε_t and another part due to the propagation of inflation shocks.

Table 3 reports the standard deviations of inflation shocks ("Shocks"), the standard deviations of inflation due to the propagation of inflation shocks ("Propag"), and the ratio of the variance of inflation shocks to the variance of inflation ("Ratio"). Both the size of inflation shocks and the standard deviation of inflation due to the propagation of inflation shocks decrease during the periods of inflation targeting, but the decrease in the size of the standard deviation of inflation due to the propagation of inflation shocks is larger than that of inflation shocks itself. This finding suggests that the reduction in inflation volatility is not mainly due to the decrease in shocks to inflation. This finding is consistent with the claim that inflation targeting has contributed to reducing the volatility of inflation, although it neither proves the claim nor explains why and through what process inflation targeting has been effective in reducing the volatility of inflation.

Table 3

Inflation volatility due to inflation shocks

(1) Quarterly inflation rate (quarterly data)

	CPI inflation rate			Core CPI inflation rate		
	Shocks	**Propag**	**Ratio**	**Shocks**	**Propag**	**Ratio**
1987-96	3.0	1.2	0.86	2.6	1.5	0.75
1990-96	2.9	2.1	0.66	2.2	2.4	0.45
Apr 1998-Aug 2005	2.4	0.0	1.00	1.6	0.9	0.74
1999-Aug 2005	2.3	0.0	1.00	1.6	0.3	0.97

(2) Annual inflation rate (monthly data)

	CPI inflation rate			Core CPI inflation rate		
	Shocks	**Propag**	**Shocks**	**Propag**	**Shocks**	**Propag**
1987-96	0.6	1.8	0.09	0.4	1.5	0.07
1990-96	0.5	1.7	0.07	0.3	1.4	0.05
Apr 1998-Aug 2005	0.5	1.6	0.11	0.3	1.4	0.06
1999-Aug 2005	0.4	1.0	0.15	0.3	1.1	0.06

III.3. Inflation expectations

Under inflation targeting, it is important that the monetary authority maintain transparency in the conduct of its monetary policy. As summarised in Section II, the BOK has tried to improve

its transparency by communicating with the private sector. If firms and households believe that the monetary authority will be able to sustain price stability, their expectations on inflation may become less sensitive to changes in actual inflation. For example, in response to inflationary shocks, the private sector would not change its inflation expectations, if inflation targeting convinced the private sector that inflationary shocks would be countered and hence lead to a weaker inflationary outcome.

To examine this possibility, the following equation is estimated:

$$\Delta\pi^{e}_{t,t+q} = \lambda + \beta\Delta\pi_{t-k,t} + \varepsilon_t \qquad (2)$$

where $\pi_{t-k,t}$ is the inflation rate (CPI) from time $t-k$ to t, $\pi^{e}_{t,t+q}$ is an expectation of inflation from time t to $t+q$ formed at time t. Coefficient β shows the sensitivity of changes in inflation expectations to changes in inflation. The data on inflation expectations are obtained from the quarterly KDI economic outlook. The estimation takes 1, 2, 3 and 4 for the expectation horizon q and 4 and 8 for the actual inflation horizon k. Two estimation periods are chosen: 1999-February 2005 (2000-February 2005 for $k = 8$) for the period of inflation targeting and 1987-96 for the period before. CPI inflation is chosen as the dependent variable because of the lack of expectation data on core inflation.

Table 4 (1) reports estimated values of β. "*" and "**" show that the estimates are significant at the 10% and 5% levels, respectively. It can be seen that the estimated β is smaller for the period of inflation targeting than for the period before. In addition, the estimates are often not statistically significant, but there are more cases where they are significantly different from zero at the 10% level during the period before than during the period after inflation targeting. This finding suggests that inflation expectations were more sensitive to changes in actual inflation in the period before than in the period after inflation targeting.

Table 4

Sensitivity of changes in inflation expectation to changes in inflation rate

(1)

	1987-96		**1999-2005**	
	***k* = 4**	***k* = 8**	***k* = 4**	***k* = 8**
q = 1	0.48* (0.27)	0.77 (0.55)	0.05 (0.13)	0.42 (0.25)
q = 2	0.34 (0.23)	0.91* (0.50)	–0.03 (0.10)	0.29 (0.17)
q = 3	0.28 (0.24)	1.02* (0.51)	0.02 (0.88)	0.32* (0.15)
q = 4	0.28 (0.28)	1.10* (0.59)	0.04 (0.10)	0.32* (0.15)

(2)

	1987-96		**1999-2005**	
	***k* = 4**	***k* = 8**	***k* = 4**	***k* = 8**
q = 1	0.43* (0.24)	0.81 (0.53)	–0.03 (0.19)	0.48 (0.16)
q = 2	0.35 (0.24)	0.93* (0.51)	0.01 (0.15)	0.43* (0.21)
q = 3	0.31 (0.25)	1.05* (0.52)	0.08 (0.14)	0.46** (0.19)
q = 4	0.36 (0.29)	1.12* (0.61)	0.12 (0.14)	0.46** (0.19)

To examine the robustness of the results, changes in the output growth rate are included as an additional regressor to control the effect of changes in the real sector of the economy on inflation expectations. For this purpose, the following equation is estimated:

$$\Delta\pi^{e}_{t,t+q} = \lambda + \beta\Delta\pi_{t-k,t} + \gamma\Delta yg_{t-k,t}\varepsilon_t \quad (3)$$

where $yg_{t-k,t}$ is the growth rate of real GDP from $t - k$ to t. Table 4 (2) reports estimates of β. The main conclusion does not change; changes in inflation expectations respond less to changes in actual inflation during the periods of inflation targeting than during those before it.

To summarise, the sample mean and volatility of inflation dropped during the period of inflation targeting. A decrease in the size of inflation shocks explains only a small part of the drop in inflation volatility. The persistence of inflation also fell, and the drop in inflation volatility is mostly due to the changes in the propagation of inflation shocks. The sensitivity of changes in inflation expectations to changes in actual inflation rates is lower during the periods of inflation targeting.

However, these pieces of evidence do not necessarily prove that inflation targeting has been successful, unless one can clearly show the process through which it has been effective. It is possible that the introduction of inflation targeting has contributed to lowering inflationary expectations by publicly setting the target range of inflation. This argument might hold if the public understood the mechanism of inflation targeting and believed in the resolve of the central bank to sustain price stability. For a long time before 1999, the public had paid little attention to the policy announcements and had little confidence in the ability of the monetary authorities to control inflation. Therefore, it might not be so easy to argue that the mere introduction of the new system was able to convince the public that the monetary authorities would be able to meet the target rate of inflation from the first year of inflation targeting. At the same time, since 2001 the monetary authority appears to have placed more emphasis on reviving domestic demand (as shown in the continuous drop in the interest rate) and thus has maintained an expansionary stance of monetary policy, which may not have anchored inflation expectations as firmly as the results suggest.

IV. Monetary reaction function

This section analyses how monetary policy was conducted to achieve various objectives such as controlling the inflation rate and stabilising the output gap during the period of inflation targeting. First, raw data and facts are examined, and then a formal analysis of estimating the monetary reaction function of the BOK follows.

IV.1. Facts and data

Figure 3 shows the call money rate and annualised inflation rates (using monthly data). As discussed earlier, the rates of inflation measured by the CPI and core CPI were relatively stable during the periods of inflation targeting, but the call money rate was even more stable. But this simple graphical representation may not provide a clear picture of the BOK's policy reactions since the target range of inflation has changed over time and so has the target rate of inflation (from the CPI inflation rate to the core CPI inflation rate). To adjust for these changes, deviations of the actual from the target rates of inflation are calculated.

Figure 3

Call money rate and inflation rates

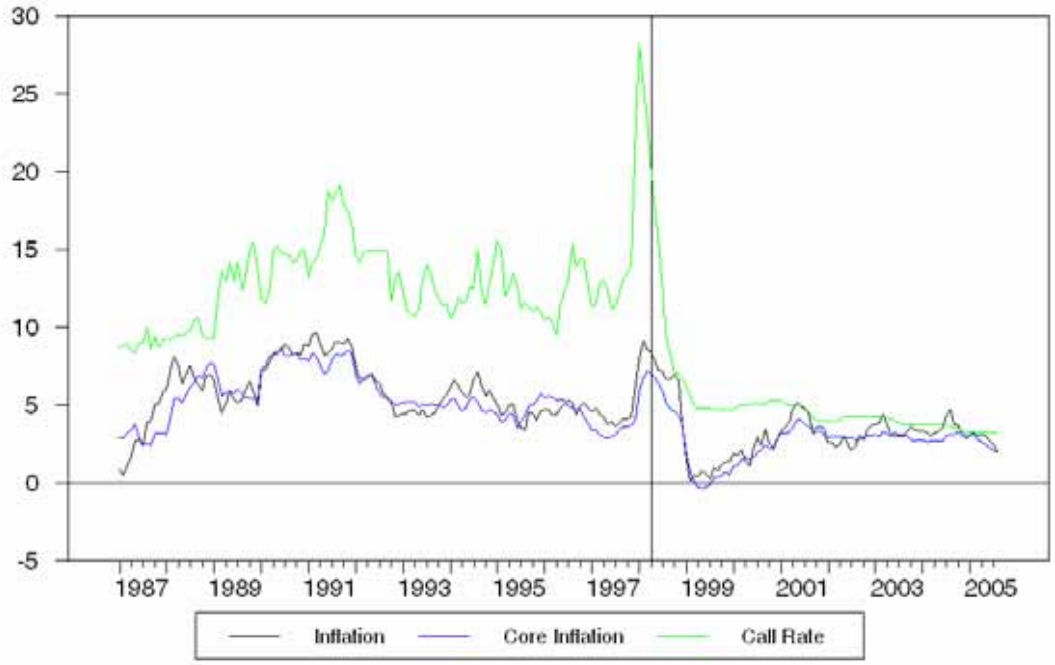
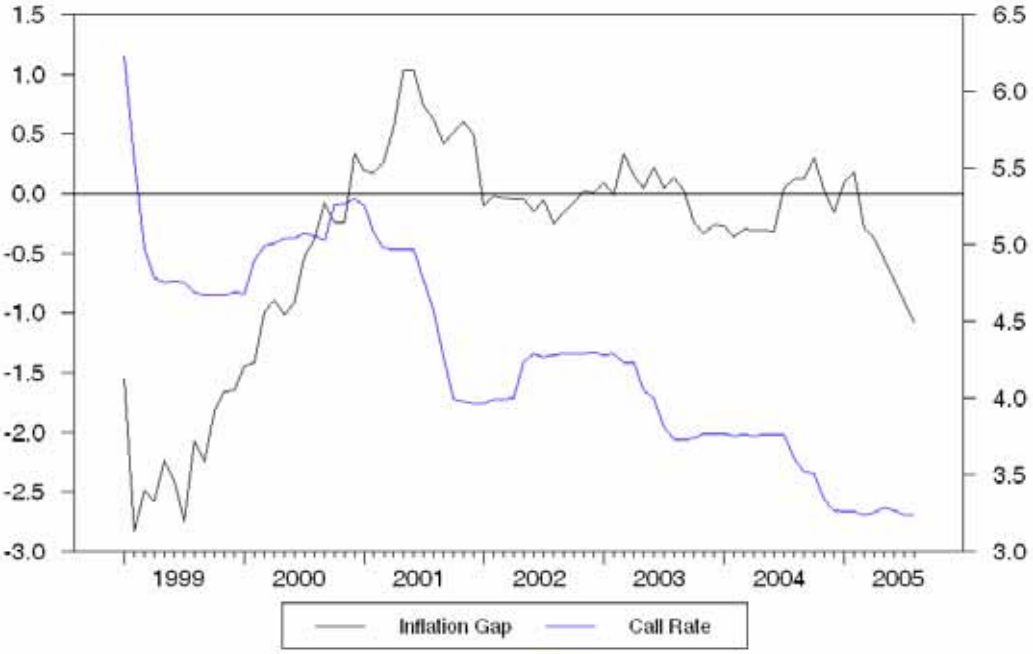


Figure 4 shows the call money rate and deviation of inflation from the target for the period 1999-2005, in which the call money rate has been firmly used as the operational instrument.[7] The left scale is for inflation while the right scale is for the call money rate. In the graph, a more systematic monetary policy towards inflation stabilisation around the target is found. In early 1999, when the inflation rate was dropping, the central bank decreased the interest rate. In 1999 and 2000, when the inflation gap was increasing, the central bank increased the interest rate. Again, when the inflation gap was decreasing in 2001, the central bank decreased the interest rate. Since 2002, the inflation gap has fluctuated around the target, and the call money rate seems to have moved together with the inflation gap. However, it is not clear whether the interest rate movement is strong enough to stabilise the inflation rate around the target, although the direction of the interest rate adjustments broadly matches the inflation changes. A simple theory suggests that in order to stabilise the inflation rate, the central bank should adjust the interest rate to the inflation rate changes more than one-to-one and thus change the real interest into the opposite direction to the inflation rate change. The answer to this issue is not clear from the graph. The issue will be further addressed by estimating the formal monetary reaction function.

[7] The inflation rate is constructed as a deviation from the target rates that are relevant for each period. In addition, the relevant inflation rate is used for each period; the CPI inflation rate is used for 1999 and the core CPI inflation rate is used for other periods.

Figure 4

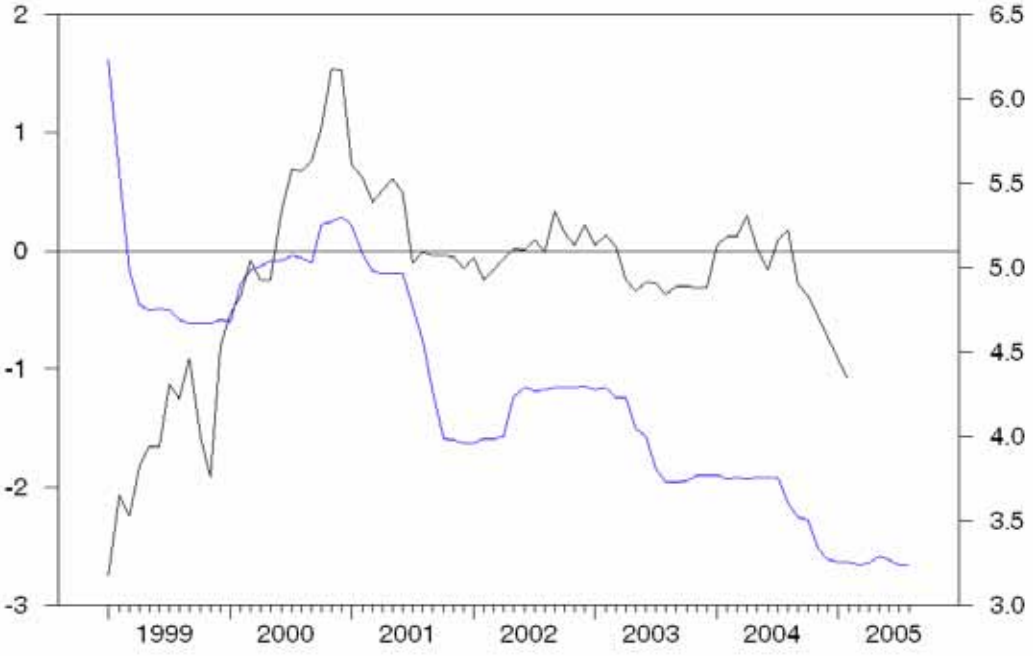
Inflation rate (deviation from target) and call money rate



However, a closer look at Figure 4 shows that the interest rate movements tend to lead the inflation rate movements. For example, the inflation rate increase in the early sample peaked in the middle of 2001, but the interest rate peaked early that year. The inflation rate used in the graph is backward-looking in nature since it is the inflation rate from one year before, but central bank action may be forward-looking by responding to expected inflation rates. In this regard, another graph was plotted with a moving average inflation rate (from six months past to six months ahead) in Figure 5. Now the timing is more synchronised. If the central bank has the correct expectations on the inflation rate, this may imply that the BOK's inflation stabilisation was forward-looking in nature.

Figure 5

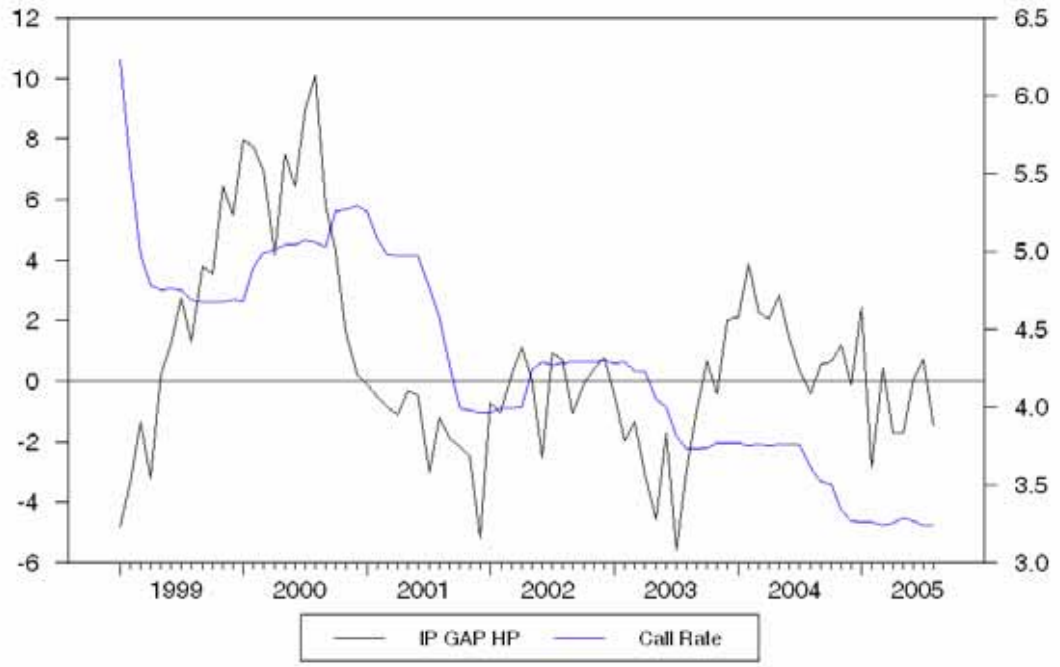
Inflation rate (moving average) and call money rate



The BOK may stabilise the output gap in addition to inflation rates. Therefore, the output gap and the call money rate are reported in Figure 6. The output gap is constructed by applying an HP filter, and industrial production is used as the output measure.[8] The right scale (per cent deviation from the trend) is for the output gap while the left scale is for the call money rate. During the period 2000-03, the interest rate tended to move together with the output gap, which may imply that the BOK was trying to stabilise the output gap.

Figure 6

Output gap and call money rate



From the graphs, it seems that the BOK has tried to stabilise the (expected) inflation rate (deviation from target) and output gap. Such explanations are also found in the records of the MPC meetings. There are many occasions where the BOK changed the call money rate in order to stabilise the inflation rate and output gap. For example, the BOK increased the rate by 0.25% in October 2000 and May 2002 in response to expected inflation or inflationary pressure. In 2001, the BOK undertook monetary easing by gradually decreasing the rate from 5.25% to 5%, 4.75%, 4.5% and 4.0% in order to stimulate the economy. In 2003, the BOK again decreased the rate gradually to boost economic conditions.

Although simple graphical analysis suggests that the BOK tries to stabilise both the inflation rate and the output gap, one might argue that the monetary authority should have been more aggressive in reviving the economy than controlling inflation. Since 2001, there has been a declining trend in the deviation of inflation from the target. The Korean economy has also suffered from a lack of domestic demand that has resulted in prolonged slow growth of output.

[8] We also experimented with a linear trend and a quadratic trend in output. The results with a quadratic trend in output are qualitatively very similar, but the results with a linear trend in output are somewhat different.

IV.2. Estimating a monetary reaction function

In order to further examine the conduct of monetary policy in response to changes in inflationary pressure and the output gap, this section estimates a monetary reaction function of the BOK, based on Clarida, Gali and Gertler (1998 and 2000). The monetary reaction function allows for interest rate smoothing or gradual changes in the interest rate, which is an important feature of monetary policy in Korea.

The following form of the monetary policy rule is estimated:

$$r_t = (1-\rho)\alpha + (1-\rho)\beta\left(E\left[\pi_{t+n} - \pi_t^* \mid \Omega_t\right]\right) + (1-\rho)\gamma\left(E\left[y_t - y_t^* \mid \Omega_t\right]\right) + \rho r_{t-1} + \varepsilon_t \quad (4)$$

where r_t is the nominal interest rate, π_{t+n} is the rate of inflation between periods t and $t+n$, y_t is real output, π_t^* is the target rate of inflation, y_t^* is the potential output, E is the expectation operator, Ω_t is information available to the central bank at the time it sets the interest rate, t, ρ captures the degree of interest rate smoothing, β and γ measure the strength of the response of the central bank to any deviation from the target inflation rate and change in the output gap.

As discussed in Clarida, Gali and Gertler (1998, 2000), equation (4) implies the following set of orthogonality conditions that can be exploited for estimation:

$$E\left[r_t - (1-\rho)\alpha - (1-\rho)\beta\left(\pi_{t+n} - \pi_t^*\right) + (1-\rho)\gamma\left(y_t - y_t^*\right) + \rho r_{t-1} \mid u_t\right] = 0 \quad (5)$$

where u_t includes any lagged variables that help forecast inflation and output, as well as any contemporaneous variables that are uncorrelated with shocks to the interest rate smoothing equation.[9]

Equation (4) is estimated by the generalised method of moments, following Clarida, Gali and Gertler (1998, 2000) for the period 1999-August 2005.[10] Monthly data is used since the estimation period is relatively short. Industrial production represents output, and the output gap is obtained by applying the HP filter. In this estimation, the actual target rate of inflation is used as a proxy for the target. The inflation rate for 1999 is the rate of change of the CPI and thereafter core CPI inflation.

The results are reported in Table 5. The estimated value of β is 1.58, which is positive and significantly different from zero. This result suggests that the BOK adjusts interest rates in response to changes in inflationary pressure. The estimated value of β, which is greater than one, also implies that the BOK is prepared to make changes in the interest rate large enough to change the real interest rate to the same direction, which is necessary to stabilise the inflation rate. The estimate of γ is 0.32, which is statistically significant, and implies that the policy objectives of the BOK also include stabilising the output gap.

Table 5

Estimated monetary reaction function

	ρ	α	β	γ
Point estimate	0.915	4.24	1.58	0.32
Standard error	0.007	0.06	0.29	0.04

[9] Refer to Clarida, Gali and Gertler (1998, 2000).

[10] For instruments, a constant; 1, 2, 3, 4, 5, 6, 9, 12 lags of the call money rate; CPI inflation rate; core CPI inflation rate; and IP are used.

V. Channels and effects of monetary policy

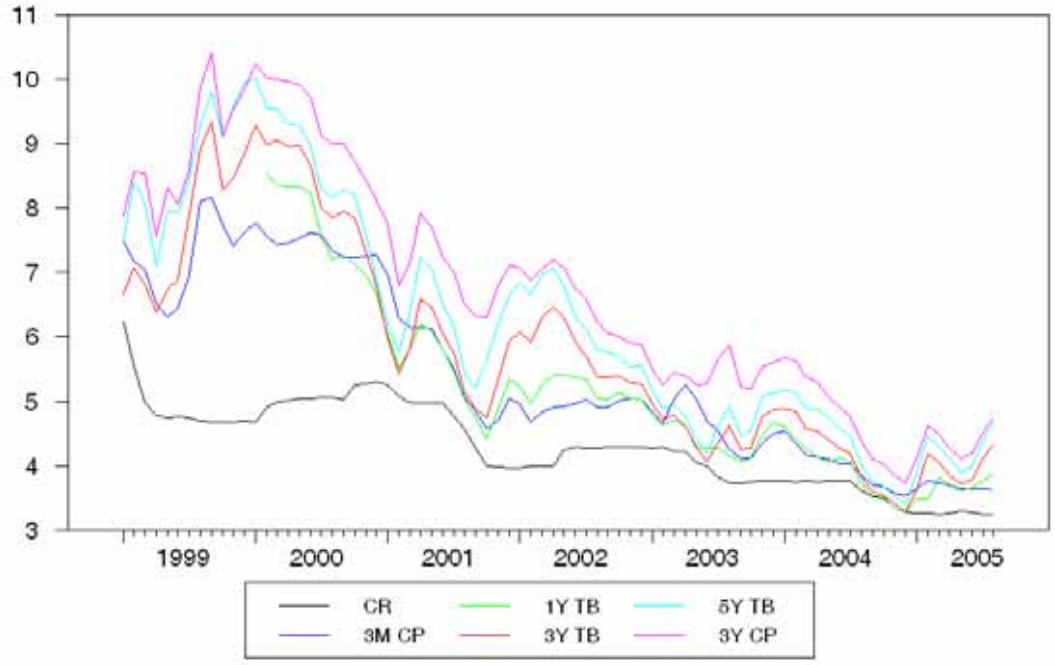
V.1. Policy developments

Changes in the call money rate that the BOK controls send signals to financial markets as to the direction of monetary policy. The changes in the call money rate are then expected to change the behaviour of financial institutions in their lending and firms and households in their spending. As discussed in Section III.3, the BOK pursues not only price stability, but also output stability. Since late 2000, the monetary authorities have been sending a clear signal to the market that they are prepared to pursue an expansionary monetary policy to the extent that such a policy does not endanger price stability. Although the BOK has tried to stabilise the output gap by adjusting its operational instrument, the call money rate, it is not clear whether the BOK's monetary operations have exerted significant effects on aggregate demand and if so, what channels of monetary policy have been effective. This section discusses whether the monetary policy actions of the BOK have an influence on the real economy effectively and how the monetary policy affects the real economy.

The channels of monetary policy in the setting of inflation targeting are rather straightforward. A cut in the call money rate would under normal circumstances lead to lower rates of interest in financial markets, which would in turn stimulate investment and consumption. Figure 7 shows the call money rate and the yields on three-month corporate bonds, three-year corporate bonds with an AA rating, one-year treasury bonds, three-year treasury bonds and five-year treasury bonds from 1999. Over the long run, these interest rates move together with the call money rate. Correlations of the yield on three-month corporate bonds, three-year corporate bonds with an AA rating, one-year treasury bonds, three-year treasury bonds and five-year treasury bonds with the call money rate are 0.95, 0.88, 0.88, 0.83 and 0.81, respectively. As the call money rate decreased from late 2000, so did other interest rates. For example, the yield on three-year corporate bonds with an AA rating fell off from about 8% to below 5% in recent periods. It is also clear that the real interest rate declined during this period since the inflation rate was relatively stable.

Figure 7

Nominal interest rates

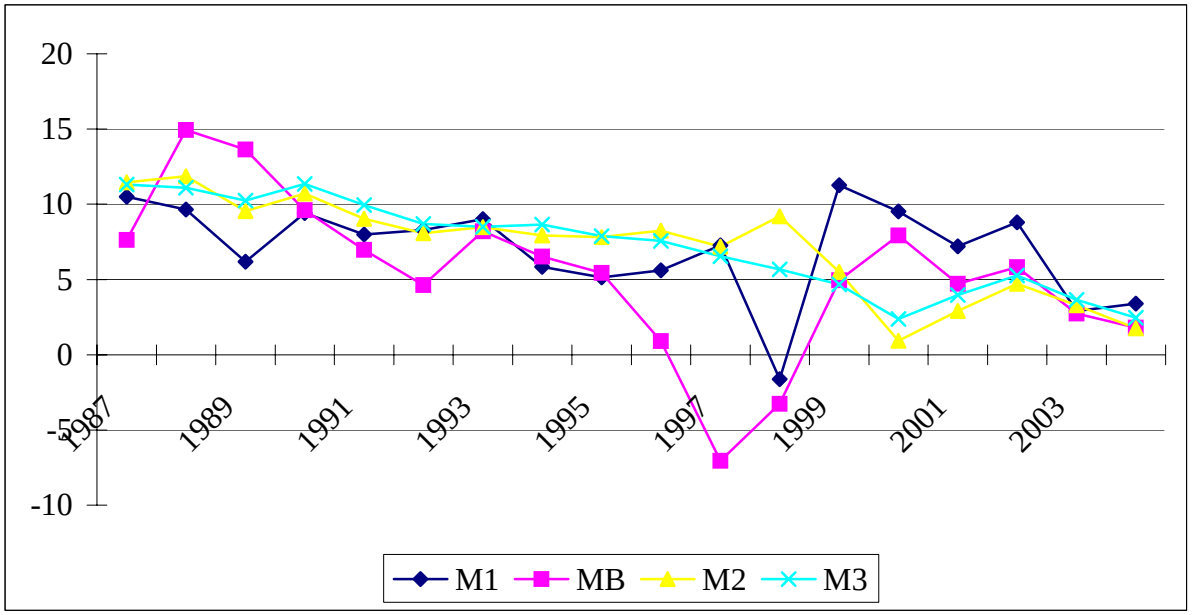


However, movements of these interest rates digress substantially from those of the call money rate in the short run, as shown in Figure 7. Correlations of the differences in the yields on three-month corporate bonds, three-year corporate bonds with an AA rating, one-year treasury bonds, three-year treasury bonds and five-year treasury bonds with the differences in the call money rate are 0.45, 0.05, 0.26, 0.12 and –0.01, respectively.

Following sharp rises after the currency crisis, however, the rate of growth of M3, a measure of liquidity of the economy, has also slowed down since 2003, as have the rates of growth of M1 and M2 (Figure 8). By looking at changes in the interest rates and monetary aggregates, the monetary authority might have not been aggressive enough in stimulating domestic demand. It is possible that the contraction of domestic demand caused by non-monetary factors has been so strong that it has offset monetary expansion to reduce the aggregate demand for credit by firms and households to result in a decrease in the interest rate and lower the rates of change of monetary aggregates.

Figure 8

Growth rates of monetary aggregates



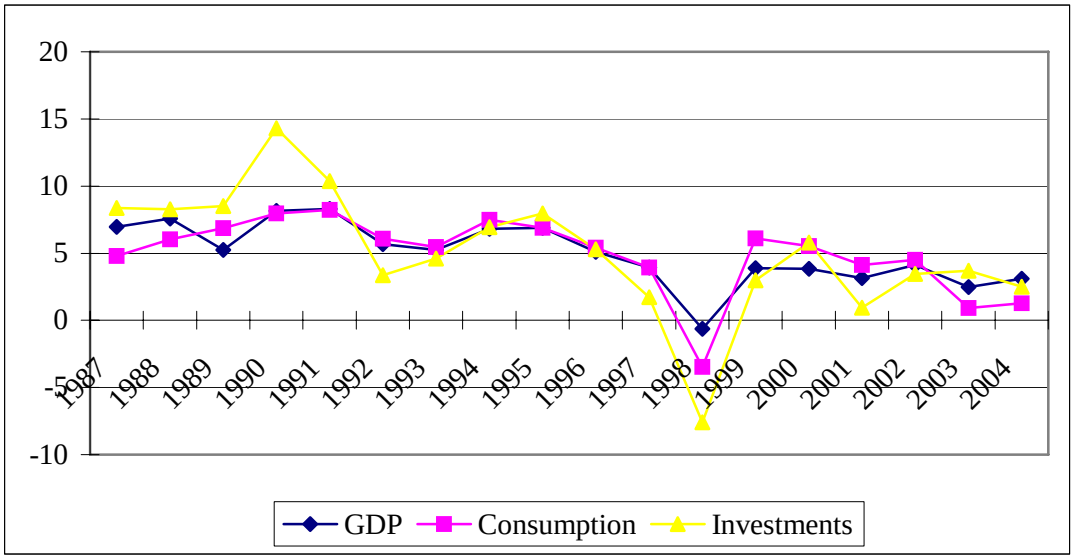
This possibility may be backed up by the saving and investment behaviour of firms. In recent years, the flow of funds estimated by the BOK shows that the business sector has been a net saver of the economy. When they are sitting on huge amounts of retained earnings, it is not surprising that a small change in the call rate will not have effects on their investments. Although the available evidence is sketchy, it appears that business firms have invested their savings in stocks and real estate on a large scale, thereby becoming a major source of asset speculation and inflation. Should the BOK have lowered the call rate further until they observed a pickup in the economy? In this regard, the Japanese experience with monetary policy that has lowered the interest rate to zero is instructive. It indicates the possibility that any further monetary expansion may push the economy into a liquidity trap, even in Korea.

Large firms, in particular those belonging to Korea's industrial groups, have developed access to international financial markets; a marginal increase in the call money rate is not likely to affect their investment behaviour to the extent that they can raise funds on international financial markets at a lower rate.

It is also unclear whether the lower interest rate that has prevailed has exerted expansionary effects on capital investment. Figure 9 shows the growth rates of real fixed investments, real private consumption and real GDP. The growth rate of real fixed investment picked up from 2002, but it was still low, and investment overall has remained stagnant since the 1997-98 crisis.

Figure 9

Growth rates of real GDP, real fixed investments and real consumption



In many economies, in particular advanced ones, monetary policy mostly works through the markets for housing, commercial buildings, other real estate and financial assets. The lower interest rates have fuelled speculation in markets for real estate and equities, thereby accelerating asset inflation. Housing prices have risen about 30% on average since 2001. However, a series of measures, including the imposition of heavy taxes and administrative control on trading and holding real estate, have squelched a further boom in the real estate markets.

Figure 10

Housing prices and call money rate

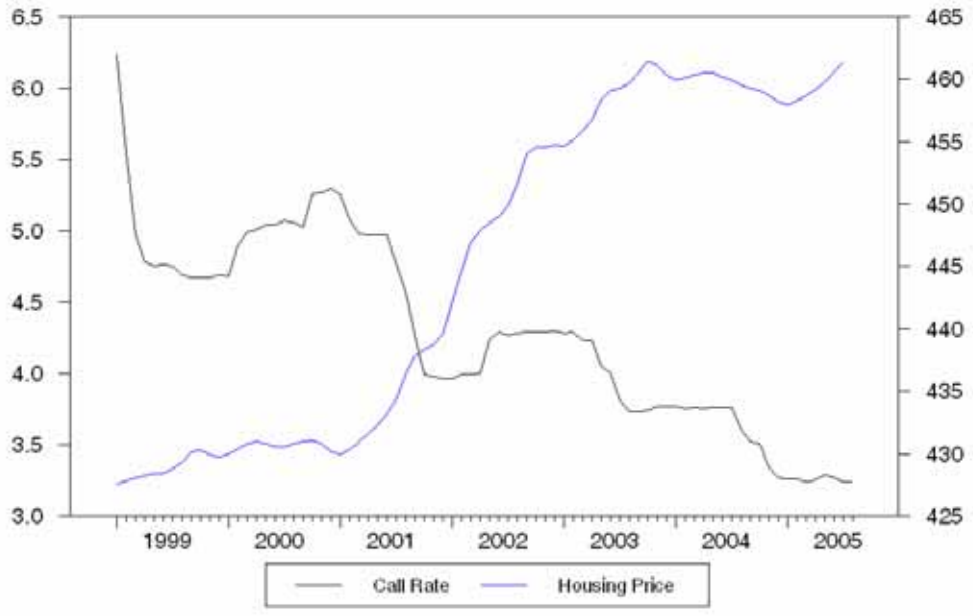
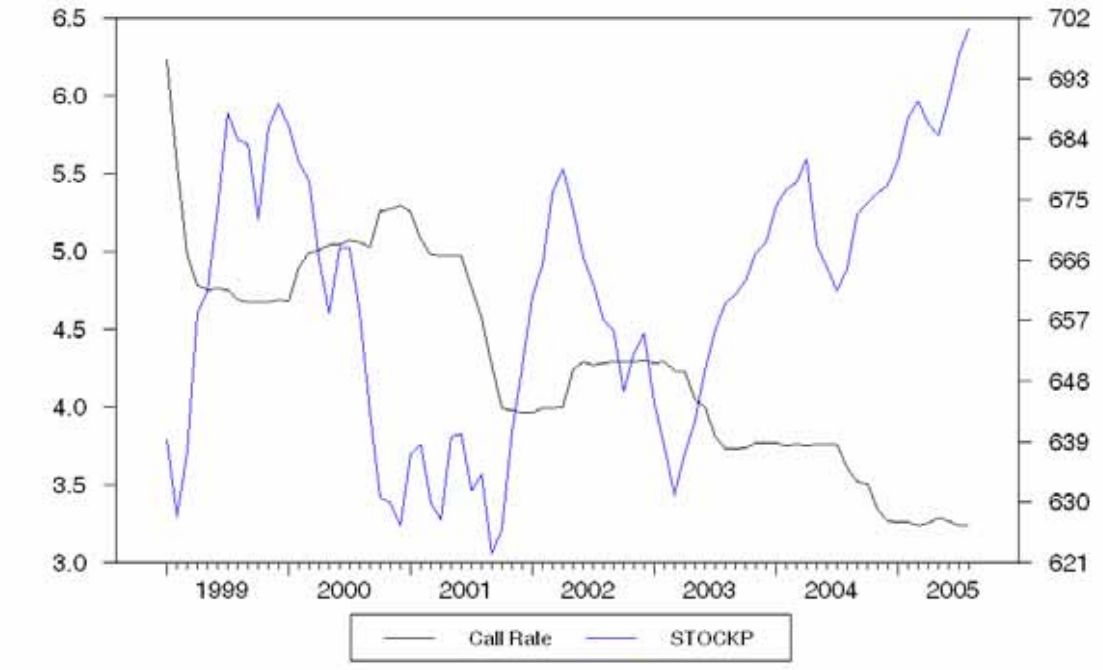


Figure 10 reports the log of housing prices multiplied by 100, which depicts the booming housing market. Stock prices jumped by about 70% from 2001, as shown in Figure 11 (the log of stock prices multiplied by 100). Although the stock market and housing boom could have produced a significant wealth effect to induce consumption spending, banks and other non-bank financial institutions have been reluctant to extend loans to households in the aftermath of the credit card crisis in 2001 and 2002, which may have contributed to a very low level of consumption growth in 2003 and 2004 (Figure 9).

Figure 11

Stock prices and call money rate



It is often pointed out that monetary expansion, among other factors, has created a bubble in the real estate market. When asset market speculation accelerates, the expansionary effects of monetary policy are likely to be visible. The bubble will in turn help increase capital investment and consumption spending, but it will eventually burst, inflicting serious damage on the economy. Policy authorities may then need to step in to curb the speculation, thereby reducing the effects of expansionary policy, which Korean policymakers did by imposing heavy taxes and administrative control on trading and holding real estate. In some respects, Korean policymakers have been contradictory in managing macroeconomic policies. While pursuing expansionary monetary policy, they have also blocked off one main channel of monetary policy, that of housing market.

V.2. VAR analysis

This section examines the effects and the transmission channels of monetary policy in terms of VAR methodology.[11] The structure of the VAR model under consideration is similar to the one developed by Christiano, Eichenbaum and Evans (1996), which has been one of the

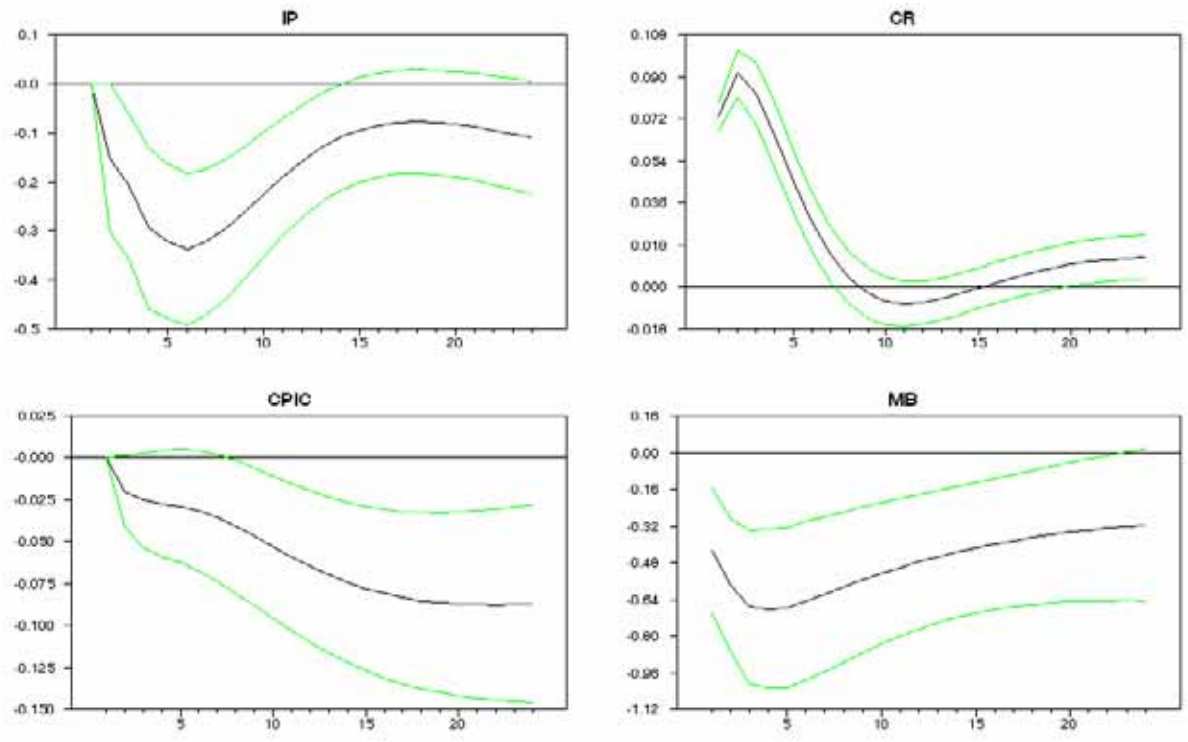
[11] Leeper, Sims and Zha (1996) and Christiano, Eichenbaum and Evans (1996) provide a good summary of the literature.

most widely used methods of identifying monetary policy shocks.[12] As the basic model, a four-variable recursive VAR system is constructed. The data vector is {IP, CPIC, CR, MB}, where IP is the log of industrial production, CPIC is the log of the core Consumer Price Index, CR is the call money rate and MB is the log of the monetary base.

The core CPI, instead of the CPI, is used since the BOK targeted the core CPI for most of the sample period. The call money rate is included in the model since it is the operational instrument of monetary policy during the sample period. Following Christiano, Eichenbaum and Evans, a measure of a monetary aggregate is also included. The ordering is {IP, CPIC, CR, MB}, where contemporaneously exogenous variables are ordered first, and monetary policy shocks are identified as shocks to the operational instrument, the call money rate. The sample period is from 1999 to August 2005. A constant term is included in the model. Two lags are chosen based on the Akaike criterion.[13] Figure 12 shows the impulse responses to monetary policy shocks with a 68% error band in the basic model over a 24-month horizon. On the top of each graph, the names of the responding variables are denoted.

Figure 12

Impulse responses to monetary policy shocks: basic model



In response to typical shocks to monetary policy, the call money rate moves up by about 0.7% first and then rises further by 0.9% in the next month. Then, the rate decreases over time and is back at the initial level in about nine months. The monetary base decreases on

[12] For example, Christiano, Eichenbaum and Evans (1996, 2004) and Kim (2001) use similar identification methods.

[13] For the effects of monetary policy shocks during the period before inflation targeting, refer to Kim (1999), in which a structural VAR model was also used.

impact by about 0.45%, and then falls further by 0.65% in about three to five months. Thereafter it continues to be below the initial level for the next two years or so.

Industrial production falls off to a maximum of about 0.33% in about six months, and then returns to the initial level in about 15 months or so. The core CPI gradually decreases over time until it turns up about three years later. In general, these responses are not inconsistent with the textbook effects of monetary policy actions, except that the effects of monetary policy on the real variables last for a relatively short period of time.

In order to examine the channels of transmission of monetary policy shocks, the basic model is extended to construct a five-variable model. The data vector is {IP, CPIC, CR, MB, X}, where X is an additional variable to infer the transmission mechanism. The model is then estimated to examine: the responses of various interest rates including longer-term interest rates to the changes in the call money rate; the responses of various monetary aggregates such as M1, M2 and M3 to examine the extent to which changes in monetary policy affect credit conditions of the economy; changes in asset prices such as housing and stock prices; and, finally, the responses of business fixed investment and retail sales.

Figure 13 shows the impulse responses of various interest rates such as the yield on three-month corporate bonds, three-month CDs, 3-year corporate bonds with an AA rating and five-year treasury bonds from 1999. On impact, short-term interest rates such as the yields on three-month corporate bonds and three-month CDs rise in the short run. In about three months, the yields on three-month corporate bonds and three-month CDs increase by 0.075% and 0.06% respectively. However, the responses of the long-term rates are not significantly different from zero. The call money rate shocks do not last very long. This may explain why the long-term rates do not respond and why the real effects of monetary policy peter out in a short period of time.

Figure 13

Impulse responses to monetary policy shocks: interest rates

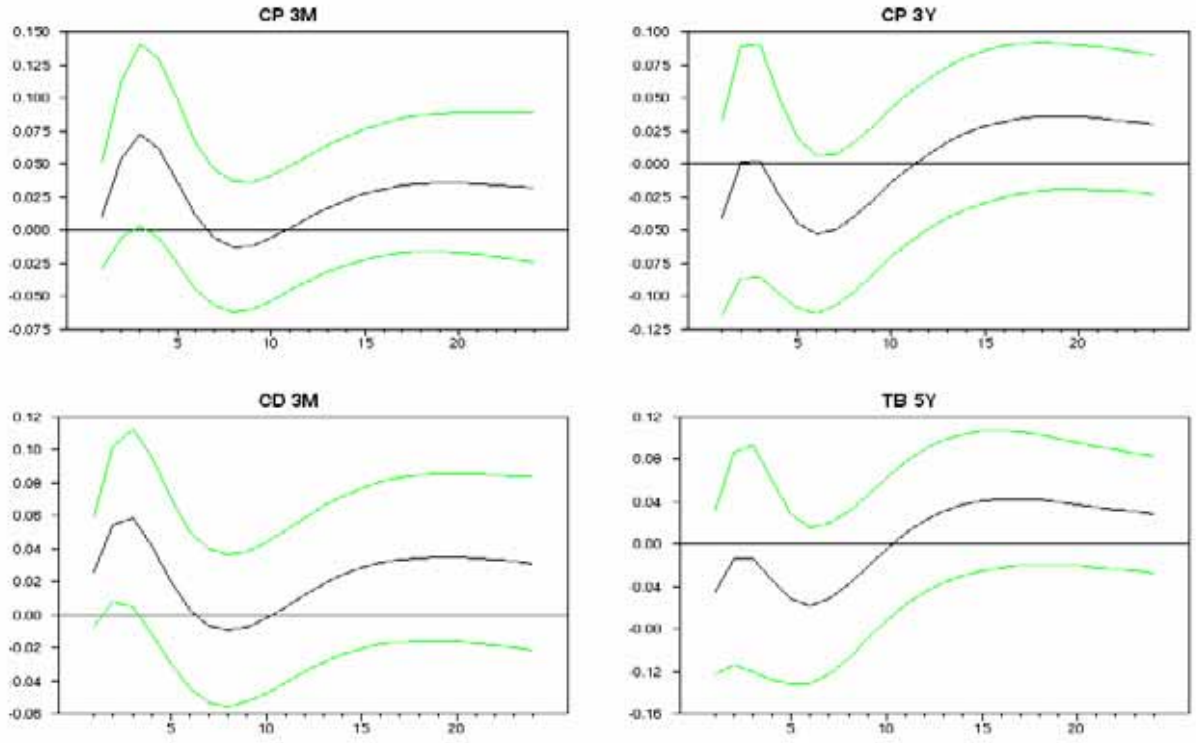


Figure 14

Impulse responses to monetary policy shocks: monetary aggregates

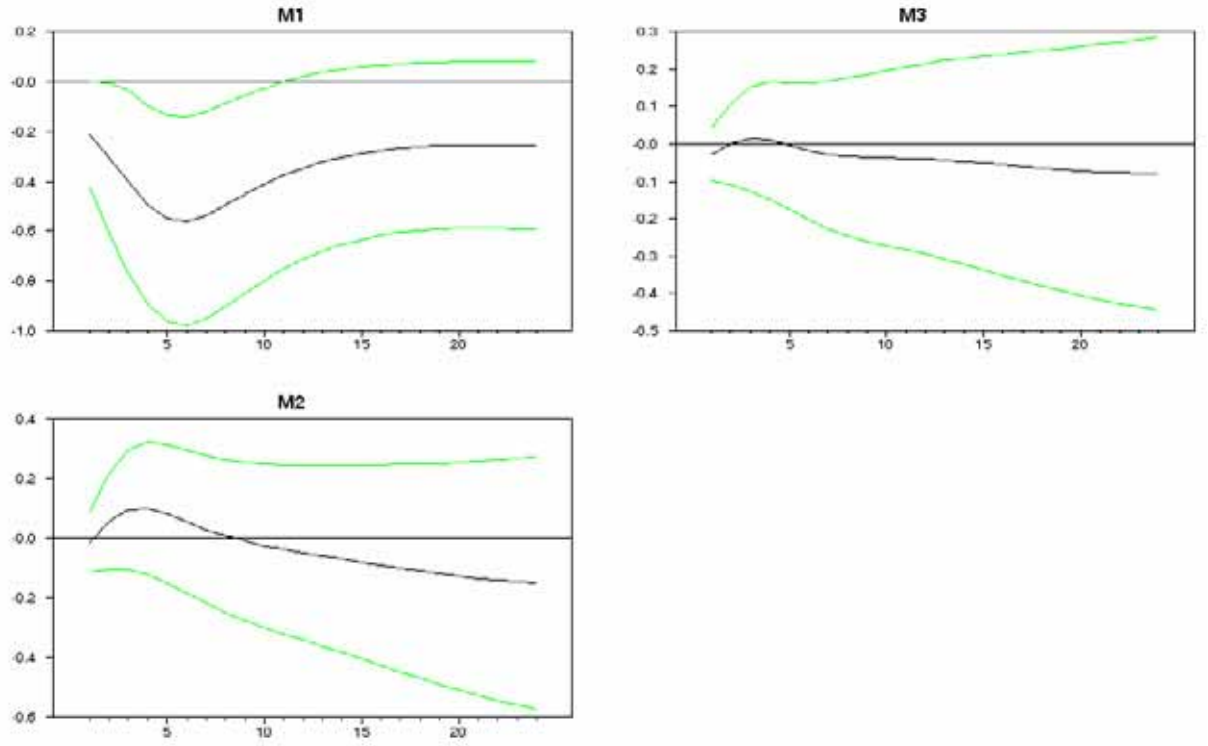
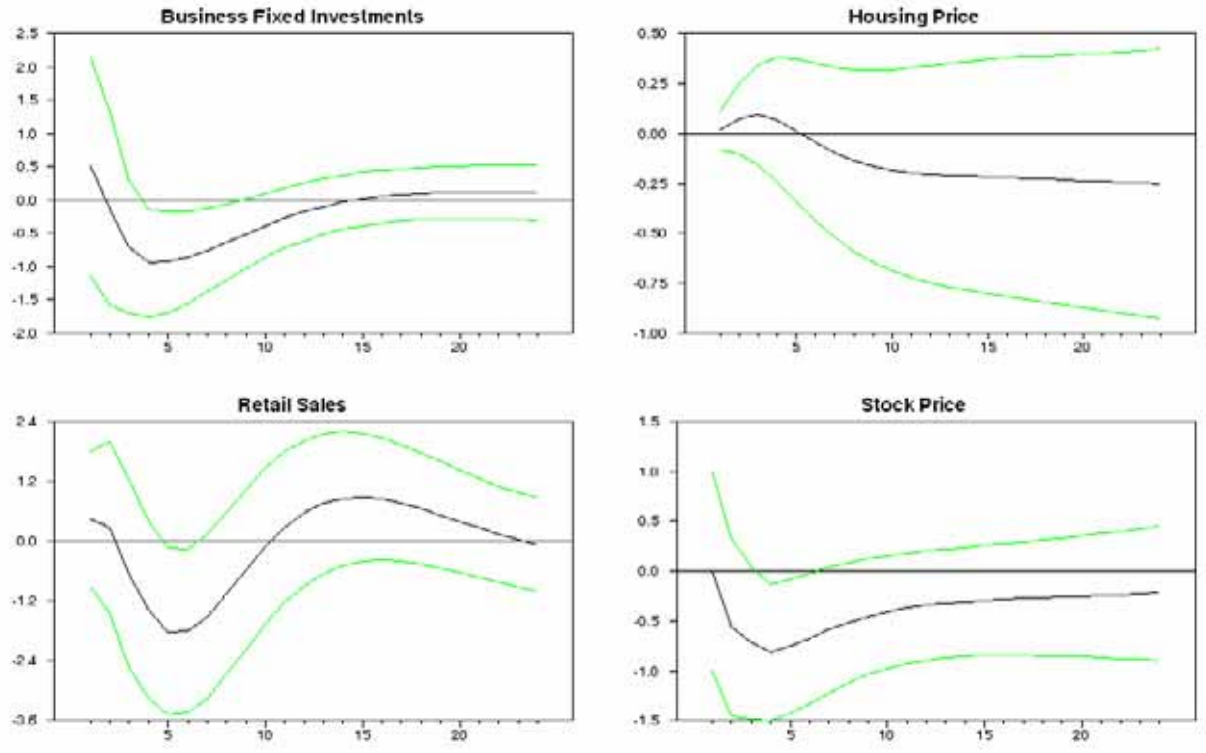


Figure 14 shows the responses of monetary aggregates to a change in the call money rate. M1 declines by about 0.6% in five months, but the responses of M2 and M3 move very little, if at all; this may also be related to the short-lived effect of monetary policy. Figure 15 depicts the responses of business fixed investments, retail sales, housing prices and stock prices. Business fixed investments decrease sharply in the short run. The maximum effects of a 1% drop are observed in about four months. Retail sales also decrease sharply in the short run. The maximum effect of a drop of about 1.8% is seen in about five months. Housing prices do not change but stock prices decline significantly. Probably due to various regulations and control on the housing market, housing prices do not change much.

The results of the VAR analyses should be taken with some caution as to both the channels and the effects of monetary policy changes, because some results do not seem consistent with the conventional effects of monetary policy: for example, the sharp short-run response of business investment to the monetary shock, although the long-term interest rates do not move, which is not easily explained by the standard theory on the effects of monetary policy.

Figure 15

Impulse responses to monetary policy shocks:
business fixed investments, stock prices, housing prices



VI. Concluding remarks

The pieces of empirical evidence presented in this paper tend to lead to the conclusion that inflation targeting in Korea has been effective in sustaining price stability. The level and the volatility of inflation dropped after adopting the inflation targeting framework. The size of inflation shocks has not been the main cause of the reduction in inflation volatility. Inflation expectations have become less sensitive to inflation shocks. The estimated reaction function of the BOK shows the evidence of inflation stabilisation.

However, this conclusion requires some qualifications, because one cannot ignore other developments that may have weakened inflationary pressure more than the targeting itself. First, as noted earlier, the economic environment of Korea has been favourable for stable inflation. During most of the inflation targeting period, the Korean economy has suffered from a lack of domestic demand, which has in turn suppressed inflationary pressure. In addition, the appreciation and stability of the Korean won against the US dollar has also clearly stabilised import prices and, in turn, helped to keep the inflation rate low. At the same time, wage increases have been modest, and international prices of imported goods have in fact declined. In the future, when the Korean economy starts to recover and faces stronger inflationary pressure, the new monetary policy framework will go through the real test.

Second, although we did not discuss international or open economy perspectives in this paper, Korea is considered a small open economy where the exchange rate policy constitutes an important part of monetary policy. Recent changes in international economic linkages of the Korean economy may put inflation targeting to a real test for its effectiveness in the future.

Among other developments, trade liberalisation has limited the scope for controlling core inflation in Korea. Prices of tradables, which account for a substantial part of the index measuring core inflation, are mostly exogenous to an open economy like Korea's, and changes in the prices of non-tradables are likely to be dictated by changes in nominal wages. Korea has developed an open trade regime in which imports of a large number of goods and services whose prices constitute the core CPI index are subject to low rates of tariffs and other non-tariff barriers. As a result, an expansion of domestic demand for tradables that is not met by domestic suppliers is easily satisfied by their imports; there is little room for domestic prices of tradables to deviate from their international levels, especially when the nominal exchange rate is stable.

In this case, monetary policy works through the non-tradable sector of the economy in influencing core inflation. Prices of tradables in China and Japan, the two major sources of Korea's imports, have moved little if not declined in recent years. Nominal wages of regular employees in manufacturing have been rising at an annual rate of almost 10% since 2001. Given the low inflation rate in Korea in recent years, it might be reasonable to argue that most of the increase in core inflation has come from the wage increases. In the future, when there is more inflationary pressure originating in the tradable sector, it may be far more challenging for the BOK to keep the inflation target.

Although it is a controversial issue, some studies suggest that the monetary authorities of Korea have intervened in the foreign exchange market and controlled capital movements to stabilise the nominal exchange rate despite of its official announcement of free floating after the currency crisis.[14] The trade surplus has been sterilised in Korea, which may be interpreted as the result of the policy of maintaining the exchange rate in effective terms stable. The tight control of the exchange rate with massive foreign exchange intervention, if it turns out to be the de facto exchange policy of Korea, means that the monetary authority has operated its monetary policy in a framework of two nominal anchors.

Since 2001 when the IT bubble burst, there has been a contraction of domestic demand. In the absence of any inflationary pressure, Korea's policymakers have found room for undertaking expansionary monetary and fiscal policy to revive the weakening economy. Therefore, the monetary authority has been able to accommodate an exchange rate policy that has been geared to stabilising a nominal exchange rate in effective terms that has in turn necessitated the sterilisation of surpluses on both the current and financial accounts. The surplus has not been fully mopped up, and the instrument of sterilisation has been monetary stabilisation bonds, many of which have had maturities of less than three months and hence are good substitutes for M3. Stabilisation of the exchange rate has therefore been supportive of the expansionary stance of monetary policy.

However, when the economy is overheated and tightening of monetary policy is called for, the two-anchor system may break up. The tighter monetary policy may induce capital inflows and may not deteriorate the current account much if it reduces import demand and policy authorities try to prevent the exchange rate from appreciation. An exchange rate policy that attempts to stabilise the nominal effective exchange rate will necessitate the sterilisation of capital inflows, which will frustrate the efforts of the monetary authorities in managing a tighter monetary policy.

To the extent that the monetary authorities operate an intermediate exchange rate regime, they cannot fully liberalise the capital account unless they are prepared to give up monetary policy. The interest rates in Korea have not deviated by any substantial degree from those

[14] For example, Park, Chung and Wang (2001) provided some evidence of strong foreign exchange intervention in Korea, while Kim (2005) and Kim, Kim and Wang (2005) provided some evidence of weak foreign exchange intervention in Korea.

prevailing in the financial markets of its major trading partners. While restricting the range of movement of the nominal exchange rate, the monetary authorities could push down the market interest rates, probably because capital account transactions can be controlled. However, given the many legal and illegal routes through which capital moves in and out of the country, there is likely to be a limit to which any difference in the interest rates in domestic and international capital markets can be maintained.

Does the preceding argument mean that Korea should adopt a standard model of inflation targeting with free floating and capital account liberalisation or its variant for a framework of monetary policy? If Korea continues with an intermediate regime, not free floating, it will have to retain capital controls. Even then, the open trade regime will reduce the scope of monetary policy. Sooner or later the public may realise the limit of the ability of the monetary authorities in controlling inflation. The announcement of the target range of core inflation then runs the danger of falling on deaf ears, thereby making the expectation channel inoperative.

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Comments on: "Inflation targeting in Korea: a model of success?" by Soyoung Kim and Yung Chul Park

Tim Condon[1]

Before the 1997-98 financial crisis Korea was a middling inflation economy. The Bank of Korea Act passed during the financial crisis institutionalised inflation targeting and since then Korea has become a much lower inflation economy. Soyoung Kim and Yung Chul Park's paper documents that both the level and the volatility of inflation have come down since inflation targeting was introduced. This is true for both headline and core inflation measures.

How much of Korea's improved inflation performance can be ascribed to the adoption of inflation targeting? This is the question Kim and Park set out to answer.

They first ask whether the drop in inflation volatility is due to luck or a more inflation-resistant economic system. To do this they analyse whether the lower volatility can be traced to a lower variance of the inflation shocks that have hit the country since inflation targeting was adopted or whether inflation propagation diminished. They find that shocks diminished in size and their propagation was weaker after inflation targeting was introduced. But crucially for the inflation targeting debate, the weaker propagation effect was more important than the decline in the size of inflation shocks in explaining the decline in inflation volatility.

The authors also look at the sensitivity of inflation expectations to realised inflation in the pre- and post-inflation targeting periods. They find that inflation expectations were more sensitive to changes in actual inflation in the pre-inflation targeting period. This finding suggests that the Bank of Korea has successfully de-linked inflation expectations from realised inflation, another positive for inflation targeting.

So far, so good. The Bank of Korea's policy of inflation targeting seems to have anchored inflation expectations more firmly than in the previous regime and this may be responsible for the superior performance of the economy in response to inflation shocks. The authors argue that confidence in their tentative findings would be strengthened if they could get inside the Bank of Korea's monetary policy black box and demonstrate that the transmission mechanism was well understood. Obviously, if a link between monetary policy and the favorable inflation outcome cannot be established then the latter cannot necessarily be attributed to the adoption of inflation targeting. It must be true that "the public understood the mechanism of inflation targeting and believed in the resolve of the central bank to sustain price stability".

They estimate a central bank reaction function that indicates that the Bank of Korea places a high importance on price stability. They then attempt to measure the effects and transmission mechanism of monetary policy using impulse response functions. They first attempt to identify monetary policy shocks using a basic model that includes as variables core CPI, industrial production, the central bank's policy interest rate (the call rate) and the monetary base. Their findings are robust enough to enable estimation of an expanded model that includes different interest rates and monetary aggregates to permit an examination of the transmission mechanism. Here things break down. The finding that monetary policy shocks,

[1] ING Bank N V, Singapore.

which are modelled as shocks to the call rate, have no impact on long-term interest rates but a pronounced negative impact on business investment is especially anomalous.

In their concluding remarks the authors conjecture that their failure to illuminate the contents of the Bank of Korea's monetary policy black box may be due to the Bank's accommodation of the objective of controlling the exchange rate. It is not surprising that the transmission of monetary policy is not clear when there are two nominal anchors in the system.

This is a controversial point, as the authors note. The Bank of Korea steadfastly insists that it is not in the exchange rate targeting business. It justifies foreign exchange market "smoothing" by the need to control excessive exchange rate volatility, which, if they were to allow it, could unsettle inflation expectations. In a similar way, the Bank keeps a close eye on the property market. It regularly mentions the current account position in its monetary policy statements. My view is that the Bank of Korea sees its inflation targeting mandate as giving it a great deal of flexibility. Kim and Park's results indicate that a downside of this flexibility is an unclear monetary transmission mechanism.

Thus, on the big question posed in their title of whether the implementation of inflation targeting in Korea is a model of success, Kim and Park answer "Yes, but...". Yes, inflation fell and became less variable after inflation targeting was adopted. But no, we cannot be sure it was because of inflation targeting.

There is, I believe, another lesser success that can be attributed to the adoption of inflation targeting, and which strengthens the case for recommending it as a monetary policy rule. I refer to institution building and the strengthening of financial policymaking.

The authors note that prior to the adoption of inflation targeting, the public paid little attention to the Bank of Korea's policy pronouncements and, in fact, public confidence in the Bank was low. Things are very different today. Market players today take very seriously the Bank of Korea's policy pronouncements.

It is even possible to imagine that the institutional developments that have come with inflation targeting have created forces that could ultimately resolve the problem of having two nominal anchors. The change may not be far off considering the recent scale of the Bank of Korea's activities in the foreign exchange market.

From January 2002 through to the first quarter of 2005, the Bank of Korea accumulated over $100 billion of foreign exchange reserves or about $3 billion a month on average. Just as this creates problems for Kim and Park's reaction functions, it also creates problems for Bank of Korea officials, who have to explain their actions in the annual monetary policy report they present to the National Assembly. In the last two years, these reports have provoked questions from elected officials about the Bank of Korea's reserve accumulation/sterilisation operations. Losses incurred by the Bank have been a political issue.

Political pressure is the most likely source of a policy change in the direction Kim and Park hint, a liberalised capital account with a much more freely floating won. And there is evidence that such a change is occurring, most recently the Foreign Exchange Liberalization Plan announced on 19 May, 2006. In a one-anchor system it seems reasonable to conjecture that a re-estimation of the reaction functions in Kim and Park's paper would be more successful in identifying the monetary transmission mechanism.

I have two small issues with the paper. First, the Fed and the ECB continually emphasise that keeping inflation low and stable is the best thing they can do to promote economic activity, which is obviously one of the variables of ultimate interest. The authors could usefully have looked at whether the decline in inflation volatility has been accompanied by a decline in the volatility of output, ie has Korea joined in the Great Moderation?

I also believe the paper would benefit from a comparison of the pre- and post-inflation targeting experience in terms of the transmission of monetary policy shocks. Given the inconclusive findings for the inflation targeting period, it would be interesting to know whether

in adopting inflation targeting the Bank of Korea has traded a more favourable inflation performance for a less transparent monetary transmission mechanism.

Milton Friedman recently gave an interview[2] where he expressed surprise at how well different countries had been able to keep to their inflation targets. Where central banks understand their primary objective to be avoiding inflation, they are able to do it. He concluded that economists had overestimated how hard it is to maintain low, stable inflation. Kim and Park's econometric results do not enable us to say with confidence that inflation targeting deserves the credit for Korea's improved inflation performance. However, I would argue that the better inflation performance per se and the gains from institution building warrant a less qualified title for their paper.

[2] "Agreeing to disagree: Robert Kuttner speaks with Milton Friedman", *American Prospect Online*, 1 May 2006.

Comments on: "Inflation targeting in Korea: a model of success?" by Soyoung Kim and Yung Chul Park

Yang Woo Kim[1]

First of all, I would like to thank the HKIMR and BIS for giving me an opportunity to attend this very important conference. I should start with the usual disclaimer. The view I am about to express is my own and not necessarily that of the Bank of Korea.

Professors Park and Kim have given us a quite comprehensive explanation on the Korean monetary policy system, its operation, performance and tasks. I would like to say in advance that I agree with many of the main findings of this paper. I will by and large not argue with the empirical findings except a few minor points, although I have some reservations on the conclusion. Having said that, I would like to start section by section.

In Sections I and II, I think the history of monetary policy implementation and the policy system of the Bank of Korea are well described in a objective manner. However, I would like to point out two things. First, the authors argue that "the expansionary monetary policy since 2000 has not been effective in bringing about economic recovery". In my opinion, however, while the expansionary monetary policy did not bring about a noticeable economic recovery, it did prevent business activities from sliding into a deeper slump. In a small open economy like Korea, it is typical that the demand management policy has limitations, especially during the course of an economic downturn arising from external shocks. While monetary policy is inevitably in a passive stance, its role to support economic activities should not be downgraded. Therefore, I think the monetary policy played its own expected role in that sense, in a rapidly changing economic environment involving various domestic and overseas shocks. I will come back to this point later.

My second point is about the date of full adoption of inflation targeting in Korea. The paper argues that in Korea pure inflation targeting was established in 2003, but it is fair to say that the complete transition to inflation targeting in Korea was made in 2001, when the monetary indicator M3 was no longer set as an intermediate target. This view is consistent with a paper by the IMF in 2005, where the monetary policy system of Korea has been classified as fully fledged inflation targeting since 2001.

The empirical analyses in Sections III and IV of the paper seem to give positive assessments of the performance of inflation targeting of Korea, after its introduction in 1998. Inflation targeting in Korea can be evaluated as successful in the sense that it has contributed greatly to price stability. The annual rate of increase in headline CPI inflation has stabilised at around 3%, as against 7.5% in 1998. Since 2002, core inflation has been held stable within a band of between 2.9% and 3.1%, a good match for the 3% midpoint of its current target range. Also, as shown by the paper, the volatility and persistence of inflation decreased after the adoption of inflation targeting, implying that there has been some enhancement of the credibility of monetary policy operations.

Concerning the interpretation of the results of the reaction function estimation in Section IV, I agree with the authors that the BOK has taken a flexible inflation targeting approach. While the Bank of Korea takes price stability as the primary objective of monetary policy as the

[1] Bank of Korea.

Bank of Korea Act stipulates it, it also appreciates the reduction of short-term economic fluctuations and the stability of financial markets as policy goals. When these goals were moving in mutually contradictory directions, the BOK placed its focus on the objectives that it considers most important under prevailing situations, as long as price stability is not hampered. This is called employing a flexible approach. For instance, four cuts of the call rate target were implemented in 2003 and 2004 to promote economic recovery. In October 2005, however, the Bank of Korea raised the call rate target. It was the BOK's intention to shift the focus of policy to control potential inflation pressure in the medium term, as signs of the economic recovery emerged.

Meanwhile, financial stability has become another important objective of monetary policy. Financial development and stability are essential constituents of sustainable economic growth. While an advanced and stable financial system enhances the efficiency of the distribution of resources and bolsters economic development, financial instability can trigger serious economic crises. Furthermore, considering the fact that the effects of monetary policy are transmitted to production activities and prices through the financial sector, if the financial markets suffer from instability or do not function properly, then the transmission channel of monetary policy will not work smoothly. In this regard, the Bank of Korea also strives to achieve financial stability in the actual operation of its policy, although it is not specified as such in the Bank of Korea Act.

The evaluations of the transmission channels of monetary policy look mixed in Section V of the paper. There are merely differing views as to whether different channels work as well as the policy authorities expect. The transmission mechanism of monetary policy has not worked very well for an extended period in Korea, primarily due to episodes of financial instability and the inappropriate financial infrastructure.

After the adoption of an inflation targeting framework, the Korean economy suffered from the impact of the financial crisis of 1997-98, the financial collapse of Daewoo business group (September 1999), the severe financial difficulties of Hyundai business group (May 2000) and Hynix (May 2001), 9/11 terror (September 2001), the war in Iraq (October 2002), geopolitical risks related to North Korea (December 2002), a credit card boom and bust, and financial difficulties of major credit card companies (March 2003). All of these have contributed to destabilising financial markets and the Korean economy.

But one thing I want to point out is that notwithstanding turbulence in the economy and extraordinary volatility in the financial markets, empirical studies, which are based on variance decomposition analysis of a six-variable (overnight short-term interest rate, long-term interest rate, exchange rate, stock price, industrial production, and CPI) VAR model, show that the effects of monetary policy on inflation have been enhanced since the adoption of the inflation targeting framework.

Finally, on the conclusion, I agree with the first point that there were other factors which contributed to price stability, including a lack of domestic demand, the appreciation of the Korean won against the US dollar, modest wage increases, the decline of international prices of imported goods, etc.

However, the paper seems to reach somewhat pessimistic conclusions about future prospects for the Bank of Korea's monetary policy and inflation targeting system. These conclusions seem to stem from concerns that tightening policy, when incorporated in a policy mix with foreign exchange rate policy, may not be sufficiently effective in times when monetary tightening is needed. One area where I disagree with the authors is on the assertion that the BOK might have a two-anchor monetary policy system or intermediate exchange rate regime. Since Korea's adoption of the free floating exchange rate system in December 1997, evaluation of its exchange rate operations has shown that, on the whole, application of market mechanisms for exchange rate determination has been enhanced in comparison to previous periods.

On the other hand, some economists, including the authors of the paper, have expressed negative views on the policy perspective behind exchange rate operations, arguing that the authorities still have a fear of floating because of sharp exchange rate fluctuations. As a rationale for this argument, they point to: (i) the limited extent of exchange rate volatility; (ii) suspicions that the Korean authorities target a certain level of exchange rate to ensure export price competitiveness.

Notwithstanding these arguments, it is clear that the authorities in Korea have maintained the principle that the exchange rate should be determined in the market through the interaction of the demand for and supply of foreign exchange. Foreign exchange market intervention is implemented not to target a certain level but to smooth radical changes in the exchange rate when there is a transient external shock or a bid-offer gap due to one-sided exchange rate expectations.

As for the first rationale behind the pessimistic views, the fact of the matter is that won/dollar exchange rate volatility has increased significantly since adoption of the free floating system. That is, the daily ex post volatilities measured by the differences between each day's and each previous day's closing rates and between the daily highs and lows have both more than doubled compared to the period before introduction of the free floating system.

The second assertion that the Korean authorities have actively intervened in the market to target an exchange rate sustainable for maintaining price competitiveness is not unambiguous. The nominal effective exchange rate (NEER) indices show that since 1998 changes in yearly averages have been widening to 5.3%, from 2.0% during the periods before the currency crisis.

In 2003 and 2004, the figures represent a stable pattern, implying that the Korean won has kept pace with the movements of other currencies. Similarly, the yearly changes in the real effective exchange rate (REER) indices have also increased since adoption of the free floating system, from 2% to 5.2%, while the won has appreciated slightly compared to other currencies since 2002. These figures may imply that the won has not been operated for the purpose of targeting a specific exchange rate level, but that its value has instead been determined in the market, reflecting the global trends of major currencies.

The new monetary policy environment has come about with the complete opening of the financial market and the introduction of a free floating exchange rate regime. When there are changes in exchange rates between major currencies or in the pattern of foreign investors' stock investment, prices which are the most important variable for monetary policy will be affected by changes in the exchange rate of the won. In the case of the small open economy, the exchange rate is likely to be not so much adjusted endogenously as given exogenously. Accordingly, the central bank is forced to take a passive stance. Specifically, the BOK is obliged to change its monetary policy stance when the exchange rate is not in balance with the inflation target.

In closing, I would like to point out some tasks ahead. Above all, I think that various efforts should be continuously made to ensure effectiveness of the inflation targeting system. While the Bank's monetary policy operation has indeed advanced in terms of its system and practices, there are several new challenges and difficulties, and coping with them involves important tasks. The first of these that should be pointed out is that of heightening the Bank's economic forecasting capacity. The Bank of Korea forecasts GDP growth and inflation with fan-charts to take account of forecasting uncertainty. However, individual economic agents' demand for more sophisticated forecasting has been growing in Korea recently. In order to satisfy that demand as well, greater effort to increase the accuracy of forecasting is also needed.

The second major task is to enhance the communication channel between the financial markets and the BOK. The central bank should make an effort to gather financial market reactions and improve public understanding of its monetary policy by explaining its policies and desirable policy initiatives. The Bank of Korea submits a Monetary Policy Report to the

Congress twice a year, and recently started to publish the minutes of the Monetary Policy Committee with a six-week lag on the website. In this way, I believe the accountability and transparency of monetary policy operation in Korea has increased substantially.

Lastly, we should set the transmission mechanism of monetary policy to rights and maintain it constantly by, for example, nurturing the development of the money and capital markets.

Thank you for your attention.

Understanding monetary policy in Malaysia and Thailand: objectives, instruments and independence

Robert Neil McCauley[1]

1. Introduction

This paper sets out to update the author's overview of monetary policy in East Asia, presented at the Reserve Bank of Australia in 2001 and subsequently issued as a SEACEN Centre *Occasional Paper*. At the request of the Hong Kong Institute of Monetary Research, however, this paper focuses more narrowly on monetary policy in Malaysia and Thailand.

This tale of two policies features a broadly similar pursuit of price stability, in one case outside of, and in the other case within, an explicit inflation targeting framework. It features orientations to exchange rate stability: one until July 2005 explicitly bilateral and since evidently so; and the other looser and evidently effective. It features similar but not identical assignments of instruments to the achievement of these objectives. And both central banks set policy enjoying considerable behavioural independence, which might be usefully strengthened by greater legal independence.

This paper's survey of more recent events and its narrower focus allow an examination of how the two central banks have responded to the challenge of higher energy prices in 2004-05. We find that the fiscalisation of energy costs has reduced the challenge in Malaysia, while mostly just delaying it in Thailand. Given the need in an inflation targeting framework to specify the operating definition of inflation, there was a risk in Thailand of an inappropriate response to energy prices that not only showed great volatility but also a significant trend. In the event, the inflation targeting framework in general, and its focus on a core measure of inflation in particular, have not gotten in the way of an appropriate response to this upward trend in energy prices.

The plan of the paper follows that of the earlier one. First, the goals of monetary policy are discussed, and then the instruments. Finally, the question of whether the central bank enjoys sufficient independence to do the job is raised.

2. Goals

The central banks of Malaysia and Thailand have two main monetary policy goals: low inflation and stable exchange rates. In the case of Malaysia, the contribution of these goals to growth and development is often stressed. In addition, each at times pursues financial stability not through setting short-term interest rates but rather through credit or prudential policies. Finally, each takes seriously a developmental role vis-à-vis financial markets and

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[1] Chief Representative, Representative Office for Asia and the Pacific, Bank for International Settlements. The views expressed are those of the author and not necessarily those of the BIS. The author thanks the discussants, Suchada Kirakul and Sukudhew Singh, as well as Claudio Borio, Andrew Filardo, Hans Genberg, Corrinne Ho, Marc Klau, Madhu Mohanty and Michael Spencer, without implicating them in any judgments or errors. The author thanks Sansau Fung and Paola Gallardo for research assistance.

the financial services industry, in part in order to improve the working and transmission of monetary policy.

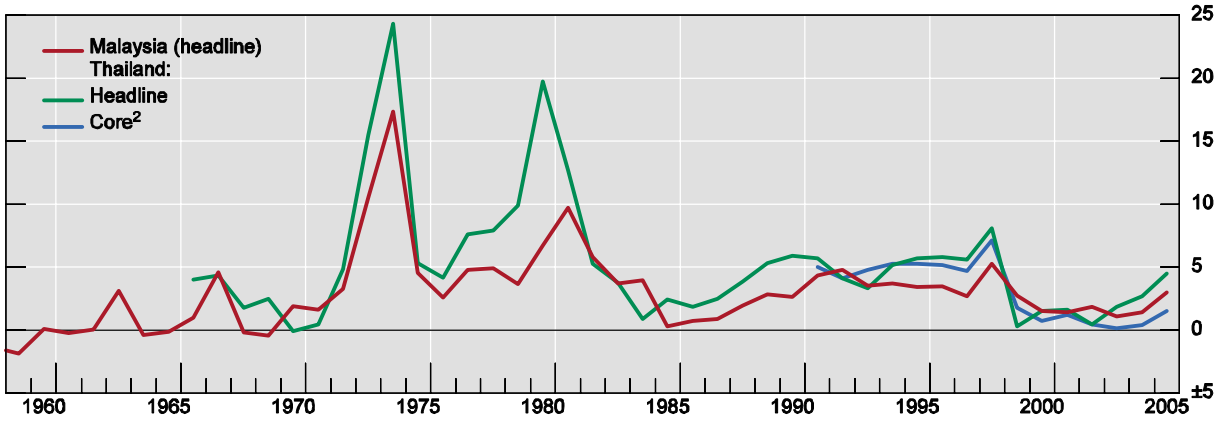
At first blush, multiple goals would seem to leave monetary policy overburdened and at risk of incoherence. The Tinbergian objection would be that the single stone (the short-term interest rate) cannot possibly hit so many birds. The next section on instruments, however, argues that there is a coherent assignment of instruments to the enumerated goals. To anticipate, the "impossible trinity" objection to having both inflation and exchange rate goals is answered through the assignment of the fractional instruments of (at times large) sterilised intervention and restrictions on cross-border movements of funds to the goal of exchange rate stability.

2.1 Low inflation

The central banks of Malaysia and Thailand share a commitment to achieving low inflation. This is evident in their long-term records. Graph 1 shows the inflation rates in the two countries since the founding of the Central Bank of Malaysia (Bank Negara Malaysia) in 1959 and since 1966 for Thailand. In both countries double digit inflation rates have been rare. During the Asian crisis of 1997-98, the decline of the Malaysian ringgit from about 2.5 to the dollar to about 4 to the dollar, and the parallel decline of the Thai baht from 25 to over 40 to the dollar caused a temporary rise in inflation to levels well above the long-term averages. Even then, this recent episode of relatively high inflation was mild compared to that during the oil shocks of the early 1970s and around 1980, especially in Thailand. Graph 1 also shows that the upward trend in Thai consumer price inflation over the past several years has been much more marked for headline inflation than for the Bank of Thailand's measure of core inflation.

Graph 1

Consumer price inflation[1]



[1] Average annual changes in consumer prices, in per cent. [2] CPI excluding raw food and energy items.

Source: National data.

Table 1 shows the average, the range and the standard deviation of rates of inflation for the two Southeast Asian countries, as well as for Japan and the United States. Over the long run, inflation has averaged about 1% lower in Malaysia and about 1% higher in Thailand than in Japan or the United States. In the years since the Asian crisis, inflation has tended to be lower in Malaysia and Thailand than in the United States.

Table 1

Inflation and its volatility in selected economies[1]

	Since 1959[2]				Since 2000			
	Average	**Max**	**Min**	**SD**	**Average**	**Max**	**Min**	**SD**
Japan	3.9	25.1	–1.6	4.5	–0.5	0.8	–1.6	0.4
Malaysia	3.1	23.9	–3.4	3.5	1.7	3.7	0.7	0.7
Thailand	5.3	28.8	–2.0	5.2	2.0	6.2	0.1	1.3
Thailand core[3]	3.2	8.4	–0.1	2.4	0.7	2.4	–0.1	0.6
United States	4.2	14.8	0.3	3.0	2.6	4.7	1.1	0.8

[1] Based on changes in consumer prices over 12 months. [2] For Japan, since 1961; for Thailand, since 1966; for Thailand core inflation, since 1990. [3] CPI excluding raw food and energy items.

Source: National data.

2.2 Exchange rate stability

Policy in both Malaysia and Thailand has taken as one of its goals some form of exchange rate stability. This goal can at times come into conflict with the goal of low and stable inflation (see Amato et al (2005)). Such a conflict has occurred often enough among emerging market economies that many observers infer from evidence of exchange rate stabilisation that policymakers pay only lip service to the goal of low inflation. This inference is not warranted in the two cases at hand.

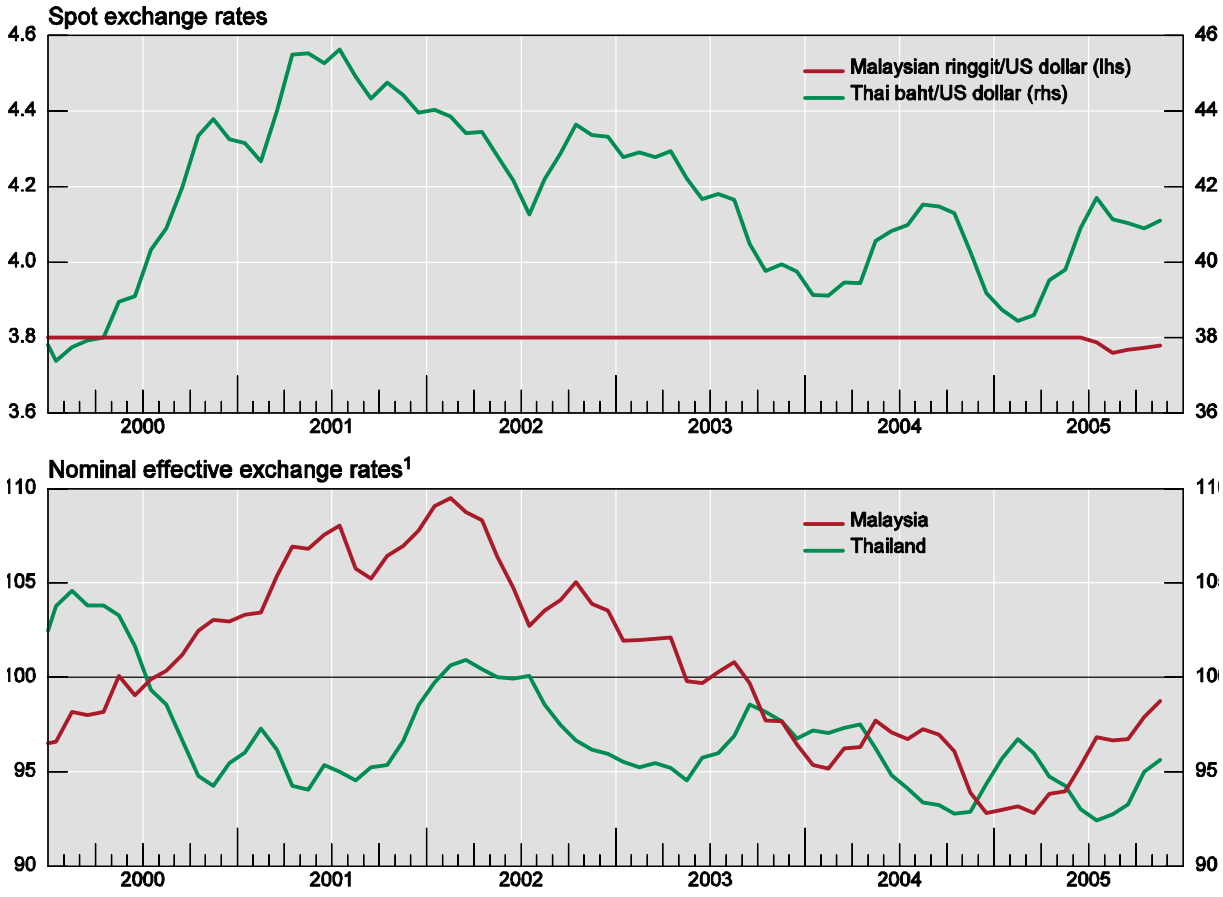
Exchange rate stability can conflict with the goal of low and stable inflation if it leads to inappropriate setting of policy interest rates or if the exchange rate directly transmits foreign prices in an inflationary or deflationary fashion. In the cases at hand, owing to the incomplete openness of their capital accounts and to the chosen forms of exchange rate stability, exchange rate policy has not hijacked interest rate setting. Given this and an environment of stable to falling global traded goods prices, preventing large exchange rate movements can be seen as having helped maintain low and stable inflation in these highly open economies. That said, Malaysia's former commitment to bilateral exchange rate stability ran a greater risk of posing a challenge to the maintenance of low inflation than Thailand's apparent pursuit of effective exchange rate stability. If the dollar exchange rate is stabilised, a strong dollar may risk deflation (as in China in 2000-01), and a weak dollar, inflation. In contrast, with stability in an effective exchange rate, cycles in the major exchange rates tend to exert less of such cumulative deflationary or inflationary forces.

Though it has taken different forms, the evident orientation of the two countries to exchange rate stability derives from similar structural characteristics. In both cases, the openness of the economy means that large effective exchange rate changes have the capacity to lead to an undesirable inflation or deflation. International experience of inflation targeting by emerging market economies in fact shows a significant association between large effective exchange rate changes, on the one hand, and missed inflation targets, on the other (Ho and McCauley (2003)). In addition, given the openness of both economies, large exchange rate appreciations can lead to an undesired loss of competitiveness in external markets, risking lower exports and economic activity. Finally, in addition to the effect on established firms, there is a widespread concern that exchange rate appreciation can undermine economies' attractiveness to new foreign direct investment.

However similar the sources of the concern for the exchange rate, policy has differed. From September 1998 to July 2005, Malaysia opted for bilateral exchange rate stability against the US dollar, while Thailand can be interpreted as having more and more evidently opted for effective exchange rate stability. Graph 2 shows the bilateral dollar exchange rates and the effective exchange rates of the ringgit and baht through 2005. While the baht has ranged since early 2001 between 38 and 46 baht per dollar - about 20% - its effective exchange rate has ranged more narrowly between 92 and 101. This reflects the fact that the baht shares much of the movement against the dollar of the currencies of Thailand's regional trading partners. In contrast, given that the ringgit until mid-2005 shared none of the movements against the dollar of the currencies of Malaysia's trading partners, its effective exchange rate has ranged more widely than that of the baht. In particular, it traces out the dollar's cycle against the major currencies, strengthening into early 2002 and weakening in the following three years until the dollar's rebound in 2005.

Graph 2

Exchange rates



[1] 2000 = 100; basket of 51 countries.

Sources: National data; BIS.

The contrast of Thailand's exchange rate outcomes with Malaysia's dollar peg is clear enough, but the interpretation of a stable effective rate as a policy goal requires further evidence. The null hypothesis is that observed effective stability in this decade (Table 2) is a market outcome. For instance, sterling, which is well known to have been free of official

intervention, has traded such that its effective exchange rate has not varied much in recent years.[2] One piece of evidence against the null is that market participants cite official intervention intended to influence the exchange rate on both sides of the market in the case of the baht. Another piece of evidence is public statements by Bank of Thailand officials, which often associate dollar/baht movements with parallel movements in regional currencies. This can be seen as not only an educational effort to refocus market participants away from the bilateral to the effective exchange rate but also a guide to the operational definition of stability.

Table 2

Historical volatility of the ringgit, baht, Singapore dollar and sterling

	Jan 1999 - May 2001				Jun 2001 - Dec 2005			
	MYR	**THB**	**SGD**	**GBP**	**MYR**	**THB**	**SGD**	**GBP**
Bilateral vs US dollar	0.00	6.66	4.00	7.77	0.00 (2.11)	4.56	4.65	8.13
Effective	3.69	6.90	3.65	5.63	4.04 (4.34)	3.49	2.95	5.53

Note: Volatility measured as annualised standard deviation of weekly (end-Thursday) percentage changes. For the latter period, data for Malaysia are through to 20 July 2005; data for remainder of 2005 shown in parentheses. See Klau and Fung (2006) on BIS effective exchange rates.

That effective exchange rate stability is a goal of policy in Thailand is made more plausible by the way that the baht traded before and after the change of central bank governors at end-May 2001. Before, a general policy of not intervening, and rather using variations in restrictions on cross-border capital flows to influence the exchange rate, left the baht among the more volatile currencies in East Asia other than the yen. Its bilateral dollar volatility was not far below that of sterling. From June 2001 to end-2005, the baht's volatility, especially in effective terms, fell to levels below those observed for sterling and not far above those of the Singapore dollar, which is explicitly managed against an effective basket. Whether the goal is to stabilise the level of the effective exchange rate around some target path set to be consistent with the inflation target, as in Singapore, or only the volatility of the effective exchange rate is hard to say.

Malaysia abandoned its commitment to bilateral exchange rate stability in favour of a commitment to effective exchange rate stability on 21 July 2005. Thus, in principle, the Malaysian and Thai interpretations of exchange rate stability have converged. Despite the announced shift in Malaysia, however, the bilateral volatility remains lower than the effective volatility. Graph 3 puts the management of the ringgit and baht in 2005 into a regional perspective, showing the ratio of a given currency's bilateral exchange rate volatility against the dollar to its overall effective volatility against the weighted average of its trading partners' currencies. The Chinese and Malaysian currencies registered a ratio of zero on this measure before 21 July because of their stability against the dollar and consequently considerable movement against the currencies of their trading partners. On this showing, Malaysia has moved quite a distance to over half since July 2005. As a result, the ringgit is closing in on the more dollar-oriented ASEAN currencies, namely the Indonesian rupiah and Philippine

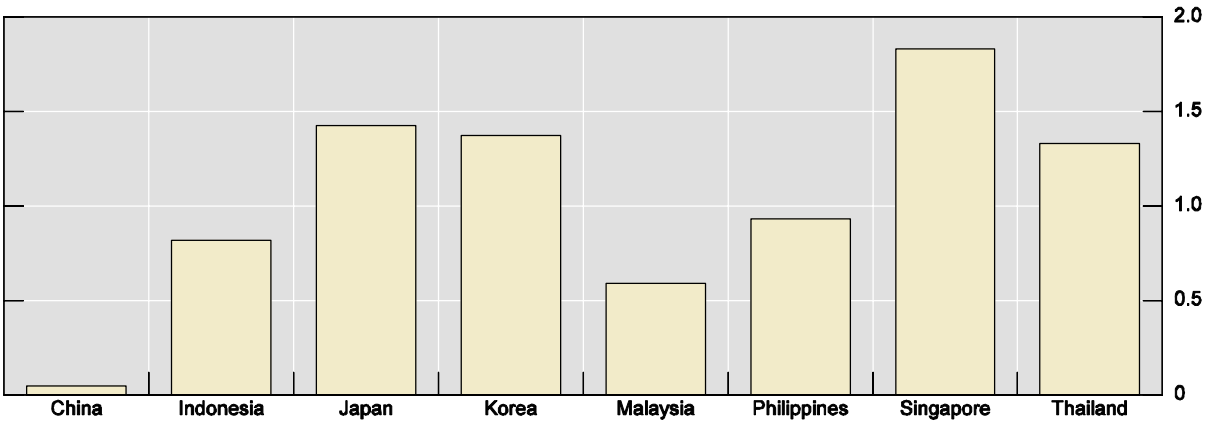
[2] Sterling's stability has led some observers to conclude that inflation targeters can be expected to have stable effective exchange rates but this expectation is not generally met. See Ho and McCauley (2003).

peso. The ringgit still has a way to go, however, to show greater bilateral than effective volatility, as do the Korean won, Singapore dollar or the Thai baht.

In passing, it is worth noting that the ringgit has made more of a move toward an effective orientation since July than the Chinese renminbi. Since the volatility ratio is constructed with weekly data, this is not solely a reflection of narrow de facto limits on movement of the renminbi against the dollar. Still, it can be said that Malaysia, and to a lesser extent China, have taken a first step toward the effective exchange rate orientation that is now typical of the region (Ho et al (2005)). The yen's performance on this measure in a year without official intervention serves as a warning that greater stability against the trade-weighted basket than against the dollar can be a market rather than a policy outcome.

Graph 3

Ratio of bilateral dollar volatility to effective exchange rate volatility in 2005[1]



[1] For China and Malaysia, since 24 July 2005; calculations based on weekly data (Thursday closings).

Sources: National data; BIS.

2.3 Other goals

Both central banks pursue other goals as well.[3] One common goal is financial stability. Asset prices in general and real estate prices in particular can give rise to concerns regarding overbuilding and unsustainable consumption on the upside and non-performing loans and "headwinds" slowing expenditure on the downside (Borio and White (2004), Disyatat (2005), Borio (2006), White (2006,a,b)). Consumer indebtedness that rises to excessive levels can also become a matter for policymakers' concern. Neither central bank has a target for asset prices or debt burdens, nor necessarily a clear idea of what is too high. Instead, there is an occasional desire to lean against the wind of sentiment when this can place financial stability at risk. Such a desire does not contradict the assignment of interest rate policy to the achievement of low and stable inflation because other instruments are employed. If macro-prudential policies succeed in, for instance, preventing a boom-bust cycle of debt-fueled

[3] The Bank of Thailand's public expression of concern regarding a return to a sizeable current account deficit can be seen as its contribution to the fiscal and structural policy debate, rather than as pointing to a goal for monetary policy. Consistent with this interpretation is the central bank's public advocacy of "savings mobilization schemes", such as a mandatory provident fund, which would stabilise the current account in the face of a rise in government-sponsored investment programme if such a scheme were to raise private savings. See Devakula (2005).

consumption, then it can leave less work to be done with policy rates. One thinks in this context of the mini-cycle of lower policy rates adopted by the Bank of Korea in 2004-05, partly in response to muted consumption after a previous spree of credit card use.

Maintaining positive or at least non-negative real returns on bank deposits also seems a concern of policy, even if it does not amount to a fully fledged goal of policy. Bank Negara Malaysia expressed this concern clearly when it elaborated a new interest rate framework in April 2004. While the former linkage of the base lending rate to the policy rate was dropped, constraints on deposit rates were left in place. In particular, minimum deposit rates for small and medium-sized accounts were kept at a level near the policy rate.[4] Such pricing constraints generally allow for the assignment of (wholesale) short-term policy interest rates to the achievement of low and stable inflation.

The developmental goals of the two central banks must also be recognised. Better functioning money and bond markets are clearly matters of active interest. These can be seen as a means of facilitating the transmission of monetary policy as well as ends in themselves.

3. Instruments

The burden of this section's argument is that the Malaysian and Thai central banks match their several goals with several instruments. Like major central banks, each periodically announces a target level for a short-term policy interest rate. In addition, these central banks occasionally intervene in the foreign exchange market and thus place changes in their own balance sheets between flows on the current and capital account, on the one side, and the exchange rate, on the other. Their interventions in the foreign exchange market may have particular effect owing to the relatively small scale of the underlying asset stocks, and the remaining restrictions on capital account transactions overseen by both central banks. The other goals just discussed are pursued with still other instruments.

3.1 Setting policy interest rates

In setting policy interest rates, the two central banks show more similarities than differences. This section discusses the banks' different choices of the policy rate and rhythm of announcing changes. Notwithstanding these differences, the two central banks carry out broadly similar monetary operations, and show similar success at hitting their short-term interest rate targets.

3.1.1 Policy rates: choice, rhythm of decision-making and activism

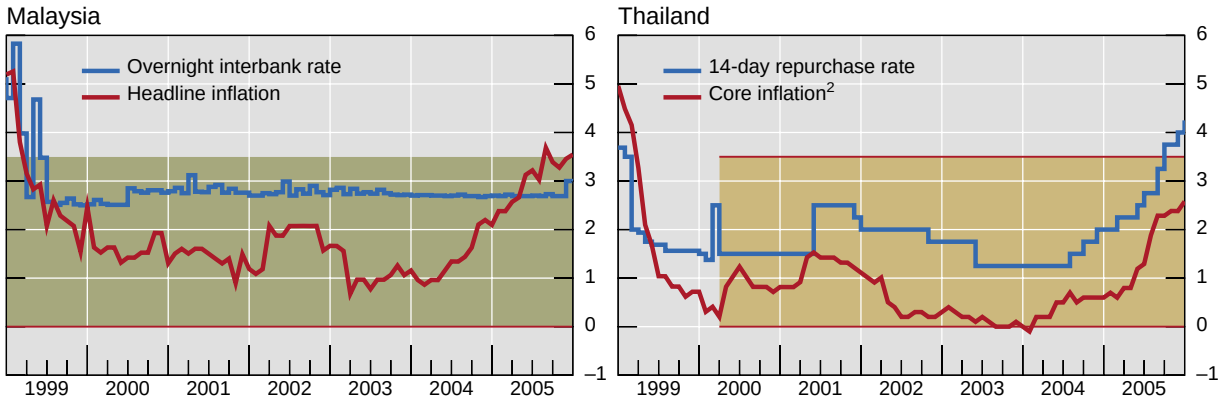
Both central banks periodically announce a target for a short-term rate on the basis of an assessment of the inflationary risks (Graph 4). An analogue to the US federal funds rate, the overnight interest rate, has served as the policy rate in Malaysia since April 2004: the "overnight policy rate" serving "as the indicator of monetary policy stance … is effectively the

[4] The April 2004 announcement included (Bank Negara Malaysia (2004)): "The minimum rates for fixed deposits with tenures between 1 and 12 months for balances of RM 1 million and below will be prescribed at the current prevailing levels of 3% for the one-month deposit and 3.70% for 12-month deposit. The minimum fixed deposit rates are being prescribed to ensure that depositors have a positive real rate of return". Bank Negara Malaysia (2005b p 65), elaborated: "Another important consideration is that a large section of the population, particularly the middle to lower income groups and retirees, relies on savings in the form of bank deposits. Minimum rates are therefore prescribed for deposits of RM 1 million and below …"

target for the average overnight interbank rate". The Bank of Thailand has since early 2000 signalled its policy stance with the 14-day repo rate.

Graph 4

Policy rates and inflation[1]



[1] Inflation based on changes in consumer prices over 12 months, in per cent; the shaded areas represent the inflation target ranges (not official for Malaysia). [2] CPI excluding raw food and energy items.

Source: National data.

The rhythm of monetary announcements differs. In the case of Bank Negara Malaysia, the stance of policy has been announced quarterly since early 2004. In the case of the Bank of Thailand, monetary announcements are made at twice that frequency, every six weeks.

Beyond these differences in the term of the policy rate and the rhythm of policymaking, the difference in activism of the two central banks is striking. Bank Negara Malaysia kept the policy rate at 2.7% in all its announcements between February 2004 and August 2005, and for almost the previous four years that rate (though not designated as a policy rate) varied but little from that level. By this measure at least, Bank Negara Malaysia kept its interest rate settings stable for five years, far longer than did the European Central Bank. In contrast, the Bank of Thailand, having brought its policy rate down to 1.25% by mid-2003, set out about a year later on a tightening cycle that brought the policy rate to 5% in 2006. Another way of drawing the contrast is that the Bank of Thailand has moved rates down and up by a cumulative 5% since mid-2001, while Bank Negara Malaysia has moved its overnight rate by 80 basis points. Whether fiscal policy has carried more of the burden of economic stabilisation in Malaysia than in Thailand, and, if so, why this is so are questions beyond the scope of this analysis.

3.1.2 The character of monetary operations

The operations carried out by the two central banks resemble each other, though the choice of instruments differs (Borio and McCauley (2001)). These two central banks operate on the same side of the market by draining reserves out of the banking system in the face of a chronic excess of liquidity. This similarity reflects the common balance sheet structure; in particular, their foreign exchange reserve holdings stand at a multiple of the note issue (or the monetary base) and they use relatively short-lived sterilisation instruments. Thus, the operations needed to hold short-term interest rates at targeted levels generally drain liquidity. Bank Negara Malaysia mostly takes outright interest bearing deposits from commercial banks through daily tenders at maturities ranging from weeks out to several months, while the Bank of Thailand drains liquidity through repos. In both cases, however, other instruments are used. In particular, both central banks issue their own bills to drain liquidity on a longer-term basis of up to one year maturity, in the case of Bank Negara, and up to two year maturity in the case of the Bank of Thailand. In the former case, the outstanding amount

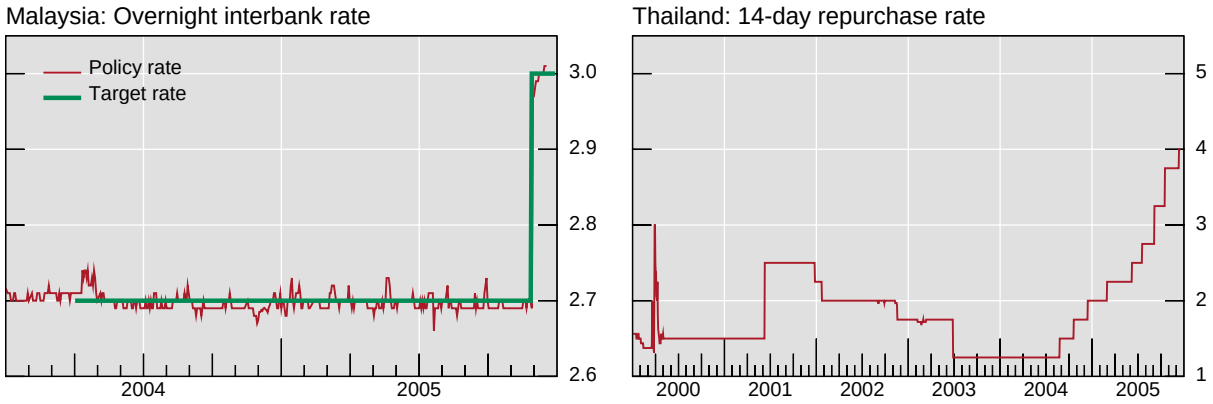
of bills has been limited by the central bank law to a modest sum. Bank Negara Malaysia announced its intention to shift to repos against government securities (see below), and the Bank of Thailand also uses short-term foreign exchange swaps to control liquidity. In both cases, operations have something of the character of debt management, with maturing liabilities requiring to be rolled over.

3.1.3 Do operations keep market interest rates at targeted levels?

In both cases, money market rates have tended to track their policy targets closely (Graph 5). In neither case is there evidence that the very large liquidity injections movements associated with foreign exchange market intervention, whether on the buying or selling side, have led to significant deviations between realised money market rates and policy targets. (Of course, as a technical matter, the T+2 settlement norm in foreign exchange means that the flows associated with intervention are well telegraphed to the monetary policy operations.) In this sense, one can say that a thorough sterilisation of the intervention has been the norm.

Graph 5

Policy rates



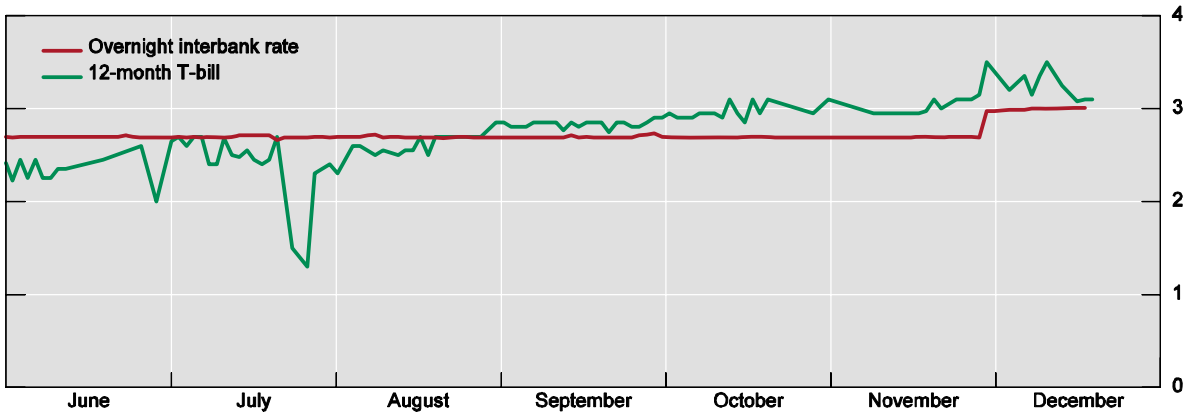
Source: National data.

That said, the transmission of the policy interest rate out the yield curve can be strongly affected by exchange rate expectations. In the case of Malaysia, extensive foreign ownership of money market securities has at times allowed Malaysia's money market yield curve to assume a peculiar shape. Twelve-month yields had fallen below the overnight policy rate even before 21 July 2005. In the immediate aftermath of that day's announcement of the unpegging of the ringgit, Malaysian government bill yields fell still further to levels well below the overnight rate target. This reflected expectations of further appreciation of the ringgit by the foreign funds that owned the paper (Graph 6). Such a peculiarly shaped yield curve appears exceptional.[5] Indeed, as foreign investors have drawn the conclusion that there is not to be a quick killing to be made on long positions in the ringgit, they have sold their holdings of short-term central bank and government paper back to the Malaysian banking system, resulting in a more normal money market yield curve.

[5] A difficult to answer question, however, is the extent to which bond yields have been held down by expectations of appreciation. In the case of Malaysia, one hears, lingering concern about the possibility of re-imposition of capital controls that would lock foreign investors into bond holdings has tended to limit foreign investment. This has probably worked against expectations of ringgit appreciation holding down bond yields.

Graph 6

Interest rates for Malaysia in 2005



Sources: Bloomberg; national data.

Box

Estimating a Taylor rule for Thailand

by Marc Klau and Robert N McCauley

This box builds on Mohanty and Klau (2004) to estimate Taylor rule-type reaction functions for the Bank of Thailand. Our main finding is that Bank of Thailand policy in the period of inflation targeting can be most plausibly modelled using the Bank's next year forecast of inflation.

We first re-estimate the baseline model from Mohanty and Klau and find evidence inconsistent with the proposition that there is a consistent reaction function in the 1990s and in the last five years. When the sample is extended from 2002 to the second quarter of 2005, the response of the short-term interest rate to inflation falls and becomes insignificant. Taken at face value, adding years during which the Bank of Thailand explicitly targets inflation produces estimates that convey an impression of increased gradualism (a higher value on the lagged short-term interest rate) and unresponsiveness to contemporaneous inflation! Also, a decline in the size and significance of the response to the contemporaneous real effective exchange rate is noticeable. We interpret these results to suggest that the reaction function differs across monetary policy regimes, since adding years from the more recent regime alters the findings.

Thus, our next step is to focus on the period of inflation targeting since 2000, and to use the policy rate, the two-week repo rate, rather than the one-month interbank rate. We also re-run the HP filter to estimate the output gap over the more recent sample period. The results suggest a major change in the lack of any response to the exchange rate, whether measured as a real effective exchange rate, a nominal effective exchange rate or a bilateral dollar exchange rate. This change is robust to the further changes in the choice of headline or core inflation, or the use of forecasts instead of contemporaneous values.

The estimated responses to inflation and the output gap over the period of inflation targeting become problematic, however. In particular, the response to contemporaneous inflation becomes so small that the long-run coefficient falls below one, suggesting that real interest rates are allowed to fall in the presence of higher inflation. In addition, the response to the output gap becomes perverse, and significantly so. These features are not changed when a dummy is entered for the 100 basis point rise in the policy rate in May 2001. Use of the core rather than headline inflation increases the responsiveness of the policy rate, but the smaller coefficient on the lagged policy rate means that this greater short-term responsiveness does not translate to a much higher long-term response. Use of the core measure, moreover, leaves the response to the output gap perverse.

Box (cont)

Estimating a Taylor rule for Thailand

Thus far, the estimated reaction functions have been backward-looking, with policy assumed to respond to realised inflation. The Bank of Thailand's *Inflation Reports* make it possible to use the policymakers' estimates of inflation at the end of the current year and at the end of the following year. Since these are given as fan charts, we use the centre of the distribution in the estimation.

These forecasts for the following year do not have the straight line look of some inflation reports (Graphs 12 and 13). Use of the inflation outlook for the current year does not change the estimates materially, leaving the perverse response to the output gap. Use of the inflation outlook for the following year, however, eliminates the perversity in the case of headline CPI and produces a proper response to the output gap in the case of core CPI. This comes at the expense of a fairly weak response to inflation in the former case, and none in the latter case, and a coefficient on the lagged policy variable in the region of one.

Finally, we investigated the sensitivity of the results to the period over which the HP filter was run in order to estimate the output gap. We found that, with potential output estimated over 1997-2005 rather than 2000-2005, the perverse response to the output gap still shows up when contemporaneous inflation is used. However, the outlook for this year's core inflation produces no perverse response to the output gap. Use of the more forward-looking next year's headline or core inflation rates, moreover, produce the expected response to the output gap at standard levels of significance. Again, this comes at the cost of a fairly weak response to inflation and a possibly unit coefficient on the lagged policy rate.

Taking it all together, several findings seem to emerge. First, no specification found a response of the policy rate to the exchange rate. This does not necessarily imply that the authorities are unconcerned with the exchange rate; it could imply that another instrument is assigned to it. Second, the estimates suggest that the policy rate is responding to forward-looking measures of inflation.

Box table

Estimated Taylor reaction function for Thailand

		Const	**Δcpi_t**	**gap_t**	**Δxr_t**	**Δxr_{t-1}**	**ir_{t-1}**	**Dummy**	**R^2**
1993 Q3-2005 Q2									
Baseline model with	REER	0.80 (1.65)	0.12 (0.46)	0.43 (2.46)	–0.06 (–1.09)	–0.19 (–2.80)	0.78 (6.00)		0.88
	XR	1.11 (1.75)	0.10 (0.34)	0.33 (3.08)	–0.07 (–1.17)	–0.17 (–2.72)	0.76 (7.02)		0.88
		0.65 (1.15)	0.04 (0.22)	0.35 (2.13)			0.87 (7.13)		0.85
2000 Q2-2005 Q2									
Baseline model with	REER	0.42 (1.18)	0.25 (3.21)	–0.29 (–3.55)	–0.03 (–0.96)	0.01 (0.34)	0.46 (2.68)		0.61
gap0005	XR	0.35 (0.96)	0.25 (3.04)	–0.26 (–3.40)	0.00 (0.02)	0.01 (0.65)	0.52 (3.06)		0.60
	NEER	–4.45 (–1.72)	0.04 (2.11)	–0.19 (–2.35)	–0.03 (–0.86)	–0.00 (–0.18)	0.52 (2.59)		0.50
		0.39 (1.20)	0.24 (3.22)	–0.25 (–3.61)			0.50 (3.24)		0.64
		0.28 (0.99)	0.20 (2.97)	–0.19 (–2.94)			0.59 (4.26)	0.27 (2.57)	0.73

Box table (cont)

Estimated Taylor reaction function for Thailand

		Const	Δcpi_t	gap_t	Δxr_t	Δxr_{t-1}	ir_{t-1}	Dummy	R^2
2000 Q2-2005 Q2									
Core CPI	NEER	1.19 (3.55)	0.47 (2.75)	–0.18 (–2.49)	–0.02 (–0.59)	0.01 (0.43)	0.14 (0.63)		0.57
Headline CPI estimate, current year	NEER	0.64 (2.09)	0.30 (3.54)	–0.26 (–3.69)	–0.04 (–1.33)	0.02 (0.56)	0.32 (1.89)		0.65
		0.59 (2.03)	0.28 (3.37)	–0.22 (–3.47)			0.38 (2.44)		0.65
Core CPI estimate for current year	NEER	1.00 (2.83)	0.32 (2.02)	–0.14 (–1.70)	–0.02 (–0.49)	0.02 (0.36)	0.25 (1.13)		0.49
		0.95 (3.04)	0.32 (2.17)	–0.12 (–1.73)			0.28 (1.45)		0.54
Headline CPI forecast, next year	*NEER*	*–0.40* *(–1.39)*	*0.24* *(2.70)*	*0.06* *(0.60)*	*–0.00* *(–0.01)*	*0.03* *(1.28)*	*1.00* *(4.88)*	*0.36* *(3.64)*	*0.87*
		–0.46 *(–1.72)*	*0.19* *(2.57)*	*0.08* *(1.09)*			*1.09* *(6.28)*	*0.39* *(4.75)*	*0.87*
Core CPI forecast, next year	*NEER*	*–0.47* *(–1.19)*	*0.03* *(0.23)*	*0.21* *(2.03)*	*0.02* *(0.78)*	*0.00* *(0.03)*	*1.27* *(4.27)*	*0.49* *(4.05)*	*0.80*
		–0.40 *(–1.18)*	*0.02* *(0.23)*	*0.18* *(2.05)*			*1.23* *(4.90)*	*0.48* *(4.54)*	*0.82*
Baseline model with gap9705	REER	0.70 (1.59)	0.23 (2.51)	–0.25 (–2.42)	0.01 (0.31)	0.03 (0.71)	0.36 (1.55)		0.49
		0.23 (1.48)	0.23 (2.56)	–0.23 (–2.48)			0.44 (2.18)		0.53
		0.33 (0.89)	0.15 (1.66)	–0.10 (–1.00)			0.63 (3.06)	0.29 (2.05)	0.60
Core CPI estimate, current year	NEER	0.70 (1.49)	0.37 (1.82)	0.01 (0.13)	0.01 (0.34)	0.00 (0.09)	0.36 (1.64)		0.39
Headline CPI forecast, next year	*NEER*	*–0.44* *(–1.68)*	*0.24* *(3.26)*	*0.06* *(0.98)*	*–0.00* *(–0.24)*	*0.02* *(0.92)*	*1.02* *(6.44)*	*0.37* *(4.12)*	*0.88*
		–0.53 ***(–2.16)***	***0.21*** ***(3.40)***	***0.08*** ***(1.75)***			***1.09*** ***(8.41)***	***0.41*** ***(5.44)***	***0.88***
Core CPI forecast, next year	*NEER*	*–0.41* *(–1.30)*	*0.17* *(1.79)*	*0.16* *(2.47)*	*0.01* *(0.39)*	*–0.00* *(–0.11)*	*1.07* *(5.58)*	*0.46* *(4.51)*	*0.82*
		–0.40 ***(–1.45)***	***0.16*** ***(2.05)***	***0.15*** ***(2.68)***			***1.07*** ***(6.84)***	***0.45*** ***(5.16)***	***0.84***

Note: t-statistics in parentheses.

Abbreviations: Δcpi = annual percentage change in consumer prices; gap = output gap; Δxr = change in the real effective exchange rate (REER), nominal effective exchange rate (NEER) or in the bilateral exchange rate (XR) (up means appreciation); ir = interest rate (dependant variable).

3.2 Foreign exchange market intervention

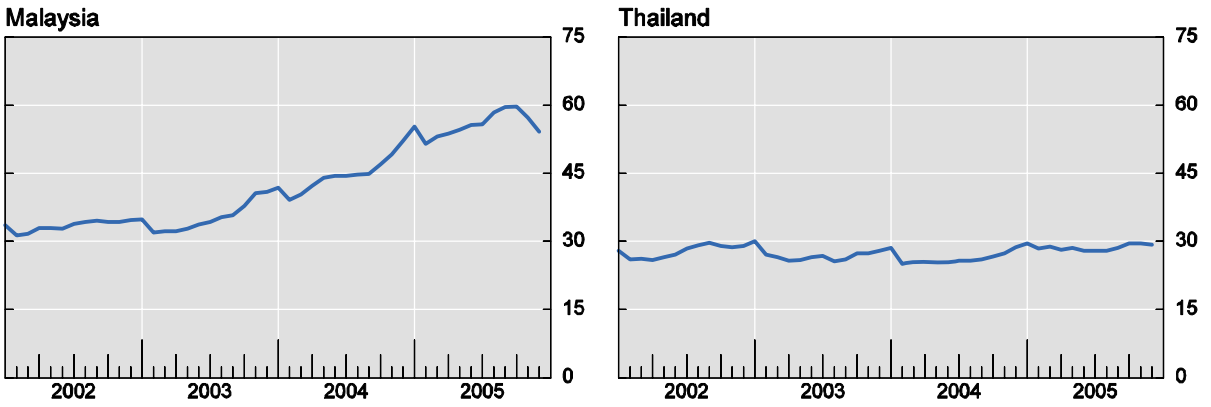
The main instrument assigned to the stabilisation of the ringgit and baht exchange rates is sterilised intervention (compare Disyatat and Galati (2005)). Its effectiveness is probably enhanced by the existence of capital controls in both countries. Moreover, these can be and have been varied in response to exchange rate pressures.

Sterilised intervention has been described as a fractional instrument (Dooley et al (2002)). That is, it does not have the power of interest rate policy. Still, in combination with capital controls, themselves leaky and partial, sterilised intervention may afford considerable leverage over the exchange rate.

As noted, Malaysia has used sterilised intervention to set the level of the exchange rate into July 2005, and perhaps to influence its level and volatility since then. Consistent with the difference in their exchange regimes, the Malaysian authorities have evidently used this instrument with greater vigour (Graph 7). Foreign exchange reserves rose in Malaysia to about 60% of GDP in the third quarter of 2005 before falling back toward 50% since. Foreign exchange reserves have fluctuated around 30% of GDP in Thailand. Short-term capital inflows were particularly strong in the fourth quarter of 2004 and third quarter of 2005.

Graph 7

Foreign exchange reserves as a share of GDP[1]



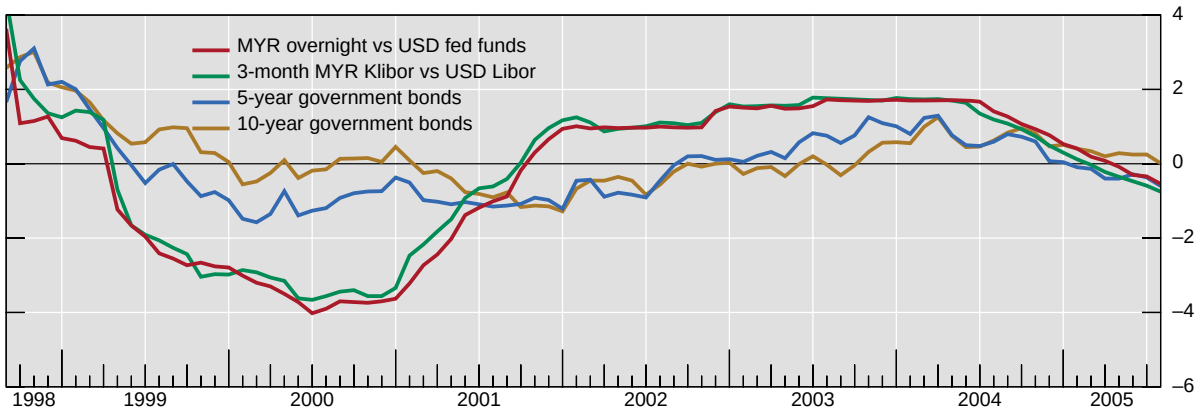
[1] In per cent.

Sources: IMF; national data.

Intervention as a fractional instrument gains force from capital controls. Their effectiveness is evident in both cases, though more so in the case of Malaysia. The offshore market for ringgit was successfully shut down in September 1998, and only in 2005 did a non-deliverable market offshore develop any liquidity. Thus, it is not possible to test for the effectiveness of capital controls by measuring the difference between onshore and offshore yields, whether derived from deliverable or non-deliverable forwards (Ma et al (2004)). Given the fixed exchange rate, however, it is possible to test for the effectiveness of the capital controls by measuring the difference between ringgit and dollar yields at various maturities. Examining these interest rate differentials, Malaysia's capital controls appear effective in the sense of permitting short-term ringgit interest rates to be set at very different levels than short-term US dollar interest rates (Graph 8). Moreover, the difference extends out the maturity spectrum, albeit to a lesser extent. Anyone who claims that Malaysia's fixed exchange rate meant that it was importing its monetary policy from the Federal Reserve needs to explain the 600 basis point range in the gap between US dollar and ringgit money market yields over the period of the fixed exchange rate.

Graph 8

Interest rate differentials for Malaysia[1]



[1] Malaysian ringgit rates minus US dollar rates; monthly averages.

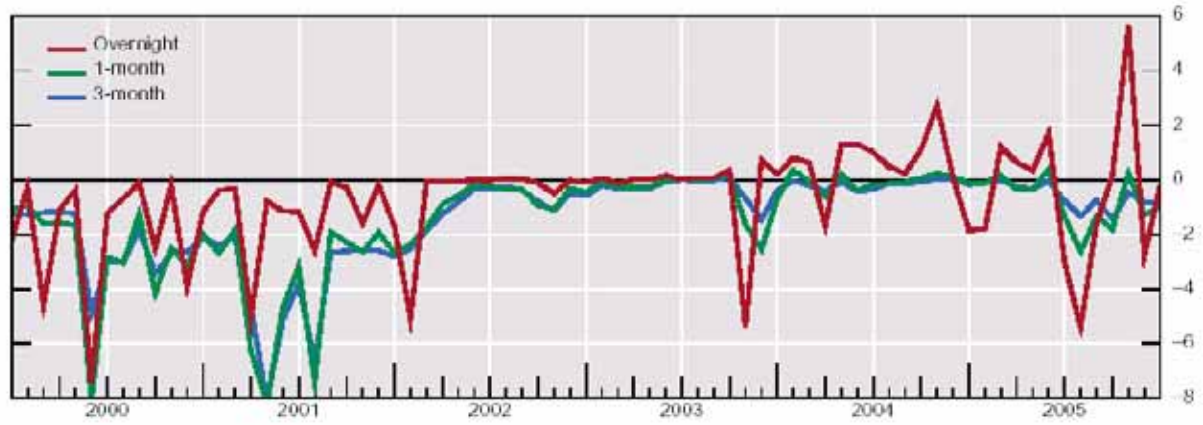
Source: National data.

In the case of the Thai baht, the sizeable although variable differences between on- and offshore baht interest rates signal effective capital controls. This holds whether offshore swap-implied rates are compared to their onshore counterparts (Graph 9a) or onshore interbank rates (Graph 9b). From 1999 into the first half of 2003, the evidence is consistent with an effective control on *outward* arbitrage, since offshore swaps often traded at levels implying higher offshore interest rates, but hardly ever with lower offshore rates. With strong capital inflows and chronic pressure for appreciation during much of 2002 and 2003, there was incipient pressure for offshore rates to fall below those onshore, but arbitrage kept the rates in line. In other words, into the third quarter of 2003, the Bank of Thailand oversaw an asymmetric regime, with effective constraints on lending baht to nonresidents but no measure preventing the flow of baht held by nonresidents into Thailand. In September and October 2003, however, the Bank of Thailand made its capital controls symmetric by limiting onshore financial institutions from borrowing more than 50 million baht from non-residents (Bank of Thailand (2003a,b)).[6] Since then, overnight differentials have shown more symmetry. In particular, non-resident demand for offshore exposure to the baht has often pushed the offshore *overnight* rate below its onshore counterpart. That the quite liquid offshore swap market at the *one month* tenor has not shown the same symmetry in its relationship to the onshore market suggests that the controls on inflows may not be as effective as their counterpart controls on outflows.

[6] The October 2003 *Inflation Report*, pp 30-31, noted: "In July and August, overnight interbank was relatively low compared with 1-day repurchase rate as a result of shift of borrowing by financial institutions from the interbank market to swap market. A more attractive rate in the swap market was due to a large amount of available baht funds offered by foreign investors justified by the expectation of baht appreciation. However, after implementation of measures to curb short-term capital flows in September, by limiting financial institutions to borrow baht from non-residents without underlying trade or investment not exceeding 50 million baht per entity, volume of transactions in the swap, interbank, and repo markets were restored, resulting in a better liquidity balance in the money market. Subsequently, all types of [onshore] short-term money market rates moved in a narrow range". Such measures to curb short-term capital flows are dubbed "moral suasion" by Watanagase (2005b). Note that offshore rates fell further below domestic interbank rates in Graph 9b than they fell below domestic swap rates in Graph 9b in the lead-up to the capital controls being made symmetric.

Graph 9a

Interest rates differentials for Thailand[1]

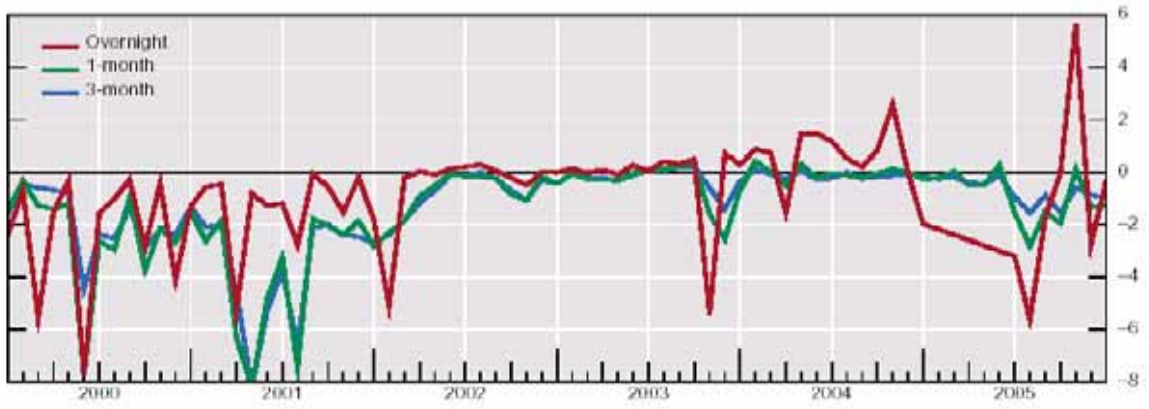


[1] Onshore rates minus offshore rates implied by forex swaps; monthly averages.

Sources: Bank of Thailand; CEIC; Reuters.

Graph 9b

Interest rates differentials for Thailand[1]



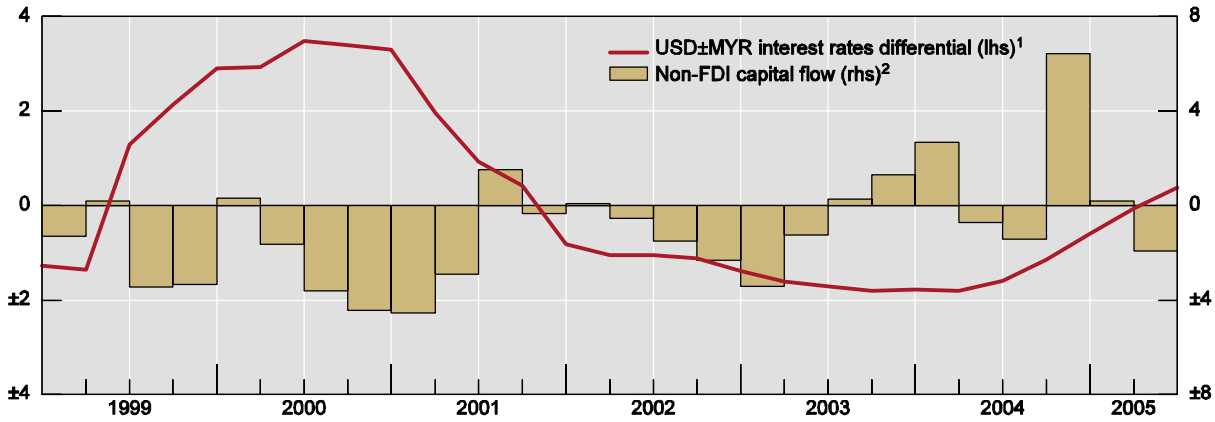
[1] BIBOR rates minus offshore rates implied by forex swaps; monthly averages.

Sources: Bank of Thailand; Bloomberg; CEIC; Reuters.

While capital controls were sufficiently robust to afford Malaysia an independent monetary policy during a period of a pegged exchange rate, these controls were leaky. In 1999-2000, the previous period when US dollar short-term interest rates climbed above those on Malaysian ringgit, Bank Negara reported declines in reserves notwithstanding a robust current account surplus (Graph 10). More recently, as ringgit short-term interest rates have fallen below those on the US dollar, Bank Negara Malaysia is again reporting declines in reserve holdings. Once again, market analysts, who might have previously viewed reserve holdings as excessive, have expressed concern about the potential for capital outflows (Le Mesurier and Tan (2005)). In any case, it would be a misapprehension to suppose that reserves are only acquired and never sold off.

Graph 10

Net capital flows into Malaysia



[1] Three-month money market rates, quarterly averages. [2] Change in reserve minus net current account, net FDI and net international debt securities flows; in billions of US dollars.

Sources: Datastream; national data; BIS.

In both cases, restraints on cross-border flows of capital may impede financial market development. For instance, some foreign investors in Thai government bonds report finding it difficult to manage their transactions in such a manner as not to run afoul of the 2003 constraints on holding onshore cash balances in baht. If this experience is general among foreign investors in Thai bonds, development of a more diverse investor base in them may have been discouraged. Restraints on cross-border capital flows also seem to work against diversity in the currency swap market, in which multi-year payment streams in local currency are exchanged for multi-year payment streams in US dollars. Globally, just over half of currency swap transactions occur between counterparties in different countries (BIS (2005, table E20)). In contrast, the currency swap markets in ringgit and the baht appear to be mostly confined to exchanges among residents (Table 3). For the Korean won and Singapore dollar, despite remaining restrictions on onshore-offshore transactions, it is evident that the cross-border transactions are the more dynamic piece of the rapidly growing markets for currency swaps.

Table 3

Foreign exchange transactions in the ringgit, baht, won and Singapore dollar

	April 2001				April 2004			
	MYR[1]	THB	KRW	SGD	MYR[1]	THB	KRW	SGD
Global spot transactions	252	530	5,731	2,756	351	1,333	10,510	5,177
Over-the-counter derivatives transactions in local currency[2]	675	1,077	3,319	9,214	662	1,627	8,769	7,167
Currency swaps[3]	…	11	46	18	11	246	342	54
Local	…	10	37	11	11	236	240	12
Cross-border	…	1	9	7	0	9	98	31

Source: BIS (2002, 2005), Tables E1, E20, E26, E28.

Notes: [1] For the Malaysian ringgit, transactions include only those reported for the Malaysian market in local currency. [2] Net of local but not cross-border double-counting. [3] Owing to incomplete counterparty breakdown, local and cross-border components may fall short of the currency swap totals.

3.3 Other instruments

In response to risks to financial stability, each central bank is capable of constraining the extension of credit either in relation to the borrower's income (a flow measure) or in relation to the value of asset to be financed (a stock measure). It is worthwhile to consider these concerns and the policy responses given the global debate over the appropriate response to financial imbalances (Borio and White (2004), Disyatat (2005), Borio (2006), White (2006,a,b). Before the 1997-98 financial crisis, Bank Negara Malaysia restrained competition in underwriting standards in extending mortgage credit by setting a maximum loan-to-value ratio for mortgages. More recently, the Bank of Thailand, as described below, limited the extension of credit on bank and non-bank credit cards in relation to the income of the cardholder.

In addition to such macroprudential goals and instruments comes the choice of operating instruments to serve the goal of market development. Any central bank generally enjoys a degree of freedom in choosing in which instruments to operate, and this choice can be exercised in a manner that serves the developmental goal. Below, Bank Negara Malaysia's proposal to shift from direct borrowing to repurchase operations offers an example of choice of instrument in the service of market development, in this case bond market development. Of course, market development in turn serves monetary policy by improving the transmission of the policy interest rates to related yields.

3.3.1 Credit policies for systemic stability and consumer protection: the Bank of Thailand on credit cards

The Bank of Thailand perceived excesses in the market for credit card loans and used regulatory policies to limit these excesses (Devakula (2004)). Bank and non-bank issuers of credit cards were seen as pushing credit at high and ill disclosed rates of interest (nearly 30% for credit cards and over 50% for personal loans) on low-income households with little practice in managing debt. The response can be seen as a change in the groundrules that came at early stage of the debt build-up. Policies to restrain competition included limits on the scale of credit lines (no more than five times monthly income), a minimum monthly income test (15,000 baht, or less than $400), a minimum monthly repayment rate (at least 5% and later 10% of the outstanding balance) and caps on interest rates and fees (Bank of Thailand (2004a)).

That these measures were applied not only to banks but also to non-bank card issuers demonstrates that consumer protection was at issue as well as systemic stability (Watanagase (2005a)). However, the fact that the Korean government had intervened to shore up the solvency and liquidity of a non-bank credit card issuer means that a financial stability argument for the extension of the regulation beyond the banking system is not far-fetched. Indeed, the Korean experience suggests that a cycle of excess and retrenchment in consumer credit can be a source of macroeconomic instability.

3.3.2 Choice of operating instruments for market development

Central bank operations tend to bring extra liquidity to the chosen instrument(s). In general, there is a degree of freedom in monetary policy operations regarding the choice of instrument. This can be chosen for its pre-existing liquidity: before the financial crisis of 1997-98, central banks in East Asia often operated in foreign exchange swap markets because these were the most liquid parts of the money market. But the developmental perspective can

reverse the reasoning behind the choice, and the central bank can operate in the market that lacks liquidity.[7]

A developmental aim is evident in both central banks' approach to the repo market. The choice by the Bank of Thailand to operate in repo markets has tended to increase the liquidity of repos and to some extent holdings of government bonds as well. There remains an intention to induce the development of a truly private repo market, instead of having the Bank of Thailand a counterparty on one side of every repo transaction.

Bank Negara Malaysia has more recently set its sights on promoting the repo market. It announced in February 2005 that:

> "To further develop the repo market, Bank Negara Malaysia will actively use repo operations as part of its monetary policy instruments[8] to manage liquidity in the banking system.
>
> "Bank Negara Malaysia's repo operations would:
>
> - Act as a catalyst to encourage market participants to actively use repos as an alternative funding instrument;
> - Enhance the flexibility for market participants to use these securities in managing settlement risks and trading strategies; and
> - Further strengthen the banking industry's risk management capabilities by encouraging banks to move towards collateralised inter-bank transactions" (Bank Negara Malaysia (2005b)).

4. Goals, instruments and higher energy prices

The recent rise in energy prices has presented a challenge to both central banks. These challenges are conditioned by energy pricing policies of the government, and also by the elaboration of the central banks' monetary policy frameworks. It is worthwhile to analyse this challenge as faced by these two central banks because many of its aspects are faced by others in and outside Asia (BIS (2006)).

At the outset, it should be recognised that the energy price rise differs from cases often taken to be precedents. Whereas in earlier decades cutbacks in supply led to oil "shocks", in the recent past supply has expanded in the face of strong demand, which was led not least by the fast-growing Asian economies. In general, commodity prices have risen because world growth has been more robust than in a generation.

The energy price rise tends to pose a particular challenge to emerging market economies. First, at medium levels of income, the energy intensity of the consumption basket tends to be higher (an Engle curve observation). Second, and in part as a consequence, the baseline of energy taxes tends to be lower in emerging markets than in more advanced countries. As a result, a given percentage increase in energy prices makes for a larger percentage change in consumer prices in emerging markets.

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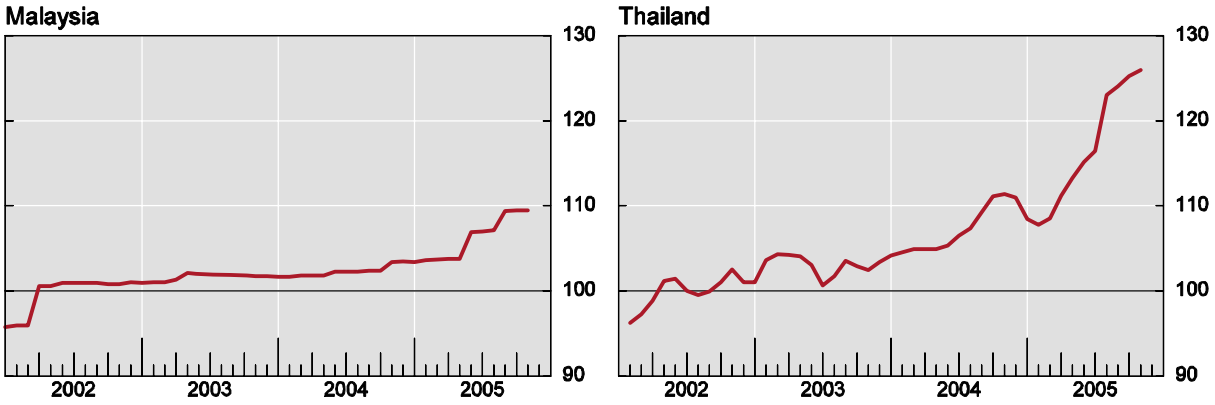
[7] For a proposal to transform the non-monetary liabilities of the central bank into government debt in order to contribute to the development of the government bond market, see McCauley (2003, 2006).

[8] Currently the Central Bank manages liquidity largely through direct borrowing from the interbank market. Bank Negara Malaysia also issues short-term bills for purpose of mopping up excess liquidity in the market" [footnote in original].

From the standpoint of the central bank response to this challenge, an important conditioning factor is the government's energy pricing policy. Malaysia, as an energy exporting country, has built-in capacity to shield its domestic economy from energy price rises. That is, it can divert some of the fiscal windfall from higher energy prices to holding down energy prices, constrained at the extreme by the possibility of turning fishermen into diesel fuel exporters. And indeed the Malaysian government has limited the pass-through of higher energy prices, even as prices have been raised several times. A couple of years ago, a litre of petrol sold for MYR 1.12 and after several 10 cent rises, it reached MYR 1.62 (45 US cents). In contrast, the government in Thailand at first sought to hold down petrol and diesel prices, but late in 2004 passed through much of the extra costs to petrol consumers. Early in 2005 the same was done with the price of diesel as well. Pressure remains on the pricing of the natural gas sold to the electric generating company, but it is fair to say that much of the energy price rise has passed through. All in all, more of the inflationary impulse of higher energy prices in Malaysia has been fiscalised, and the pressure on domestic prices from the higher international price of energy has been higher in Thailand than in Malaysia (Graph 11). In this respect, the Bank of Thailand has had a harder job.

Graph 11

Energy-related CPI[1]



[1] CPI on transport and communications; 2002 = 100.

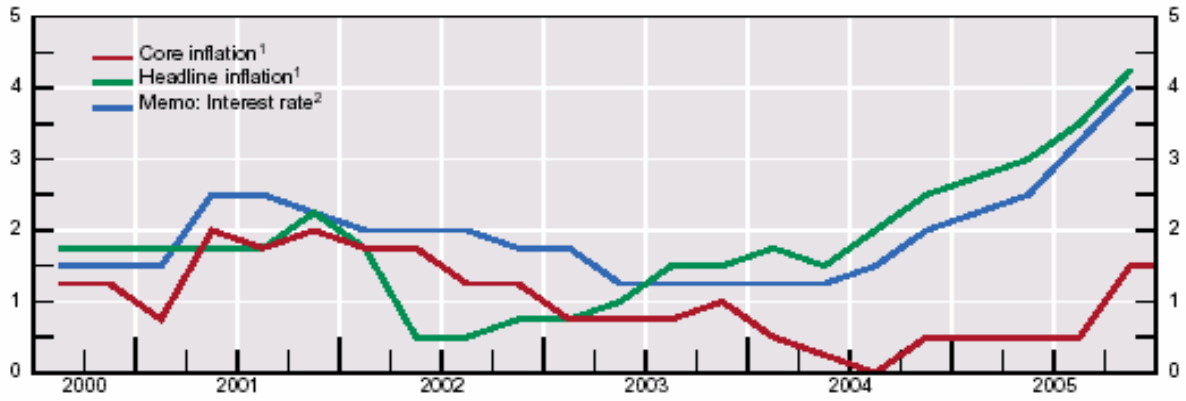
Source: CEIC.

Given any upward pressure on inflation, however, advocates of inflation targeting would suggest that the less elaborated monetary policy framework would make Bank Negara's job harder. They would argue that without a clear specification of the inflation target, price pressures might more readily translate into inflation expectations.

In another respect, however, the Bank of Thailand's interpretation of inflation targeting could have made its job difficult. As part of its elaboration of inflation targeting, it had committed to a core measure of inflation that discounted much of the initial pressure on inflation from higher energy prices. Thus, when it started to raise interest rates in the middle of 2004, many market participants were surprised: at less than 1%, the core measure was near the bottom of the 0-3.5% band (Graph 4). Moreover, the country sustained several adverse developments ranging from tsunami - implying lower demand for tourism - to avian flu to unrest in the southern provinces. These were seen as easing the pressure on the labour market and capacity. Thus, low Bank of Thailand estimates of core inflation for the current year left many observers wondering when the central bank started raising the policy rate in mid-2004 (Graph 12).

Graph 12

Inflation estimates for Thailand



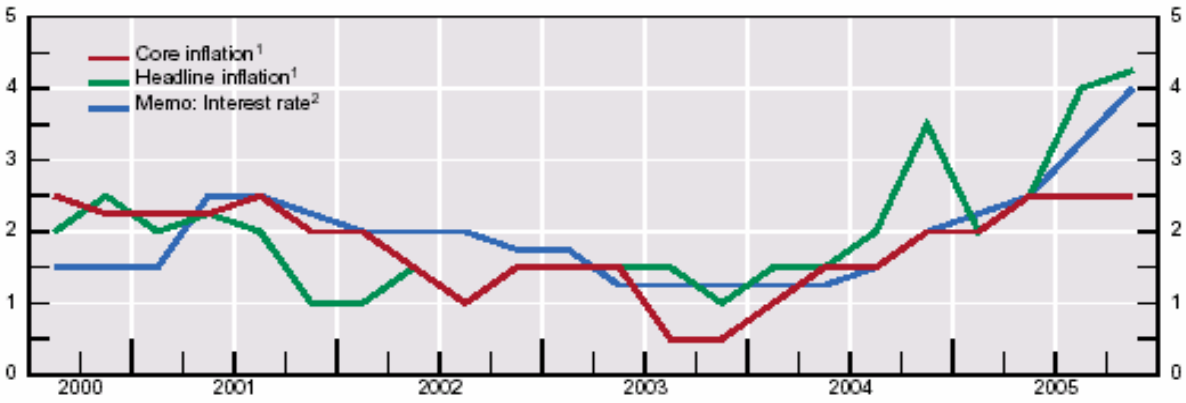
[1] Estimates made for the current year; annual change; in per cent. [2] 14-day repurchase rate; in per cent.

Sources: Bank of Thailand, *Inflation Reports*.

What looked to some like indecision regarding the objective can be seen in retrospect as avoiding a trap in the core measure. Such a measure intends to exclude volatile prices, but energy prices showed a trend as well as volatility around it. More broadly, what is the appropriate response if the rapid growth of Asian economies was holding down the prices of manufactures (China) and cheapening some previously non-traded services (India), while pushing up commodity prices? It is not obvious that the right answer is to pay attention to the prices being held down while ignoring those being pushed up. In the specific case of Thailand, the central bank also had to consider the sustainability of the early fiscalisation of higher energy prices. One could argue that the Bank of Thailand was simply appropriately forward-looking in its view on the core rate. On this view, the headline rate required a response only insofar as it informed a forecast of the future core inflation rate. Certainly, the timing and vigour of the policy tightening looks easier to understand when juxtaposed to inflation forecasts for eight quarters ahead (Graph 13).[9] As an alternative, one could argue that the Bank of Thailand appropriately gave some weight to headline inflation.

Graph 13

Inflation forecast for Thailand



[1] Forecast made for the following year; end-year forecast; annual change; in per cent. [2] 14-day repurchase rate; in per cent.

Sources: Bank of Thailand, *Inflation Reports*.

[9] Note that the Bank of Thailand forecast for targeted inflation deviates from the centre of the target band by more than the forecasts of the four industrial country economies as reported in Edey (2006).

On this second reading, the broader lesson that may be taken is that the elaboration of a monetary framework probably cannot be a once-and-for-all act. Events undermine the presumptions of any elaboration: recall the instability of the relationship between monetary aggregates and nominal output. Steve Grenville's (2001) question of whether inflation targeting can be viewed as the end of monetary history, seconded by Genberg's (2002) question of whether it can be viewed as the holy grail of monetary policy, remains.

5. Independence

Do the central banks enjoy the independence necessary to meet their objectives? To recap McCauley (2001), one can distinguish legal, behavioural and balance sheet independence. In large part, the argument in that earlier paper was destructive: the readily available Asian data did not support the linkage demonstrated for industrial countries and/or emerging market economies in general between legal or behavioural independence, on the one hand, and good inflation performance on the other. Indeed, the contrary hypothesis received stronger support on several measures of independence.

The introduction of the notion of balance sheet independence, however, attempted to contribute more constructively to the discussion of central bank independence. One aspect of balance sheet independence had been incorporated into legal measures of independence, namely, whether the treasury could compel the central bank to buy its paper. And the European System of Central Banks has, as a defining feature, prohibited direct purchases of government paper by a participating central bank. But balance sheet independence can be compromised in many other ways.

5.1 Legal independence

The acts of the two central banks date to very different times. The Central Bank of Malaysia Act 1958 was drawn up in peacetime and drew inspiration from, among other sources, the legislation of the Reserve Bank of Australia. This Act was revised in 1994. The Bank of Thailand's Act of 1942 dates back to a time when checks and balances seemed more a hindrance than a promoter of national development. Thus, the Bank's independence and accountability might be well served by a revision of the act. Among other changes, both monetary and financial stability policymaking might benefit if the governor were appointed for a fixed term, rather than serving at the pleasure of the cabinet.

5.2 Behavioural independence

The legal position of the Bank of Thailand's governor is reflected in one of the measures of behavioural independence, namely the turnover of the governor (Cukierman (1992) and Cukierman and Webb (1995)). In fact, no governor has served to retirement age in the history of the Bank of Thailand, save one whose time to retirement was only months in the first place.

The tenure of the governor is in practice twice as long in Malaysia as in Thailand (see Annex). On average, the Bank Negara Malaysia governor has served 6.6 years, while her counterpart in Thailand has served only 3.2 years. Thus the current governor in Malaysia, who is the longest-serving governor in a major ASEAN country, has not reached the average tenure, while the recently departed governor in Thailand had exceeded the average.

Another measure of behavioural independence is whether the governor is replaced within six months of a change in government. The Malaysian governor remained in office after the change in prime minister in October 2003. In the case of Thailand, unprecedented enlargement of the parliamentary majority of the prime minister early in 2005 led to questions

about the tenure of the economic team. While strictly speaking there was no change of government in 2005 in Thailand, it was noteworthy that the central bank governor remained in office for six months after the election. After the coup d'etat in September 2006, Governor Devakula became Deputy Prime Minister and Finance Minister; this shift shows that central bank turnover in the wake of political change is not always prejudicial to central bank independence. In this case, the shift is seen as bringing forward legal change: "changes to the Bank of Thailand Act and Currency Act are underway … to give the Bank of Thailand more independence while securing an appropriate system of checks and balances" (Watanagase (2006)).

The bank supervisory responsibilities of Bank Negara Malaysia and the Bank of Thailand may bolster their behavioural independence.[10] Their ability to respond to asset inflation and credit excesses with prudential policies rather than just interest rate hikes may shield the central bank from political pressure. For example, protecting banks by setting lower loan-to-value ratios in mortgage lending is an easier sell than targeting real estate wealth with higher interest rates. Finally, the political act of splitting off supervision can easily be interpreted as a weakening of the central bank, rather than a focusing of its mandate, perhaps implying less behavioural independence.

5.3 Balance sheet independence

Balance sheet independence is defined as a central bank having control over its balance sheet and not taking on essentially fiscal assets. A lack of such independence may not immediately threaten the autonomy of monetary policy. By risking a decapitalisation of the central bank, however, a lack of balance sheet independence can put the central bank into the awkward position of needing yearly budgetary transfers or a one-time recapitalisation. Even in the presence of legal independence, there is likely to be a price to pay at the time the ministry of finance makes a payment to the central bank.

It is the rule rather than an exception for a central bank to experience a compromise of its balance sheet independence in the response to a major financial crisis. Taking the economies most affected by the Asian financial crisis of 1997-98, for instance, all of them follow the rule.

Bank Indonesia suffered a loss of balance sheet independence when there was not a prompt fiscal take-out of its discount window advances to failed banks during the 1997-98 crisis. When the 2004 revised central bank act provided for some fiscal recognition of the problem, Bank Indonesia lost the goal independence that it had previously enjoyed (Indonesia (2004), p 6). Rather than being able to set the inflation target, Bank Indonesia now is tasked with meeting the target set by the Ministry of Finance. Some outside observers might find this division of labour familiar and arguably better the status quo ex ante. For the present purposes, however, the important point is that the loss of balance sheet independence led to the loss of goal independence.

[10] Consistent with the Bank of England's gaining its independence in monetary policymaking while losing its responsibility for bank supervision, some would argue that the vesting of this responsibility in a separate agency sharpens the central bank's mandate and prevents conflicts of interest and risks to reputation arising from the exercise of that responsibility. The arguments to the contrary, however, may be stronger for an emerging market economy than an advanced one. While a large, advanced country may have sufficient pool of talent to have separate bureaucracies compete for financially trained personnel, this is likely to prove more problematic in a small or emerging economy. To the extent that a central bank has built up credibility, moreover, splitting off supervision will create a need to build up credibility in the new agency.

For its part, the Bank of Korea found itself once again discounting loans to small and medium-sized enterprises at below-market interest rates. This is a quasi-fiscal operation that had been wound down before the crisis.

Our two central banks were not spared, though their compromises of balance sheet independence vary in scale and resolution. Bank Negara Malaysia capitalised Danamodel, an instrument to recapitalise the banks. It sold bonds and invested in several distressed banks. It is winding down and Bank Negara Malaysia stands to recover its investment.

The Bank of Thailand provided assistance to distressed financial institutions in the midst of the crisis through the Financial Institutions Development Fund. The Bank of Thailand owns the FIDF, staffs and in effect funds it by serving as its counterparty in regular short-term fund-raising through the repo market. Sales of assets of failed financial institutions have left a substantial negative equity position. There have been several rounds of the government assuming the burden in whole or part. In one round, the government undertook to pay interest coupons on bonds sold to recapitalise the FIDF, while the Bank of Thailand undertook to pay the corpus of the bond out of profits on management of the foreign exchange reserves. Given that the foreign exchange reserves are financed at the margin largely by interest-bearing debt, such profits are far from assured, however. The FIDF may be wound up within the next several years.

Challenges to central bank balance sheet independence continue, however. It is understandable that a variety of adverse developments, ranging from an outbreak of avian flu, to ethnopolitical conflict in the southern provinces, to a tidal wave, would lead to pressure on the central bank to do something. Still, discounting bank loans to private businesses at subsidised interest rates must be recognised as mixing fiscal policy, in the form of the allocation of seigniorage, with monetary policy.

In sum, the response to the financial crisis of 1997-98 unsurprisingly posed challenges of varying types and intensity to the central banks of the most affected economies. Seven years on, much progress has been made in restoring balance sheet independence.

6. Conclusions

The monetary policies of Malaysia and Thailand offer points of comparison and contrast. Both seek to stabilise the rate of inflation, with Malaysia operating without and Thailand operating within an explicit inflation targeting framework. The latter assigns a pre-eminent position to a core measure of inflation, but the record suggests that the Bank of Thailand has recognised the trend element of higher energy prices and thus pre-emptively moved against the risk of higher inflation notwithstanding a series of adverse developments on the demand and the supply side. Both central banks seek to stabilise the exchange rate, with Malaysia to date having given more weight to the bilateral exchange rate against the dollar and Thailand attempting to stabilise the effective exchange rate. In both cases, a short-term interest rate serves as an operating target, with liquidity-draining operations the modal means to hit the target. Malaysia has recently chosen the overnight interest rate, while Thailand has since the financial crisis of 1997-98 opted for the two-week repo rate. In both cases, sterilised intervention supported by restrictions on cross-border money market and foreign exchange transactions are assigned to the goal of stabilising the exchange rate. In both cases, the central bank embraces broader goals of macrofinancial stabilisation and assigns credit policies to this goal. In addition, in both cases the central bank embraces a developmental role in the financial markets. With regard to governance, both central banks enjoy considerable behavioural independence, and the public interest might be well served by increased legal independence in Thailand.

Annex:
Governors of the central banks of Malaysia and Thailand

Malaysia		
No	**Name**	**Period in office**
1	Tan Sri W H Wilcock	January 1959 - July 1962
2	Tun Ismail bin Mohamed Ali	July 1962 - July 1980
3	Tan Sri Abdul Aziz bin Taha	July 1980 - June 1985
4	Tan Sri Dato' Jaffar bin Hussein	June 1985 - May 1994
5	Tan Sri Dato' Ahmad bin Mohd Don	May 1994 - August 1998
6	Tan Sri Dato' Seri Ali Abul Hassan bin Sulaiman	September 1998 - April 2000
7	Tan Sri Dato' Sri Dr Zeti Akhtar Aziz	May 2000 - current

Thailand		
No	**Name**	**Period in office**
1	H H Prince Vivadhanajaya	27 November 1942 - 16 October 1946
2	Mr Serm Vinicchayakul	17 October 1946 - 24 November 1947
3	Mr Leng Srisomwongse	25 November 1947 - 2 September 1948
4	H H Prince Vivadhanajaya	3 September 1948 - 2 December 1948
5	Mr Leng Srisomwongse	3 December 1948 - 3 August 1949
6	M L Dej Snidvongs	4 August 1949 - 29 February 1952
7	Mr. Serm Vinicchayakul	1 March 1952 - 24 July 1955
8	Mr Kasem Sriphayak	25 July 1955 - 23 July 1958
9	Mr Jote Guna-Kasem	24 July 1958 - 3 May 1959
10	Mr Puey Ungphakorn	11 June 1959 - 15 August 1971
11	Mr Bisudhi Nimmanhaemin	16 August 1971 - 23 May 1975
12	Mr Snoh Unakul	24 May 1975 - 31 October 1979
13	Mr Nukul Prachuabmoh	1 November 1979 - 13 September 1984
14	Mr Kamchorn Sathirakul	14 September 1984 - 5 March 1990
15	Mr Chavalit Thanachanan	6 March 1990 - 30 September 1990
16	Mr Vijit Supinit	1 October 1990 - 1 July 1996
17	Mr Rerngchai Marakanond	13 July 1996 - 28 July 1997
18	Mr Chaiyawat Wibulswasdi	31 July 1997 - 4 May 1998
19	M R Chatu Mongol Sonakul	7 May 1998 - 30 May 2001
20	M R Pridiyathorn Devakula	31 May 2001 - 6 October 2006
21	Ms Tarisa Watanagase	8 November 2006 - current

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Comments on "Understanding monetary policy in Malaysia and Thailand: objectives, instruments and independence" by Robert Neil McCauley[1]

Suchada Kirakul[2]

The paper provides an informative review of Thailand's current monetary policy framework and demonstrates a good understanding of Thai financial market development. Thus, my comments will focus on some issues raised in the paper regarding Thailand, in order to enhance the completeness of the paper.

Monetary policy goals

The paper states that the two main monetary policy goals of the Bank of Thailand (BOT) are low inflation and stable exchange rates. Even though the BOT's objectives are often cited so, it is important to emphasise that the overriding goal under the inflation targeting framework is price stability, with a view to enhancing sustainable growth in the long term. Exchange rate stability, however, is now regarded as a desirable condition subsumed under the price stability goal. For an open economy like Thailand, it is undeniable that the exchange rate still bears important influence on domestic prices. Therefore, mild exchange rate volatility complements overall price stability, and the two goals should not be considered as independent.

Exchange rate stability

Under the managed float exchange rate regime, extreme exchange rate movements have occasionally been limited by the central bank's intervention. Broadly speaking, the BOT does not attempt to influence the exchange rate level, for that should be left to the market based on the true fundamentals of the economy. However, when exchange rate movements become too volatile, for example with sudden shifts in global market sentiments, the BOT may decide to take action but only to slow down the speed of change in order to allow adequate time for the real sector to adjust accordingly.

It is well understood in Thailand that exchange rate intervention may have grave consequences in the long term. Therefore, the central bank has been doing less rather than more market intervention, which is consistent with the message sent out to the public. Over time, as the domestic financial market matures, the public will be better equipped with the tools to protect themselves from exchange rate volatility, and thus the central bank's role on this front can be expected to diminish even further.

In the paper, the author observes the exchange rate volatilities over two periods and draws the conclusion that the intervention policy under the present BOT governor (June 2001-present) is more active than that under the former governor (May 1998-May 2001). However,

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[1] March 2006 version.

[2] Bank of Thailand. The views expressed are those of the discussant and do not necessarily represent those of the BOT.

exchange rate volatility reflects not only the policy stance but also the prevailing economic and market environment during each period of time. Incidentally, exchange rate volatilities of Indonesia, the Philippines, South Korea and Thailand all diminished substantially in the latter period when compared to the former (Table 1). These regional countries were hit hard by the financial crisis of 1997-1998, and thus the reduction in the exchange rate volatility in the case of Thailand is likely to reflect improved economic fundamentals and confidence, just like in the other countries, rather than the change in the stewardship of the monetary policy governing agency.

Table 1

Historical volatilities of selected Asian currencies

	Jan 1999-May 2001	**Jun 2001-Dec 2005**
Indonesia - IDR	20.46	9.28
Thailand		
Bilateral THB/USD	7.04	4.03
Effective exchange rate	6.65	3.44
Philippines - PHP	12.81	4.72
South Korea - KRW	9.92	7.41

Note: Volatility is measured as the annualised standard deviation of the daily percentage changes.

Source: Bank of Thailand.

Other goals

The paper mentions that, with both monetary and supervisory responsibilities, the BOT has goals other than those pertaining to monetary policy, namely, financial stability and developmental goals.

Under financial stability, asset prices are alluded to as an area of possible concern of the central bank. In practice, the BOT has no asset price target, explicit or implicit, but it does use asset price information to detect fragilities in the economy. The use of asset price information can serve both monetary and prudential policy, and the choice of policy instrument may vary as the BOT deems suitable. For example, if an asset price bubble reflects overall demand pressure, monetary policy may be tightened along with a stepping up of prudential measures to safeguard macroeconomic stability as well as financial institutions' stability. In some cases, however, the asset price bubble reflects a localised fragility, and the use of monetary policy is likely to be too broad to address the problem even though it pertains to macroeconomic stability. Under such circumstances, the BOT may opt to use prudential measures, instead of tightening monetary policy, for the macroeconomic stability goal. It simply demonstrates how the BOT uses its policy tools flexibly and concertedly, for macroeconomic and financial stability goals in the end serve the same ultimate objective of economic stability in support of long-term growth.

As for the development of the bond market, it should not be viewed as an independent developmental goal. The development of the bond market will help enhance monetary policy transmission and thus, in a broad sense, serves the monetary policy goal. Table 2 illustrates

the development in terms of market depth, with the outstanding value of government bonds[3] to GDP increasing substantially from the pre-crisis period (1993-1997) thanks in part to the budget deficits in recent years. Meanwhile, progress has also been made on other fronts, such as the exemption of withholding tax, to provide easier access to all players and enhance the participation of both investors and private issuers.

What would be useful in the study of Thailand's monetary policy is an analysis of whether monetary and prudential roles of the BOT tend to conflict with or support each other on the whole. The analysis may also extend to include developmental goals in the form of credits to special sectors.

Table 2

Development of the government security market

Unit: Billion baht	Average 1993-97	Average 1998-99	Average 2000-05	2005
Government bonds	47.6	507.0	1,046.5	1,360.5
T-bills	0	12.5	135.0	209.0
NGDP	4,070.6	4,631.8	5,840.4	7,104.2
Total outstanding (% GDP)	**1.2**	**11.2**	**20.2**	**22.1**

Sources: Thai Bond Market Association; National Economic and Social Development Board (NESDB).

Instruments

Setting policy interest rates

In setting the policy interest rate, the Monetary Policy Committee (MPC) meets eight times each year to assess recent economic conditions and consider the inflation and economic outlook over the next two years. With the assistance of forecasting tools and the MPC members' views, the risk of core inflation breaching the target range of 0-3.5% (quarterly average) determines the MPC's policy reaction.

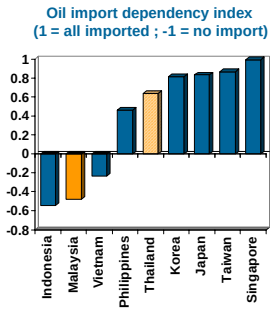
Policy rates: choice, rhythm of decision-making and activism

From past reactions of the MPC, the paper concludes that monetary policy in Thailand is more active than its counterpart in Malaysia. The conclusion is based on the fact that the policy rate in Thailand was raised by 375 basis points between August 2004 and October 2005, while the Central Bank of Malaysia kept its policy rate unchanged between February 2004 and August 2005. Again, this comparison downplays the differences in the underlying structure and environment of the two economies. For example, Malaysia is an oil-exporting economy whereas Thailand is an oil-importing country (Chart 2). That alone should suggest that, even with the same degree of inclination for policy activism, monetary policy in the two countries may have to react differently to an oil price shock. Moreover, Thailand is an inflation targeter but Malaysia is not. That may also suggest a different degree of concern over inflation risk.

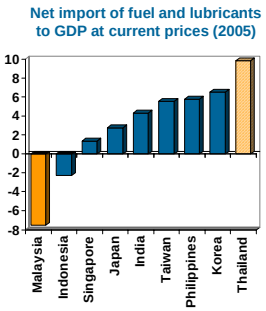
[3] Calculation is based on securities registered with the BOT.

Chart 2

Oil import dependency comparison



Source: World Bank.



Sources: CEIC, Customs Department, NESDB.

Goals, instruments and higher energy prices

The paper argues that the BOT uses core inflation as the policy target but also gives consideration to headline inflation. I would like to add to the point by saying that having core inflation as the target does not preclude the use of other price information for policy deliberation. The case with headline inflation is a good example. With high oil prices and their subsequent pass-through to the prices of other goods and services, headline inflation tends to lead core inflation more so than it used to. As a result, the MPC monitors headline inflation closely and uses it as an indicator of future pressure on core inflation, of course with the degree of lead varying up to a number of factors including demand pressure.

Independence

Behavioural independence

Although the BOT's charter (the Bank of Thailand Act of 1942) does not guarantee the central bank independence from the power of the government, in practice the BOT has behavioural independence to some degree. However, this may not be reflected by the paper's indicator of choice, namely, the turnover rate of the central bank governor. For example, it is difficult to assess the central bank's behavioural independence from the turnover rate alone given different political setups in Malaysia and Thailand. Moreover, when normalised by the turnover rate of the prime minister, the turnover rate of the central bank governor in Thailand is roughly half that of Malaysia, suggesting that central bank governors in Thailand may be less affected by political changes than in Malaysia once the turnover of the head of government is controlled for (Table 3).

Table 3

Turnover rate of central bank governor

	Thailand	**Malaysia**
Central bank governor turnover	20 (1942-present)	7 (1959-present)
Prime minister turnover	29 (1942-present)	5 (1957-present)
Central bank governor turnover normalised by PM turnover	**0.69**	**1.4**

Sources: Bank of Thailand; Royal Thai Government; Wikipedia.

Balance sheet independence

Although the Bank of Thailand Act of 1942 allows the BOT to finance the government directly through monetisation, the law allowing the government to conduct such business was terminated in 1960.[4] At the same time, the BOT has not participated in the primary government bond market over the past decade.

Last but not least, one point should be clarified regarding the BOT's assistance to distressed financial institutions through the Financial Institutions Development Fund (FIDF). The paper states that "[I]n one round the government undertook to pay interest coupons on bonds sold to recapitalise the FIDF, while the Bank of Thailand undertook to pay the corpus of the bond out of profits on management of the foreign exchange reserves. Given that the foreign exchange reserves are financed at the margin largely by interest-bearing debt, it might have been better to pay off the bonds out of the profit from the note issue." As a matter of fact, the BOT is paying off the principal of the fiscalisation bonds out of the annual net profits from both the "General Account" (typical central banking business) and the "Currency Reserve Account", which is more or less the Note Issue Department's account. It should be emphasised that the key point here is that the FIDF's losses have been resolved, rather than the BOT's balance sheet independence having been compromised, because such an arrangement is equivalent to regular profit remittance from the point of view of the BOT.

[4] According to the law, drawing overdraft money requires two sets of acts: an act allowing the BOT to grant such loans to the government and the Annual Budget Act allowing the government to overdraw money from the BOT. The latter was terminated under Prime Minister Sarit Dhanarajata in October 1960.

Comments on: "Understanding monetary policy in Malaysia and Thailand: objectives, instruments and independence" by Robert Neil McCauley

Sukudhew Singh[1]

The paper by Bob McCauley provides a well written survey of the conduct of monetary policy in Malaysia and Thailand, highlighting the similarities and the points of divergence. Overall, I think it is a balanced and thoughtful note that seeks to draw insights into the conduct of monetary policy in these two countries. The paper, in a number of instances, displays the author's sensitivity to key differences between the conduct of monetary policy in small developing open economies and the more developed but more closed economies. This is refreshing given that one often comes across views, sometimes expressed by "experts" in the developing countries themselves, that blindly seek to reflect the experiences of the developed countries onto the developing countries. Although I do not agree with everything in the paper, the areas of divergence of views are relatively minor. Therefore, in my comments I will seek to elaborate on some of the areas that I feel were not adequately covered in the paper, and will limit my comments to the Malaysian case.

Multiplicity of monetary objectives

The Central Bank of Malaysia (Bank Negara Malaysia) sees its multiplicity of goals as a natural outcome of being a central bank in a developing country. In wealthy economies, it may make sense for central banks to focus exclusively (though even then, not so exclusively) on the preservation of the value of wealth by focusing only on maintaining price stability. In developing countries, while preservation of the value of wealth is important, the creation of wealth is an equally important policy objective. Therefore, while recognising the importance of maintaining price stability as the paramount objective of monetary policy, the central bank also recognises that having an appropriate policy to support the financing of productive investments allows the economy to increase its potential output level and sustain a higher level of economic growth. It is for this reason that the monetary policy objective of Bank Negara Malaysia is stated as being "the promotion of maximum sustainable growth in an environment of price stability".

The paper also notes that each central bank "at times pursues financial stability not through setting short-term interest rates but rather through credit or prudential policies". In the case of Malaysia, Bank Negara Malaysia has clearly stated its belief that interest rates are a blunt instrument and may not be the appropriate tool for dealing with issues in the banking system. Bank Negara Malaysia is the regulator and supervisor of the banking system, insurance companies and the development finance institutions. This role provides many advantages and compliments the monetary function. For instance, excessive bank lending to asset markets can be dealt with through a tightening of prudential standards rather than higher interest rates. During the Asian financial crisis, the availability of detailed information about

[1] Director of the Monetary Assessment and Strategy Department at Bank Negara Malaysia. The views expressed here are those of the author and do not necessarily reflect the official position of Bank Negara Malaysia.

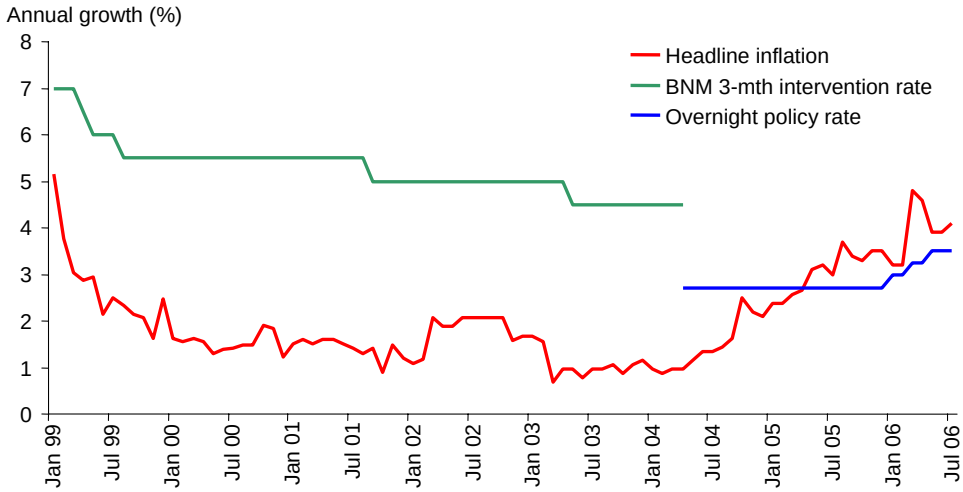
the balance sheets of banking institutions allowed the central bank to pre-empt a credit crunch.

Finally, another important goal of Bank Negara Malaysia has been to promote the development of the Malaysian financial system. It has played a leading role in institution building, including the setting up of the Securities Commission, the National Mortgage Corporation, rating agencies, development of the bond markets and the Labuan Offshore Financial Centre, just to name a few. In setting interest rates, a key consideration has been avoiding negative real deposit rates over sustained periods. This has promoted the mobilisation of funds through the formal banking system. The Bank sees the benefit of a well developed financial system through its increased contribution to economic growth, increased efficiency of financial intermediation and enhanced effectiveness of monetary policy.

Policy rate

The paper notes that, unlike Thailand, Malaysia's policy rate has remained unchanged since mid-2001. This statement is based on observing the overnight rate, which, as the author notes, only changed by 30 basis points during the period to end-2005. However, a more representative depiction of the conduct of monetary policy in Malaysia during this period is shown in Graph 1. The first thing to note is that over this period, there have been two different policy rates. The overnight policy rate (OPR) was adopted as a policy rate only in April 2004, with the introduction of the New Interest Rate Framework. Prior to that, there was Bank Negara Malaysia's three-month intervention rate. Excluding the transition between the two policy regimes, the policy rates were adjusted by a cumulative 280 basis points over the period until end-2005.

Malaysia: policy rates and inflation



There are two reasons why the intervention rate was not adjusted downwards more sharply over this period. First, a significant amount of the adjustment in the policy rate had already been undertaken in 1998, when it was reduced by 400 basis points, thereby requiring a smaller adjustment in the subsequent period. Second, further downward adjustment of the policy rate would have pushed deposit rates considerably lower and contradicted the policy objective of avoiding negative real deposit rates over a sustained period.

On the "rhythm" or frequency of monetary announcements, there is now no difference between Malaysia and Thailand. In August 2003, Bank Negara Malaysia started off by

issuing the Monetary Policy Statement (MPS) four times a year to coincide with the quarterly release of the GDP growth numbers. Subsequently, an MPS was issued after every one of its eight Monetary Policy Committee (MPC) meetings, and since May 2006, the MPS has been issued on the same day as the MPC meeting. An advance calendar of MPC meeting dates for the following year is also now made available to the public.

Monetary policy and the exchange rate

I support the view expressed in the paper that because of the openness of the Malaysian economy, policymakers are very concerned about the exchange rate. However, this does not mean that the authorities actually try to determine a time path for the exchange rate. Rather, the major concern of policymakers has been to avoid excessive volatility and maintain a fairly valued exchange rate with respect to Malaysia's major trading partners. One of the main sources of distortion since the early 1990s has been the large and rapid movements of short-term capital in and out of the economy. If allowed to prevail, the outcome would be increased exchange rate volatility and overshooting of the exchange rate. Under these circumstances, Bank Negara Malaysia had intervened in the foreign exchange market. Of course, in earlier days, sterilisation was an important concern given that the central bank did not have sufficient instruments to absorb the excess liquidity, particularly when the inflows were large. It was also during the mid-1990s that the central bank moved from monetary targeting to interest rate targeting, as the former was distorted by the large inflows from the external sector. Finally, the central bank has never used its interest rate policy as a means to influence the exchange rate. While large changes in the exchange rate have a significant impact on the economy, the role of the exchange rate as a transmission channel for monetary policy has been relatively weak and uncertain.

Monetary policy instruments

Having enough instruments to undertake its monetary operations has been a perennial concern for Bank Negara Malaysia. In the period prior to the Asian financial crisis, this forced the choice towards more direct instruments such as the statutory reserve requirement. However, with the efforts put into the development of the financial markets, the central bank has been able to diversify its monetary instruments. While the bulk of monetary operations are still conducted through direct borrowing from the money market, the central bank has not used the statutory reserve requirement as a monetary instrument since the crisis.

As noted in the paper, Bank Negara Malaysia has focused increasingly on using repos as a monetary instrument, but in order to increase the scale of these operations, it has had to first address the problem of limited availability of appropriate paper. In an attempt to overcome this shortage, the central bank came out with an innovative solution called the Institutional Securities Custodian Programme (ISCAP) in January 2005, whereby the central bank borrows securities from major institutional holders such as pension funds and insurance companies (who typically hold these securities to maturity) and then uses them as collateral in its repo operations. Lenders of the securities are remunerated through lending fees paid monthly and calculated daily from an agreed percentage of the spread difference between the repo rates and the money market rates that would otherwise be incurred in comparable direct borrowings. Apart from lowering the cost of sterilising excess liquidity, ISCAP has also increased the availability and liquidity of government securities that were previously locked away and unavailable to the market.

Monetary policy approaches and implementation in Asia: the Philippines and Indonesia

Roberto S Mariano and Delano P Villanueva[1]

> "For those emerging market economies that do not choose a policy of 'permanently' fixing the exchange rate - perhaps through a currency board or dollarization, the only sound monetary policy is one based on the *trinity of a flexible exchange rate, an inflation target, and a monetary rule*." (Italics in the original, Taylor, (2000).)

I. Introduction

The last 15 years have seen extensive use of monetary policy approaches that are rules-based, but with considerable judgments factored in.[2] This invited paper is about current monetary policy approaches and implementation in the Philippines and Indonesia. For each of these two countries, the paper attempts to address the following list of issues:

- What are the objectives/intermediate targets/instruments?
- How are these determined? Are institutional arrangements appropriate to ensure that the stated objectives are achieved? Is the central bank independent? De facto as well as de jure?
- Do the deeds of the central banks correspond to their words? For instance, do estimates of reaction functions or other measures of the actual actions of the central bank correspond to what it claims to be doing?
- What provides the nominal anchor in the country? How are the issues of fiscal dominance and exchange rate dominance dealt with?
- How effectively does the central bank communicate with the public? By what means? Do readily available reports and a website provide adequate information?

Section II describes recent trends in monetary policy. Section III addresses the five issues listed above. We describe for the Philippines and Indonesia the evolution of the monetary policy of the monetary policy transmission process as financial development progressed and external conditions changed over time. We also discuss the effects of these factors on the monetary policy implementation strategy. Section IV concludes.

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[1] Roberto S Mariano is Vice-Provost for Research and Dean of the School of Economics and Social Sciences (SESS) at Singapore Management University (SMU). Delano P Villanueva is Visiting Professor, SESS, SMU, and a former member of the faculty of the IMF Institute and former Research Director of the South East Asian Central Banks (SEACEN) Research and Training Centre. We thank Diwa Guinigundo, Deputy Governor, Francis Dakila and Dennis Lapid, Monetary Policy Research Group, Bangko Sentral ng Pilipinas, Halim Alamsyah, Office of the Governor, and Wiwiek Sistowidayat, Monetary, Fiscal and Financial Sector Team, Bank Indonesia, and Peter Kriz for invaluable inputs. We also thank the participants in the HKIMR-BIS Conference on *Monetary Policy Approaches and Implementation in Asia* held in Hong Kong on 21-22 November 2005, particularly Hans Genberg and Eli Remolona for useful suggestions that improved the paper. Remaining errors are our sole responsibility.

[2] For a collection of references, see John Taylor's Monetary Policy Home Page (http://www.stanford.edu/~johntayl/PolRulLink.htm).

II. Preliminaries: modern monetary policy

Taylor (1998) enumerates five broad macroeconomic principles that underpin modern monetary policy. This core of macroeconomic principles provides the rationale behind all the structural econometric models that have been estimated or calibrated to evaluate monetary policy.

The first principle is stated by the neoclassical growth theory: long-run per capita GDP growth is a function of capital intensity and technology, which are both endogenous functions of economic policy. The second and third principles, respectively, are that in the long run there is no trade-off between inflation and unemployment, but that in the short run there is such a trade-off. Whether the short-run trade-off is due to sticky prices, cost shocks or imperfect information is an open issue. The second and third principles imply that although monetary policy is neutral in the long run, it can have powerful effects on unemployment in the short run. The quantitative effect is an open issue, depending on the theoretical reasoning behind the impact effect.

The fourth principle is that people's expectations about the economy affect the evaluation of monetary policy, and these expectations are endogenous to monetary policy changes (and to other policy changes). Optimal monetary policy is endogenous to underlying institutions and the behaviour of economic agents.

The fifth principle is implied by the first four: the central bank should announce a target inflation rate and describe a rule to be followed such that inflation will remain close to the target. It is not enough to target inflation or engage in inflation targeting.[3]

Research on monetary policy rules has focused on the United States and other developed countries, whose debt and foreign exchange markets are very deep and sophisticated. Rules-based monetary policy is now increasingly being used in emerging market economies, and the question is being raised as to what modifications need to be made for the effectiveness of modern monetary policy in those economies. Taylor (2000) lists five issues: (1) What is the appropriate instrument in the policy rule? (2) What is the appropriate specificity in the policy rule? (3) What is the relationship of the policy rule to inflation targeting? (4) What are the implications of underdeveloped long-term bond markets for the choice of a policy rule? (5) What is the role of the exchange rate in the policy rule?

1. What is the appropriate instrument in the policy rule?

Taylor (2000) mentions velocity uncertainty as ruling in favor of the interest rate instrument. While the interest rate is most commonly used by the central banks of industrial countries, its usage is not universal. In the United States and other developed countries, a short-term interest rate (in the United States, it is the federal funds rate; at the ECB, it is the rate of the main refinancing operations, MROs). The Philippines uses the overnight repurchase rate (RP) and reverse repurchase rate (RRP), complemented by open market operations, reserve requirements and rediscounting. Taylor (2000) also lists the following factors favouring the use of a monetary aggregate instrument: (i) the measurement of the real interest rate is difficult; and (ii) there are large shocks to investment or net exports. If the interest rate is used under conditions of uncertainty about the equilibrium real interest rate, policy errors are

[3] This principle implies that nominal income targeting is not a policy rule in the absence of a process by which policy instruments are adjusted to achieve a nominal income target.

very likely.[4] Indonesia used base money until July 2005, after which it shifted to the Bank Indonesia interest rate.[5]

2. What is the appropriate specificity in the policy rule?

A common misconception is that policy rules are applied mechanically. True, such rules are often expressed as algebraic expressions; as such, they can be subject to econometric evaluation. Nevertheless, policy rules are generally used as policy frameworks or guidelines and in practice are not followed mechanically.[6] Discretion is exercised when examining data on prices, industrial output and other variables in order to forecast the current inflation rate and the real output gap (real GDP measured as deviation from potential GDP). Likewise, there are special circumstances when a temporary departure from the policy rules is warranted.[7] However, one important specificity of the policy rule is the size of the interest rate response to an increase in the inflation rate, as advocated by Taylor: changing the interest rate by more than one for one with the inflation rate is consistent with both theoretical and empirical research in the United States.[8] The stable inflation episode in the United States in the 1980s and 1990s when the interest rate response was greater than one for one contrasts sharply with the high inflation episode in the late 1960s and 1970s when the interest rate response was less than one. The response coefficient may be 1.4 or 1.6 and not exactly 1.5, but the general point is that, to be an effective policy rule, the response coefficient must be greater than one.

3. What is the relationship of the policy rule to inflation targeting?

An inflation target embedded in a good policy rule means an average value for inflation over several years.[9] Such an inflation target may, however, be achieved with several policy rules that involve larger fluctuations in other important variables such as the exchange rate and/or real output. Therefore, one needs to specify a monetary rule and to choose one that minimises the standard deviation of real output and inflation from their desired values. Whether there should be weights placed on exchange rate stabilisation, interest rate stabilisation or something else is open to debate. Trade-off exists among these deviations, and a good policy rule assists the policymaker in choosing the point on this trade-off.[10]

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[4] In countries with very high inflation rates and high and variable risk premia, the real interest rate is hard to measure. In addition, at any moment in time, emerging market economies are unlikely to be in their steady state, being continuously buffeted by exogenous shocks of all sorts; accordingly, the steady state or equilibrium real interest rate is difficult to determine and measure.

[5] Singapore uses the trade-weighted nominal exchange rate index (TWI) as the policy instrument, reflecting the argument "that in the small and open Singapore economy, the exchange rate is the most effective tool in maintaining price stability"; Monetary Authority of Singapore (2001). For an estimate of the policy reaction function for Singapore, see Parrado (2004).

[6] See Bernanke (2004) for a discussion on forecast-based and simple policy rules.

[7] For example, the 1987 stock market tumble prompted the US Federal Reserve to temporarily lower interest rates by providing liquidity, at a time when the pre-1987 monetary policy was one of raising interest rates, to which the Fed returned following the resolution of the liquidity crisis. This framework is consistent with the risk management approach espoused by Greenspan (2005). The challenge is to reconcile a forecast-based targeting regime with the risk management approach. One can argue that Singapore's approach is such an example.

[8] The Taylor response coefficient is 1.5.

[9] For example, a target mean value of 2% with a 1% standard deviation anywhere from six quarters to three years.

[10] This variance tradeoff replaces the old Phillips curve.

4. What are the implications of underdeveloped long-term bond markets for the choice of a policy rule?

Inflation targeting is an alternative to a currency board or to dollarisation. Some discussions on inflation targeting (eg in Indonesia) suggest that inflation targeting is an alternative framework to monetary targeting. In Indonesia, with difficulties associated with the interest rate as an instrument, the previous practice of using reserve money as a policy instrument to achieve the inflation target may be more appropriate.[11]

5. What is the role of the exchange rate in the policy rule?

Inflation forecast targeting requires a good econometric model and an experienced staff (eg Bank of England) to enable the policymakers to determine how their interest rate decisions influence the inflation forecast and thus how close (or far) the inflation forecast will be from the target value in the future (say, in four or eight quarters). Owing to the difficulties in implementing inflation forecast targeting in many emerging markets, simple monetary policy rules using current inflation rates may be the practical alternative to inflation forecast targeting.[12] Simple targeting can also be a stepping stone to inflation forecast targeting.

Expectations of future changes in the policy instrument affect financial markets and the rest of the economy. For those monetary policy approaches that use the interest rate as the policy instrument, expectations of future short rates influence long rates right away via term structure effects. Thus, because monetary policy rules affect expectations, the explicit use of a monetary policy rule is a more critical decision than any change in the chosen policy instruments.[13] The other implication of expectations effects is the inertial response of the policy instrument to the inflation and output gap; such a slow adjustment of the policy instrument increases the responsiveness of forward-looking variables such as long-term bonds and exchange rates.

In countries without liquid and deep financial markets and where term structure effects are absent or weak, changes in the exchange rate or land price may influence the private sector's future expectations.[14] Moreover, in countries (eg in the Philippines) where the interest rate is used as the policy instrument, and in sharp contrast to situations (eg in the United States) where term structure effects are strong, more adjustment in the short-term markets must take place. Thus, larger adjustments in the short-term interest rate are called for.[15]

While research on developed countries appears to suggest that omitting the exchange rate in the policy rule is not critical, it is an important consideration in the policy rule applied to the developing countries or in countries that are highly open (such as Singapore). An explicit manner in which the exchange rate enters the policy rule is its use as the policy instrument in

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[11] See footnote 4 for reasons why reserve money may be superior to the interest rate as a policy instrument in Indonesia.

[12] This assessment, however, is a bit exaggerated. In the real world, monetary policy rules involving the current quarter (year) require at least a one-quarter (one-year) ahead forecast for inflation.

[13] The 1999 Bank of Japan zero interest rate policy "rule" brought expectations of future short rates to zero and was consistent with the BoJ's expansionary thrust of monetary policy.

[14] In Singapore, the development of the government securities market is fairly recent. Singapore being a small and highly open economy in which the exchange rate has quantitatively larger effects than the interest rate, the policy instrument used is the trade-weighted nominal exchange rate.

[15] Meaning that the response coefficients of the interest rate to the inflation and output gaps should be higher. Herein lies the danger when the banking system is fragile - a large increase in the interest rate may lead to financial collapse.

the policy reaction function.[16] Another way is that the instrument explicitly places weight on the exchange rate when trying to achieve the objectives. The inertial response of the exchange rate to the inflation and output gap can be captured by the inclusion of the lagged value of the exchange rate on the right-hand side of the policy reaction function.[17]

III. The main issues

A. The Philippines

The evolution of the monetary policy approach and implementation

From the birth of the Bangko Sentral ng Pilipinas (BSP) in 1993 until the adoption of formal inflation targeting (IT) in 2002, the BSP employed the IMF monetary programming framework. Actually, monetary programming had been used since 1984 when the then Central Bank of the Philippines (CBP) shifted to a floating exchange rate regime. More precisely, the monetary policy framework revolved around base or reserve money programming. This monetary policy approach was consistent with the IMF financial programming module of a tight linkage among money, real GDP and inflation, given forecasts of income velocity or the demand for real money balances.[18] As Guinigundo (2005) suggests, the shift from monetary programming to IT can be explained more in terms of instability in the income velocity of money and the structural break in the positive relationship between money and inflation, particularly in short periods of time, such as in 1994 and 1995 when historically rapid growth rates of money supply and a deceleration of inflation were observed.

In the second half of 1995, rigid observance of money targets gave way to inflation targets. As long as inflation was below or at the target level, the BSP tolerated money supply in excess of the programmed level. At the same time, the BSP looked at a wide array of economic and financial variables in making monetary policy decisions. Nonetheless, the semi-IT framework was based on current inflation, as opposed to forecast inflation.[19]

In addition, the new Central Bank Act of 1993 (Republic Act No 7653) assigned price stability as the objective of monetary policy and empowered the BSP as the sole formulator and executor of monetary policy. The new Act also imposed limits on the amount and maturity of BSP credits to the national government, with the intended effect of minimising fiscal dominance.

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[16] The exchange rate affects both inflation and output gap via effects on net exports, on domestic prices through import price pass-through, and on interest rates (through interest rate parity).

[17] See Parrado (2004) for the estimation of such a policy reaction function for Singapore.

[18] The IMF financial programming and policy (FPP) is under revision, beginning with the 1998 programme with Brazil following that country's adoption of IT and a flexible exchange rate regime. Note that the standard IMF FPP assumes a fixed exchange rate, exogenous capital flows, and a prominent role of the money supply in the inflation process. The standard ceiling on net domestic assets (NDA) of the banking system and a floor on net international reserves (NIR) are typical quantitative performance criteria in any IMF-supported adjustment program. In the case of the 1998 Brazilian arrangement, in the sixth review of November 2000, the ceiling on NDA was dropped. With direct IT, a value of NDA in excess of the ceiling did not present any difficulties as long as the inflation outcome was on target and the understanding on the NIR was met. Included in the policy understandings was a consultation clause on the implementation of the IT framework, with a specific numerical path for the inflation rate.

[19] See, however, footnote 10.

The Monetary Board, the monetary policymaking body of the BSP, formally adopted IT in January 2000, and its implementation came two years later in January 2002. The average inflation targets (in per cent), respectively, for 2002-07 are:

Year	Targets	Actual
2002	3-4	3.0
2003	3-4	3.5
2004	4-5	6.0
2005	5-6	
2006	4-5	
2007	3-4[20]	

The actual inflation rates for the first two years of IT (2002 and 2003) were lower than the targets, reflecting falling food prices and restrained monetary policy. However, for exactly the opposite reasons, rising food and energy prices contributed 4 percentage points of the 6% average inflation rate in 2004. When inflation forecasts by the BSP suggested higher than targeted inflation in 2004 and 2005 owing mainly to supply side factors, the BSP informed the public via press releases, the Quarterly Inflation Report, press conferences and public briefings of the reasons for those breaches of the targets as well as the policy measures undertaken by the BSP in the light of its forecast of subdued inflation by 2006, downside risks to economic activity, and long and variable lags (15-21 months) in the effects of monetary policy on inflation.[21]

The issues

1. What are the objectives/intermediate targets/instruments?

The BSP's main responsibility is to formulate and implement policy in money, banking and credit, with the primary objective of maintaining stable prices conducive to balanced and sustainable economic growth. The BSP also aims at promoting and preserving monetary stability and the convertibility of the Philippine peso.

The BSP uses the consumer price index (CPI) or headline inflation, published by the National Statistics Office, as its monetary policy target, expressed as a range for a given year and set by the national government in coordination with the BSP.

The BSP uses the overnight repurchase rate (RP) and reverse repurchase rate (RRP) as the main instrument of monetary policy. This is complemented by open market operations, the minimum legal reserve requirements, and rediscounting.

Some outside analysts have observed that the BSP's actions on tiering make the policy rate less transparent, since the effective RRP rate will differ from the "headline" policy rate when

[20] Indicative target taken from the Medium-Term Development Plan. The BSP Governor has not formally announced a target for 2007.

[21] Although the policy rates were kept unchanged, the liquidity reserve requirements were raised by 2 percentage points in February 2004 to neutralise the inflationary impact of exchange rate depreciation.

the tiering scheme is in place.[22] However, the market players themselves generally understand why the BSP occasionally resorts to the tiering scheme. With tiering, the BSP discourages banks from parking their excess funds with the BSP and encourages them to lend such funds to clients instead. The BSP's interpretation of IT appears to be of the flexible variety.

Generally speaking, the 91-day treasury bill rate tends to respond directly to changes in the RRP/RP rates, with other market interest rates subsequently following suit. Of late, however, there appears to be some divergence between these rates, since the T-bill rate has continued to trend down (or remain low) despite the recent increases in the policy interest rates. It appears that the banks still prefer holding T-bills to placing their funds in the RRP window, because the T-bills are easily tradable. Consequently, the T-bill auctions continue to attract excess bids, and primary T-bill rates continue to be low.

2. How are the objectives determined? Are institutional arrangements appropriate to ensure that the stated objectives are achieved? Is the central bank independent? De facto as well as de jure?

The inflation target is set by the national government (NG), and the target-setting process is based largely on the existing framework for coordination among economic agencies under the Development Budget Coordinating Committee (DBCC), an inter-agency body tasked mainly with overseeing the overall budgetary thrusts of the NG. The DBCC, in coordination with the BSP, sets the annual targets for macroeconomic variables, particularly GNP and GDP growth and inflation, which are important inputs in the formulation of the revenue, expenditure and financing programmes of the NG. The BSP announces the inflation target and is accountable for conducting monetary policy consistent with the target.

Although the BSP does not have goal independence (the inflation target is set by the NG), it does have operational and instrument independence. The BSP solely decides on the setting of the policy instrument. The BSP also enjoys both fiscal and administrative autonomy under Republic Act No 7653, which very clearly specifies limits on the amount and tenor of any liquidity assistance by the BSP to the NG. The BSP may provide assistance to the NG in the form of provisional advances, but the amount of such advances is limited in terms of both duration and amount. Section 89 of RA No 7653 states that "the BSP may make direct provisional advances with or without interest to the National Government to finance expenditures authorized in the annual appropriation: provided that such provisional advances shall not, in their aggregate, exceed 20 percent of the average annual income of the National Government for the last three (3) preceding fiscal years". These advances must be repaid "before the end of three (3) months, extendable by another three (3) months as may be allowed by the Monetary Board following the date the National Government received such provisional advances".

RA No 7653 focuses on price stability as the overriding objective of the BSP and makes no mention of growth or any other objective pertaining to the real sector. In addition, the BSP's administrative autonomy is guaranteed by the Philippine Constitution. In contrast to the old Monetary Board that was dominated by public sector representatives, the new and current Monetary Board is composed of the Governor, one Cabinet member and five private sector representatives.

An Advisory Committee (AC) was created by the BSP to make recommendations to the Monetary Board on monetary policy. The AC consists of: (1) the BSP Governor (Chairman);

[22] Tiering limits interest paid on banks' placements with the BSP. The intention is to drive the banks away from the BSP and for them to lend out their funds to the general public. Currently, banks' first PHP 5 billion receives 7.5%, the next PHP 5 billion 5.5%, and the rest 3.5%.

(2) the Deputy Governor of the Monetary Stability Sector; (3) the Deputy Governor of the Supervision and Examination Sector; (4) the Director of the Treasury Department; and (5) the Director of the Department of Economic Research. The AC meets every four weeks and held its first meeting on 15 January 2002, when it recommended reductions in BSP policy interest rates and in the liquidity reserve requirement ratio.

3. Do the deeds of the central bank correspond to its words? For instance, do estimates of reaction functions or other measures of the actual actions of the central bank correspond to what it claims to be doing?

There are no estimates of the reaction functions. It appears that the policy rule is based on forecast inflation and the output gap. The decisions of the Monetary Board concerning the stance of monetary policy have been primarily based on the forecast for inflation, along with information on the conditions for output and aggregate demand.[23] However, there have been instances where excessive volatility in the foreign exchange market has compelled the BSP to take action in order to prevent adverse effects on inflation expectations. This has led some observers to ask whether the central bank is pursuing dual goals of price and exchange rate stability.[24]

For the BSP, however, its mandate is clearly price stability, and under the inflation targeting framework it pursues only an inflation target. Inasmuch as exchange rate movements generate imported inflation, the BSP believes that policy actions to address exchange rate volatility are not inconsistent with the goal of achieving the inflation target. Exchange rates figure more prominently in emerging economies given the greater sensitivity of their domestic prices to exchange rate movements.

Monetary action (eg changes in BSP policy interest rates or reserve requirements) to address volatility in the foreign exchange market is considered only in cases where the BSP believes that there is a significant prospective threat to the inflation target and to inflation expectations. In all cases, the primary concern of authorities is the future path of inflation, not the value of the currency against the US dollar.

4. What provides the nominal anchor in the country? How are the issues of fiscal dominance and exchange rate dominance dealt with?

Republic Act No 7653 provides safeguards against fiscal dominance in the form of prescribed limits on the extent of financial assistance that can be provided by the NG.[25]

Exchange rate stabilisation posed some problems for the conduct of monetary policy under inflation targeting, given the extent of exchange rate volatility observed over the past few years and the need to guide inflation expectations in the face of such volatility. In the end, monetary authorities relied on both their judgment and on the information at hand.

Generally speaking, however, the BSP supports a market-determined level for the exchange rate and does not target a specific spot exchange rate against the US dollar. On a day-to-day basis, intervention in the spot market is done only to smooth out sharp fluctuations in the exchange rate and ensure orderly conditions in the foreign exchange market at all times.

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[23] The BSP currently employs two inflation forecasting models, one a single equation and the other a multiple equation. These models produce monthly forecasts of inflation up to 24 months. The single-equation model is based on Mariano (1998). To complement these two models, the BSP is developing an annual structural macroeconomic model incorporating the BSP's view of monetary policy transmission.

[24] See Gochoco-Bautista (2001).

[25] See the preceding paragraph.

5. How effectively does the central bank communicate with the public? By what means? Do readily available reports and a website provide adequate information?[26]

The BSP also publicly documents and explains any breaches of the inflation target. In instances where average annual inflation deviates from the targeted band, the BSP Governor issues an Open Letter addressed to the President of the Philippines. The Open Letter explains the sources of deviation of actual inflation from the target inflation path and measures that will be undertaken to help achieve the desired inflation path over the policy horizon. Open Letters to the President were issued on 16 January 2004 and 18 January 2005.

The BSP has a number of disclosure and reporting mechanisms to help the public better monitor its commitment to achieving the inflation target:

- The Quarterly Inflation Report (which serves as a monetary policy statement).
- Press releases at the time of interest rate voting (done every four weeks).
- The Highlights of the Meeting of the Monetary Board on Monetary Policy (lag of six weeks).
- Speeches by the Governor and other senior BSP officials - public presentations and information campaign. The BSP conducts regular public information presentations on inflation targeting in various Philippine cities every month. The BSP also holds regular press conferences to explain its inflation outlook and its monetary policy response. The Quarterly Inflation Report is launched with a press conference, usually on the last Friday of the month following the reference quarter.

On its website, http://www.bsp.gov.ph/news/2005-10/news-10202005a.htm, the BSP made the following announcement:

> "20 October 2005
>
> **BSP Raises Key Policy Rates**
>
> At its meeting today, the Monetary Board decided to increase the BSP's policy interest rates by 25 basis points to 7.5 percent for the overnight borrowing or reverse repurchase (RRP) rate and 9.75 percent for the overnight lending or repurchase (RP) rate.
>
> The Monetary Board noted that the latest BSP forecasts, which incorporate more recent data on inflation, output and other key variables, indicate a possible breach of the inflation target in 2007, due to possible second-round effects coming from supply-side pressures. Equally important, the possibility of a sustained deviation of the forecast from the target over the policy horizon poses a considerable risk to inflation expectations, in that the public may begin to expect inflation to remain persistently well above announced government targets. Because monetary action normally requires 15-21 months to take full effect on inflation, policy measures undertaken now will help address the risks to inflation and inflation expectations in the coming year and in 2007.

[26] Eichengreen (2005, Ch 8) describes the features of transparency: (i) announce the inflation target; (ii) publish inflation forecast and (iii) describe model linking central bank policy instruments to inflation outcomes. If target is missed, central bank explains why in its Inflation Report. Central bank and government have discretion over inflation targets, but such discretion is constrained by the targets, forecasts, and model that central bank announces and publishes.

> An added concern is the continued rapid growth in domestic liquidity. Available data suggest that the financial system remains very liquid despite the recent increase in the policy rate and the reserve requirements, and that the additional liquidity in recent months has been fueled by both foreign exchange inflows and by the deposit generation activities of banks.
>
> In summary, the Monetary Board believes that the need for a timely response to expected pressures, the risk of a sustained breach of the inflation target and the continued presence of excess liquidity in the financial system, provide the impetus for monetary action. Recent policy moves have contributed to making the overall policy stance less accommodative. However, the evidence suggests that this action was necessary. This monetary action will not only address the risks to inflation and inflation expectations but also clearly demonstrate the BSP's commitment to its price stability mandate."

Clearly, the BSP's exercise of transparency is commendable. In addition to policy change announcements, the BSP website that we accessed on 24 October 2005 includes descriptions and analyses of IT, highlights of Monetary Board meetings on monetary policy issues (25/08/2005), An Official Core Inflation Measure for the Philippines, a Primer on Core Inflation, and the BSP Inflation Report (2nd quarter, 2005).

Impact of higher energy prices

Very early on when oil prices started going up, the BSP was careful to make clear to the public that the inflationary impact of higher oil prices is not something that can be directly addressed by monetary policy, since it is a cost-push effect. Over the past year, however, it has become obvious that the regime of high oil prices is bound to continue for some time, for supply and demand reasons. Thus, the policy concern has shifted to the impact of oil prices on inflationary expectations and on wage setting (ie the second-round effects of the oil shock). The policy rate increases so far this year were carried out partly to help guide down inflationary expectations.

Fiscal dominance and other issues

There remains the issue of fiscal dominance. The problem lies in the excessively large stocks of public debt and fiscal deficits, the non-performing loans of the banking system, and the potential or near insolvency of important state enterprises. The latter involves contingent fiscal liabilities that may be difficult to quantify but nevertheless may be fairly substantial. In the event, the effectiveness of monetary policy is reduced.[27] In this context, Walsh's (2003) summary presentation of the fiscal theory of the price level is worth mentioning. This controversial theory states that the government's outstanding nominal debt is a major determinant of the price level, however independent and committed a central bank may be to price stability as the primary goal. The fiscal theory of the price level basically argues that the price level is endogenously determined by the fiscal solvency constraint: a widening of the fiscal deficit lowers the present value of future government surpluses. Just as a company's stock price falls when future profits are expected to decrease, the real value of government debt would decrease when the revenue flows to repay government bond holders are expected to decline. For the government's real debt to decrease, the price level has to go up.

[27] The three prerequisites for a successful inflation targeting are: (i) central bank independence; (ii) the absence of fiscal dominance; and (iii) the presence of clear transmission channels from monetary policy instruments to market-determined interest rates. (i) and (iii) are satisfied. (ii) is problematic particularly because of the large contingent fiscal liabilities implied by non-performing loans in the banking system, and the ongoing large fiscal deficits that the central bank might be pressured to finance (despite the legal prohibition or limits).

According to the fiscal theory of the price level, it is not the non-interest bearing money but the total nominal liabilities including interest bearing notes and future fiscal surpluses that matter for price-level determination. In the absence of fiscal discipline, an independent central bank such as the BSP cannot guarantee a stable nominal anchor. In other words, for the BSP to successfully focus on price stability, there must be a credible commitment on the part of the NG to reduce total fiscal deficits by a meaningful amount.[28]

The whole idea behind inflation targeting is that by committing credibly to a low and stable inflation target, a central bank could lower inflationary expectations for the future. Fiscal dominance makes this impossible, by not allowing the central bank much control over those expectations. In simple terms, why would firms lower their inflationary expectations when they know that large fiscal deficits and borderline unsustainable external debt positions essentially corner the monetary authority into an untenable position? Knowledge of such a cornered monetary policy will result in one-sided bets. Remove the twin dangers of monetisation of the debt and the risk of creating inflation through devaluation, and inflation targeting has a shot. Fiscal authorities can do a lot by signalling deficit reductions in the future, especially if backed up by certain institutional moves that can engender credibility.

The other relevant issue is the health of the domestic banking system. Here, there remains a relatively high level of non-performing loans, and the practice of risk management in commercial banking and in bank oversight is not yet widespread. Even in a textbook model with a redundant banking sector, price stability should not be the only target for central banks. The literature is clear on this, but it is unclear on what other variables to have in the loss function. But clearly, jacking up interest rates without regard for the damage it may cause to financial intermediaries or the big firms that may control the economy may lead to perverse effects as described by Blanchard (2004). Also, hiking up interest rates when the fiscal side is out of control may generate stagflation.

The combination of weak financial systems, "threatening fiscal issues" and problems along institutional lines means that higher interest rate moves may actually increase inflation (a perverse effect), as higher interest rates might actually precipitate a currency crisis by way of causing financial collapse. Here, our feeling is that US Federal Reserve Chairman Alan Greenspan, a long-time champion of the risk management approach, or his successor Ben Bernanke, a long-time champion of formal inflation targeting, would pound the bully pulpit to demand fiscal and structural reforms. Without such reforms, monetary policy can only do so much - much like a good jockey on a bad horse.

While the BSP may be perceived as successful in its IT now, it should be sending a clear signal that (a) the fiscal imbalances must be taken care of, (b) structural reforms should continue, and (c) financial sector reforms should be pushed ahead aggressively. Without these elements, and with the return of global inflation, the BSP may find that its apparent successes were a mirage.[29] For inflation targeting emerging market economies, given (i) the deflationary force of China's recent developments, (ii) globalisation and (iii) the increased sophistication of modern monetary policy in controlling inflation, the efficacy of IT used in small open economies is an open question, ie how to decompose the fall in inflation into what is due to global prices versus domestic monetary policy.

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[28] For the ECB to focus on price stability, the European Union's Stability and Growth Pact restricts member countries' fiscal deficits. Of course, breaches of the fiscal understandings by France and Germany underscore the difficulties enforcing fiscal commitments.

[29] Domestic interest rates are much higher than foreign (US) interest rates, reflecting expected exchange rate depreciation and risk premia. We conjecture that the expected exchange rate depreciation is closely related to the unsustainable fiscal and external debt positions.

Inflationary expectations

What matters for inflation expectations is forecasts of productivity, the exchange rate, competitiveness and future government spending. If the Philippines were growing at a fast clip with inflation under control, high productivity, a strong peso, and structural and institutional reforms all moving along nicely, then the degree to which fiscal deficits and large debts would limit the effectiveness of inflation targeting or any other rule-based approach could be reasonably small. If those spigots dry up, we could expect to see something like a repeat of 1997-98 (when all the skeletons got exposed).

The United States can run fiscal deficits of 4-5% of GDP right now. Why? This is perceived as temporary. Productivity is very high. The US dollar is used as a reserve and invoicing currency, and is gaining value against the euro and the yen. The United States has both credible monetary policy and a super-sound financial system. Even so, many top monetary economists think that the United States is approaching dangerous levels with its current account and fiscal deficits. If this much can be said of the United States, what can be said about the Philippines? We argue that the large fiscal deficits and unsustainable external debt levels mean far riskier scenarios for the Philippines.

The BSP's concern with the exchange rate pass-through effects on inflation makes the Philippines closer to Singapore. But the procedure and the mechanics are quite different. Whereas the Philippines uses the policy interest rates as instruments, Singapore uses a trade-weighted basket of currencies and adjusts the nominal exchange rates based on what the Monetary Authority of Singapore thinks it should achieve in terms of external competitivess and inflation.[30]

B. Indonesia

The evolution of the monetary policy approach and implementation[31]

In the past, the framework for conducting monetary policy was based on monetary programming using base money as the operational target. This was in conjunction with past IMF-supported adjustment programmes wherein base money targets were used as indicative targets or as performance criteria, together with the other monetary targets set for the net international reserves (NIR) and the net domestic assets (NDA).

In the mid-to late 1990s, and for similar reasons as in the Philippines, ie instability in velocity resulting from global financial innovations and deregulation, the tight link between reserve money, on the one hand, and inflation and growth, on the other, became very tenuous. Thus, a gradual shift to IT was launched pari passu with greater flexibility in the exchange rate (widening the band), with more attention since July 2005 to interest rates as policy instruments replacing changes in reserve money.

During the crisis of 1997, the crawling band exchange rate regime was abandoned, and the rupiah was floated. The massive depreciation of the rupiah had dramatic adverse effects on the real economy, shrinking real GDP by 13.2% in 1998, collapsing the banking system, and leading to corporate bankruptcies and high rates of unemployment. Following this massive rupiah depreciation, Bank Indonesia (BI) raised short-term interest rates sharply. This combination proved fatal to the banking and real sectors, resulting in more corporate bankruptcies and increased non-performing loans in the banking system.

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[30] In fact, it would be interesting to estimate a policy reaction function for the Philippines using the nominal exchange rate instead of the RP or RRP as the policy instrument.

[31] This section draws heavily on Alamsyah et al (2001).

Reacting to these developments, BI exercised its lender of last resort function and injected massive liquidity into the banking system to prevent bank runs. Reserve money and broad money, respectively, increased by 115% and 68% from November 1997 to July 1998. The excessive money creation exerted further pressure on the exchange rate, and thus on prices. The inflationary impact of money supply expansion and of the rupiah depreciation created a vicious cycle that, if left unchecked, threatened to lead to hyperinflation (which Indonesia had experienced in the distant past). Therefore, BI decided to reabsorb the excess liquidity in the financial system through the active deployment of all the policy instruments at its disposal. NDA of the BI were frozen, and a floor on NIR was established as performance criteria under an IMF-supported stabilisation programme. In addition, large penalties were imposed on the use of the BI discount facility. To minimise adverse selection and moral hazard problems, BI imposed ceilings on bank deposit and interbank rates (with the effect of placing ceilings on bank lending rates).[32] The 1999 Central Bank Law provided the legal groundwork for BI to adopt IT as an alternative monetary policy framework. When the rupiah was floated, Taylor's trinity kicked in, and inflation targeting with a monetary rule was adopted.

The issues

1. What are the objectives/intermediate targets/instruments?

A major change in the conduct of monetary policy in the aftermath of the crisis was the new Bank Indonesia Act (No 23/1999 as amended by Act No 3/2004) that gave full autonomy to BI in the formulation and implementation of monetary and banking policies. As stipulated in the new Act, the main objectives of BI are to achieve and maintain the stability of the rupiah - meaning low and stable inflation, and stable exchange rates. Since the beginning of 2000, BI has adopted inflation targeting as the monetary policy framework. The monetary policy framework is not a formal inflation targeting (IT) framework, but rather one with an explicit inflation target. To achieve this target, BI is still using base money as the operational target (policy instrument), at the same time monitoring various aggregates as well as interest rates.

The BI inflation target is based on a "core" CPI. For 2000 and 2001, the target was set for the CPI excluding the impacts of government-administered prices and incomes policy. The inflation targets were 3-5% for 2000 and 4-6% for 2001. BI produced forecasts of the impacts of administered prices and incomes policy on inflation in the order of 2% and 2-2.5%, respectively for 2000 and 2001. Adding these two, the BI forecasts for the headline CPI inflation were 5-7% and 6-8%, respectively, for 2000 and 2001. For 2002, in the light of difficulties in communicating "core" inflation to the public, the (headline) inflation target was set in the range of 9-10%. In addition to this annual target, since 2002 BI has announced its commitment to bring inflation down to 6-7% within five years as a medium-term target.

With an amendment to the BI Act in early 2004 and upon BI's recommendation, the government has set annual and medium-term targets for CPI inflation for 2005, 2006 and 2007 of 6% (±1%), 5.5% (±1%) and 5% (±1%), respectively. These targets were formulated in the context of a gradual disinflation process with the objective of achieving over the long term a target of 3% that is deemed competitive with rates prevailing in other emerging market economies.

Up to July 2005, the policy instrument used by BI was base money. Owing to the difficulties of controlling base money, from July 2005 BI began to use the BI rate as the policy

[32] In the presence of asymmetric information, a rise in the lending rate leads to a contraction in the volume of bank loans. The low credit risk customers withdraw from the credit market, leaving the high credit risk clients on the demand side. On the supply side, owing to the higher probability of default when interest rates rise, banks would refuse to extend loans to these high credit risk customers, resulting in a dramatic shrinkage of bank credit with the consequent adverse effects on investment and growth.

instrument. This is a policy rate determined in the board meeting based mainly on the forecasted inflation path. This action completes the transition towards the inflation targeting framework. At the moment, the BI rate serves only as a signal of BI monetary policy stance. Weekly, BI still auctions SBIs based on an interest target of close to the BI rate. The auction results can be different from the BI rate since some of the banks may want to accept rates of the auctioned SBIs below the BI rate in order to make sure they can obtain the allocated SBIs. However, in recent months the weighted average of SBI rates under the weekly auctions has effectively converged to the BI rate.

2. Are institutional arrangements appropriate to ensure that the stated objectives are achieved? Is the central bank independent? De facto as well as de jure?

Act No 23/1999 gave the BI independence in both setting the inflation target (goal independence) and in conducting its monetary policy (instrument independence). But since 2004, the new Central Bank Act No 3/2004 empowered the government to set the inflation target upon taking into account BI's recommendation.

A clear mechanism for accountability and transparency of monetary policy is outlined in the new Act. BI is required to announce its inflation target and monetary policy plan at the beginning of the year and to provide a quarterly report to parliament on its conduct of monetary policy.

Nevertheless, the road towards a credible monetary policy has not always been easy for BI. Conditions in Indonesia make monetary policy a complex task. The economy and the financial system are undergoing difficult restructuring processes. Inflation has been affected mostly by higher administered prices, exchange rate depreciation and heightened inflationary expectations. The exchange rate has been driven by the level of market confidence towards sociopolitical developments and the slow progress of the economic and financial restructuring programmes. Monetary policy has been made more difficult by the lack of a smooth-functioning transmission mechanism arising from problems faced by financial intermediaries. With these problems and challenges, Indonesia's experience in recent years offers valuable lessons on how to enhance the credibility of monetary policy as well as on what the proper role of the central bank should be in nurturing the economic recovery.

3. Do the deeds of central banks correspond to their words? For instance, do estimates of reaction functions or other measures of the actual actions of the central bank correspond to what it claims to be doing?

There are no estimates of the policy reaction function. The experience of BI using inflation targeting with base money as operational target is less than favourable, owing to difficulties in controlling base money. There are two preconditions for a successful use of base money as policy instrument. First, BI has the capacity to control base money with its own instruments. Second, public demand for base money is highly predictable, and the relation between base money and inflation is stable; thus targeting base money means that BI is able to target inflation.

The unfavourable performance of base money control was largely attributable to the difficulty in predicting public behaviour towards currency holding. After the crisis, there was a structural shift in the public demand for currency, making it difficult to view it solely in terms of the transactions and precautionary motives. Base money control became more difficult under the fragile banking structure. Under such circumstances, raising the monetary instrument interest rate (SBI) to absorb currency into the banking system was often hampered by the low response of the deposit interest rate, so that the required interest rate increase must be quantitatively larger.

This reality often posed a dilemma to BI in the implementation of monetary policy. On the one hand, BI had to raise the interest rate to reduce the demand for base money. On the other hand, the high interest rate environment exacerbated the fragility of the banking system

and the corporate sector, with consequent adverse effects on the real economy. Facing such a dilemma, it was difficult for BI to achieve the predetermined base money target (Table 1).

Base money control was also difficult when base money was far below the predetermined target, as the experience in 2002 showed. The attempt to stimulate base money growth was not effective when the banking sector was in a weak condition and the risks in the real sector were high. For as long as banks were not sound, additional economic liquidity through banks would just return to the central bank. Therefore, base money performance was largely affected more by demand conditions than by monetary policy.

The inflation record has been far from perfect. Inflation was above the target in 2000-02 even though it could be maintained within the target in 2003 and 2004. For 2005 and 2006, inflation is forecast to be above the target. The recent inflationary pressures stem mainly from the increase in administered prices, depreciation of the exchange rate, and rising inflation expectations. BI has responded with further tightening of monetary policy since the third quarter of last year, accompanied by direct measures to stabilise the exchange rate and strengthen policy coordination with the government to mitigate the impacts of administered prices and prices of volatile foods.

Table 1

Monetary policy framework performance

Year	CPI target[1]	Economic growth assumption[1]	Base money growth target[1]	Rupiah exchange rate per USD (average)	Actual base money growth[1]	Actual CPI inflation[1]
2000	5.0-7.0	3.0-4.0	8.30	8,238	23.40	9.53
2001	6.0-8.5	5	11.0-12.0	10,255	18.30	12.53
2002	9.0-10.0	3.5-4.0	14.0-15.0	9,353	9.30	10.03
2003	8.0-10.0	3.5-4.0	13	8,593	10.30	5.06
2004	4.5-6.5	4.0-5.0	13.0-14.5	8,940	15.14	6.40

[1] In per cent.

Faced with difficulties in controlling base money, but with continued improvements in financial and economic conditions that are reinforced by significant progress in strengthening the monetary policy framework, BI is determined to take further steps to improve its monetary policymaking consistent with the implementation of the IT framework. The move is intended to strengthen the effectiveness and governance of monetary policy to achieve price stability under conditions of sustainable economic growth.

Key measures of the enhanced monetary policy framework focus on four main areas: (i) the move from base money to the BI rate as operational target for monetary operations (policy instrument); (ii) enhanced decision-making process consistent with forward-looking strategy of directing current monetary policy response to achieve the inflation target; (iii) more transparent communication strategy to signal the stance of monetary policy and to guide private sector expectations; and (iv) strengthened policy coordination with government to mitigate inflationary pressures stemming from increase in administered prices and volatile food prices, as well as for better and concerted management of the overall economy.

4. What provides the nominal anchor in the country? How are the issues of fiscal dominance and exchange rate dominance dealt with?

The nominal anchor for monetary policy is the medium-term inflation target (based on the CPI) set by the government in September 2004. Based on the Ministry of Finance decree, the inflation targets for 2005, 2006 and 2007 are set in the ranges of 6.0% ± 1%, 5.5% ± 1% and 5.0% ± 1%, respectively.

Article 56 of the BI Act prohibits BI from extending credit to the government. In the meantime, similar to the Philippines, indirect fiscal dominance does exist, owing to fiscal deficits and the large stocks of government external and domestic debt. Furthermore, the large stock of government domestic debt, with a coupon rate equal to the three-month SBI discount rate (variable rate bond), has the effect of reducing BI independence in determining the SBI discount rate, particularly when the monetary policy stance requires an increase in the interest rate. Rupiah exchange rate depreciation, given the large stock of government foreign debt, should also be minimised to avoid an onerous local currency debt servicing burden on the government. As in our commentary on the fiscal dominance issue in the Philippines, the current and future fiscal deficits which appear to remain heavy as measured by the large budget allocations for external and domestic debt services, will indirectly limit BI independence in monetary policy implementation.

For an open economy such as Indonesia, the exchange rate affects inflation in a substantial way. For example, exchange rate depreciation raises inflation, reflecting the pass-through effect of higher import prices as well as expanded aggregate demand via higher net exports. Besides, the public monitors exchange rate movements every day, so that the behaviour of the exchange rate could simply be regarded as a key indicator of central bank performance.

Furthermore, owing to the large outstanding stocks of external obligations of the Indonesian banking and corporate sectors, exchange rate movements have magnified effects - not only on inflation and export competitiveness, but also on the servicing of external debt and thus on the future fiscal position, which could easily lead to another currency crisis, like in Mexico in 1994-95 and in Asia in 1997-98.

According to BI, the IT framework still focuses on inflation, and meeting the inflation target is a priority. Exchange rate movements and their determinants are closely monitored. If an exchange rate depreciation is the result of changing portfolios, tighter monetary policy is implemented to prevent higher inflation. But if the depreciation is the result of a terms-of-trade shock, an easier monetary policy is implemented.[33]

Thus, Indonesians argue that it is difficult to include the exchange rate in the policy rule without reviewing the factors behind the changes in the exchange rate. In this respect, BI excludes the exchange rate from its monetary policy response, but regards the exchange rate as one variable in the information set to monitor and evaluate before decisions are made on the required interest rate response.

5. How effectively does the central bank communicate with the public? By what means? Do readily available reports and a website provide adequate information?

Communication and transparency are important in Indonesia, where inflation expectations constitute a dominant determinant of inflation, along with the effects of administered prices, prices of volatile foods, and direct exchange rate pass-through. Moreover, inflation expectations in Indonesia have been mostly adaptive in nature, reflecting substantial inertia. The BI Act prescribes the mechanisms for BI to regularly convey its inflation targets and

[33] Communication with the BI Monetary, Fiscal and Financial Sector Team.

policy evaluation to the public. The single target of inflation is published at the beginning of each year, and policy evaluation is regularly published.

The current communication strategy and transparency are implemented in press releases, speeches and BI official discussions with the public and economic observers, and quarterly reports to the House of Representatives (DPR). There are also several publications available such as monthly reports, quarterly reports, annual reports, financial stability reports and research bulletins.

In addition, to enhance its communication strategy, BI introduced its Monetary Policy Report in August 2005. This report contains an overall assessment of the quarterly Monetary Board meeting on recent economic and financial developments, inflation forecasts, and monetary policy responses required to bring inflation within target. Furthermore, BI intends to publish the decisions of Monetary Board meetings, its economic forecasting models, and a primer on monetary policy.

The BI website http://www.bi.go.id is also available to the public. Although the website remains in a developmental stage, the public can access all information relating to monetary policy, banking supervision and regulation, and the payment system. There are future plans to improve the website so that it conforms to those of other central banks implementing the IT framework. In enhancing its communication strategy, coverage and media, BI hopes to guide public expectations towards the inflation target as well as improve BI credibility.

The impact on the Philippine and Indonesian economies of the recent change in the exchange rate regime in China is considered to be minimal, owing to the small weight of the yuan in relation to the currency basket used in calculating the real effective exchange rate (REER). The present course of both countries' monetary policy frameworks and their implementation will continue. However, with several estimates of undervaluation of the yuan ranging from 18% to 35% (Obstfeld and Rogoff (2004)), and should China revalue accordingly, it is an open question as to the impact on other countries in the region (likely appreciations, albeit considerably less than the Chinese appreciation).

Impact of higher energy prices

BI reacted only partially to the increase in inflation caused by the recent hike in fuel prices. The main challenge was how to contain this supply-driven inflation shock so that it would not result in higher inflation expectations. This proved difficult because Indonesians tended to raise their inflation expectations as actual inflation increased, regardless of the sources of inflation. The response of BI was to cautiously increase the interest rate such that it maintained a sound balance in the foreign exchange market. BI saw to it that the increase in the rates did not induce too much capital inflows (thus allowing some depreciation of the exchange rate), while at the same time maintaining the momentum of economic growth. BI also adopted a series of policy measures to curb speculative short-term capital inflows while tightening commercial banks' net open positions.

The above policy response was supported by a combination of policy measures related to banking regulation/prudential regulations. With the existing large liquidity overhang in the system, BI knew that by raising its policy rate alone it may not persuade banks to adjust their loan rates. Thus BI tried to soak up the liquidity from the banking system by adopting higher reserve requirements.[34]

[34] As a matter of policy, BI encourages banks to use their excess reserves to extend more loans since they only tend to buy SBIs rather than issue new loans. If a bank achieved a loan/deposit ratio (LDR) higher than 70%, then the required increase in the reserve requirement was waived. However, as the current LDR level in most banks remains low, effectively banks have to deposit higher required reserves.

These measures seem to be working. Although inflation is still very high at 16-17% per year, BI projects that it should fall to to single digit levels by the end of 2005 (partly because the one-time upward effect on the CPI would die out in October). The market believes this as BI continues to adopt a tight policy stance. Currently, with the BI rate at 12.75%, BI has observed an influx of short-term capital, which has tended to appreciate the exchange rate. This in turn should help reduce inflationary expectations in the economy.

Fiscal dominance and other issues

Much like in the Philippines, the large stocks of total (domestic and external) government debt in Indonesia make fiscal dominance an issue, despite outright prohibition of BI credits to the government (a stricter legal condition than in the Philippines).

Besides, there are unfavourable institutional and other issues. First, as Alamsyah et al (2001, p 327) admit, "BI feels unable totally to ignore pressures from outside - for example, urging it to avoid raising interest rates too far". The BI budget is discussed and approved by parliament. The Governor and Deputy Governor have to be confirmed by parliament. These institutional procedures may at times hamper the ability of BI to pursue an independent monetary policy and select its own reaction coefficients in its policy rule (eg the relative weights of the inflation vs output gaps). Second, working models for forecasting inflation remain in their infancy and "conclusive studies of the costs and benefits of choosing certain channels (the short-term interest rate) in preference to others still need to be undertaken in order to decide on the optimal operational (policy) instrument" (Alamsyah (2001), p 328, parentheses ours). Third, there is confusion over monetary instruments. BI handles both its own instrument (SBI) and that of the government (bonds). Fourth, there may still be a need for instilling consistent monetary discipline, disclosure and transparency. And finally, fully-fledged IT may have to wait until bank restructuring is fully completed and the banking system's intermediary function fully restored.

IV. Conclusion

This paper has reviewed the monetary policy approaches and implementation in the Philippines and Indonesia. We addressed several issues relating to the objectives/ intermediate targets/instruments, how these are determined, central bank independence, the nominal anchor, fiscal dominance and other issues, and communication strategy and transparency.

Fiscal dominance remains an unresolved issue in both the Philippines and Indonesia. In the absence of fiscal discipline, an independent central bank such as the BSP cannot guarantee a stable nominal anchor. For the BSP to successfully focus on price stability (and exchange rate stability), there must be a credible commitment by the national government to reduce fiscal deficits and ultimately to achieve fiscal surpluses. The Indonesian case is even more unfavourable. Besides outside pressure on BI, the large stocks of domestic and external debt of the government exert relentless pressure on the exchange rate and, since the exchange rate figures prominently in price level determination, BI cannot guarantee a stable nominal anchor either.

The other issue relates to the health of the banking system. Here, the Philippines fares better than Indonesia. Nevertheless, interest rate actions could have perverse effects on inflation and output when non-performing loans are high and the practice of risk management has yet to take root in commercial banking and in bank oversight.

Since expectations are crucial in the monetary policy transmission mechanism, the elimination of fiscal deficits and a substantial reduction in the stocks of government debt are critical to influencing the private sector's expectations.

We conclude that the top policy priority for both the Philippines and Indonesia is to implement without delay fiscal and financial sector reforms.[35] Without such reforms, monetary policy can only do so much, and these two countries may find that their apparent successes in inflation targeting were a mirage.

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[35] See Kriz (2004) and Chow et al (2005) on their recommendation for "cascading liberalisation" - joint financial and capital account reforms together with exchange rate flexibility.

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Comment on: "Monetary policy approaches and implementation in Asia: the Philippines and Indonesia" by Roberto S Mariano and Delano P Villanueva

Akhis R Hutabarat[1]

I am grateful to have the paper by Roberto S Mariano and Delano Villanueva reviewing the monetary policy approaches and implementation in the Philippines and Indonesia. It shares enlightened feedback and challenges that could encourage the refinement of our inflation targeting practice. My comment will be solely on the case of Indonesia.

Why targeting base money was abandoned

First of all I would like to briefly revisit the rationale behind Bank Indonesia's decision to abandon base money targeting and move to inflation targeting using the interest rate, instead of base money, as a policy response variable. This is related to the authors' hypothesis of base money as the more appropriate monetary policy instrument for Indonesia. There are four reasons underlying the decision. First, the relationship between base money and inflation and economic growth becoming increasingly unstable and even experiencing a reverse causality due to unstable money demand as well as uncertainty of money multiplier and money velocity behaviours. Second, the signalling of monetary policy to the market and public has been hindered not only because of the difficulty in understanding base money for the public in general, but also due to perceptions of dual nominal anchor, ie the base money target and inflation target. Third, the monetary policy response tends to be backward-looking and more difficult to implement, considering a time lag between instrument and inflation target. Fourth, base money is more difficult to control due to the dominant role and unpredictable behaviour of currency demand in Indonesia. Base money comprises 61% currency, of which 85% is held by the public, while the excess reserve that is controllable using the monetary instrument is only 8% of base money.

Taking into account such weaknesses of base money, the use of the growth of the variable as a policy instrument on the left-hand side of the policy rule is likely to increase interest rate volatility. It can be excessively high in the case of monetary contraction and too low during an expansionary period. In the case of monetary contraction, the policy rate might need to be significantly increased in order to sufficiently absorb excess liquidity in the banking system. This could have a consequent adverse effect on banking and the real economy, through the interest rate and bank balance sheet channel of monetary transmission. Furthermore, higher interest rate volatility will imply an excessively high or low real interest rate. The latter can heighten the risk of currency substitution thus eventually increasing inflationary pressures. Moreover, the volatility of the interest rate differential could also increase. A very low interest rate differential would discourage short-term capital inflows and exert pressure on the exchange rate and thus inflation.

[1] Associate Senior Economist, Directorate of Economic Research and Monetary Policy, Bank Indonesia, Jl M H Thamrin 2, Jakarta 10110, Indonesia. E-mail: akhis@bi.go.id. The opinions expressed are those of the author and do not necessarily reflect the views of Bank Indonesia.

Inflation targeting with interest rate policy response

On the other hand, the role of the interest rate post-crisis is empirically more important than that of base money growth in influencing the exchange rate and inflation. It also provides a clearer signal of the monetary policy stance than base money growth does. Under the new framework, starting from July 2005 the interest rate called BI Rate is used as the monetary policy response and operational target. BI Rate is a policy interest rate with tenor of one month, which is periodically announced by Bank Indonesia for a certain period and designed to signalling its monetary policy response to the market and the public. BI Rate is currently the desired one-month rate of the Bank Indonesia Certificate (SBI), which is the current main instrument of liquidity adjustment in open market operations. The implementation of BI Rate through the open market operations for SBI relies on a number of reasons. First, one-month SBI has long been used as a benchmark by banks and market players in Indonesia for their activities. Second, the use of one-month SBI as operational target will reinforce the signalling of the monetary police response. Third, with significant improvements in the banking and financial sector, the important role of SBI in transmitting monetary policy to the financial sector and the economy has been evidenced. In the future, BI Rate will most likely be directed towards the desired rate of the overnight interbank money market.

The decision-making process within Bank Indonesia is continuously being strengthened, consistent with a forward-looking strategy for setting the current monetary policy response directed towards achieving the inflation target. For that purpose, an overall assessment of macroeconomic conditions, inflation forecast and monetary policy response is conducted in every quarterly monetary policy meeting of the board. An inflation forecast with contemporaneous output gap policy rule in a small macroeconomic model is employed in the preparation of policy recommendations to the board meeting. The macroeconomic forecast scenario and simulations using a medium-scale macroeconometric model are also taken into account, as well as leading indicators and other information variables and surveys.

Inflation is reasonably predictable to the extent that the predetermined assumptions of exogenous variables, especially oil and fuel price changes, are quite accurate. This has been justified through ex post analysis of the inflation forecast produced by the small macroeconometric model. In this regard, a better quality of inflation forecast targeting in Indonesia needs further enhanced fiscal-monetary coordination so that major discretionary changes in fiscal policy are informed to Bank Indonesia well in advance, which would provide enough time for Bank Indonesia to factor them into its macroeconomic assessments and monetary policy response. For example, the percentage increase in the fuel price is better informed to Bank Indonesia beforehand, which allows the monetary authority to assess more appropriately its impact on the inflation forecast, interest rate and economic growth.

Limitation of interest rate response

Another essential issue discussed in the paper I would like to comment on is difficulties associated with the interest rate as an instrument. The paper points out the issues of indirect fiscal dominance and exchange rate dominance that could constrain the flexibility of the interest rate policy response. I would like to elaborate on this.

High and volatile inflation

High and volatile inflation could imply a very high interest rate response to bring inflation down through the aggregate demand channel of monetary transmission. Such a behaviour of inflation might be caused by several factors. First, the dominance of adaptive behaviour of inflation expectation formation, as indicated from surveys and estimated econometrically.

Second, an ongoing transition process towards the target of a zero subsidised and flexible fuel price system that is anchored to oil price movements. Third, price setting behaviours characterising downward price rigidity and upward price flexibility on cost increases.

Ongoing recovery under restricted sources of growth

The inflexibility of an interest rate hike policy is related to the need to support economic recovery under the condition of limited sources of economic growth. The first aspect is related to the ongoing recovery of the banking system's intermediary function. The flexibility of the interest rate hike is therefore bounded by the consequential risk of worsening banking soundness, ie increasing non-performing loans, and decreasing the risk-weighted capital adequacy ratio.

Slow acceleration of economic growth could also be associated with the empirical estimate of contractionary exchange rate depreciation that could be explained through the imported input effect, investment demand effect and balance sheet effect. Increasing the interest rate may have the positive effect of avoiding decelerating growth through the indirect exchange rate pass-through of aggregate demand channel. However, given the low responsiveness of the exchange rate to interest rate changes, the resulting interest rate hike may even be more harmful to economic growth through the other aggregate demand channels of monetary transmission. Besides, exchange rate movements during the post-crisis period have been more sensitive to the risk premium. This explains why the exchange rate is not included explicitly in the policy reaction function. Instead, the exchange rate movement is responded to implicitly via the output gap and core inflation gap forecast.

Another important source of inadequate growth is the limited fiscal stimulus due to the large oil subsidy and government debt. Oil subsidy reduction has slowed down economic growth and has the potential to further hamper growth as the process is not finished yet. The consideration for the fuel price increase is not only fiscal deficit reduction. Other factors include achieving an international economic price, reducing the international price differential and domestic industrial-transportation price differential to avoid smuggling, encouraging more economical consumption of non-renewable energy, switching to a more appropriate form of subsidy, and imposing an oil tax. The contractionary effect of the administered price policy could limit the room for increasing the interest rate.

I also agree with the author that the fiscal condition with large stocks of government domestic debt could lead to indirect fiscal dominance that might hamper monetary policy conduct in raising the interest rate. However, the strengthened fiscal-monetary coordination, notably in determining the inflation target and formulating macroeconomic assumptions for the government budget, does not sacrifice the instrument independence. Moreover, recent events showed that Bank Indonesia independently raised BI Rate promptly in its effort to curb rising inflation expectations following the government's much larger than expected increase of the transportation fuel price. The policy then continues as realised inflation is actually much higher than the previous estimate, leading to a higher updated inflation forecast. The monetary policy response has then led to a higher SBI rate than that used as an assumption for the government budget.

In contrast, the lower bound of interest rate rises is restricted by the minimum real interest rate and interest rate differential that are sufficient to prevent exchange rate depreciation. Therefore, exchange rate depreciation resulting from an inadequate interest rate increase could not only accelerate inflation but also worsen the fiscal condition due to the large stocks of government foreign debt.

Bank Indonesia has been trying to use an ex ante real interest rate based on its headline inflation forecast as in line with a forward-looking policy framework. However, most goods market players are still likely to take the ex post real interest rate into account for their business decisions, as their inflation expectation formation is still dominated by adaptive

behaviour. On the other hand, Bank Indonesia's inflation target has been seen as too optimistic, while the uncertainty of the inflation forecast has increased mostly due to the uncertainty in the future course of administered price adjustment.

Our recent experience following the sharp inflation shocks due to high percentage increases in fuel price adds difficulty to the use of an ex ante real interest rate. Even though next year's inflation forecast is for a decline, inflation expectations among the public might be greater than Bank Indonesia's inflation forecast. As a consequence, Bank Indonesia might do better to temporarily shorten the lead time horizon considered in calculating the ex ante real interest rate. The measure could reduce the risk of currency switching that can lead to rising inflation. Nevertheless, this temporary action is a part of learning process that, we believe, will move towards best practices as Bank Indonesia's policy credibility improves.

Notwithstanding its limitations, a monetary policy response using interest policy enables Bank Indonesia to manage interest rate volatility by giving appropriate weight to interest rate smoothing and the forward-looking aspect of the policy reaction function. This feature strengthens the argument for abandoning base money as a choice of policy response variable.

Fiscal and financial sector reform and prerequisites of full-fledged inflation targeting

I am not in full agreement with the conclusion that the financial sector and fiscal reform should serve as prerequisites for full-fledged inflation targeting in Indonesia. Banking and financial sector reform could be beneficial in reducing cost of disinflation. However, its positive impact on the persistence of inflation will be dependent on the relative responsiveness of consumption and investment to an interest rate increase.

Fiscal reform is most likely to increase the persistence of inflation through the continuing process of oil subsidy reduction and imposition of an oil tax. The realised effects of the recent drastic subsidy policy are already being faced by the public in terms of increasing social welfare loss, as reflected by soaring inflation and slowing consumption growth. If the subsidy policy is then followed by imposing a substantial increase in the tax rate, coverage and ratio, it could weaken private consumption further. However, its negative impact on the cost of disinflation might be reduced if the government can achieve the appropriate level of infrastructure spending. The extension of such spending benefiting from tax reform could also reduce inflationary pressure in the medium term as it could increase economic capacity.

Fiscal and financial sector reform are clearly important, but the policy measures might not lessen inflation pressure and disinflation cost as well. It is the implementation of fiscal and financial sector reform with costless disinflation that does have prerequisites. First is an increasing growth of investment through government and domestic private investment, and foreign direct and portfolio investment. Second is the improvement of monetary policy credibility, which is the at the core of full-fledged inflation targeting.

Issues and challenges in strengthening credibility and communication strategy

The dilemma of Indonesia's monetary policy response associated with high inflation and ongoing recovery under restricted sources of growth leads to the increasing importance of policy credibility improvement. Increasing monetary policy discipline, transparency and communication is expected to help lessen inflation persistence and the cost of disinflation. Efforts to strengthen the credibility of monetary policy, eg through the use of BI Rate and

enhancing policy communication, are expected to contribute to a better role of Bank Indonesia in striking the balance between disinflation and economic recovery, as it will improve the effectiveness of monetary transmission.

Regarding the issue of exchange rate dominance and communication, I agree that exchange rate movements could be regarded as a key indicator of central bank performance. However, there has also been an increasing perception among both public and government that inflation management is the central bank's core competence and responsibility. We have been trying to educate the public that we treat inflation as the overriding objective while remaining concerned to reduce the volatility of the exchange rate as one inflation determinant.

More important is the way Bank Indonesia communicates to the public regarding the sources of inflationary pressure and exchange rate movement. With the experience from the last currency depreciation and fluctuation, Bank Indonesia has communicated to its stakeholder in a clearer way about the fundamental factors behind exchange rate depreciation that are beyond monetary policy control, ie the non-oil and gas trade deficit, oil trade deficit, lack of portfolio and direct investment capital inflow, oil price shocks, strengthening of the US dollar against regional currencies, and heightening public concern over fiscal sustainability. Moreover, the public is likely to have recognised that the fuel price shock can be a significant source of increasing inflation expectations. Monetary policy response to the recent inflation shocks and Bank Indonesia's communication to the public, as well as its coordination with the government, could also increase public understanding of the importance of controlling inflation as the central bank's overriding objective.

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Monetary policy in Vietnam: the case of a transition country

Ulrich Camen[1]

1. Introduction

A major objective of the Vietnamese authorities in the coming five years is it to strengthen the integration of the Vietnamese economy into the world economy. An important milestone has been the Vietnam-US Bilateral Trade Agreement, BTA. A subsequent milestone will be Vietnamese membership in the WTO, which is under preparation and expected for 2006. As part of this process of internationalisation, Vietnam is also opening its financial sector to foreign financial institutions. Currently, foreign banks have already started to provide banking services in Vietnam.

Internationalisation will pose major challenges for financial sector polices, underlining the importance of further progress with financial sector reforms and reforms of monetary policy. This paper will present the current status of the reform of monetary policy in the context of economic and financial sector developments in Vietnam and identify key reform issues with respect to monetary policy.

Section 2 will give a brief overview of principal economic and financial developments to situate monetary policy in the context of economic developments in Vietnam. Section 3 describes the monetary policy framework currently in use in Vietnam, and Section 4 presents empirical results on the determinants of inflation and the role of monetary factors.

2. Background: macroeconomic developments

2.1 Economic growth and inflation

The Vietnamese economy has shown strong economic performance since the early 1990s (Figure 1). Annual average growth per year was 7.4% for the period since the early 1990s, and in recent years Vietnam had one of the highest growth rates in East Asia. During the 2001-2005 five-year plan, the annual average growth of 7.4% was only slightly below the 7.5% annual average target in the Socio-Economic Development Plan for 2001-05.

Equally impressive was the strong reduction of poverty in Vietnam. The percentage of the population living below the poverty line has been reduced from well above 50% to below 30% in the period 1993-2002. As recently as 1993, 58% of the population lived in poverty, compared to 37% in 1998 and 29% in 2002. This implies that almost a third of the total

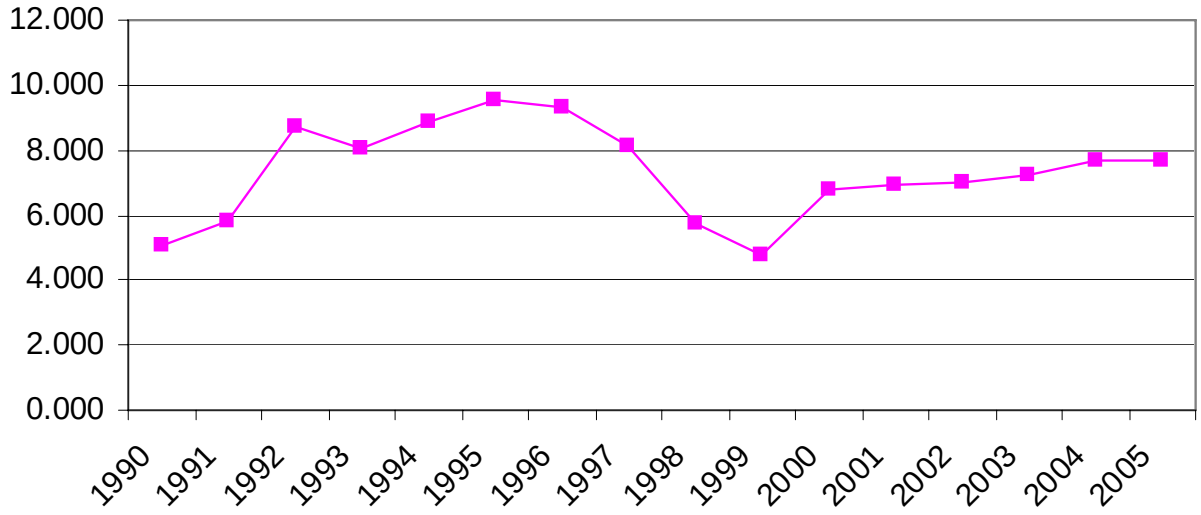
[1] Programme Director, Monetary Policy and Financial Sector Reform Programme, Graduate Institute of International Studies, Geneva, Switzerland. E-mail: Camen@hei.unige.ch. The research is part of a programme for central banks funded by the Swiss State Secretariat for Economic Affairs, SECO. The author gratefully acknowledges very helpful comments from Susan Adams, Hans Genberg and Nguyen Thi Thu. The opinions expressed in the paper are those of the author and do not necessarily reflect those of the institution with which he is associated.

population was lifted out of poverty in less than 10 years.[2] Still, Vietnam continues to be a low-income country with a per capita income of USD 552 in 2004.

Figure 1

Economic growth

% per year



Source: IFS.

According to the new five-year Socio-Economic Development Plan for 2006-2010,[3] which was approved by Vietnamese government in May 2005, an important goal is that Vietnam should reach the status of a middle-income country by 2010. To reach this goal, the government set as an annual economic growth target the range of 7.5 to 8.0% for the next five years.

Figure 2 shows the evolution of the inflation rate since 1986 and the distinct different patterns of inflation in Vietnam before and after 1995. Vietnam experienced hyperinflation in the second half of the 1980s and early 1990s. In the years 1986 to 1988, the annual inflation rate was above 300%. This period was followed by a reduction of the inflation rate to below 20% in 1992 and close to 10% in 1995. During this period, Vietnam undertook a major stabilisation effort in which restrictive monetary policy and fiscal policy played a key role.[4]

The period after 1995 was characterised by modest inflation and even slight deflation in the years 1999 and 2000. In more recent years, inflation has picked up again, with annual inflation rates of 9.5% in 2004 and 8.4% in 2005.

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[2] World Bank (2004).

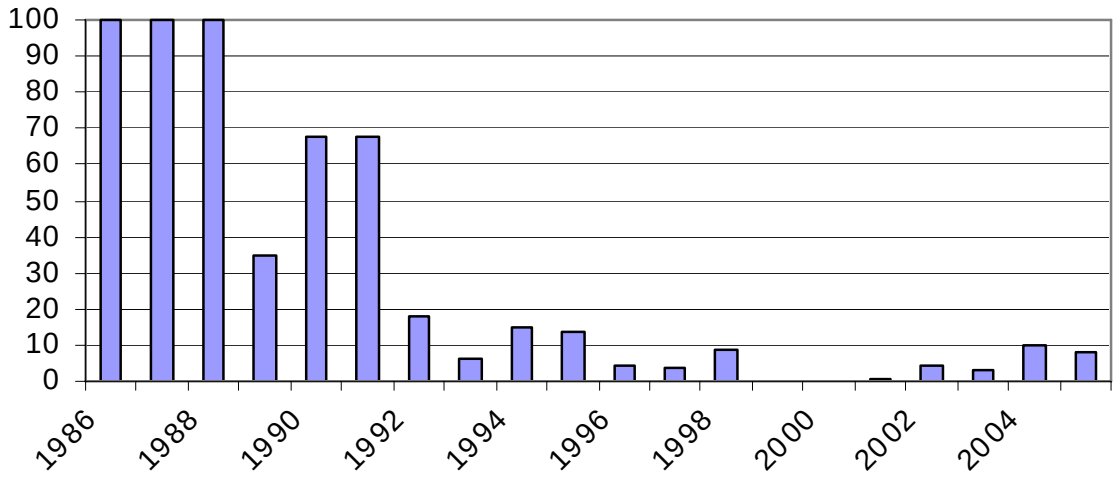
[3] The Five-Year Socio-Economic Development Plan 2006-2010, Draft, September 2005.

[4] Camen and Genberg (2005).

Figure 2

Inflation rate

% per year



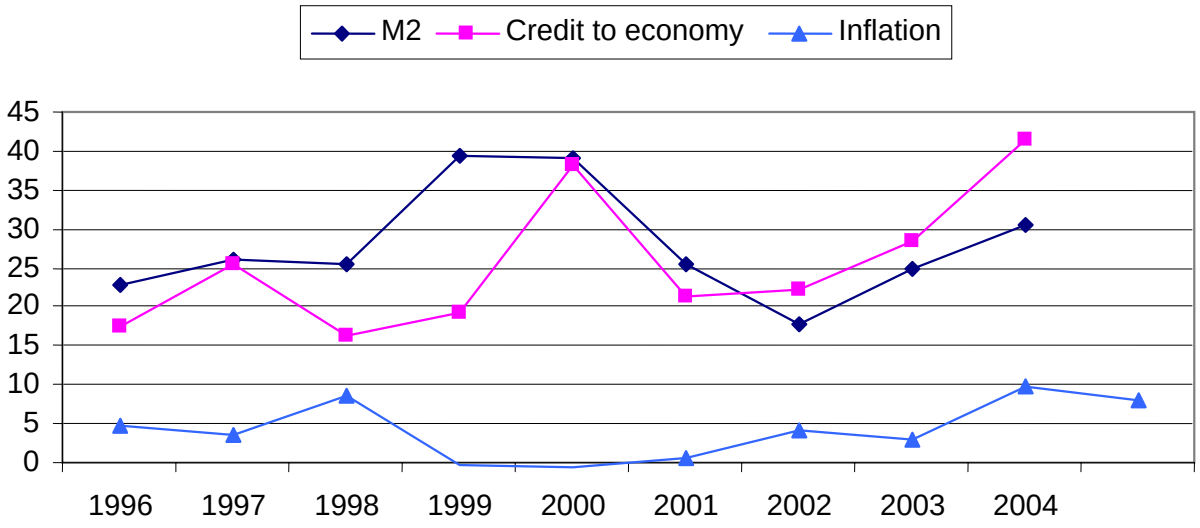
Sources: Hung (1999); IFS; own calculations; the inflation rate for 2005 is an estimate.

A striking characteristic of the period since 1996 is the seeming lack of a relationship between the inflation rate and growth of money and credit to the economy as shown in Figure 3. While the average annual money growth during this period was 31% the average inflation rate was 3.7%. Vietnam's experience of high money growth and single digit inflation is not unusual for a transition country, as Al-Mashat (2004) shows, although money growth has been higher in Vietnam than in comparable transition countries. An explanation for the disconnect between money growth and inflation rate appears to be a rapid rate of monetisation in Vietnam as reflected in a strong decline in velocity.

Figure 3

Inflation and money growth

% per year



Source: IFS.

While money supply and inflation appear to be disconnected for most of the period shown in Figure 3, both series appear to be somewhat more correlated in recent years. The role of monetary factors in explaining the recent rise in prices in Vietnam is questioned and

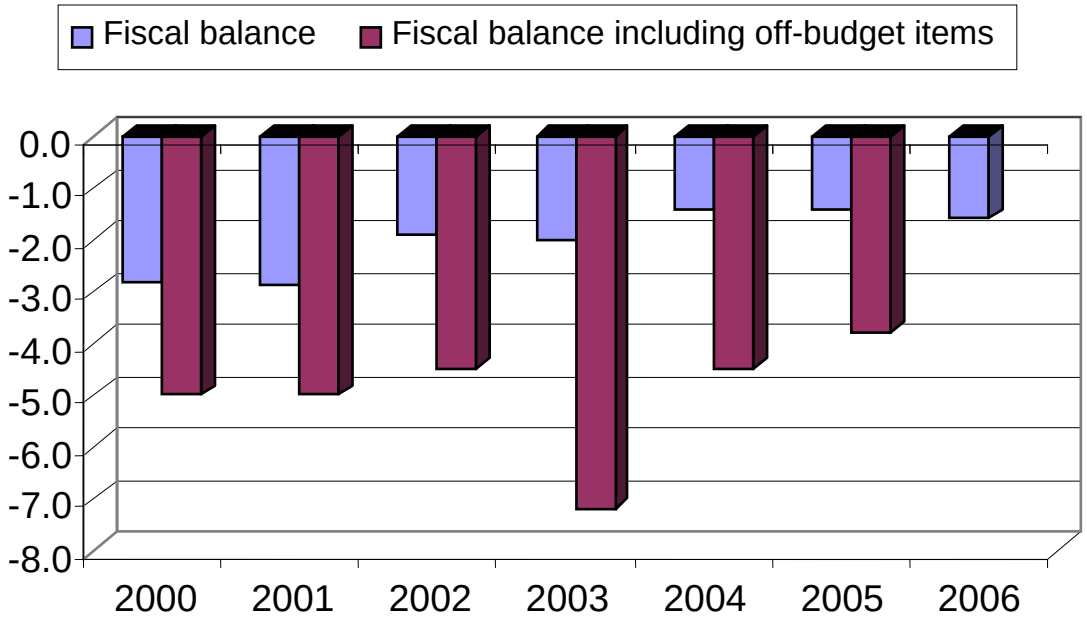
authorities appear to favour the hypothesis that the increases in the inflation rate, especially in 2004, have been induced by supply shocks such as avian flu outbreaks and bad weather. These shocks primarily affected food prices and international commodity prices. For example, in the first nine months of 2004, staple food prices increased by 12.5% and other food prices by 16.8%, compared to an overall inflation of 8.6% and non-food inflation of only 3.7%. In a later section, an attempt will be made to identify the principal factors that explain the inflation rate in Vietnam.

2.2 Fiscal balance

Restrictive fiscal policy and monetary policy have played an important role in bringing hyperinflation down in the 1980s and early 1990s.[5] Since this period, the fiscal deficit has been largely contained, and since 2000 the fiscal deficit has been about 3% of GDP and sometimes even below. The overall balance including off-budget expenditures, however, has been substantial in several years since 2000, as can be seen from Figure 4. Off-budget expenditures are for infrastructure investments that are primarily financed through government bond issues.

Figure 4

Fiscal balance



Sources: IMF (2006a); World Bank (2005); values for 2005 and 2006 are estimates.

2.3 Financial sector reform and financial structure

Since the late 1980s, the Vietnamese authorities have implemented comprehensive financial sector reforms whose principal components were the transition from a monobank system to a

[5] Camen and Genberg (2005).

two-tier banking system, the establishment of joint stock banks (JSB) the restructuring of state-owned commercial banks (SOCBs), the liberalisation of interest rates and the development of financial markets.[6] Reforms, which started in the first half of the 1990s, have since then been implemented gradually. As a result of the reforms, the Vietnamese financial system has deepened as indicated by the increased monetisation. The ratio of M2 to GDP, about 25% in the mid-1990s, has increased to above 70% today.

Legal reforms have led to the creation of a two-tier banking system with the State Bank of Vietnam being the central bank, four large SOCBs, one smaller SOCB, 36 JSBs and an extensive system of People's Credit Funds. The equitisation of SOCBs has been announced, and very recently the decision was taken to start with the equitisation of the largest commercial bank in Vietnam, Vietcombank, in 2006 and the Mekong Housing Bank, the smaller SOCB. According to this decision, 10% of the capital of Vietcombank will be sold each year starting in 2006 until 49% of the capital is privatised in 2010. All SOCBs are planned to be equitised by 2010.

The SOCBs continue to dominate the banking sector with a share of 73% of total credits in 2004. The credit market and other parts of the financial system continue to be segmented. JSBs and other small banks lend primarily to the private sector. In 2004, JSBs, having a share of total credit of 27%, lent only 4% of total credits to state-owned enterprises but 23% to the non-state-owned sector. In 2004, the four largest state-owned banks accounted for 32% of total credits to state-owned enterprises and 41% to non-state-owned enterprises.[7] The share of total credits extended to state enterprises decreased to 36% in 2004 from 48% in 1999, indicating a gradual increase of the role of the non-state sector in Vietnam.

Although non-performing loans have partly been moved to ACMs of SOCBs they remain a principal issue for the Vietnamese banking sector. It has been difficult to assess the actual size of non-performing loans as international standards have until recently not been applied for the classification of loans. Since April 2005, banks are required to apply international standards for the classification and reporting on loans.

Dollarisation is present in Vietnam but currently on a moderate scale. The share of foreign currency deposits has decreased from 41% in 2000 to 30% in 2004. With an interest differential of currently 4 to 5% in favour of dong deposits and stable exchange rates, people tend to keep their money in domestic currency denominated deposits. The share of foreign currency loans instead increased slightly from 21% in 2000 to 24% in 2004. More recently, a marked increase in foreign currency borrowing of enterprises has been reported, which may result in a currency mismatch of enterprises and increase the risk of financial sector instability in the case of a depreciation of the dong.

Interest rates have been gradually liberalised since the mid-1990s. Previously, the SBV set deposit as well as lending rates and, since October 1992, ceilings for lending rates and floors for deposit rates. Major steps towards market-determined interest rates were taken with the lifting of floors for deposit rates with the exception of foreign currency deposits in 1996 and of ceilings on lending rates in August 2000. The ceilings for lending rates were replaced first by a basic interest rate, which was announced by the SBV every month and which commercial banks could only exceed within a set margin. Interest rates for foreign currency loans were liberalised in July 2001 and lending rates for loans in domestic currency in June 2002. Since 2002, commercial banks in Vietnam have been able to legally set lending rates as well as deposit rates according to market conditions.

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[6] For an overview of the financial sector reforms and specially banking sector developments see World Bank (1995), World Bank (2002), Klump and Gottwald (2003) and Kovsted, Rand and Tarp (2005).

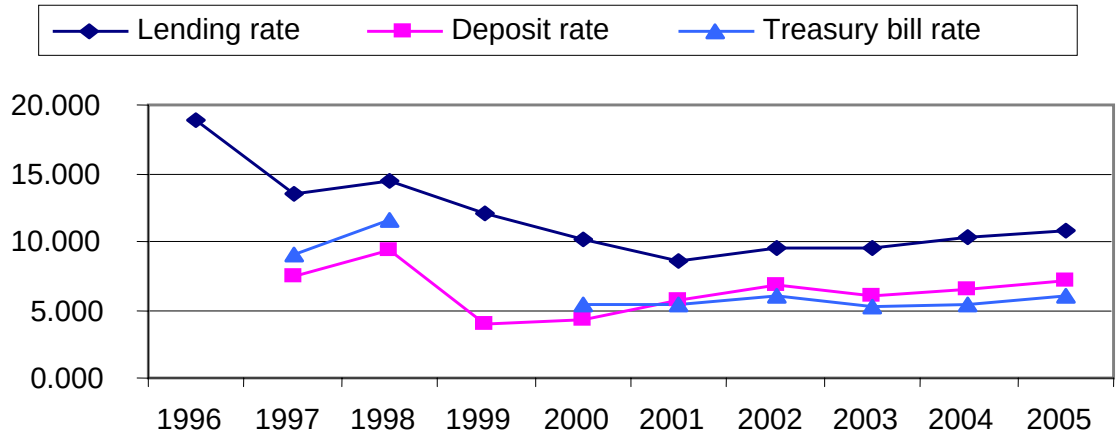
[7] IMF (2005).

The liberalisation of lending rates for domestic currency loans, however, did not lead to a noticeable increase in lending rates in Vietnam, as can be seen in Figure 5. Interest rates started to increase slightly in 2004 in reaction to rising inflation rates, increasing dollar rates and, more recently in 2005, as a result of tightening monetary policy and increasing demand for loans. But the increases in interest rates have been relatively limited. The lack of a response of interest rates to the liberalisation of lending rates can partly be explained by the fact that at the time when interest rates were liberalised, three quarters of total loans were provided by SOCBs, which have a history of providing loans without taking credit risks fully into account.

Figure 5

Interest rates

Domestic currency



Source: IFS; the interest rates for 2005 are those of May 2005.

Also, the SBV together with the Ministry of Finance continues to try to influence interest rate movements by other means than indirect monetary policy. For example, the SBV continues to announce a base rate, which was used in the past for setting interest rate ceilings and which is now considered as a reference rate for banks to set lending rates.[8] Also, it appears that ceilings for some interest rates such as interest rates for dollar deposits for corporate clients continue to exist.[9] In addition, agreements on the level of deposits exist between large SOCBs and between joint stock banks to avoid competition through changing deposit rates. Very recently these agreements have come under pressure due to the increasing need for banks to mobilise deposits. Finally, while caps on the interest rates on government securities have been discontinued, the Ministry of Finance continues to issue guidelines or reference rates that appear to have been strictly enforced.

Other important steps in the reform process have been the start of T-bill auctions in the mid-1990s, the introduction of open market operations in 2000, and the gradual introduction of indirect monetary policy instruments.

[8] See also Section 3.3

[9] According to reports in the Vietnamese press, a SBV directive in March 2005 raised the ceiling on rates on dollar deposits.

Money markets and financial markets in general continue to be thin and segmented. Investors in government securities up until now have held securities until maturity and secondary markets in these securities are illiquid, with a limited range of maturities. In June 2005, the Vietnamese bond market – including government as well as corporate bonds – accounted for 3.8% of the previous year's GDP. In comparison, the ratio for South Korea is 26% and for Thailand 13.5% of GDP. Interest by investors in auctions of government securities has been declining over the last few months because adjustments in interest rates did not sufficiently reflect changing market conditions, especially increasing demand for capital by the private sector and increasing inflation rates. The Ministry of Finance planned to issue VND 38 trillion in 2005 while only VND 10 trillion were sold in the first eight months of 2005.

While substantial progress has been made towards the development of a market-based financial system, the Vietnamese financial system will need to undergo further deep structural transformation. Main reform areas include the reform of the banking system with the equitisation of the SOCBs and the development of financial markets.

The structure of the Vietnamese financial system and the financial sector reform process give rise to a number of challenges for monetary policy:

- The structural transformation of the Vietnamese financial system makes it difficult to identify stable relationships between principal macroeconomic variables, with the implication that monetary policy needs to be conducted in the presence of important uncertainties.
- The thinness of money markets and the lack of financial instruments limit the scope of open market operations.
- Bank lending is likely to be one of the principal channels of the monetary transmission process, although balance sheet problems of banks and enterprises are likely to limit its effectiveness.[10]
- Underdeveloped financial markets are likely to limit the effectiveness of the monetary transmission through interest rates.
- Indications exist for a segmentation of the credit market, with SOCBs tending to apply more non-commercial practices while JSBs apply more commercial practices.

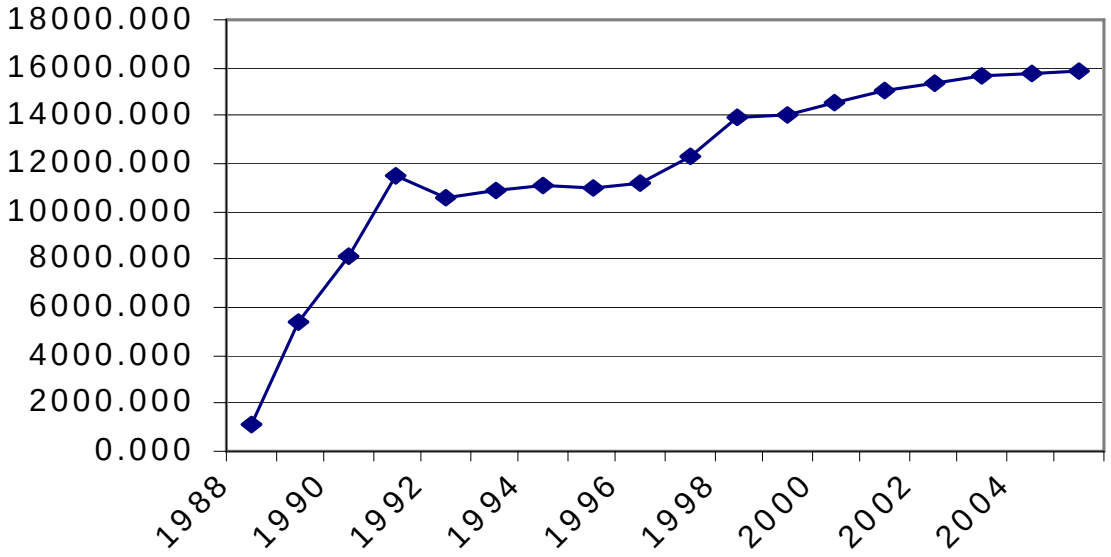
2.4 Foreign exchange rate policy and capital control

Figure 6 shows the evolution of the VND/USD rate since the late 1980s. Principal features of the evolution are the strong depreciation of the dong until 1991, which was part of the stabilisation effort in the late 1980s and early 1990s, and a depreciation of the dong in 1997 and 1998 of about 20%. Since this depreciation, the dong has followed a path of relatively gradual depreciation of around 2% per year. In 2004 and in 2005 so far, the depreciation of the dong has been under 1%. In fact, in early 2005 the Governor of the SBV announced that the depreciation of the dong would be limited to 1% during the year. As of October, the dong had depreciated by 0.7%.

[10] Exchange rates have been another important transmission channel (see Section 4).

Figure 6

VND/USD exchange rate



Source: IFS.

While Vietnam officially has a managed floating exchange rate system,[11] currently the exchange rate system functions like a fixed exchange rate system.[12] The Vietnamese exchange rate has been pegged de facto since mid-2004, when the SBV Governor announced that the depreciation of the dong would be limited to 1% in 2004, and the dong actually depreciated by close to 1% that year.

Regarding the exchange rate policy, the question arises whether Vietnamese authorities tried to stabilise only the VND/USD exchange rate or the effective exchange, thus allowing some exchange rate fluctuations with respect to the US dollar. This question was analysed by regressing daily changes in VND/USD rate on daily changes in the JPY/USD and the EUR/USD exchange rate. The daily change in the RMB/USD was included in regression for estimation periods starting after 21 July 2005. The regressions, which were estimated for various sample periods, showed insignificant coefficients indicating that movements in the VND/USD exchange rate were not systematically related to other dollar exchange rates and Vietnamese authorities did not stabilise the effective exchange rate.

Vietnam has accepted the obligations under IMF Article VIII, with effect from 18 October 2005. Thereby, Vietnamese authorities accepted not to impose restrictions on the making of payments and transfers for current international transactions, and not to engage in any

[11] In early 1999, the SBV moved to a type of crawling peg exchange rate system, which the IMF classifies as a "de facto managed floating regime (managed floating with no pre-announced path for exchange rate)". The SBV announces daily an official rate that is the weighted average of the exchange rates quoted in the interbank market the previous day. Since the interbank rate can fluctuate around the official rate within a range of +/- 0.25% (since July 2002; the band was + 0.1% between February 1999 and July 2002), the interbank rate can gradually change the official exchange rate. While fluctuations of +/- 0.25% are in principle permitted, the actual daily fluctuations have in general been much smaller, staying in a range of 0.1% around the interbank exchange rates of the previous day.

[12] Effective 1 January 2005, the International Monetary Fund has reclassified the exchange rate regime of Vietnam to the category of conventional pegged arrangement, from the category of managed floating with no predetermined path for the exchange rate (IMF (2006b)).

discriminatory currency arrangements or multiple currency practice, except with IMF approval.

Capital controls continue to be in force in Vietnam, and the only sizeable inflows apart from official transfers are foreign direct investments and remittances from Vietnamese living abroad.[13] Short- and medium-term capital inflows have been successfully restricted.

3. Monetary policy framework

3.1 Legal framework

The SBV is governed by the Law on the State Bank of Vietnam, of December 1997. According to the law, the SBV is a body of the Vietnamese government (Article 1) and its governor is a member of the government (Article 11).

The SBV Law explicitly makes a distinction between the functions of the SBV and functions related to the national monetary policy, which is "a component of economic-financial policies of the State" (Article 2). Decisions regarding monetary policy and its supervision are principal functions of the National Assembly and the government.

The government has the specific function to prepare a plan for monetary policy, including a projection of the annual inflation rate, and to submit it to the National Assembly (Article 3(3)), which then needs to approve the plan (Article 3 (1)). Part of the role of the National Assembly is to set annual targets for the inflation rate in line with the state budget and economic growth objectives. The government is also closely involved in the implementation of monetary policy (Article 3 (3)). It has the function to organise the implementation of monetary policy and to determine the amount of liquidity to be injected in the economy. The National Assembly supervises the implementation of monetary policy, and the government is required to periodically report on the progress on the implementation to a standing committee of the National Assembly.

The functions of the SBV include the preparation of the plan for monetary policy (Article 5) and the implementation of monetary policy, as designed by the government. In addition to that role, the SBV has functions that are stated in Article 1 (2) as follows: "The State Bank shall conduct the state's management over monetary and banking activities, is the issuing bank, the bank of credit institutions and the bank providing monetary services for the government". Independently of these functions, the State reserves the right to undertake the unified management of all banking activities.

Based on this reading of the SBV Law, monetary policy is largely the responsibility of the National Assembly and the government, and the SBV is an integrated part of Vietnamese government. The National Assembly, together with the government, sets monetary policy objectives and the stance of monetary policy. Legally, the National Assembly plays an important role in the monetary decision process. Apart from setting policy objectives, it supervises the implementation of monetary policy. This strong position can possibly be explained by the experience of hyperinflation in the 1980s and early 1990s and the resulting determination to avoid similar events. The strong involvement of the government in the implementation of monetary policy, at least legally, suggests that the instrument independence of the SBV is limited.[14]

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[13] Hauskrecht and Lee (2005) give an overview of recent developments.

[14] Kovsted, Rand and Tarp (2005) note that most analysts consider that the SBV Law of 1997 reduced the level of autonomy of the SBV compared to the level of autonomy that had existed before.

For comparison, transition economies in central and eastern Europe introduced instrument independence mostly in the early 1990s. With the exception of Poland, where the central bank has to design monetary policy together with the parliament, central banks in the Czech Republic, Hungary, Slovakia and Slovenia have the exclusive responsibility to design monetary policy. In the Czech Republic, Slovakia and Slovenia, the central bank is formally responsible for the choice of exchange rate regime, while in Hungary and Poland the choice is made jointly by the central bank and the government.[15]

The goals of monetary policy, which is a component of the economic-financial policies of the state, include stabilising the value of the currency, controlling the inflation rate, facilitating socio-economic development, ensuring national defence, security and improving the living standards of the people (Article 2). The specific annual goal for the inflation rate is set by the National Assembly and the government in line with other principal objectives of economic policy.

Regarding the goals of the SBV, the SBV Law states that "the operations of the State Bank shall aim at the stabilisation of the value of the currency, contribute to securing the safety of banking activities and the system of credit institutions, facilitate the socio-economic development in a manner consistent with the socialist orientation" (Article 1(3)). "Stabilisation of the value of the currency" is interpreted here as stabilisation of the *exchange rate*, as the stabilisation of the currency is mentioned as a separate goal, together with control of the inflation rate, in Article 2 as goals of monetary policy.

The goals of monetary policy in the SBV Law are very broadly defined and a primary objective is not clearly identified. The multiplicity of goals without established hierarchy raises the risk of conflicting objectives. While in the SBV Law a hierarchy of goals is not established, the actual economic policy in Vietnam suggests that economic growth has been the de facto primary goal of the government. The Vietnamese government set for 2005 a target for economic growth of 8.5% and a target inflation rate of 6.5%. Projections prepared in October indicated that the inflation rate for 2005 would be in the area of 8% and economic growth slightly below the target of 8.5%. Although it was known for several months that the inflation target for 2005 would not be attained, open market operations continued to inject liquidity. According to reports in newspapers, the SBV considers it more likely that current inflation in Vietnam is the result of supply shocks. Restrictive monetary policy is seen to constrain economic growth as interest rates would rise without effectively reducing inflation.

In statements, officials of the SBV have identified some of the limitations of the current SBV Law and the possibility of amendments to it are envisaged in the next five-year plan, which covers the period 2006 to 2010. The SBV has recognised its lack of independence as a serious limitation for the conduct and implementation of monetary policy, and the recent draft of the Five-Year Socio-Economic Development Plan 2006-2010 stipulates that an objective is to "improve responsibilities and powers of the State Bank in planning and realizing monetary policies". Other important topics that should be reviewed as part of the amendment of the SBV Law are the lack of a hierarchy of goals and a clarification of the responsibilities of the SBV with respect to monetary policy.

3.2 Monetary policy strategy

The monetary policy strategy in Vietnam is derived from the five-year plan on Social and Economic Development Strategy, formulated by the Conference of the Communist Party, which takes place once every five years. The government is then responsible for formulating an action plan for implementing the five-year plan. The SBV, as part of the government, is in

[15] Radzyner and Riesinger (1997).

charge of formulating the action plan for the banking sector. In this action plan, targets are set for the injection of liquidity into the economy, M2, deposits and credits and other financial sector-related measures that will be implemented as part of the government's action plan.

Information on the actual monetary policy can be found in the Annual Reports of the SBV and in the Directives of the Governor. The directives of the Governor contain, in general, more technical information on the implementation of monetary policy and specifically the instruments used. Annual Reports, Directives of the Governor and statements by the SBV are the principal publications of the SBV. The Bank has also a website in Vietnamese, and one in English is under construction. The following account of the monetary policy strategy of the SBV is largely based on its actual monetary and exchange rate policy.

Two principal components of the monetary policy strategy of the SBV can be identified: an annual target for the depreciation of the dong and targets for total liquidity (M2) and credit to the economy.

In 2004 and 2005, the Governor of the SBV announced exchange rate targets suggesting that the SBV uses the exchange rate as a nominal anchor. In both years, the target was that the depreciation of the dong with respect to the US dollar would stay below 1%.[16] The target was achieved in 2004 and is likely to be achieved in 2005. For the time being, targets are formulated as annual targets, and the SBV does not appear to have made commitments to continue with the peg in the future. In fact, the SBV stresses in its 2004 Annual Report the flexibility of its exchange rate policy.

It addition to exchange rate targets, the SBV announces annual targets for total liquidity and credit to the economy, which are based on the macroeconomic and monetary objectives as defined by the government in its action plan. The latter target is of importance as it is monitored by the IMF during Article IV consultations. The credit target was set to 25% in 2004 and 2005. Actual credit growth turned out to be 42% in 2004, and estimates for 2005 suggest that the credit target for this year will also be overshot. The fact that SBV has not achieved the target may suggest that the SBV only gives a low weight to the credit target, which is consistent with the view that the ultimate target for the government has been the target for economic growth.

There exist indications that the SBV has also used implicit targets for interest rates applied by commercial banks, at least in 2005. In its 2004 Annual Report, the SBV stated the objective of interest rate stability, and in 2005 the SBV injected liquidity through open market operations to stabilise interest rates in order to avoid a negative effect of raising interest rates on economic growth. These measures were based on the SBV's view that restrictive monetary policy will not be effective in reducing inflation. Taken together, this suggests that the SBV tries to conduct monetary policy rather independently although it has set targets for the exchange rate. No indications were found that the SBV uses the division between ultimate, intermediate and operational targets.

As is well known, countries can only pursue two of the following three options: fixed exchange rates, domestic monetary autonomy and capital mobility.[17] Since capital account restrictions are still in place in Vietnam, authorities are likely to have some scope for independent monetary policy even with a fixed exchange rate. Due to the dollarisation, the scope for independent monetary policy is, however, likely to be limited. In recent years the

[16] Most of the transition countries in central and eastern Europe adopted fixed exchange rates during the initial stabilisation period, and several countries moved to more flexible exchange rates when they started to use inflation targeting; Krzak and Schubert (1997); Jonas and Mishkin (2005).

[17] Shambaugh (2004) presents evidence that a trade-off exists between choosing to peg the exchange rate and the ability to conduct monetary policy autonomously. Ping and Xiaopu (2003) give a brief account of the conflicts that have arisen between exchange rate and monetary policy in the case of China.

SBV has intervened in the foreign exchange market to achieve the exchange rate target. In several years the interventions were substantial, leading to increases in net foreign assets that were larger than the change in the monetary base, suggesting that the SBV partially sterilised the liquidity effect of foreign market interventions.[18]

Pegging the exchange rate has a number of advantages as well as disadvantages, two of which appear of specific relevance for Vietnam.[19] In a country with a pegged exchange rate, economic agents tend to neglect exchange risks, since they do not appear to be relevant in the short term. In a dollarised economy such as Vietnam, this has the effect that economic agents more easily borrow in foreign currency although their income is in domestic currency, which may lead to a structural currency mismatch. Such a currency mismatch, as experiences in Latin America have shown, can lead to major financial instabilities in the case of a devaluation of the domestic currency. The risk of financial stability in such a situation is likely to be considerable in Vietnam, since modern risk management is not yet established in many banks and effective bank supervision is only in the process of being introduced.

Recent developments in Vietnam suggest that the expectations of a stable exchange rate have contributed to a strong increase in borrowing in foreign currency in Vietnam. In 2004, lending in foreign currency increased by 60%, compared to 38% of loans in domestic currency. While lower interest rates on foreign currency loans explain part of the increase in foreign currency lending, the SBV's policy of pegging the exchange rate has most likely also contributed to the increase.

The economy has a greater ability to adjust to external shocks and to avoid costly adjustment processes with a flexible rather than a fixed exchange rate. This buffer function of flexible exchange rates would be an important advantage for Vietnam, which as small open economy is exposed to external shocks and increasing external competition.

One option for SBV would be to use inflation targeting instead of pegging the exchange rate. A number of transition countries in central and eastern Europe in the late 1990s shifted from exchange rate targeting to inflation targeting. The experience of these countries is currently reviewed.[20]

The Vietnamese government with the approval of the National Assembly currently sets annual inflation targets. In January 2005, this inflation target was announced by the Governor for 2005. Camen and Genberg (2005) analyse whether inflation targeting would be a feasible option for Vietnam and conclude that conditions are currently not in place for the introduction of strict inflation targeting. Steps towards inflation targeting would include announcement of and institutional commitments to a medium-term inflation target, a better understanding of the inflation process as well as procedures to forecast the inflation rate, and an increased flexibility of the exchange rate.

3.3 Monetary policy instruments

The SBV began introducing indirect monetary policy tools in the mid-1990s as part of the financial sector reforms. Today, a number of indirect instruments have been introduced and are increasingly used. Apart from reserve requirements, refinancing and discount lending

[18] Hauskrecht and Le (2005).

[19] Frankel (2005) presents a number of arguments, which support an increase in exchange rate flexibility in the case of China.

[20] Jonas and Mishkin (2005).

facilities, the SBV uses open market operations and foreign exchange interventions.[21] In addition, the SBV continues to use reference rates to influence interest rates, and the government uses administrative instruments to control prices.

The SBV has been using required reserves in various forms since the 1990s, and changes of reserve requirements for deposits have been considered as an important instrument of monetary policy in the past. Currently, reserve requirements are differentiated according to the maturity of deposits, the sectoral focus of banks, and whether it is a domestic or foreign currency deposit. Reserve requirements for deposits of less than a year are higher than those for deposits of more than a year, and lower for banks that are active in the agricultural sector and for People's Credit Funds. The SBV currently pays interest of 1.2% on required reserves in dong and 0% on excess reserves, and does not pay interest on required reserves in US dollars but pays 1% on excess reserves in US dollars.

The last time changes in reserve requirements were made was June 2004, when they were raised to tighten monetary policy. Reserve requirements on dong deposits of less than a year were increased from 2 to 5% and on foreign currency deposits from 4 to 8%. Reserve requirements on dong and foreign currency deposits for a period of one to two years were increased from 1 to 2%. Different rates were applied for agricultural banks as well as People's Credit Funds. The effect of this change in reserve requirements on the inflation rate was not as expected by the SBV, and more recently there has been a move to use discount and refinancing rates more actively.

The SBV has two lending facilities, a refinancing and a discount facility. Both are collateralised and the latter gives commercial banks access to funds subject to quotas. Discount operations can take the form of an outright purchase of securities or a repurchase agreement. The maximum maturity of the repurchase agreement is 91 days. The refinancing rate is the upper interest rate and the discount rate the lower rate for lending from the SBV. Together they define the band within which the rate for open market operations moves (Figure 7). At times the OMO rate moves out of the band, as in January 2005 when it reached 6.5%.

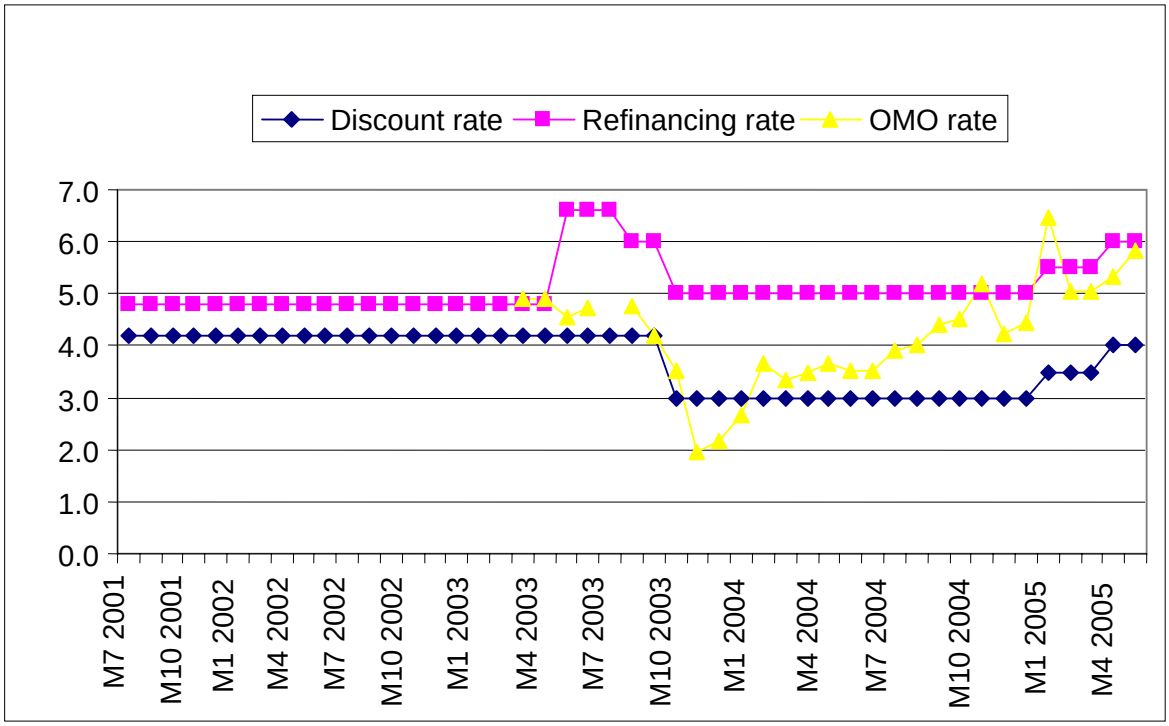
Recently, the SBV has actively used both the refinance and discount rates in the process of tightening monetary policy. In January and March 2005, they were increased together by one percentage point so that starting 1 April 2005 the refinance and discount rates are 6% and 4% per annum, respectively.

Open market operations, which started in July 2000, had to be developed from scratch. Over the years they have gained in importance and have by now become the single most important monetary instrument for controlling liquidity. Of the total liquidity injected by the SBV, open market purchases provided close to 80% in 2003, compared to about 39% in 2002. Open market operations take the form of outright sales and purchases of securities or repurchase agreements. The purchase or sale of securities may take place in the form of auctions by volume or auction for interest rate. Securities eligible for open market transactions are primarily government securities, State Bank bills or securities that have been selected by the SBV. Initially only short-term securities could be used for open market transactions, but since the amendment of the SBV Law in 2003, securities with a maturity of more than one year are eligible for use. Currently, auctions take place three times a week, and in 2004 the SBV launched a web-based auction system.

[21] The monetary policy instruments that are at the disposal of the SBV are listed and described in Article 16 and the following articles of the State Bank Law. Technical aspects of the monetary instruments are specified in the Directives of the Governor.

Figure 7

SBV interest rates



Sources: IFS; press reports.

The SBV also employs interventions in the foreign exchange market through purchases and sales of foreign currency or foreign exchange swaps. These interventions have been substantial at times, as was shown above. The main purpose of foreign exchange interventions has been to achieve the foreign exchange target set by the SBV.

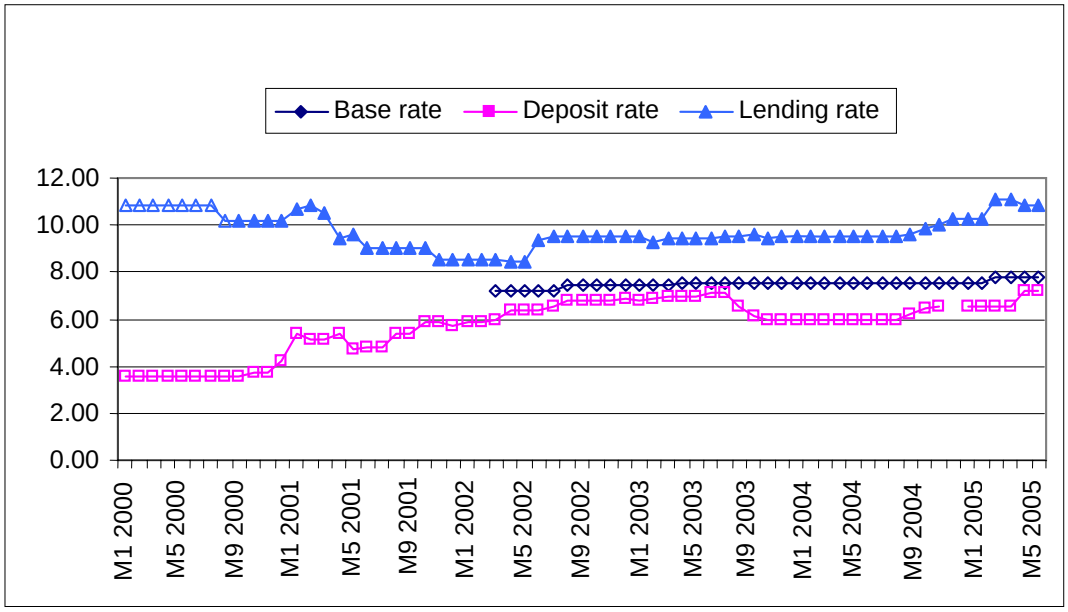
The basic system of lending facilities as well as the open market operations used by the SBV is comparable to monetary policy instruments used, for example, in transition economies in central Europe and many other central banks. While the SBV now actively uses indirect monetary policy, their use continues to be constrained by the lack of securities and the thinness and segmentation of financial markets.

Apart from indirect monetary policy instruments, the SBV continues to use measures to influence the deposit and lending rates more directly.[22] For example, the SBV continues to announce a base interest rate as the reference rate for interest rates of banks. Initially the base rate was used to specify ceilings for lending rates. The purpose of the base interest rate has been to provide a "basis for the determination by credit institutions of the lending interest rate in Vietnam dong". The gap between the base and the lending rate has, however, widened since mid-2004, indicating that the base interest rate may lose its function as a reference rate (Figure 8). Still, market participants appear to take increases in the base rate as a signal to increase lending rates used by commercial banks.

[22] See also Sections 1.3.

Figure 8

Base, deposit and lending rates



Sources: IFS; SBV Annual Reports.

The SBV also continues to set a ceiling on interest rates that banks pay on dollar deposits of corporate clients.

While indirect monetary policy has been introduced, there appears to exist a strong belief in the government and the State Bank of Vietnam that indirect monetary policy instruments are not sufficient to control inflation and that other measures than indirect monetary policy need to be used. This belief is based on the assumption that the inflation rate is primarily driven by supply shocks. The Governor of the SBV has been quoted as saying that currency has only a small impact on the consumer price index compared to other factors such as bad weather, bird flu or the sharply increasing prices of imported materials. In accordance with this view, the government also tries to control prices administratively. For example, in April 2005 the government instructed main industries to take measures to control prices. Also, important prices entering the CPI such as oil prices continue to be administered. Other policy measures used to directly influence prices include fiscal and tax measures. For example, tariffs on petroleum and steel products were recently cut to counteract increases in world market prices.

4. Determinants of inflation: results from variance decomposition

As was argued above, the SBV appears to base its monetary policy on the assumption that inflation in Vietnam is not a monetary phenomenon but largely the result of supply shocks. The findings presented in this section indicate that credit to the economy apart from commodity prices and the exchange rate plays an important role in the determination of the inflation rate

A vector autoregression (VAR) model is used to undertake an exploratory analysis of the role of external variables such as US money supply and commodity prices and domestic factors in the determination of the inflation rate in Vietnam. It also addresses the question whether monetary aggregates, credit to the economy and domestic interest rates play a role in the determination of inflation in addition to the VND/USD exchange rate.

The basic VAR system includes as principal domestic variables the VND/USD exchange rate, the consumer price index (CPI), and either the money supply (M2), total credit to the economy (CTE) or lending rates (LR), commodity price indices (petrol price and rice price) and as foreign variables the US money supply (M3US).[23] All variables are in log levels except the interest rates. Given the lack of long time series for Vietnam, Bayesian priors are used for estimating the system.[24] The VAR system is estimated with monthly data for the periods February 1996 and April 2005 and selected sub-period to check for the stability of the findings. Each equation includes 13 lags of each variable.

A principal finding of the variance decomposition is that credit to the economy is a key variable in explaining the CPI after 24 months (Table 1). Credit accounts for about a quarter of the variation of the CPI in two of three sample periods exceeding the part of the forecast error variance that is accounted for by the commodity price indices or the exchange rate. Credit to the economy is the most important variable explaining the CPI at the 24-month horizon in the sample period February 1996 to April 2005 and the most important variable together with US money supply in the sample period February 1996 to April 2004. This result, however, is not robust across all sample periods. When the system is estimated over the period February 1996 to April 2003, credit to the economy explains only a small portion of the forecast error variance of inflation in Vietnam.

The system of equations is also estimated with total liquidity (Table 2) and a lending rate (Table 3) instead of credit to check whether part of inflation can be attributed to these variables. Basically, these variables explain only a very small part of the inflation rate. In none of the systems that were estimated for different sample periods did total liquidity or the lending rate account for more than 5% of inflation in Vietnam.[25]

One system included both credit to the economy and the lending rate (Table 4). While credit to the economy explains 18% of the forecast error variance of the inflation rate, the lending rate does not contribute to the explanation of the inflation rate. Taken together, these results are consistent with the view that bank lending is an important channel in the monetary transmission mechanism in Vietnam.

Other important findings are that the indices for petrol and rice prices together with the VND/USD exchange rate are also important for explaining variations in the CPI. This finding supports the view that commodity prices as well as the exchange rate have been important determinants of the inflation rate in Vietnam. Petrol and rice prices explain 21% and 11%, respectively after 12 months, and the exchange rate 19% of the forecast variance of the inflation rate (Table 1). The rice price index is the variable that, with 16%, explains the largest part of the CPI within the first six months.[26] While the part of the CPI that is explained by

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[23] Peiris (2003) and Camen and Genberg (2005) estimated the VAR system for Vietnam. Fung (2002) estimated structural VARs for a number of Asian countries. Industrial production was also included in some systems that were estimated. Since industrial production did consistently not contribute to the explanation of other variables in the system, it was not included in the system presented here.

[24] The Bayesian approach makes it possible to estimate a VAR system with a limited number of observations by using prior information regarding the mean and standard coefficient of the lags included in the system. The basic assumption used is that variables follow an autoregressive process of the order of one, and accordingly lags of a higher order than one are assumed to be zero. If empirical evidence indicates that this is not the case, the data can override this assumption.

[25] The strong negative contemporaneous correlation that exists between forecast errors of the CPI and CTE equation is the price puzzle that has been reported in similar research applying the VAR approach. See Fung (2002).

[26] Due to high contemporaneous correlation between CPI and rice prices and the exchange rate, the order of variables in the system matters for the results regarding the rice price and the exchange rate. Ordering the rice price and the exchange rate before CPI implies that changes in the rice price and the exchange rate contemporaneously cause CPI.

these variables varies across the time period for which the VAR systems were estimated, the qualitative results are robust with respect to changes of the sample period.

Finally, the US money supply as a measure of international liquidity conditions also plays an important role in explaining the CPI in two of the three sample periods in the system which includes the domestic credit variable (Table 1). US money supply explains 18% after 24 months in the system estimated over the period 1996:2 to 2005:4, and even 25% after 24 months in the system estimated over the period 1996:2 to 2004:4. In the period 1996:2 to 2003:4, however, US money supply makes only a negligible contribution to explaining CPI. This is also true for the system with the lending rate (Table 3) and for the system with domestic money when estimated over the period 1996:2 to 2005:4 (Table 2).[27]

While this analysis of the variance decomposition has provided some interesting findings regarding the role of credit in the determination of the inflation rate, it can only be considered an exploratory analysis. More detailed analysis of the monetary transmission process would be highly desirable, specifically of the role of the financial structure for the monetary transmission mechanism. Then, for studying the monetary transmission mechanism with the help of the VAR methodology, the use of a structural VAR system would need to be applied.[28]

Table 1

Decomposition of the forecast error variance of CPI: system with CTE

In per cent

	Forecast steps (in months)	M3US	Petrol price	Rice price	VND/USD	CTE	CPI
Feb 1996-Apr 2005	12	6.1	21.4	10.9	19.0	12.0	30.7
	24	17.7	15.6	7.7	14.0	24.4	20.5
Feb 1996-Apr 2004	12	6.4	20.9	11.3	19.6	11.8	30.0
	24	25.7	11.3	7.2	12.5	25.7	17.6
Feb 1996-Apr 2003	12	1.7	37.8	15.1	15.0	3.6	26.8
	24	2.4	44.7	12.3	14.4	6.6	19.5

Source: own calculations.

Variables: M3US = US M3, seasonally adjusted; petrol price = UK Brent; rice price = rice price, Bangkok; VND/USD = VN dong-US dollar exchange rate; CTE = credit to the economy; LR = lending rate; CPI = consumer price index.

[27] The role of external factors in the macroeconomic evolution in Vietnam was studied using a block-triangular vector autoregression system in Camen and Genberg (2005). External factors, including the US federal funds rate, US CPI inflation, US real GDP growth and CPI inflation in China, were found to be important in explaining the inflation rate in Vietnam.

[28] See, for example, Bernanke and Mihov (1997).

Table 2

Decomposition of the forecast error variance of CPI: system with M2

In per cent

	Forecast steps (in months)	M3US	Petrol price	Rice price	VND/USD	M2	CPI
Feb 1996-Apr 2005	12	0.3	15.9	43.8	7.4	3.8	28.8
	24	0.7	15.4	57.7	3.9	4.3	18.0
Feb 1996-Apr 2004	12	3.5	24.5	28.5	11.3	1.2	31.0
	24	13.5	28.8	28.5	7.6	0.8	20.8
Feb 1996-Apr 2003	12	23.0	20.2	12.1	10.5	5.3	28.9
	24	38.3	26.4	8.0	6.1	5.2	16.1

Source: own calculations.

Table 3

Decomposition of the forecast error variance of CPI: system with LR

In per cent

	Forecast steps (in months)	M3US	Petrol price	Rice price	VND/USD	LR	CPI
Feb 1997-Apr 2005	12	4.4	9.6	44.8	2.5	2.5	36.2
	24	8.9	12.0	52.6	2.7	2.5	21.2
Feb 1997-Apr 2004	12	1.7	21.9	30.8	6.4	4.5	34.7
	24	6.9	27.5	34.1	4.6	3.7	23.3

Source: own calculations.

Table 4

Decomposition of the forecast error variance of CPI: systems with either CTE or CTE and LR

In per cent

	Forecast steps (in months)	M3US	PICOM	VND/USD	LR	CTE	CPI
Feb 1996-Apr 2005	12	13.2	15.3	13.9		11.7	45.9
	24	28.0	9.3	12.5		19.7	30.4
Feb 1997-Apr 2005	12	16.8	14.6	8.5	1.3	9.0	49.8
	24	35.9	8.1	5.5	0.7	17.8	32.0

Source: own calculations.

5. Conclusions

As this review has shown, Vietnamese authorities have made impressive progress in the implementation of financial sector reforms and the introduction of indirect monetary policy instruments over the last 10 years. But, especially in view of the internationalisation of the Vietnamese financial sector, further financial sector reforms and reforms of monetary policy are needed, and Vietnamese authorities have recognised the importance of continuing with the reform process.

Important components of the financial sector reforms would be the equitisation of the SOCBs and the further development of financial markets. These reforms will relieve important constraints on the financial system for monetary policy and constitute an important condition for progress with the implementation of indirect monetary instruments. In particular, they will probably help to strengthen the interest rate and bank credit channels of the monetary transmission mechanism.

With respect to monetary policy, the following principal reform steps would need to be considered:

- Transition of responsibilities for conducting monetary policy to SBV.
- Establishment of a hierarchy of monetary policy goals and of price stability as the primary objective.
- Clarification of the monetary policy strategy and increased flexibility of the exchange rate. The choice of a new intermediate target, instead of targeting the exchange rate, should be based on a comprehensive analysis including the recent experiences of transition countries with inflation targeting. The feasibility of the use of inflation targeting will largely depend on the implementation of a number of reform steps.

For the review of the monetary strategy, a good knowledge of the monetary transmission process and the role of the financial structure as well as of the determinants of inflation would be essential. Therefore, emphasis should be given to systematic empirical research on these topics, including the role of the financial structure in monetary policy transmission. As was shown by Hamada and Noguchi (2005) for the case of Japan, misguided economic perceptions can have serious consequences for the economic performance of a country if they influence economic policymaking.

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