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FUTURE DIRECTIONS FOR MONETARY POLICIES IN EAST ASIA

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FUTURE DIRECTIONS
FOR MONETARY POLICIES
IN EAST ASIA

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Central banks from the countries listed on the cover are members of EMEAP (Executives' Meeting of East Asia-Pacific central banks). The cover design incorporates elements of banknotes from Asia and Oceania. Included are the: Chinese 50 Yuan note, Hong Kong 100 Dollar note, Japanese 2000 Yen note, Malaysian 50 Ringgit note, New Zealand 20 Dollar note and Singaporean 2 Dollar note.

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Table of Contents

Introduction

David Gruen[1]

It is perhaps too glib to record that the 1997–1998 financial crisis represented a watershed for the economies of east Asia. But it is certainly clear that many of the economic policies in the region, which had been viewed in a favourable light in the long years of spectacular economic growth, were reassessed in the light of the crisis.

A critical part of this reassessment involved monetary policy and, its close cousin in an open economy, exchange-rate policy. Before the crisis, a de facto currency peg against the United States dollar formed the centrepiece of the monetary policy regimes of many of the countries in the region. But the crisis convinced almost everyone, if they had not been convinced by earlier crises, that such softly pegged exchange rates eventually prove unsustainable in a world of high capital mobility.

Just how far this argument should be taken, however, remains a matter of controversy. For some, the logic of high capital mobility requires that countries must choose one end or the other on the spectrum of exchange-rate flexibility. According to this view, the choice is between a hard fix (monetary union, currency board or dollarisation) and a freely floating exchange rate. But this is by no means a universally held view. In principle as well as in practice, a country's range of exchange-rate choices is not limited exclusively to these two extremes. While softly pegged exchange rates are not an attractive policy option (at least if the capital account remains open), a range of possible arrangements at the flexible end of the spectrum remains on the menu of possible exchange-rate choices.[2]

And so these and many other questions remain open in the debate about which monetary and exchange-rate arrangements are appropriate for east Asia. If individual countries choose flexible exchange rates, should inflation targeting be their preferred monetary policy framework? And if so, to what extent is this framework compatible with exchange-rate coordination between countries? Alternatively, is monetary union within east Asia an appropriate goal, even if it seems a long way off at present? And if this alternative vision is a realistic one, what lessons can be learned from the European journey to monetary union? The papers in this volume were commissioned by the Reserve Bank to address these questions.

Background

In setting the scene for the more detailed discussions to follow, Robert McCauley provides an interesting perspective on a range of the issues. He notes that inflation

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1. In writing these comments, I have benefited from the remarks made by Glenn Stevens at the final session of the conference.

2. Statements about exchange-rate regimes commanding universal support are rare birds indeed. Charles Wyplosz, in his contribution to this volume, has a few kind words to say about softly pegged exchange rates.

targeting has become more prominent after the Asian crisis – as also happened in Europe in the aftermath of the exchange-rate crisis in the early 1990s. He further notes, however, that the idea of a single mandate for monetary policy, with the focus on price stability, which is quite common in other regions, is not that common in Asia. He notes another interesting and subtle difference in thinking about monetary policy in Asia, namely the different degree of emphasis on formal central bank independence. In Europe, the western hemisphere and countries such as Australia and New Zealand, it has come to be widely accepted that a strong degree of independence in the setting of monetary policy is a necessary condition for a good system. It appears that in Asia, while a measure of independence is seen as important, it does not rate as highly as elsewhere.

There may be a good reason for this. The simple association that researchers have found between proxies for legal independence and inflation performance (usually, it should be noted, using countries' experience before the 1990s) appears to have much less power once a group of Asian countries are introduced into the sample. The Asian countries offer a richer experience than that embodied in regressions for the OECD countries. Perhaps what matters more, ultimately, is the degree of credibility and legitimacy central banks have, which is earned in the eyes of public opinion and financial markets over time by performance, rather than created *ex nihilo* by legislation.

It is also interesting to observe how quickly discussions about east Asian monetary policy evolve into discussions about the exchange rate. Were a similar volume to be written on future monetary policy directions in the major OECD economies of the United States, continental Europe or Japan, there would undoubtedly be much less focus on exchange rates.[3] The difference arises, of course, because of the openness of the east Asian economies to both trade and capital flows. Capital flows, both when they are sustained and when they change rapidly, have the potential to blow policies and economies seriously off course. While capital market disturbances in the major economies have sometimes had international dimensions – with the 1998 Russian crisis and the ensuing difficulties of Long-Term Capital Management being a prominent example – the monetary authorities are usually in a position to respond without worrying too much about the effect on the exchange rate. Smaller, more open, economies are denied this luxury.

So the focus on exchange rates is an understandable one. An implication is that monetary policy arrangements for the future will have to find a way either of managing exchange rates, or of coping better with their movement. The former will require a good deal of cooperative behaviour; the latter, in some cases at least, some improvements to the structure of economies and financial systems.

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3. The new economy, asset prices and financial stability would presumably be discussed more prominently in such a volume.

The Options

Inflation targeting

Both McCauley and Gordon de Brouwer point out that many east Asian countries – apart from the strict-peg regimes – have accepted considerably more exchange-rate variability, relative to interest-rate variability, in the aftermath of the crisis. In a few cases, this has gone against the expected relationship between openness and desired stability of the exchange rate. For countries that choose flexible exchange rates, inflation targeting is a promising monetary policy framework. Guy Debelle argues in his paper that while there are many practical difficulties involved in setting up a successful inflation-targeting regime, they should not be regarded as insurmountable.

Successful inflation targeting requires a capacity to forecast future inflation outcomes. It also requires an understanding of the link between monetary policy actions and the final objectives of policy. In both these respects, inflation targeting is likely to be more difficult to implement in developing economies than in developed economies. For one thing, inflation is likely to be more volatile in developing countries, particularly since food items, which are inherently more volatile, make up a larger fraction of consumption baskets in developing countries. For another, there may be more uncertainty about the size and timing of the transmission channels of monetary policy when financial systems are less developed and when the economy is undergoing rapid structural change. These influences make inflation targeting difficult. But a more volatile economy with more uncertainty about the monetary transmission mechanism will present difficulties for any monetary regime.

The advantages of inflation targeting, as Debelle argues, are in terms of the coherent framework it provides. The central bank can explain its actions in terms of the inflation target, and can be assessed in these terms by the public and financial markets. To the extent that a numerical target for inflation – that the central bank is committed to achieving in the medium term – helps to focus private-sector inflation expectations, there is an additional benefit from the framework.

The exchange rate: to manage or not to manage?

If countries choose inflation targeting, what scope is there for them to also manage their exchange rates? Both Debelle and John Williamson argue in their papers in the volume that there is considerable scope for exchange-rate management. Inflation-targeting central banks should be concerned about deviations of both inflation from target and economic output from potential. But there is nothing, in principle, preventing central banks in very open economies from also being concerned about deviations of the exchange rate from (some estimate of) its equilibrium rate.

In practice, however, conflicts may sometimes arise between the inflation target and the desire to stabilise the exchange rate, and it is then difficult to know how best to respond. Debelle argues that the inflation target must take precedence in such

situations, in order to maintain the credibility of the regime. But a counter-argument is put by Alejandro Werner, who reasons on the basis of Chile's experience during the Asian crisis, that when an exchange rate is under pressure it is not the best time to down-play its importance, so that concern about the exchange rate will instead take precedence at such times.

In his contribution to this debate, Williamson provides a nice motivation for the co-existence of an inflation target and an exchange rate objective by appealing to the 'Australian analysis' of Salter and Swan, which distinguishes between internal and external balance. The allocation of monetary policy to internal balance – the inflation target – in the short to medium term and exchange-rate policy to external balance in the longer term fits squarely into the traditional inflation-targeting model. But where that model, in its canonical form at least, assumes that a floating exchange rate will address external balance considerations pretty much automatically, Williamson retains a role for management or guidance of the exchange rate.

In support of this position, he cites the by now overwhelming evidence that floating exchange rates are often subject to fads and bubbles, rather than being predominantly driven by economic fundamentals. In Williamson's view, this exchange rate behaviour has significant real costs, especially for countries that are very open to trade and capital flows.

Williamson discusses three options for helping to manage a flexible exchange rate – monetary policy, sterilised foreign exchange intervention and capital controls – and argues that each option has a role to play. He reads the recent evidence as supportive of a potential role for sterilised intervention. This point is echoed by Takatoshi Ito, who draws on recently released data to argue that Japanese foreign exchange intervention has been stabilising over the past decade. Williamson's view on capital controls is somewhat similar to his view on foreign exchange intervention; recent evidence in his view suggests that, while capital controls cannot be made 'leak-proof', they can influence both the volume and nature of capital flows and hence the exchange rate. Both Ito and Charles Wyplosz, in their contributions to this volume, also express sympathy for this view.

Williamson favours a basket, band and crawl (BBC) regime for the exchange rates of east Asia. Such a regime can, in principle, be implemented unilaterally by individual countries, and Singapore's monetary policy framework already incorporates the key features of a BBC regime, as Edward Surendran Robinson explains. A BBC regime is undoubtedly easier for a single country to implement, especially at times like the Asian crisis when a decision to change the future trajectory of the desired exchange rate band can be taken unilaterally.

But Williamson favours an approach in which a number of east Asian countries use a *common* basket of the three major world currencies – the US dollar, the yen and the euro – with the aim of significantly reducing real exchange-rate variability both within the region and, in trade-weighted terms, with the rest of the world. As his analysis makes clear, to implement such a system requires considerable coordination between central banks in the region, including the need at times to manage conflicts between the domestic monetary policy requirements of individual economies, and

the desire to lean against exchange rate movements that threaten the integrity of the cooperative exchange-rate arrangement. The presumption must be that a strengthening of collective institutions in the region would enhance the prospects for such an exchange-rate arrangement.

Monetary union

If exchange-rate flexibility is judged ultimately to be more trouble than it is worth, a possible alternative is to form a currency union. In an argument with echoes in the contributions by Andrew Coleman, Don Brash and Andrew Rose, Wyplosz points out that it was not so long ago that the idea of a country ceding its monetary policy to another country, or to a supra-national authority, was a curiosity fit only for special cases. But the advent of monetary union in Europe, as well as a re-assessment of the relative merits of floating exchange rates and monetary unions, has seen something of a sea-change in attitudes about the desirability of monetary unions.

Wyplosz uses his paper to draw lessons for Asia from the European journey to monetary union. He makes the interesting point that, given relative sizes and distances between countries, there is much more trade among east Asian countries than among European ones – despite more than forty years of the Common Market in Europe. However, a significantly higher *proportion* of European trade is within the region than is the case for east Asia, and correspondingly, there is proportionately less trade for Europe with the United States than is the case for east Asia. These two observations may pull in opposite directions; the former one suggests that intra-regional exchange rate fluctuations may be more harmful for east Asia than for Europe, while the latter observation suggests that reducing exchange rate fluctuations *vis-à-vis* the US dollar might be more important for east Asia than for Europe.

Wyplosz makes a compelling case for the importance of building collective institutions along the road to monetary union:

> Collective institutions become the advocates of integration. They move the debate from the purely political sphere to the technical level, allowing for professional assessments and avoiding costly mistakes. They provide analyses that would not be carried out otherwise. They can prepare blueprints that can be readily put to use when the occasion arises, often unexpectedly. If the support for collective undertakings is limited, such institutions can start with limited terms of references and be allowed to grow once they have established their credentials.

Europe's message to Asia, as Wyplosz sees it, is that monetary union is a long way down the path of gradually increasing cooperation. In Europe, while there never was a master plan, opportunities were grasped when they arose.

From an economic point of view, the two countries in this region most likely to be able to contemplate a monetary union would be Australia and New Zealand. The two economies share similar monetary policy frameworks, are at a similar stage of development, and the two currencies are highly correlated already. Legal and institutional frameworks are also similar. Coleman's paper contains original discussion on this issue, and uses as a compelling analytical device an economic comparison of

the sovereign country of New Zealand with Queensland, a state within the Australian federation and monetary union.

As seems very clear from the European experience, however, the step to monetary union is not just an economic one, it is inherently a political one. While some groups in New Zealand have expressed interest in the possibility of a monetary union with Australia, the idea has hardly registered above the background noise in Australian political discourse. Coleman argues that Australia *should* care – a monetary union with New Zealand should be expected to lead to a big increase in trade between the two countries (perhaps a doubling), which should raise incomes in Australia as well as New Zealand.

To summarise, the monetary policy choices for east Asia are tricky ones, involving trade-offs that are only incompletely understood. In important respects, this is because of the intermediate openness of many of these countries. On the one hand, monetary policy in large, relatively closed economies can focus on domestic price and output stability without taking much notice of the exchange rate. On the other hand, for extremely open economies, like Hong Kong and Singapore, the exchange rate must be at centre-stage, with exchange-rate variability severely curtailed by one means or another. For countries at neither of these extremes, however, there are genuinely difficult questions about where to sit on the spectrum of exchange-rate flexibility, and once the choice has been made, how best to conduct monetary policy. It is to be hoped that the contributions in this volume shed some light on these important but difficult questions.

Setting Monetary Policy in East Asia: Goals, Developments and Institutions

Robert N McCauley[1]

1.   Introduction

The Asian crisis represented a watershed in monetary policy-making in east Asia. Suddenly gone, in many cases, was the guiding principle of stability of the currency against the US dollar. Suddenly gone, in some cases, was the senior management of the central bank itself. New goals, and new means to achieve them, were needed. In a number of Asian central banks, new leaders faced the challenge of setting new goals.

Four years after the onset of the crisis it is possible to characterise the objectives that have been embraced and the institutions that have developed to elaborate and attain these objectives. What follows, therefore, reviews the broad menu of objectives considered, and poses the question of whether a predominant emphasis on price stability can be reconciled with attention to asset prices or exchange rates. Then follows a sketch of the various choices made by the monetary authorities and how these are related to structural differences across economies. The institutions of monetary policy-making have evolved, but not always in smooth parallel. Section 2 discusses five appropriate objectives of monetary policy. Section 3 sketches the change in objectives since the crisis. Section 4 focuses on institutional developments. Section 5 briefly summarises the key points.

2.   The Appropriate Objectives of Monetary Policy

Monetary authorities bear the responsibility for achieving certain objectives. Macroeconomic goals can include long-term growth or employment. Increasingly in recent years, central bank goals have, either in practice or law, focused on 'price stability', in some cases even going as far as setting numerical inflation targets to be attained over specific time horizons. Other objectives also assumed by central banks in east Asia are assuring financial stability, exchange-rate stability, somehow defined, and attempting to maintain positive real interest rates for depositors. A central bank may also embrace the principle of freedom for international capital flows, although this principle may constrain the bank in achieving its other objectives. I now focus on each of these in turn and look at, in increasing depth in the next two sections, how they have fared in east Asia.

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1.   The author has benefited from discussions with Palle Andersen, Claudio Borio, Ben Fung, Stefan Gerlach, David Gruen, George Pickering, Amando Tetangco and Shinichi Yoshikuni and from the assistance of Angelika Donaubauer and Les Skoczylas but responsibility for any errors or bad judgement remains his own. The views expressed are those of the author and not necessarily those of the Bank for International Settlements.

2.1   Goals

2.1.1 Price stability

Price stability, defined qualitatively or operationalised as a range for the inflation rate, has gained wide acceptance as an appropriate goal of monetary policy. Explicit inflation targeting, which can be defined as including a publicy announced, specific range of acceptable inflation rates, a horizon for achieving this target range and regular reporting, has been characterised as constrained discretion. It has the great advantage, in my view, of framing the public discussion of monetary policy in terms of an outcome that the public demonstrably cares about and can understand. It permits the use of an intermediate target, if a sensible one is available, but frames a discussion of ignoring it (or even abandoning it), if necessary.

Guy Debelle's following contribution to this conference makes 'The Case for Inflation Targeting in East Asia' (this volume). Amato, Gerlach and Hawkins (2001) have recently surveyed institutional arrangements and challenges faced by emerging market and transition economies, including Korea and Thailand.

Relieved of the need for balance, let me echo below some reservations that my colleagues at the Bank for International Settlements have lodged regarding an exclusive focus on inflation and neglect of asset prices. Bill White, present at the creation of inflation targeting at the Bank of Canada, has joined the questioning, so no innate hostility to inflation targeting is involved.

2.1.2 Financial stability

Financial stability is an objective of monetary policy as well. Indeed, this was the first rationale for, and goal of, the Federal Reserve. Its leaders even denied that it should be held responsible for price fluctuations well into the 1920s. While this view now seems quaint, some proponents of inflation targeting focus as single-mindedly on price stability and, implicitly or explicitly, hold that it is a necessary and sufficient condition for financial stability.

Price stability, however, does not appear to be a sufficient condition for financial stability. In particular, asset price inflation and associated excessive credit growth can occur against the backdrop of stable prices. The risk of asset price inflation and excessive credit growth, indeed, might even be heightened by falling or low inflation. Conversely, the effect of asset inflation and excessive credit growth may be to reduce inflation, including via exchange rate appreciation associated with capital inflows.

To some observers, the solution is that the central bank must have the discretion to depart from the inflation-targeting framework itself, responding to threats to financial stability in a manner that cannot be readily explained in terms of meeting the inflation target.[2] Others argue that an apparent departure from actions required

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2.   Kindleberger (1995).

by inflation stabilisation – in particular, a tightening in the face of asset price inflation – can be justified in terms of avoiding the deflationary consequences of a later collapse.[3] Others suggest using the full scope of a tolerable inflation range, by, for example, aiming at price increases in the lower end of the target corridor in the face of asset price inflation and associated rapid credit growth.[4] Others adopt a Tinbergian position, and argue for policies other than interest rate movements to address the problem of credit cycles: disclosure of credit exposures to inflated asset prices; higher capital requirements for particular assets or across the board during asset price inflation; variable loan-to-value ratios; and other policies.[5]

2.1.3 Exchange-rate stability

Usually portrayed as an alternative to inflation targeting is stabilisation of the exchange rate (real or nominal). This can be argued for on the grounds of an optimal currency area, the criteria for which, by construction, ensure that the imported interest rate policy is appropriate for the economy adopting the fixed exchange rate. The policy of fixing the exchange rate can alternatively be thought of as adopting a monetary standard that has long-term predictability even if the associated interest rates are often cyclically inappropriate. One appeal is that this policy is simple to execute and does not require a deep understanding of the linkages between interest rates, inflation and growth.

In practice, the contrast usually drawn between assigning the monetary authority to achieving price stability and managing the exchange rate is harder to sustain as the economy under consideration is more open. The more open an economy, the greater will be the effect of the exchange rate relative to the interest rate in setting monetary conditions. At the extreme of hyper-openness, the monetary authority may well choose to devote monetary policy first and foremost to some rate or path for the exchange rate, *as a means of achieving price stability*.

2.1.4 Capital account openness

Capital account openness is a policy choice that may be adopted for various other reasons but that then puts a constraint on monetary policy. In particular, according to the so-called 'impossible trinity' view, an economy can only have two of the following: independent monetary policy, a fixed exchange rate and capital account openness.

Yi Gang and Tang Xian (2001) have argued a variant of this view. They hold that the impossible trinity is better viewed as a constrained sum in which fractions are possible. That is, an independent monetary policy (1) might be combined with semi-fixity of the exchange rate (1/2) and a halfway open capital account (1/2).

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3.   Kent and Lowe (1997).

4.   Crockett (2001, p 17).

5.   BIS (2001, pp 123–141); Borio, Furfine and Lowe (2001); McCauley, Ruud and Iacono (1999, pp 289–326).

Whether one agrees with this characterisation or not, one must agree that capital account openness should not be viewed as an all-or-nothing proposition. The Mundell-Flemming model, after all, conceived of capital flows as largely money-market flows, or at most money-market and bond-market flows.

An important development in the world economy in the late 1990s was the shift of international capital flows from the fixed income market, both money and bond flows, to the equity market, including both portfolio equity flows and direct investment. Equity-dominated capital flows can overturn standard Mundell-Flemming results. That is, a decline in policy interest rates can raise expected corporate earnings, possibly in conjunction with a decline in the longer-term interest rates presumably used as the basis for discounting those earnings. This can lead equity prices to rise and attract foreign investors with extrapolative expectations to buy more equities. These equity inflows, under the hypothesis of equity domination of capital flows, can overwhelm the money-market effects of lower interest rates on the currency and lead to a rise in the currency. Attempts to explain the US dollar's strength in the first half of 2001 along these lines run up against the shift from equity to bond inflows into the US during this period. The yen's strength after the March 2001 change in policy, and episodes of the US dollar/won exchange rate, however, can be more plausibly read in this manner.

The increased importance of equity flows has increased the effective scope of a capital account policy of semi-openness. In particular, in this era a capital account can be open to equity flows, both portfolio and direct investment, but closed to money and bond flows, or only some kind of money flows. Such a policy allows the international redistribution of risk through trade in the most risky assets, while limiting international influence on the money market.

2.1.5 Positive real interest rate on deposits?

In parts of east Asia, it appears that monetary policy is constrained by a perceived need to maintain positive real interest rates on household deposits. During boom years, of course, this constraint did not bind. Since the crisis, however, as economies have flown into the 'headwinds' of corporate and bank balance sheet restructuring, this consideration may have kept interest rates higher than they might have been otherwise. The view that real deposit yields must at all times over the business cycle be positive may derive from the arguments against financial repression of a generation ago. But these arguments targeted the chronic, not episodic, maintenance of negative real interest rates.

The application of a secular argument to each point in a cycle may be questioned. Elsewhere, in the face of fairly mild headwinds, at least by the recent standards of east Asia, the Federal Reserve pushed interbank rates down to zero in real terms. This implied significantly negative real deposit rates for all but the largest deposits. Structural differences, however, may allow the Federal Reserve to more easily adopt such a policy than its counterparts in east Asia. For one, bank deposits are a much smaller share of household deposits in the United States, and the institutions of

collective investment in stocks and bonds are much more developed. For another, the United States is a net debtor to the rest of the world in short-term dollar instruments, so the net income effect of lower short-term interest rates is positive.

2.2   Goals and instruments

Tinbergen's genius was to win a Nobel Prize for the insight that you can't hit two birds with one stone. The question arises whether to seek only price stability or exchange-rate stability, however defined, or whether to try to seek to achieve some measure of another goal, given the primary emphasis. There are two approaches to this question.

One approach is to attempt to use the range of targeted outcomes to accommodate other goals. This was mentioned above in the context of attention to asset price inflation in an inflation-targeting regime. A similar, within the margins, attention to the exchange rate might be paid in the same regime. (Similarly, there might be room within an exchange-rate targeting regime for interest-rate stabilisation or even some limited interest rate policy.)

Another approach is to look for another instrument. Again, this was mentioned above in the context of assigning prudential measures a role in limiting the potential damage of asset price inflation. Another instrument, or following Dooley, a quarter of an instrument,[6] is the currency composition of the government's (or the central bank's) balance sheet. If monetary policy is assigned to stabilising prices, changes in the balance of domestic and foreign currency assets or liabilities on the official balance sheet can be used to affect the exchange rate in some fashion. Changes in the composition could include not only sterilised intervention but also changes in debt management.

Another instrument available in some economies is variation in employer contributions to a mandatory provident fund. A cut in the employer's contribution lowers the cost of labour in domestic and foreign currency. The Singaporean authorities used this incomes-policy instrument in the mid 1980s and during the Asian crisis (MAS 2001a) to lower the real exchange rate as measured by relative unit labour costs without requiring a depreciation of the nominal exchange rate. This then allows the nominal exchange rate to be assigned to price stability (see below). Mandatory provident funds in Malaysia and, more recently, in Hong Kong might be similarly used (although the recent proposal in Malaysia to cut the employee contribution is more akin to fiscal policy).

3.   Recent Choice of Objectives in East Asia

This section analyses the choices of objectives for monetary policy in east Asia since the crisis. Broadly, the goal of monetary policy in the region has moved towards price stability. The exception, of course, is Malaysia, which has, for the time being, joined Hong Kong SAR (Special Administrative Region) in embracing a

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6.   In his presentation in Seoul (Dooley, Dornbusch and Park 2001).

fixed exchange rate against the US dollar. The Chinese authorities took a smaller step in the same direction by reducing the already very limited volatility of the renminbi against the US dollar in the course of the crisis, a policy that has since been reversed only partially.

3.1   Price stability

At writing there are six or seven central banks in east Asia that have set for themselves the objective of price stability. In addition, two central banks seek to use the control over interest rates afforded by capital controls to stabilise prices in the context of a fixed exchange rate. The following paragraphs consider central banks generally oriented toward price stability; explicit inflation targeters, or central banks moving in that direction; and fixed exchange rate countries with a large measure of freedom in setting interest rates.[7]

Among the central banks with a general orientation to price stability one can argue, and indeed the Monetary Authority of Singapore (MAS 2001a, p 15; Khor 2000, p 110) has argued, that it has long aimed at price stability, albeit without, until recently, publicly articulating their strategy. In March 2001, the Bank of Japan adopted the goal of an end to deflation and promised to maintain large excess reserves in the banking system until such time as deflation ended. The monetary authority of Taiwan, China[8] sets an M2 target 'to allow the economy to make full use of its production capacity without jeopardising price stability' (CBC 2000, p 35), where the latter apparently means a core inflation rate of 1 per cent.[9]

Explicit inflation targeting is relatively new in east Asia. The Bank of Korea introduced explicit inflation targeting in the context of the reforms adopted with the support of the IMF in 1998. The Bank of Thailand published its first quarterly *Inflation Report* in July 2000. Indonesia set its second annual inflation target in January of 2001. The Philippines is in the process of adopting inflation targeting.

Capital controls allow for independent setting of interest rates in China and Malaysia. The authorities in China expressed their concern at the deflation that resulted from maintaining China's exchange rate during the Asian crisis as they lowered 1-year deposit rates to 2.25 per cent in 1999. In Malaysia, 'the basic thrust of monetary policy was…to support economic recovery and facilitate structural reforms, while preserving price stability' (Bank Negara Malaysia 2000, p 85) and interest rates were brought down to 3 per cent. In 2000, 'interest rates remained low but were judiciously managed to balance the need to suppoert economic growth,

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7.   Schaechter, Stone and Zelmer (2000), published in December 2000, does not focus on any inflation targeters in east Asia.

8.   Henceforward 'the CBC' of 'Taiwan'.

9.   Core inflation is defined as consumer prices excluding fresh fruits and vegetables, fish and shellfish and energy (CBC 2000, p 21).

preserve price stability and sustain the nation's level of savings' (Bank Negara Malaysia 2001, p 85).

3.1.1 Singapore: price stability and the exchange rate

Above, Singapore was included among central banks aiming at price stability, but conventional classification would leave Singapore out of this group and instead place it among the economies pursuing a stable exchange rate. On this view, the basic strategy of monetary policy in east Asia would line up rather neatly along the lines of economic openness. The relatively closed economies, with export to GDP ratios ranging from 10 per cent in Japan up to 50–60 per cent in the Philippines or Thailand focus on price stability, while the very open economies of Malaysia, Hong Kong and Singapore focus on the exchange rate. On this view the outlier is China, which by regional standards is not so open. There, however, discussion of more flexible interest rates and exchange rates in the lead-up to WTO admission may suggest a monetary policy regime in transition. Of course, China and Malaysia employ capital controls to allow a combination of fixed exchange rate and domestic interest rate setting.

At the level of strategy, however, Singapore belongs among those central banks aiming for price stability. One can model a Taylor rule for Singapore in which the nominal effective exchange rate moves in response to deviations of inflation away from its target and of output from its trend. Box A reports two empirical efforts along these lines. That foreign exchange market economists in Singapore (rather than, say, a policy economist in Hong Kong) have estimated these Taylor rules means that the Singaporean authorities have succeeded in communicating their strategy to market participants. Thus, the exchange rate is a policy variable analogous to the short-term interest rate elsewhere. If one insists that the monetary strategy in Singapore is exchange-rate stabilisation, then one has to argue that the monetary strategy of the United States is interest-rate stabilisation. Singapore poses a challenge to the concept of 'an international system of hard pegs and relatively free floats', in which the central banks with freely floating currencies target inflation; it has not joined 'the observed movement away from intermediate arrangements' (Eichengreen 2001, p 17).

Box A: A Taylor Rule for Singapore with the Nominal Effective Exchange Rate as Operating Target

At least two sets of market analysts conceive of the Monetary Authority of Singapore following a Taylor Rule, but of a form quite different from the original formulation. The standard Taylor rule relates the policy interest rate, the overnight target for the federal funds rate, to deviations of expected inflation from target inflation and deviation of output from trend output. In this variant on the Taylor rule, however, the MAS operating target is the change in the nominal effective exchange rate (NEER)[1], not the short-term policy interest rate.

In particular, Simon Flint of Bank of America's Currency Strategy Group argued in 1999 that 'Singapore uses its FX rate as the US Federal Reserve uses the Fed Funds Rate'.[2] Similarly, Bhanu Baweja and Paul Schymyck at IDEAglobal Economic Research in Singapore find the MAS 'set the NEER in period t as a function of the expected deviation of inflation and the output gap from their target levels'.[3]

Flint estimates the following equation on quarterly data:

$$NEER_t - NEER_{t-1} = a + b[I_t] + c[(Y_{t-1} - Y^*_{t-1})] \tag{1}$$

where *NEER* is the nominal effective exchange rate, I_t is core inflation, Y_t is real quarterly GDP and Y^* is potential output, estimated as growing at 7.8 per cent pre-crisis and 5–5.5 per cent post-crisis.

Baweja and Schymyck estimate the following equation on quarterly data:

$$NEER_t - NEER_{t-1} = a + b[(I_{t-1} - I^*)] + c[(Y_{t+1} - Y^*_{t+1})] \tag{2}$$

Where I_t is taken to be the core rate of inflation on the MAS definition, I^* is taken at the long-term average rate of inflation of 1.5 per cent and Y_{t+1} is realised GDP in the following period and Y^*_{t+1} is computed using the Hodrick-Prescott filter.

Parameter estimates and regression statistics are shown in Table A1.

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1. Note that in order for Singapore to have a lower inflation rate than its trading partners, the NEER has shown a trend appreciation. This requires the left hand side variable to be expressed as some sort of change variable. With the NEER indexed at 100 at some point, longer estimation periods would probably benefit from the variable being defined as a percentage change in the index rather than an absolute change.
2. Flint (1999, p 1).
3. Baweja and Schymyck (2001).

Table A1: Two Estimates of a Taylor Rule for Singapore's Nominal Effective Exchange Rate

	Constant	Inflation	Output gap	Adjusted R^2	Standard error	F-statistic	Durbin-Watson statistic	Number of observations
Flint	0.0041	0.79	0.11	0.32	0.012	8.6		36
	(1.5)	(3.5)	(2.0)					
Baweja and Schymyck	0.65	0.44	0.24	0.31	1.2	9.6	2.2	45
	(3.3)	(3.3)	(2.4)					

Notes: Flint estimates refer to the period 1990–99; Baweja and Schymyck refer to 1985–96. Figures in parentheses are *t*-statistics.

Sources: Baweja and Schymyck (2001); Flint (1999); author's personal communication with same

The two analyses agree qualitatively that point estimates of the parameter on inflation are larger than those for the output gap but the authors' interpretations of this finding vary in an interesting manner. Baweja and Schymyck follow the standard approach by suggesting that 'The estimates…indicate a stronger policy response to inflation deviations as compared with output gap deviations'. In particular, the authors note, if inflation is 1 per cent over target, a 0.44 per cent appreciation in the NEER is engineered. For the output gap, a 1 per cent excess of output over potential would lead to an appreciation of the NEER by 0.24 per cent. By contrast, Flint holds that 'It would be wrong to conclude from the coefficients above that I was far more influential than Y. It is chiefly that Y has been far more volatile than I (with a standard deviation of 3.6% versus 0.9%)'. In other words, it may be more interesting to ask whether the central bank moves its policy variable more or less for a one standard deviation overshoot of inflation or growth, rather than a 1 per cent overshoot. In industrial countries, inflation and growth vary more similarly over the cycle, so this issue does not arise with the same force.

3.1.2 The choice between a general orientation to price stability and explicit inflation targeting

Why have some economies chosen explicitly to target inflation while others have not? Gerlach (1999) examined data on 22 OECD countries and found that a previous lack of independence of the central bank, heavy dependence on commodity exports and a relatively closed economy all favoured the adoption of explicit inflation targeting. For central banks that previously did not enjoy independence, explicit inflation targeting was interpreted as a sort of substitute: a government gives a clear mandate and allows the central bank to choose the means of achieving it. In economies dependent on commodity exports, wide swings in the terms of trade render an exchange-rate goal hard to attain and thereby make a regime of inflation targeting more attractive. In highly open economies, central banks are less tempted to ease to give a temporary boost to the economy because any consequent exchange rate depreciation would strongly affect domestic prices. Thus, with openness itself disciplining monetary policy, there is less advantage to targeting inflation.[10]

In the light of these findings for most of the OECD, any historical lack of central bank independence in east Asia would seem to argue for the broad advantage of explicit inflation targeting (see below). With regard to export composition, however, only Indonesia remains heavily dependent on commodity exports in east Asia today. The openness of a number of east Asian economies would make their adoption of explicit inflation targeting unusual in light of the experience in most of the OECD. Sweden, with a ratio of exports to GDP of 32 per cent, was the most open economy among explicit inflation targeters in Gerlach's sample, although Iceland and Norway at 35 per cent and 39 per cent, respectively, have since adopted this policy.[11] The adoption of explicit inflation targeting by the relatively closed economies, at least on a regional comparison, of Korea and Thailand accords with the choices of most of the OECD, although Thailand is more open than any industrial country that has adopted explicit inflation targeting.

One can ask the converse of Gerlach's question: why do some central banks that embrace price stability as a goal abstain from explicit inflation targeting? Baltensperger, Fischer and Jordan (2001) argue that central banks that enjoy considerable latitude to set or to define their goal (said to enjoy 'goal independence') are likely to eschew inflation targeting. Such central banks, the argument goes, are likely to view inflation targeting as a restriction on their ability to act flexibly to promote preferred economic outcomes and so not only the Swiss National Bank but

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10. Note that Gerlach's paper, owing to data limitations, confined itself to the choice of explicit inflation targeting versus all other choices. Thus, dependence on commodity exports and a relatively closed economy may argue for a domestic price stability goal in general, rather than explicit inflation targeting *per se*.

11. Gerlach's analysis had to exclude these two countries to obtain sensible results. Given their dependence on commodity exports, Gerlach suggested that perhaps they would do better to adopt explicit inflation targeting, which they subsequently did.

also the ECB, the Federal Reserve and the Bank of Japan have abstained from explicit, full-fledged or single-minded inflation targeting.[12]

The association of inflation targeting and commodity exports poses an important question for east Asian economies: Has their integration into the world electronics business made them, in effect, commodity exporters? As this business suffers its worst downturn since the mid 1980s, the extreme amplitude and frequency of the technology cycle, as compared to that of other manufactured goods, is evident. Unlike the mid 1980s, electronic goods bulk very large in the exports of east Asian countries (Table 1). Are price or volume swings in this business so extreme (Table 2) that the electronics cycle should be understood as a fundamental force driving exchange rates, much as the traditional commodity cycles drive the Canadian and Australian dollars?[13] Or, in some east Asian economies at least, is the value added in labour-intensive electronics manufacturing relatively immune to the price swings in the business while exchange-rate stability might actually attract investment from multinational corporations? A finding that an economy's exports are heavily exposed to a highly cyclic industry with idiosyncratic cycles might, on Gerlach's evidence, argue for inflation targeting.

Table 1: High-tech Exports of Asian Economies

	Share of economy's total exports to OECD countries Per cent									Percentage change in US imports during year to:	
	CN	HK	ID	KR	MY	PH	SG	TH	TW	*Jun 2000*	*Feb 2001*
Computers[a]	6	7	2	13	19	22	54	16	28	*8*	*–6*
Telecommunications[b]	7	4	5	6	15	6	5	7	4	*43*	*1*
Components[c]	8	18	2	23	24	33	17	11	17	*22*	*–2*
Total	**20**	**30**	**9**	**41**	**58**	**60**	**77**	**34**	**50**	*19*	*0*

(a)   SITC division 75: office machines and automatic data processing machines.
(b)   SITC division 76: telecommunications and sound recording and reproducing apparatus and equipment.
(c)   SITC division 77: electrical machinery, apparatus and appliances not elsewhere specified and electrical parts thereof.
Note: See Appendix C for a listing of country codes.
Source: BIS (2001, p 43)

12. Cargill and Ito (2001) argue that the last has fallen into an 'independence trap', in which it resists the (in their view, correct and efficacious) policy of inflation targeting only because of the seeming limitation on newly-won independence.

13. Given the shares in Table 1 and the openness of the east Asian economies, the estimates in the last column of Table 2 seem, if anything, low.

Table 2: Effect of Slowing Electronic Demand

	Value-added share of electronics Per cent	Effect on GDP of a 20 per cent reduction in electronics exports %
ID	20	–0.4
KR	50	–1.2
MY	35	–2.0
PH	20	–0.7
TH	25	–0.4

Source: Asian Development Bank (2001, p 23)

3.1.3 Inflation targeters' choices

The three Asian central banks that are explicitly targeting inflation have defined inflation in various ways and have set target ranges of varying widths (Table 3). All three exclude volatile or unpredictable elements, with Indonesia excluding the effect not only of government price hikes but also government incomes polices, while the elements excluded from the Korean and Thai consumer prices are variations on the more familiar food and energy themes.

Most of the target ranges have, in the event, been undershot or achieved. After experiencing lower than target inflation for the first three years of its inflation targeting, the Bank of Korea this year has cited inflation running above its 2001 target (resulting from depreciation of the won, higher oil prices and rises in public-sector tariffs) in lowering interest rates only 50 basis points thus far this year. The central bank has attempted to anchor expectations across the cycle to lessen the impact of one year's inflation outside the target range. In setting its target in 2000 of 2.5%±1%, 'it also established a mid-term inflation target of 2.5 per cent to maintain consistency in monetary policy and suppress inflationary expectations' (Bank of Korea 2001a, p 1). Strongly affected by political developments (Alamsayah *et al* 2000, p 237), the depreciation of the rupiah led to an overshoot of Bank Indonesia's first target in 2000. Thai inflation came in at the low end of the wide target range.

In all three cases, the shift to inflation targeting has been accompanied by increasingly explicit communication with the financial markets and parliament. In Indonesia, 'We have to announce the result of the Board monthly meeting. [Interest rates resulting from SBI auctions are announced weekly.] We have to provide a quarterly report to the parliament, which basically is a sort of inflation report, and we have to submit the annual report and announce the target of inflation to the public at the beginning of every year' (Iljas 2000). Nowadyas the Bank of Korea announces

Table 3: Inflation Targeting in East Asia: Concepts, Targets and Outcomes
Per cent

Concept targeted	1998		1999		2000		2001
	Target	Actual	Target	Actual	Target	Actual	Target
ID							
Consumer price inflation excluding the effect of government price and incomes policy	na		na		3–5	5.93	4–6
KR							
Headline inflation, 1998–99; since then, consumer prices excluding petroleum and agricultural products other than cereals	9±1	6.9	3±1	0.8	2.5±1[a]	1.8	3±1
TH							
Consumer price inflation excluding raw food and energy prices	na		na		0–3.5	0.7	0–3.5

(a)   2.5 per cent also announced as a medium and long-term target.
Note: See Appendix C for a listing of country codes.
Sources: Bank Indonesia (2001); Bank of Korea (2001b); Bank of Thailand (2000e, 2000f, 2001a, 2001b)

its policy rate just after its monthly meeting and the governor and other senior officials spend quite a bit of time in parliamentary testimony.

3.1.4 US and Asian interest rates

Before turning to a discussion of exchange rates, it is useful to compare interest rate movements in east Asia with those in the United States (Table 4). One test of monetary independence is whether east Asian economies did not match the Federal Reserve in its recent cycle of tightening and loosening, especially the tightening phase. China, Indonesia, Malaysia and Thailand did not even share the qualitative up-down pattern of the Federal Reserve's tightening and easing phases. Only the Philippines matched or more than matched the Federal Reserve, and political events exaggerated the seeming response. Korea, Singapore and Taiwan showed a very muted cycle compared to the United States. Even Hong Kong, while resembling US rates, did not match them. On this evidence, east Asia's monetary policy is not a trans-Pacific import.

Table 4: Changes in Policy Rates in the US and Asia
Percentage points

	US	CN	HK[a]	ID	KR	JP	MY	PH	SG[a]	TW	TH
Tightening phase	Up	Down	Up	Down	Up	Up	Down	Up	Up	Up	Down
May 99–Nov 00[b]	1.75	1.53	0.52	12.00	0.50	0.25	0.20	5.00	1.00	0.25	0.25
Easing phase	Down	None	Down	Up	Down	Down	None	Down	Down	Down	Up
Dec 00–Jul 01[c]	2.75	–	2.24	2.23	0.50	0.25	–	4.50	0.61	1.23	1.00
Memo: nominal effective exchange rate											
May 99–Nov 00	*6.91*	*3.57*	*5.07*	*–13.90*	*1.26*	*17.30*	*3.72*	*–21.20*	*1.11*	*2.67*	*–12.70*
Dec 00–Jul 01[c]	*4.57*	*4.20*	*4.56*	*–9.90*	*–1.56*	*–9.78*	*6.04*	*–2.11*	*0.55*	*0.35*	*2.25*

(a)   Three-month HIBOR/DIBOR, not a policy rate.
(b)   The US Federal Reserve first raised the Federal Funds target rate in June 1999 and tightened in five further steps through to May 2000. The period used here
        is longer, reflecting the Federal Reserve's 'tightening bias' into November.
(c)   Data as of 9 July.
Note: See Appendix C for a listing of country codes.
Sources: BIS calculations; national sources

3.2   Exchange rates

Discussion of post-crisis exchange rate policy in east Asia has given rise to controversy and misapprehension. The exceptions are China, Hong Kong and Malaysia, which have adopted widely acknowledged fixed-rate or quasi-fixed-rate regimes. Elsewhere, it has been claimed that the behaviour of exchange rates in east Asia has reverted to pre-crisis norms. The data do not support such claims (see Appendix A). A harder question is how to characterise the foreign exchange market intervention of east Asian economies, that is, going beyond the one-size-fits-all designation of a managed or dirty float.

3.2.1 China, Hong Kong and Malaysia

These three economies aligned their exchange rates more closely to the US dollar in 1999–2000 than they did in 1995–1996. Starting from very similar spot rate volatility against the dollar in the earlier period, the Chinese renminbi and Hong Kong dollar both became more stable (Table 5). Ironically, even though the policy commitment to dollar exchange rate stability was stronger in Hong Kong, the renminbi showed less movement against the dollar in the latter period. The volatility of the Malaysian ringgit against the US dollar, for its part, fell from a not inconsiderable level around 3 per cent to 0.

Against the background of widening of interest rate differentials in favour of the US dollar in the course of the Federal Reserve's last tightening cycle, the isolation of the Chinese and Malaysian money markets came under stress. The Chinese authorities allowed domestic banks to offer higher rates on US dollar and other foreign-currency accounts (McCauley and Mo 2000), and for a time China's official reserves grew very slowly notwithstanding reported surpluses on the current and direct investment accounts. Malaysia's reserves declined for much of 2000, albeit they remained at comfortable levels, again notwithstanding a wide current account surplus.

The conventional wisdom with regard to currency board systems is that, at best, interest rates can fall to match those obtaining in the base currency. In general, owing to lower creditworthiness or residual concern about the possibility of a breakdown in the peg, interest rates in the pegged economy offer a premium over those in the base currency. Developments in Hong Kong in 2000, however, did some puzzling damage to this view as money market rates there fell substantially below US dollar LIBOR. The 1-month HIBOR fell below LIBOR by over 100 basis points at times, and 1-year HIBOR (a very liquid node in the Hong Kong money and foreign exchange market) by as much as 40 basis points. Most commentary ascribes these relatively low interest rates to weak loan demand and/or the strength of capital inflows.[14] Implicitly, these interpretations require a shortage of speculators (or nimble hedgers), that is, of corporations willing to switch US dollar debt into

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14. Capital inflows were cited by the Hong Kong Monetary Authority (2001, p 42), in particular funds flowed strongly into China-related share offerings.

Table 5: Exchange Rate Volatility – 1995–1996 and 1999–2000
Annualised standard deviation of daily per cent changes

	Volatility against US dollar		Nominal effective exchange-rate volatility	
	1995–1996	1999–2000	1995–1996	1999–2000
AU	7.25	11.45	8.90	10.47
CN	0.42	0.06	3.83	3.69
HK	0.41	0.14	4.81	4.90
ID	2.66	23.40	6.56	23.60
KR	3.94	6.58	5.89	8.17
MY	2.83	0.00	4.91	4.48
NZ	6.86	13.16	5.68	10.78
PH	3.93	8.26	6.03	8.86
SG	3.90	4.13	5.27	5.67
TW	3.80	3.56	5.05	7.26
TH	1.77	7.92	4.57	8.52
BE	9.67	11.78	3.52	2.61
CA	4.98	6.36	5.30	6.69
CH	12.10	11.19	6.86	4.09
DE	10.01	11.78	5.10	3.90
FR	8.45	11.78	3.73	3.54
IT	8.91	11.78	9.20	3.14
JP	11.08	11.39	9.79	11.62
NL	9.97	11.78	4.05	2.97
SE	8.38	10.73	7.07	5.40
GB	6.77	8.15	5.53	7.21
US	na	na	5.15	5.40
XM	na	11.78	na	8.39

Note: See Appendix C for a listing of country codes.
Sources: BIS; Bloomberg

Hong Kong dollar debt, or of money-managers prepared to switch from large Hong Kong dollar deposits to US dollar deposits. At least one market economist discerned another influence, namely, that the Hong Kong authorities used degrees of freedom in the composition of the official balance sheet (purchases of US dollars on the strong side) to sustain lower Hong Kong dollar interest rates (Condon and Chan 2000; Condon 2000). It would not be hard to find a motive: while the US economy was threatening to overheat, the Hong Kong economy was gripped by deflation.

3.2.2 The Singapore dollar

As noted above, the authorities have guided the Singapore dollar's effective exchange rate as a means of keeping prices stable. Singapore's policy continuity is underscored by the observation that neither its bilateral nor its effective exchange rate volatility has changed substantially since the crisis. Recently, however, the MAS has outlined its approach to the public in a way that marks a break with the past. On 27 July 2000, a senior official at a media briefing on the release of the MAS *Annual Report* reported that the MAS had taken a 'neutral stance' toward the trade-weighted Singapore dollar in the previous year. In view of labour market tightening and higher world commodity prices the 'MAS is, therefore, prepared to allow a gradual and modest appreciation of the Sing dollar on a trade-weighted basis in the coming year'. This stance was re-affirmed in the *Monetary Policy Statement* in February 2001 (MAS 2001b). Market participants were left to infer the current target nominal effective exchange rate (the 'centre') and the margin of tolerance around it (the 'width of the band') from the behaviour of the exchange rate and perceived interventions, but they learned its slope, in qualitative terms at least, *and* that the market rate was in the upper half of the band. Under the circumstances, market participants might interpret gradual to mean something like 1–2 per cent per annum.[15] In July 2001, market participants were surprised that the MAS openly switched to a neutral stance (i.e., a stable nominal effective exchange rate going forward), citing labour market softening, weaker global price pressures and the implications of collapsing non-oil domestic exports. The MAS also published its nominal effective exchange rate and characterised the market exchange rate *vis-à-vis* its target band (MAS Economics Department 2001, p ii), allowing market participants to make more progress on inferring the official basket weights and target band (Patterson, Chong and Eschweiler 2001).

3.2.3 The NT dollar

Falling between the economies experiencing lower or higher exchange-rate volatility is Taiwan. The New Taiwan dollar's bilateral US dollar volatility remained the same but its effective-exchange-rate volatility increased. This was in part a consequence of the greater US dollar volatility of its neighbours' currencies. There is evidence, however, of a change in policy in 2001 (see below).

3.2.4 The rupiah, won, peso and baht

Calvo and Reinhart (2000, p 27) claim: 'Indeed, once financial markets settled and capital flowed back into Asia, their currencies are fluctuating much the way they did prior to the crisis—that is to say, they are not fluctuating at all'. Similarly, McKinnon (2000) concludes that the east Asian dollar standard enjoyed a resurrection after the crisis and Ogawa (2001, p 32) looks at the baht, won and Singapore dollar

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15. Baweja and Schymyck (2001) find 2.5 per cent as the trend (their estimated constant times 4).

and concludes that 'some of the East Asian currencies have returned to de facto pegging of the home currencies to the U.S. dollar since late 1998'. By contrast, the MAS Economics Department (2000) measures exchange rate volatility against the dollar and concludes that 'the declaration that there [is] greater flexibility in the three currencies [(namely, rupiah, won and baht) is] not "merely words but also deeds"' (p 14). The data through end 2000 weigh in favour of the central bank economists in Southeast Asia, showing distinctly higher volatility for the currencies of Indonesia, Korea, the Philippines and Thailand. The higher volatility of these currencies holds whether the exchange rate is measured against the US dollar or in effective terms. Note, however, that the increase in effective-exchange-rate volatility is smaller than the increase in US dollar exchange-rate volatility. (See Appendix A for a more extensive treatment of the relationship between McKinnon's conclusion and evidence.)

It is not safe, however, to conclude from this observation that policy is more accepting of exchange rate volatility. Neither Australia nor New Zealand has changed its exchange rate policy, and yet both of their exchange rates were more volatile in the latter period. Moreover, it could be, for instance in Indonesia, that the economy as a whole was more volatile in the latter period and thus any rise in foreign exchange volatility might simply reflect the underlying economy rather than policy. An approach that considers both exchange rate and interest rate volatility is required.

3.2.5 *The balance of interest rate and exchange rate volatility*

A more telling measure juxtaposes exchange-rate volatility and interest-rate volatility.[16] Looking, then, at the ratio of exchange-rate to interest-rate volatility,[17] the impression gained by a simple comparison of exchange-rate volatilities is largely confirmed (Figure 1 shows effective-exchange-rate volatility and Figure 2 shows

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16. The present analysis does not follow some studies of the balance between interest- and exchange-rate volatility that include the volatility of foreign exchange reserves. The concept, that pressure on the currency can find expression in some combination of exchange rate intervention and interest rate movements, is sound enough. To measure intervention-related reserve changes, however, requires more than differencing a series in the *International Financial Statistics*. For one thing, variations in the US dollar/euro and US dollar/yen exchange rate introduce changes in reserve levels that are unrelated to intervention. Worse, not just interest receipts, but also draw-downs and repayments of loans, as well as government transactions, can move reserve levels in the absence of intervention. Of course, swap transactions can serve to maintain reserve levels in the presence of intervention.

17. In measuring interest-rate volatility, one faces a choice between two measures, each of which has limitations. One can look at *basis point volatility* or *yield volatility*. The former is constructed as the standard deviation of actual interest rate movements over some period (appropriately annualised); the latter as the standard deviation of percentage movements in interest rates over some period. The problem with basis point volatility is that it treats as the same a 25 basis point interest rate move when interest rates are 20 per cent or 1 per cent, yet interest rates tend, like inflation, to be more variable at higher levels. The problem with looking at interest rate movements in percentage terms, however, is that at very low rates, the same 25 basis points can be a large fraction. Thus, Japan's short-term interest rates have shown outsized yield volatility in recent years. As in Borio and McCauley (1996), yield volatility serves as the focus here while the oddity of the measure for Japan must be borne in mind; figures based on basis point volatility can be found in Appendix B. One appealing feature in the present context is that exchange-rate volatility is measured in the same units of percentage changes as yield volatility.

**Figure 1: Openness and Volatility of Nominal Effective Exchange Rate
and Interest Rate**
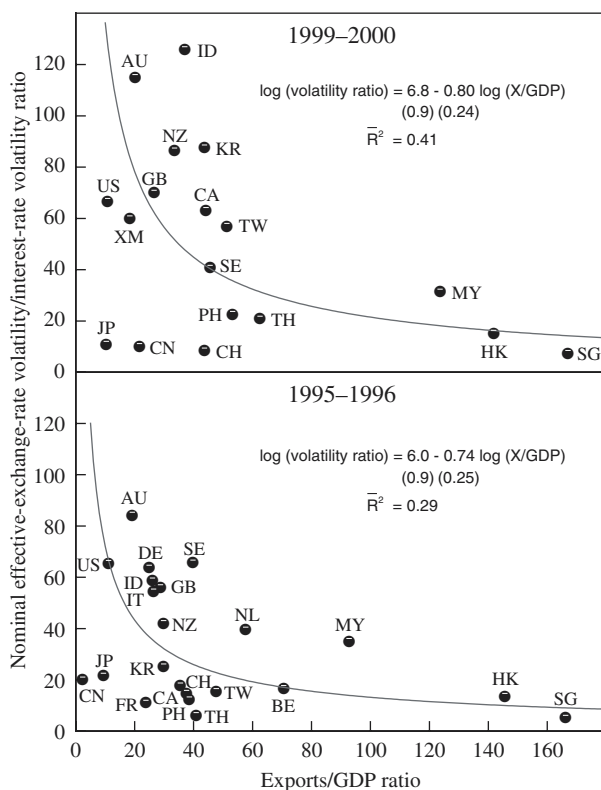
Notes: Interest rates are defined as 1-year household deposit rate for China; 3-month deposit rate for
Korea, Singapore and Thailand; 1 and 3-month SBI rate for Indonesia for latter and earlier
period respectively; 3-month T-bill rate for the Philippines; 3-month money-market rate for
Taiwan and 3-month interbank rate for remaining countries.

Interest-rate volatility measured as annualised standard deviation of daily percentage change in
yield. Figures in parentheses are standard errors. Data for China and Japan are excluded from
the plotted regressions.

See Appendix C for a listing of country codes.

bilateral exchange rate volatility against the US dollar). That is, exchange rates have
become more volatile not only absolutely but also in relation to interest rates in
Indonesia, Korea, the Philippines, Taiwan and Thailand. In addition, exchange-rate
volatility has risen relative to interest-rate volatility marginally in Singapore and
substantially in Taiwan.

What should be made of the observation that the relative volatility of the exchange
rate for many emerging east Asian economies remains below that of many industrial
economies? One answer is openness. With greater openness the exchange rate's
effect on prices and activity increases in relation to that of interest rates. Indeed, the

**Figure 2: Openness and Volatility of US Dollar Exchange Rate and
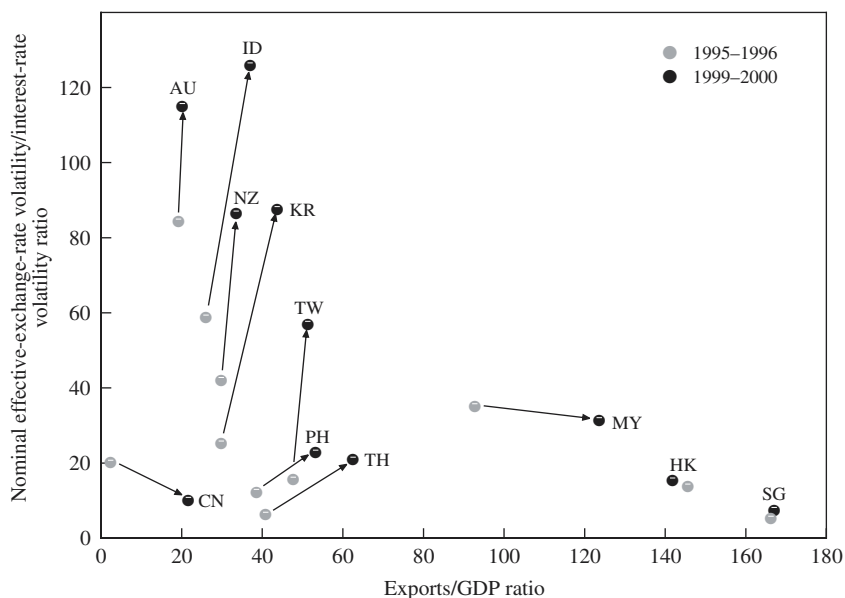Interest Rate**
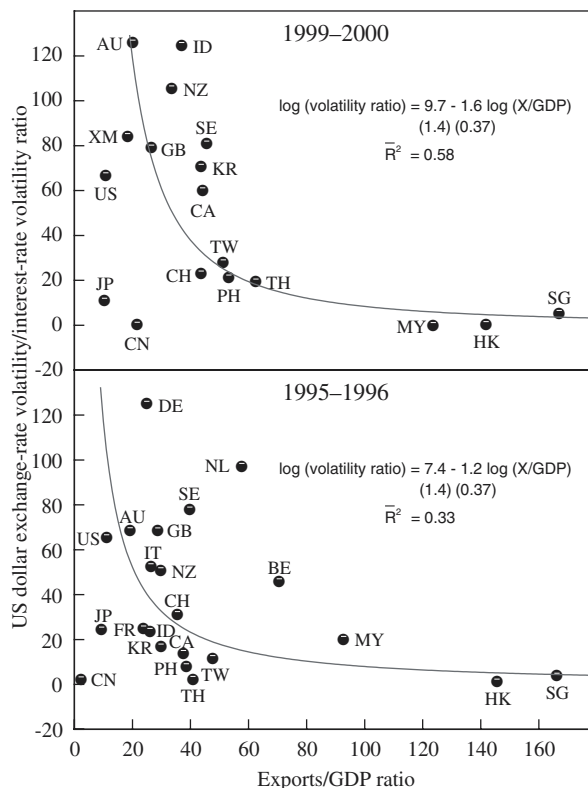
Note: See Figure 1.

more open the economy, the lower relative exchange-rate volatility. Viewed in this
light, the similarities among Hong Kong, Malaysia and Singapore are more noticeable
than their differences: these three super-open economies have chosen to stabilise
their exchange rates in relation to their interest rates.

For the east Asian and Pacific economies, Figure 3 focuses on the change in the
relative exchange-rate volatility between 1995–1996 and 1999–2000, using the
effective exchange rate measure from Figure 1. The arrows for Indonesia, Korea, the
Philippines, Thailand and Taiwan all point in the northeast direction. This indicates
that the increase in relative exchange-rate volatility occurred *despite* the very
considerable opening of the east Asian economies. (This opening reflects the
unbalanced nature of the recovery since the crisis, with exports serving as the
leading sector.)

The rise in relative exchange-rate volatility in Australia warns that a policy
change need not underlie these observations: the exchange rate simply became more
volatile in the latter period. In the case of the larger rise in relative exchange-rate

Figure 3: Ratio of Exchange Rate to Interest Rate Volatility
1995–1996 and 1999–2000


Note: See Figure 1.

volatility in New Zealand, however, policy probably played a larger role. Adherence to a monetary conditions index setting in the earlier period meant that interest rate policy leaned against movements in the exchange rate. The adoption of the official cash rate regime has been associated with a small dampening of interest-rate volatility in the latter period but a substantial rise (even relative to Australia) in effective-exchange-rate volatility.[18] In any case, it seems fair to conclude that policy-makers in east Asia have generally accepted more variable exchange rates since the crisis.

3.2.6 Styles of foreign exchange market intervention

Above, changes in the currency composition of the central bank's (or government's) balance sheet were characterised as a quarter of an instrument. Given this fractional weight, central banks in east Asia tend to be well-equipped with international reserves (Figure 4). Moreover, the composition of a central bank's balance sheet shows a higher weight on foreign assets, the greater the openness of the respective economy (Figure 5). Given the balance sheet size, central banks of the more open

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18. Drew and Plantier (2000) find less interest rate smoothing in New Zealand as compared to Australia. But their measure of interest rates, namely quarterly averages, abstracts from much of the volatility in interest rates as measured here.

Figure 4: Total International Reserve Holdings of Central Bank
US$ billion
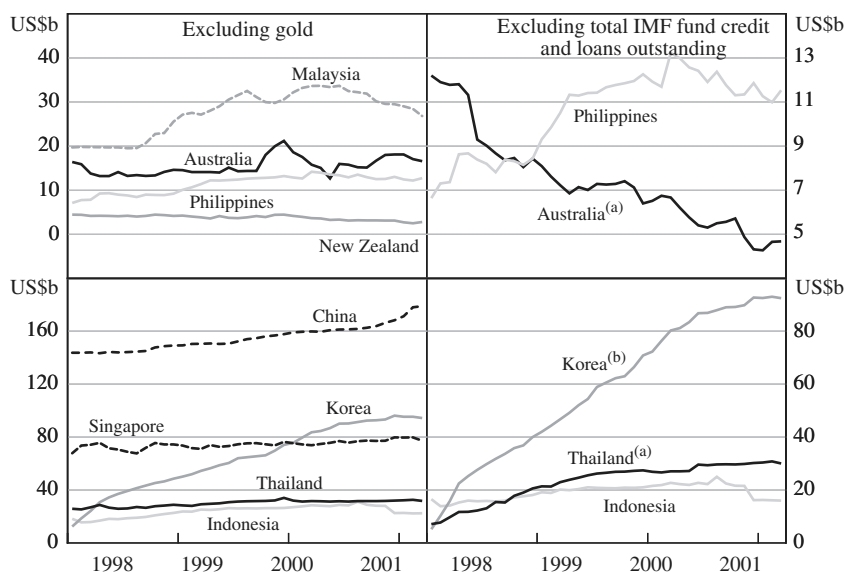
(a)   Also excluding net forward positions.
(b)   Also excluding deposits in Korean banks.

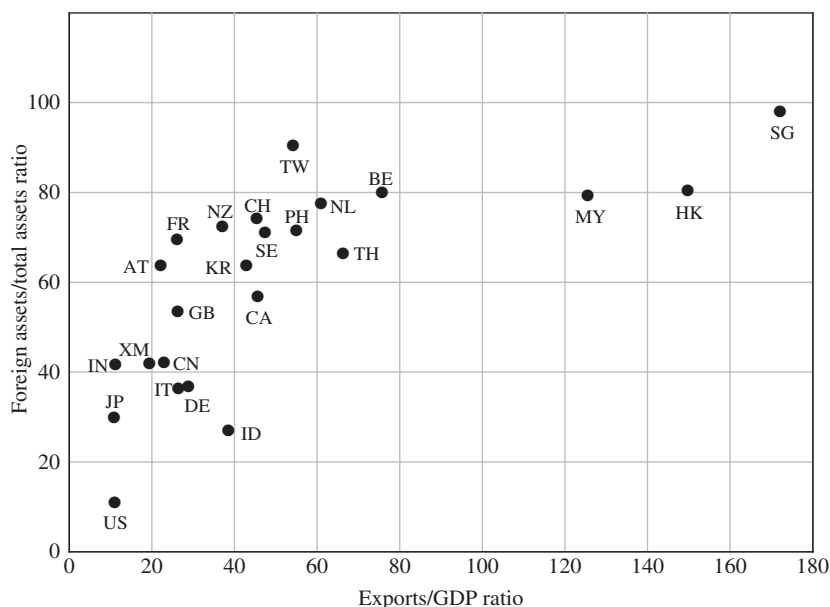Sources: IMF, *International Financial Statistics*; national data

economies thus have considerable scope to shift their assets toward domestic currency, that is to intervene to support their currencies. In reality, the balance sheet size is not given, and the more open economies have accumulated reserves well in excess of their monetary bases, whereas the relatively closed economies of the United States, Euro area and Japan all have reserves smaller than their monetary bases (Borio and McCauley, forthcoming).[19]

At least three archetypal styles of intervention can be distinguished. One approach, associated with the Bank of Canada until 1995 (Stephenson 1995), consists of attempting to reduce daily or weekly volatility. The rationale could be that smaller movements would serve to deflect speculators to other markets where quicker returns are possible, and thus to reduce bandwagon effects. Such a style could see the central bank in the market on different sides within short periods. At the other extreme, a central bank may intervene only at the edges of exchange rate cycles of length not dissimilar to the business cycle and of amplitude of 25–30 per cent. This style of intervention might see a central bank on the same side of the market repeatedly, but lengthy periods would pass before any intervention on the other side

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19. One operational result of international reserves in excess of the monetary base, it might be noted, is that the most frequent monetary policy operation in east Asia is to drain bank reserves in some fashion, whereas in the larger, more closed industrial economies the most frequent monetary policy operation injects bank reserves.

Figure 5: Economic Openness and Foreign Asset Holdings of Central Banks

Notes: Data for the individual Euro area countries are for 1998; for all other countries are the latest available.

   See Appendix C for a listing of country codes.

Sources: IMF, *International Financial Statistics*; national data

of the market. This has been the pattern in US dollar/mark–euro markets. In between these two styles is intervention at the edges of a band defined, say, as single-digit percentages away from a centre.

In east Asia and the Pacific, it is easy to identify some economies with these archetypes. Taiwan practices Canadian-style intervention, at times reportedly intervening on both sides of the exchange rate on the same day. As a result, the NT dollar shows few changes of absolute value over $^{1}/_{2}$ per cent (Figure 6). In the past three months, however, several single-day moves of about one NT dollar – roughly 3 per cent – may signal a change in approach. Changes in the Philippine peso exchange rate also fall in a narrow percentage range, although the approach may be less to limit volatility *per se* as to resist sharp downward moves in the peso, on the one side, and to rebuild expensive, borrowed reserves, on the other. Australia has in recent years at least intervened at the perceived extremes of broad swings in the exchange rate.

Korea presents greater difficulty of interpretation. Foreign exchange dealers actually staged a job action some while back to protest what they took to be unwholesome official censoring of daily volatility, suggesting a style akin to that of Taiwan. Korea's panel, however, shows an asymmetry not so evident in the case of

Figure 6: Frequency Distribution of Daily Percentage Changes in US Dollar Exchange Rates

January 2000–July 2001
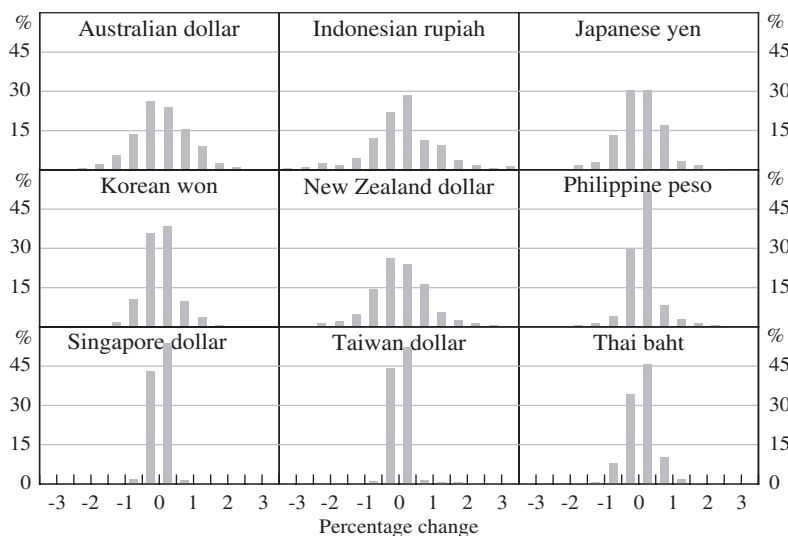
Notes: All exchange rates expressed as units per US dollar; thus, positive percentage changes denote a depreciation against the US dollar.

Source: BIS

Taiwan, with larger depreciations than appreciations. Dooley *et al* (2001) prescribe an announced rule for intervention that can be interpreted as formalising elements of a policy already in existence. In particular, given a publicly announced intention to increase official reserves, Dooley *et al* would prescribe buying US dollars on minor won strength while refraining from intervention except in the case of very considerable won weakness. Such a policy would produce the asymmetry shown on the figure. Another interpretation, however, is that the Korean authorities were closer to the US dollar/euro style of intervention. That is, they attempted to prevent appreciation above 1100 won to the US dollar, but then let the won depreciate along with the yen to about 1300 before reportedly intervening to support the won. Since, by then, the pass-through of imported goods prices to consumer prices had raised the inflation rate above the target range, this policy could also be interpreted as the use of the government balance sheet (either intervention or debt management or both) to hit the inflation target.

In Thailand, there was a period of reserve building in the wake of the crisis. Then, until recently, the authorities apparently had generally refrained from intervention, though rumours in the press were frequent. When the baht came under pressure in October 1999, the chosen policy was a tightening of the enforcement of the limit on lending baht to banks offshore. As a result, the baht's volatility against the US dollar has been at the high end in east Asia.

3.2.7 Limitations on international capital flows

The experience of Latin America heavily influences the international discussion of monetary policy choices in emerging market economies. As a result, the use of restrictions on international capital flows to square the circle of independence in monetary policy and some control over the exchange rate is generally assumed away. Yet in east Asia, not only has the use of such restrictions not passed from the scene in major economies, but also it could be argued that on balance their use has increased since the Asian crisis.

East Asian authorities put limits on international capital flows in a variety of different ways. These include limitations on non-residents access to domestic currency assets and liabilities, restrictions on resident holdings of foreign-currency bank accounts held with the domestic banking system, required approval for foreign currency borrowing by the corporate sector, and constraints on portfolio flows into equity markets.[20] Table 6 profiles east Asian economies on these dimensions and in addition reports whether there is a non-deliverable forward market for the respective currency. In such a market, forward transactions are settled not by an exchange of US dollars against local currency but rather a net dollar payment is made depending on the difference between the agreed rate and the actual, prevailing exchange rate. The existence of such a market indicates the force of the restrictions on non-resident access to the domestic currency through the banking system, although the closeness of the arbitrage between offshore and onshore exchange rates (and thus interest rates) varies.

Particularly noteworthy are the limits on *non-resident access to domestic currency*. Since the crisis, such limits have been adopted not only in Malaysia, but also in Thailand, and more recently in Indonesia. 'The Bank of Thailand imposed a new measure on 29 January 1998 that baht-denominated credit facilities provided by each financial institution to non-residents where there is no underlying trade or investment activities in Thailand, are subject to a maximum of B50 million [about US$1 million] per counterparty. On 4 October 1999, the Bank of Thailand clarified that the term "per counterparty" refers to all transactions taken by the head office, branches, representative offices and all affiliated companies of a particular non-resident to be counted as one' (Bank of Thailand 2000b). 'Until this year, the IDR [Indonesian rupiah] was one of the freer currencies in the region but…earlier this year, the central bank made offshore to offshore transactions illegal which effectively shut down the offshore deliverable market' (Leven 2001).[21] Such restrictions have been tightened in China, the Philippines and Taiwan, and loosened only in Singapore and Korea. These restrictions suggest that the argument that non-resident short-sellers, including speculative accounts, have a role to play in the international financial system has little resonance in the region.

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20. Restrictions on foreign direct investment are not discussed.

21. 'However, there are still no restrictions on spot transactions…Transactions to hedge onshore investments (including portfolio) and trade flows are exempt from this limit providing that supporting documentation is filed with the central bank' (Leven 2001, p 3).

Table 6: Limits on International Capital Flows in East Asia

	Non-deliverable offshore forward market for domestic currency	Limits on non-resident access to domestic-currency liabilities	Limits on foreign currency deposits in domestic banks	Limits on corporate borrowing in foreign currency	Limits on non-resident equity purchases
CN	Y	Y	N	Y	Y[a]
HK	N	N	N	N	N
ID	Y	Y	N	N	N
KR	Y	Y	N	N	N
MY	N	Y	N[b]	Y	N
PH	Y	Y	N	Y[c]	N
SG	N[d]	Y	N	N	N
TH	N	Y	Y	N	N
TW	Y	Y	N	Y[e]	Y

(a)   Non-residents not allowed to buy A-shares listed in Shanghai and Shenzhen but are allowed to buy B-shares.

(b)   Only corporate accounts permitted.

(c)   Registration of foreign loans with the Bangko Sentral ng Pilipinas is necessary only in order to obtain foreign exchange from the central bank.

(d)   Borrowing of Singapore dollars to buy Singaporean equities, bonds and real estate now permitted; offshore issuers of Singapore dollar bonds without local need for the funds are required to swap the proceeds into foreign currency.

(e)   Taiwanese corporations are allowed to borrow foreign currency freely but not to exchange the proceeds for New Taiwan dollars.

Note: See Appendix C for a listing of country codes.

Sources: Leven (2001); national sources.

At the same time, economies that restrict *corporations' borrowing in foreign currency* (and thus to set up speculative long positions in domestic currency) were not persuaded by the experience of the Asian crisis to abandon their constraints. The restrictions take at least two forms. In China, Malaysia and the Philippines, firms must seek approval before borrowing in foreign currency, although there were clearly cases of evasion of this requirement in both China and the Philippines. In Taiwan, firms can borrow freely in foreign currency, but are restricted from converting the proceeds into New Taiwan dollars to fund domestic assets.

If restrictions on non-residents' access to domestic currency are common, domestic depositors in east Asia enjoy remarkable freedom to place their savings in domestic banks in *foreign currency accounts*. Foreign currency banking is common in economies like the Philippines and Indonesia with chronic high inflation by regional standards. In addition, low domestic interest rates resulting from low or no inflation have led to a build-up of foreign currency deposits in economies with

restrictions on the scope of foreign investment, namely China and Taiwan.[22] Taiwan's limits on remittances by residents, $5 million a year for individuals and $20 million a year for firms, have allowed, at times, rapid shifts from NT dollars to domestic foreign currency accounts. In Thailand, by contrast, individuals or firms cannot open foreign currency accounts without underlying overseas cash flows.

Foreign investors also enjoy considerable freedom across east Asia *to buy and sell equities*. Malaysia abandoned the last of its holding-period based capital gains taxes in the last budget. Taiwan restricts investment from abroad to the larger global 'real money' investors but has enlarged the ambit of qualifying foreign investors in a bid to attract more funds into its NASDAQ-related market. While China prohibits foreign investment in its A-share markets in Shanghai and Shenzhen, valuations are so high that the pressure is from the other side, that is, domestic investors buying into lower-rated B-shares (permitted earlier this year) and into offshore issues of Chinese and China-related firms (not permitted). Foreign portfolio investors' desire at times to hold onto shares but to hedge currency risk results in some of the largest flows in the non-deliverable forward market for the Korean won and New Taiwan dollar.

Three strands of evidence shed light on the effectiveness of limits on non-resident access to local currencies and on domestic corporations borrowing in foreign currency. The general view is that controls on capital outflows 'tend to lose their effectiveness and efficiency over time' and that 'capital inflow controls may for a time be useful in enabling a country to run an independent monetary policy…but their long-term effectiveness to those ends is doubtful' (Fischer 2001). The present evidence cannot test these assertions but rather can indicate whether, at a point in time, the limits seemed to have the intended effect.

Regarding capital outflows by residents, the considerable gap that opened up during the Federal Reserve's tightening cycle and domestic interest rates in China and Malaysia in the 2–3 per cent range strongly argues for the effectiveness of restrictions on capital flows. This conclusion holds even after acknowledging the substantial capital outflows from both economies, which seems to have abated with the lowering of US dollar money rates this year (Aziz 2001).

Regarding limits on foreign access to domestic currency, one classic indicator for the effectiveness of capital controls is offshore rates above domestic yields. Figure 7, bottom panel, shows that offshore yields on the Philippine peso, New Taiwan dollar and Thai baht were all substantially above their onshore counterparts right across the maturity spectrum, suggesting some success in limiting the access of non-residents to those currencies. Indonesia had not yet banned offshore trading in the rupiah, so there was no consistent sign to the offshore-onshore interest rate differential. It should also be noted that these spreads are quite variable. The top panel shows that Hong Kong dollar differentials are very narrow[23], and the

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22. See McCauley and Mo (2000) and Fung and McCauley (2001).

23. The lower rates offshore for the Hong Kong dollar at the 1-year maturity probably reflects credit differences between the average quality of the panel of banks constituting HIBOR and JP Morgan's offshore Hong Kong dollar rate.

Figure 7: Asian Offshore-Onshore Interest Rate Differentials
As of September 1999
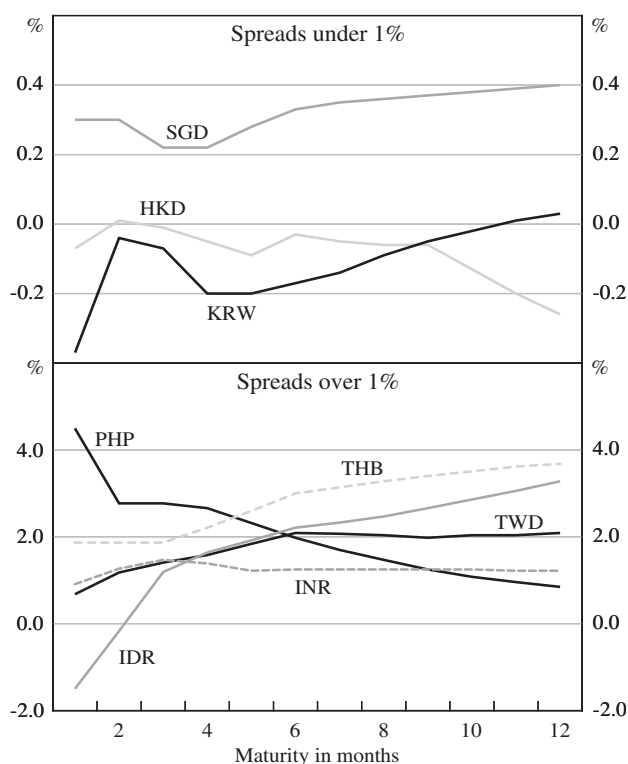
Source: Leven (1999)

Singapore spreads, modest. In Korea, since the reforms of April 1999, 'the ability for onshore investors to arbitrage the two markets [onshore deliverable and offshore non-deliverable] keeps offshore interest rates close to onshore levels' (Leven 2001, p 4). Owing to asymmetries in the permitted arbitrage, Korean offshore yields generally trade below onshore yields.

Another piece of evidence on the restrictions on foreign-currency borrowing by the corporate sector can be seen in the relationship between BIS-reporting bank loans extended to non-banks and domestic credit on the eve of the crisis. The economies with restrictions (China, India, Malaysia, Philippines and Taiwan) had an average ratio of offshore-to-onshore credit of just 4.6 per cent, while Australia, Hong Kong, Indonesia, Japan, Korea, Macau SAR, New Zealand, Singapore and Thailand averaged over twice that percentage (Table 7).[24] This contrast suggests that the various restrictions on foreign currency borrowing were effective. Since the trauma

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24. The measure is not perfect since it does not capture foreign currency lending booked domestically. Such lending was large in Thailand.

**Table 7: Credit Booked by Domestic and Offshore Banks in Asia
and the Pacific**
June 1997

Credit to non-banks located in:	Booked by domestic banks US$bn	Booked by offshore banks US$bn	Percentage offshore
Australia	338.3	22.8	6.7
China	878.8	18.8	2.1
Hong Kong SAR	279.3	25.6	9.2
India	189.0	11.2	5.9
Indonesia	129.4	37.4	28.9
Japan	5 785.4	327.9	5.7
Korea	309.6	26.2	8.5
Macau SAR	17.5	0.7	4.0
Malaysia	124.7	7.4	5.9
New Zealand	67.7	5.2	7.7
Philippines	59.7	5.1	8.5
Singapore	66.2	8.3	12.5
Taiwan	453.4	3.2	0.7
Thailand	201.5	13.3	6.6
Average			8.1
Average of China, India, Malaysia, Philippines, and Taiwan			4.6
Average of others			9.9

Sources: BIS, *BIS Quarterly Review: International Banking and Financial Market Developments*, Table 6B; IMF, *International Financial Statistics*

of the crisis and with much lower domestic interest rates, these restrictions may not be binding today.

4. Central Bank Independence in East Asia

That central banks need clear goals and the ability to use its instruments to achieve them is a widely held view. Some difference of opinion concerns whether central banks should be at liberty to assign themselves goals, or should only have the right and responsibility to pursue goals set by a finance minister or legislature (Debelle and Fischer 1994).

Several dimensions of central bank independence warrant attention. The first is *legal* independence. Studies of central banking found that, among industrial

economies, legal independence was associated with lower inflation. The lack of association between measures of legal independence and inflation elsewhere, however, led to a focus on *behavioural* proxies for independence. Finally, some attention should be paid to *balance sheet* (or possibly income) independence.

4.1   Legal independence

Taking at face value the first study of central bank legal independence and inflation that covered Asia, one confronts an immediate problem. While among industrial economies (Figure 8), legal independence was associated with lower inflation (Grilli, Maciandaro and Tabellini 1991), a broad study of the matter for the rest of the world found no such association (Figure 9). Looking at Asia alone, there is not much association either (Table 8).[25] There are several ways to look at this finding. One is to distrust the measures of independence for emerging economies and thus to imagine that better measures would confirm the result found for industrial countries. Another way to look at the lack of a relation is that the measures of independence used for industrial economies were generated in full knowledge of the inflation outcomes to be explained. If the same measures fail in another sample of countries, perhaps they were too fine-tuned ('overfitted') in the first instance.[26]

Historically, the legal position of Asian central banks was not strong according to Cukierman (1992). His overall median reading for central bank independence in the 1980s was 0.33, so most of the listed east Asian and Pacific central banks suffered legal independence at less than the median level. It is interesting, however, that 4 of the 6 Asian–Pacific central banks in the 1980s with legal independence below the median on Cukierman's measure have since gained independence, starting with New Zealand. (On the evidence of Table 8 at least, the adoption of explicit inflation targeting is related to past inflation.)

In the wake of the Asian crisis, the Korean and Indonesian central banks gained legal independence. In the case of the Bank of Korea, the 'fully revised Bank of Korea Act of 1997…establish[ed] the neutrality and autonomy of monetary policy, with price stability declared as the sole objective of the Bank of Korea' (Oh 2000, p 190). Similarly, in June 1997 the Japanese Diet passed a new *Bank of Japan Law*, establishing its independence as of April 1998. A new independent Policy Board would set monetary policy in an open manner.

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25. Cukierman's measure (1992, pp 373–376) of legal independence includes the aspects of the governor's appointment (term, who appoints, dismissal, restrictions on other jobs), policy formulation (who sets, government involvement, central bank involvement in budget process), clarity of central bank objective(s) and central bank lending policy (limits, decision-making, counterparties, maturity, interest rates, prohibition on direct funding of government).

26. Another is to suspect that openness, which as noted above may tend to lead to lower inflation, needs to be taken into account ('partialed out') in order for the data to line up in a way that permits the interpretation that independence leads to lower inflation.

Figure 8: Central Bank Independence and Inflation in the 1980s

Industrial countries
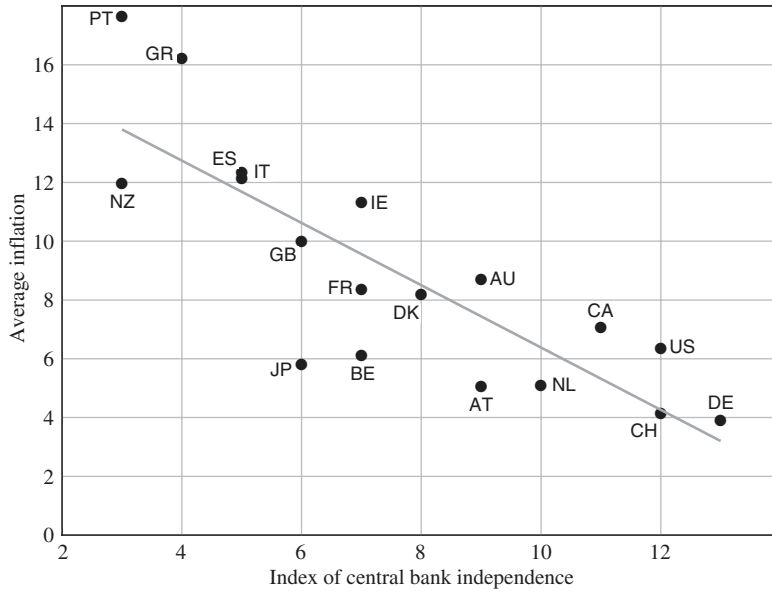
Note: See Appendix C for a listing of country codes.
Source: Grilli *et al* (1991)

Figure 9: Central Bank Independence and Inflation in the 1980s

Selected developing countries

Note: See Appendix C for a listing of country codes.
Source: Cukierman (1992)

Table 8: Legal Independence and Inflation in the 1980s

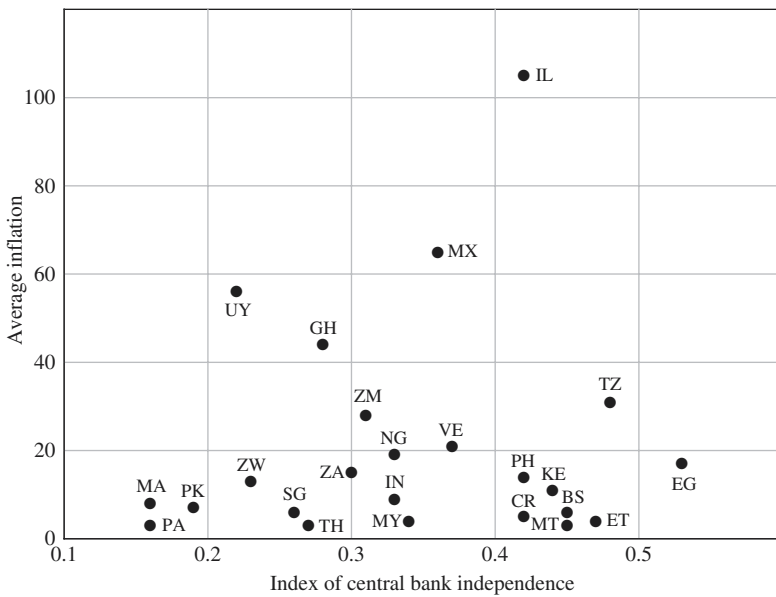|	Legal independence 1 = maximum	Average yearly inflation %
Philippines	0.42	14
Malaysia	0.34	4
Indonesia	0.32	10
Singapore	0.27	3
New Zealand	0.27	12
Thailand	0.26	6
Korea	0.23	8
Japan	0.16	3

Source: Cukierman (1992, p 381)

The 1999 *Central Bank Act* for Indonesia, replacing 1968 legislation, mandated a single objective for Bank Indonesia to maintain the stability of the value of the rupiah, made Bank Indonesia an independent body and put in place accountability and transparency requirements, to be achieved in part through disclosure. 'To reduce monetary leakages, Bank Indonesia was prohibited from extending credit to the government and subsidized credit programs were transferred to state-owned institutions appointed by the government…Based on the same law, Bank Indonesia is only allowed to extend loans to banks that are facing short-term liquidity problem (maturity mismatch), and even then, only if certain strict requirements are met' (Bank Indonesia 2000, p 5). A year later, however, 'implementation of Act Number 23 of 1999 on Bank Indonesia…has appeared to be not as smooth as expected, particularly with regard to the issue of central bank independence. The problem intensified toward the end of the year following a [government] proposal to amend the Bank Indonesia Act[27], even though it had been in place for less than two years. The emergence of this issue also absorbed a good deal of Bank Indonesia's attention and resources during 2000' (Bank Indonesia 2000, p viii).

Legislation to grant the Bank of Thailand independence was introduced in the previous Thai parliament but not passed. That left Chapter 3, Section 19 of the *Bank of Thailand Act B.E. 2485*: 'The Governor and the Deputy-Governor shall be appointed or removed from office by the Crown upon the recommendation of the Cabinet'.

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27. Including 'article 48 regarding the replacement of the members of Bank Indonesia's Board of Governors' (Bank Indonesia 2001, p 19).

4.2   Behavioural independence

Perhaps the original approach to the study of central bank power suffered from an excess of legalism and gave too little weight to practice and personalities. In any case, it set off a search for behavioural measures of independence that would capture practice. Cukierman (1992) found that turnover of the head of the central bank correlated better with inflation outcomes than did the legal measures. Of course, this measure is far from perfect. On the one hand, a rubber stamp for the finance ministry may enjoy a long tenure; on the other hand, for example, G William Miller's departure from the Federal Reserve in favour of Paul Volcker almost surely helped lower US inflation. The association of governor turnover and inflation, however, derived its strength from cases in which the turnover was above 0.25 (an average term of less than four years). In Cukierman's Asian–Pacific sample, only two countries come in with turnover above this figure, so perhaps there should be no surprise that there is, if anything, a negative association between governor turnover and inflation (Table 9).[28]

Table 9: Central Bank Governor Turnover 1950–89 and Inflation in the 1980s

	Average number of governor changes per year	Average yearly inflation %
Philippines	0.13	14
Malaysia	0.13	4
New Zealand	0.15	12
Indonesia	0.20	10
Thailand	0.20	6
Japan	0.20	3
Singapore	0.37	3
Korea	0.43	8

Sources: Cukierman (1992, p 381); Cukierman and Webb (1995, p 418) for Indonesia

Cukierman and Webb (1995) proceeded to define and measure the political vulnerability of central banks. The insight was that it was not simply a short tenure for the governor that might undermine a central bank's pursuit of the long-term goal of low inflation as against today's political expediency. In addition, they argue that if a new national leader can and does change the governor of the central bank shortly after coming into power, this might be particularly prejudicial to price stability. 'Frequent removal from office of the bank's governor following political transitions probably reflects gross political influence, because the governor's term in office is

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28. Above the 0.25 threshold, the association has the right sign, with Singapore showing lower turnover and inflation than Korea.

not shielded by law or custom from political changes' (Cukierman and Webb 1995, p 400). They find that the higher the political vulnerability, the higher the inflation.[29]

Again, the empirical relevance of this work for Asia and the Pacific does not appear all that strong (Table 10). Perhaps, however, the argument should not be dismissed, given the global, if not the regional experience. The record summarised on Table 10 helps puts some recent events in east Asia into perspective. The effort of the Indonesian head of state and the decision by the new Thai government to change governors both had precedents in the respective post-war histories through the 1980s. In the case of the Philippines, the mooted replacement of the governor by a new president would have been quite at variance with the Philippines' post-war record. Cukierman and Webb would suggest at the margin that the tenure of the two governors bode well for lower inflation. Whether the argument can be extended to the recent replacement of the Thai governor is difficult to say. The turnover at the central bank was followed by a raising of interest rates – an action quite at variance with the theoretical presumptions regarding a new government's interest in turnover at the central bank.

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29. A window of six months after a political transition was selected to maximise the explanatory power of this variable in regression analysis of inflation across countries.

Table 10: Political Vulnerability of Central Banks in East Asia and the Pacific

		Vulnerability	Number of political transitions	Number of central bank turnovers	Number of central bank turnovers within 6 months of political transition
AU	1950–71	0.333	3	1	1
	1972–89	0.000	3	3	0
CN	1950–71	–	–	–	–
	1972–89	0.500	2	4	1
ID	1950–71	1.000	1	5	1
	1972–89	–	0	0	0
JP	1950–71	0.200	5	4	1
	1972–89	0.222	9	4	2
KR	1950–71	na	0	2	0
	1972–89	0.667	3	6	2
MY	1950–71	0.000	3	0	0
	1972–89	0.000	2	2	0
NZ	1950–71	0.250	4	2	1
	1972–89	0.000	5	4	0
PH	1950–71	0.000	4	3	0
	1972–89	0.000	2	2	0
SG	1950–71	na	0	1	0
	1972–89	na	0	6	0
TH	1950–71	0.250	4	4	1
	1972–89	0.111	9	3	1
TW	1950–71	0.000	3	2	0
	1972–89	0.500	4	2	2

Notes: – denotes not available. 'Vulnerability is not available when data on either the number of political transitions or the number of central bank turnovers are not available' (Cukierman and Webb 1995). Indonesia, for 1972–89, appears mislabelled and should be na.

na denotes not applicable. Political vulnerability defined as number of central bank turnovers within 6 months of a political transition divided by the number of political transitions (i.e., the last column divided by the third column).

See Appendix C for a listing of country codes.

Source: Cukierman and Webb (1995, pp 417–419)

4.3   Balance sheet independence

Events during the Asian crisis left a mark on the balance sheets of the central banks of Indonesia, Korea, Malaysia and Thailand. An extreme parallel is offered by the Philippines, where the debt crisis of the 1980s left the central bank insolvent (Cuisia 1992; Zialcita 1993). The 1993 *New Central Bank Act* attempts to prevent a recurrence.

The balance-sheet aftermath of crisis can, at the limit, impair the capital and weaken the income of the central bank, and thereby hurt its credibility in the market place and make it dependent on appropriations. The principle is important even when none of these results follow. For instance, in the case of the run on, and subsequent effective takeover of, Continental Illinois by the Federal Deposit Insurance Corporation in 1984, the Federal Reserve's discount window advance to the bank remained outstanding for years. In the view of some observers, in allowing the discount window advance to remain outstanding for so long, the Federal Reserve was inappropriately lending to the solvency-support agency, the FDIC. Even if the Fed's monetary operations were in no way impaired by this arrangement, the principle of no Federal Reserve funding of the government was arguably frayed.

It is by no means surprising that, in system-wide financial crises, central bank balance sheets in Indonesia, Korea, Malaysia and in effect Thailand took some hits. The hope must be that these hits prove temporary, and generally there are grounds for hope. Last year the Indonesian government took responsibility for losses related to Bank Indonesia loans to insolvent banks during the crisis. In Korea, the central bank has received substantial repayments over the past two years on various crisis-related credits. In Malaysia, a bank recapitalisation fund owned by the central bank has recovered the bulk of the funds advanced to banks.

In the case of Bank Indonesia, three years after the onset of the crisis, the central bank and government were still arguing about the distribution of losses, mostly from funds advanced to Suharto-related banks.[30] Bank Indonesia had made discount window advances to insolvent banks in the amount of Rp144.5 trillion (about US$13 billion at the current exchange rate) in late 1997 and early 1998. These advances had been transferred from Bank Indonesia to the government in return for government bonds, but the government had threatened to withdraw these bonds in view of questions about the circumstances under which these advances had been made and the uses to which the funds had been put. A Parliamentary committee accepted Bank Indonesia's view that the advances had been government policy and that in any case the government was responsible for Bank Indonesia's solvency. Late last year, Bank Indonesia and the government agreed to share this burden approximately $1/6$– $5/6$. Bank Indonesia transferred notes to the government in the amount of Rp24.5 trillion, the terms of which matched the government bonds. Notwithstanding recording this amount as an extraordinary loss, Bank Indonesia

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30. This account relies on Bank Indonesia (2001, pp 16-17). There is also a much smaller issue regarding Bank Indonesia's divestment of its equity stakes in banks and non-bank financial institutions (Bank Indonesia 2001, p 18)

reported a profit in 2000. This resolution did not signal an improvement in relations between the central bank and the government: three days after the agreement was reached, the government proposed amendments to the central bank law to the parliament, as discussed above.

The Bank of Korea has worked half its way out of the balance sheet implications of the crisis. In 1999, 6.2 trillion won was repaid by the Financial Market Stabilisation Fund (Bank of Korea 2001b, p 37). In 2000, Korea First Bank, which had been taken over by the government in the crisis but was successfully divested to a foreign partnership, repaid a 1 trillion won loan. These repayments left 7.4 trillion won aggregate ceiling credits, which, 'following the currency crisis of 1997, …had come to be used as a means of easing the corporate credit crunch, making it difficult for the central bank's lending system to perform its original inherent function' (Bank of Korea 2001b, p 28).[31]

Acting in pre-emptive fashion, Bank Negara Malaysia in August 1998 set up an agency known as Danamodal to fortify the capital positions of Malaysian banking institutions adversely affected by a weakening economy and falling asset prices. In the event, Danamodal injected 7.6 billion ringgit (US$2 billion) of cash into 10 banks in exchange for subordinated capital instruments convertible into preferred shares, subordinated debt and ordinary shares. The impact on Bank Negara's balance sheet was minimised by its making a modest equity investment of 3 billion ringgit (less than US$1 billion) and Danamodal's issuing 11 billion ringgit (US$3 billion) zero-coupon bonds (Danamodal 2001b). By the end of January 2001, the bulk of the investments actually made had been redeemed by seven of the beneficiary banks, with a number of redemptions related to the consolidation of the Malaysian banking system (Danamodal 2001a). Whether or not Bank Negara's equity investment has at this stage been reduced, the fact that most of Danamodal's investments into banks have been repaid implies that the central bank is more than half-way to undoing the effect of the crisis on its own balance sheet and contingent liabilities.

The Bank of Thailand's monetary policy-making does not necessarily benefit from its management and partial funding of a bank bail out agency, albeit a legally separate one. The Financial Institutions Development Fund (FIDF) was founded in the mid 1980s to permit the Bank of Thailand 'to relax BOT limitation[s] in implementing financial-support measures for rehabilitation and development of the

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31. This crisis-related expanded use of the aggregate ceiling credits undid some of the progress made since March 1994, when the Bank of Korea revised its lending facilities. Kim and Kim (1999, p 130) note that 'since the currency crisis in late 1997, the aggregate credit ceiling has been raised twice [and at least once more] owing to the extreme difficulties faced by SMEs in accessing loans from financial institutions because of the severe credit crunch associated with financial sector restructuring. More specifically, the ceiling was raised from 3.6 trillion won to 4.6 trillion won with effect from mid-December 1997 and to 5.6 trillion won with effect from March 1998. Furthermore, no significant progress has been made so far in the area of flexible adjustment of the discount rate in accordance with the movement of market interest rates. Since a considerable share of loans through the discount window are still directed at SMEs, the discount rate has remained at 5 %' [3 per cent in 2000]. 'The Bank of Korea increased the Aggregate Credit Ceiling by 2 trillion won (7.6 trillion won to 9.6 trillion won) as of January 2001 to alleviate the funding difficulties of small and medium sized enterprises (SMEs) in the course of restructuring' (Bank of Korea 2001a, pp 4–5).

financial institutions to maintain stability in the system…[In particular, the] FIDF can purchase and lend to illiquid financial institution[s] against many kind[s] of collateral other than required by BOT' and 'can own a stake in a troubled financial institution and take control over the management' (Bank of Thailand 2000a, 2000c, 2000d). It became 'majority creditor to the closed-down financial institutions such as the Bangkok Bank of Commerce…[and] the 56 financial institutions [finance companies] under the supervision of the FRA' (Bank of Thailand 2000g). The fund showed negative equity of 202 billion baht (about US$4 billion) at end 2000, even though it enjoys a guarantee of the Ministry of Finance on its borrowing. Guarantees, of course, tend to be better budgetary politics than public policy, given the added expense of the market's treatment of guarantees as opposed to 'full faith and credit' debt and the damage to the bond market of splitting government debt (McCauley and Remolona 2000).

Running and funding the FIDF affects the development of the Bank of Thailand's operations as well. The FIDF gets the bulk of its funds through the repurchase market, where the Bank of Thailand does most of it operations. At present, the Bank of Thailand is a counterparty on all transactions in the repo market. The development of a broader market in which private parties transact directly with each other would help widen the effect of Bank of Thailand operations. But the doubtful capacity of the FIDF to fund itself without the Bank of Thailand fronting for it has not promoted this development. So the central bank's involvement with a bank bail-out fund affects the clarity of the country's fiscal accounts and the central bank's mission, and also the development of bond and money markets.

5.   Conclusions

Most central banks in east Asia focus on price stability. Given the openness of some east Asian economies, however, this focus entails quite a bit of attention to the exchange rate. In the case of extremely open Singapore, the effective exchange rate serves as an operating target of a monetary policy geared to price stability, in much the same way as the nominal interest rate is managed elsewhere to achieve price stability. The economies hardest hit by the crisis, and not the most open ones by regional standards, have adopted explicit inflation targeting and the Philippines is on the road to joining them. Two of the three economies with fixed exchange rates, China and Malaysia, have effective enough capital controls to permit them an independent interest rate policy. Only Hong Kong can be said to have chosen exchange rate stability and open capital markets over price stability.

Contrary to some readings of the evidence, east Asian economies have not generally fallen back into managing their currencies tightly against the dollar. Comparing the ratio of exchange rate to interest rate volatility before and after the crisis, Indonesia, Korea, the Philippines, Taiwan and Thailand all show much more exchange rate flexibility. This development came against the background of the substantial increase in the openness of economies in the region, which tends to work against exchange rate volatility. There remains in the region a capacity, in terms of reserve levels, and a willingness to use foreign exchange intervention to affect the

exchange rate and several styles of intervention can be discerned. There is also a willingness to use restrictions on financial transactions with non-residents as a means to limit exchange rate volatility. These restrictions seem able to drive a wedge between onshore and offshore interest rates, at least for a time.

Do central banks in east Asia enjoy sufficient independence to be held responsible for achieving their goals? Milestones in central bank independence in the region include 1993 in the Philippines, 1997–1998 in Korea and Japan, and 1999 in Indonesia. Any answer must acknowledge that the east Asian evidence has contributed *very little support* for several propositions linking central bank independence and inflation: more legal independence results in lower inflation; less turnover at the governor level leads to lower inflation; and more job security for governors during political transitions leads to lower inflation. More attention should be paid to the balance-sheet independence of central banks. Here there is clear progress in Indonesia, Korea and Malaysia since the crisis in extinguishing central bank credit extended to banks.

Appendix A: McKinnon and East Asian Foreign Exchange Policies

This appendix reconciles the findings of McKinnon (2000) with the conclusion drawn above regarding exchange rate policies since the Asian crisis. There is a sharp divergence between McKinnon's interpretation of his regression analysis, that east Asia returned after the crisis to pegging against the US dollar, and the above interpretation of bilateral exchange-rate volatility, that in 1999–2000 the Korean won, Philippine peso and Thai baht fluctuated substantially more against the US dollar than they had before the crisis.

It is helpful to distinguish two different features of exchange rate behaviour at the outset. One feature is *bloc membership*, or the behaviour of a currency in the face of movements of major currencies. In particular, when the Deutsche mark/euro moves by 1 per cent against the US dollar, does a given currency move on average in the same direction by a half a per cent or more? In this case of high sensitivity, it may be said to be in the euro bloc. Or does the given currency's dollar exchange rate not show much sensitivity to movements in the euro, in which case it may be said to be in the dollar bloc. Similarly, one can distinguish currencies in the dollar versus the yen bloc by estimating such sensitivities by regression analysis. Such analysis shows that, with episodic exceptions, the Australian dollar has traded in the dollar bloc in its floating period. Indeed, it has often shown a tendency to appreciate against the US dollar when the latter was appreciating against the Deutsche mark/euro and to depreciate against the US dollar when the latter was depreciating (a 'super-dollar' (BIS 1996, p 109)). Work that has analysed currencies as trading in the Deutsche mark/euro, yen and dollar blocs includes Brown (1979), Frankel and Wei (1994), Bénassy-Quéré (1996), McCauley (1997, 1999 (see map on p 102)), Galati (1998), Galati and McCauley (1998) and Galati (2001). The last analyses these sensitivities and shows them to be related to trade patterns, among other factors.

A different concept is *de facto pegging*. A currency could be said to be de facto pegged to another if the volatility is below some threshold. In terms of the simple regression analysis just discussed, a de facto peg would mean little idiosyncratic movement and thus a very high R-squared. It is important to recognise that currencies can float quite freely and yet belong to a bloc. The Australian dollar (save in episodes) and the Canadian dollar, for example, typically share the US dollar's movements against the euro or the yen but show volatility against the US dollar of 5 per cent or more. If belonging to the dollar bloc is taken to be the same as being pegged to the dollar, then the Canadian and Australian dollars must be considered to be pegged to the US dollar.

With this background, it is easy to reconcile this paper's claim and that of McKinnon. He regresses the percentage change in the exchange rate of regional currencies against the Swiss franc on the percentage change in the exchange rate of the US dollar against the Swiss franc. He finds that the sensitivity (or beta) of the regional currencies returned after the crisis to about unity, much the same value as before the crisis. In other words, both before and after the crisis, regional currencies

tended to move one-for-one with the US dollar against the Swiss franc. From these observations, McKinnon concludes that east Asian currencies have reverted to dollar pegging.[32]

This conclusion, however, does not follow. The conclusion that does follow is that these currencies remain in the dollar bloc, or at least that they have not slipped from the dollar bloc into the euro bloc, in which the Swiss franc trades. The evidence that McKinnon reports, and on which he should rely, is the R-squared statistics from his regression. These indicate substantial increases in volatility against the US dollar not only for the Indonesian rupiah, but also for the Korean won and the Thai baht, and some increase in volatility for the Philippine peso and New Taiwan dollar.

Figure A1: McKinnon's Reported R-squared Statistics
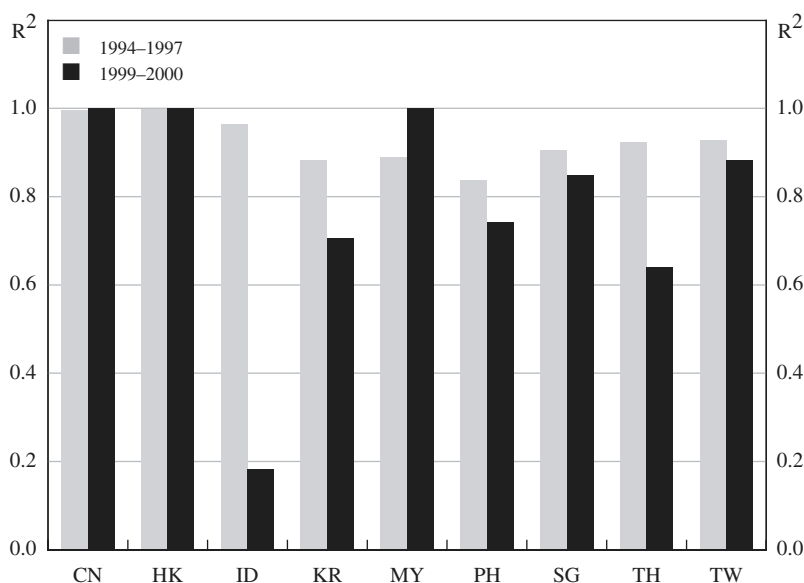
Note: See Appendix C for a listing of country codes.

Even the conclusion that the east Asian currencies remain in the dollar bloc is challenged by the performance of the Korean won starting in November 2000 and extending well into 2001. The Korean won shared well more than half of the yen's movements against the US dollar as the yen dropped from around 110 to the dollar to almost 130 to the dollar. An assessment of the implications of the Korean won at least temporarily joining the yen bloc belongs elsewhere, however.

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32. McKinnon notes that during the crisis the sensitivities tended to be near zero. This, however, simply reflected a great deal of idiosyncratic movement by the east Asian currencies during the crisis. (An analogy can be drawn to errors in variables analysis, which points to a lower coefficient. If, for example, the Korean won happened to fall by 10 per cent on a day when the dollar strengthened against the Swiss franc, the sensitivity would be moved toward zero.

Appendix B: The Balance of Interest-rate and Exchange-rate Volatility Based on Basis Point Volatility

Figure B1: Openness and Volatility of Nominal Effective Exchange Rate and Interest Rate
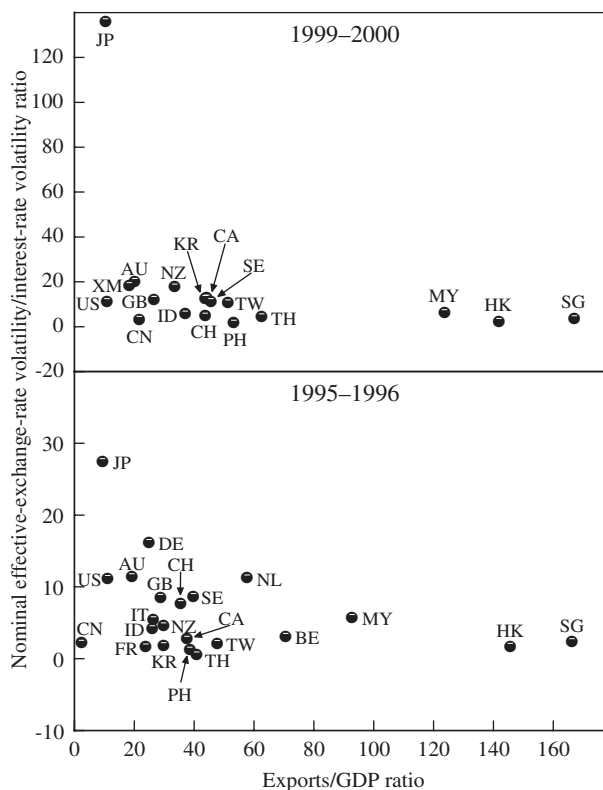
Notes: Interest rates are defined as 1-year household deposit rate for China; 3-month deposit rate for Korea, Singapore and Thailand; 1 and 3-month SBI rate for Indonesia for latter and earlier period respectively; 3-month T-bill rate for the Philippines; 3-month money-market rate for Taiwan and 3-month interbank rate for remaining countries.

Interest-rate volatility measured as annualised standard deviation of actual interest rate movements.

See Appendix C for a listing of country codes.

Figure B2: Openness and Volatility of US Dollar Exchange Rate and Interest Rate
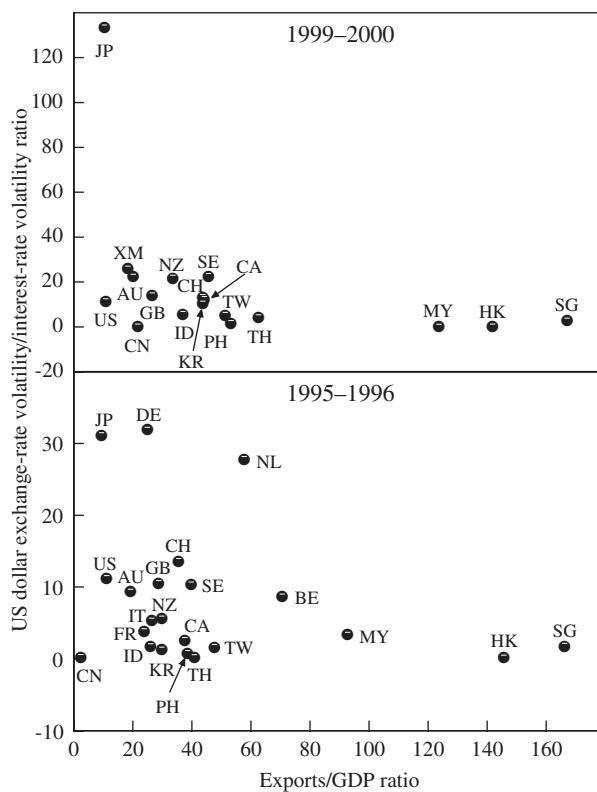
Note: See Figure B1.

Appendix C: Alphabetical List of ISO Country Codes

ISO Code	Country	ISO Code	Country
AT	Austria	KR	Korea
AU	Australia	MA	Morocco
BE	Belgium	MT	Malta
BS	Bahamas	MX	Mexico
CA	Canada	MY	Malaysia
CH	Switzerland	NG	Nigeria
CN	China	NL	Netherlands
CR	Costa Rica	NZ	New Zealand
DE	Germany	PA	Panama
DK	Denmark	PH	Philippines
EG	Egypt	PK	Pakistan
ES	Spain	PT	Portugal
ET	Ethiopia	SE	Sweden
FR	France	SG	Singapore
GB	United Kingdom	TH	Thailand
GH	Ghana	TW	Taiwan
GR	Greece	TZ	Tanzania, United Republic of
HK	Hong Kong	US	United States
ID	Indonesia	UY	Uruguay
IE	Ireland	VE	Venezuela
IL	Israel	XM	Euro area
IN	India	ZA	South Africa
IT	Italy	ZM	Zambia
JP	Japan	ZW	Zimbabwe
KE	Kenya		

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Discussion

1. Gordon de Brouwer

There have been quite a few conferences and seminars on monetary policy in east Asia over the past few years and there still appears to be no end in sight. This is no bad thing because there is still a lot of unfinished business.

The financial crisis has had a profound effect on thinking about monetary policy and the frameworks, institutions, and markets needed to support it. There is deep dissatisfaction in east Asia with the way things have been run. In some countries, the aims and targets of policy have been too unclear, diffuse or inconsistent. In some countries, institutional structures – of the central bank, commercial banks, and prudential supervisor – and markets have been too weak. And across the board, there is deep concern about how to balance flexibility in the real exchange rate with exchange-rate instability and excess volatility.

Everyone recognises the need to deal with these issues comprehensively and consistently.[1] But political and national interests, institutional inertia, lack of human and financial resources, competing intellectual paradigms, and other factors make it a difficult and piecemeal process. There is also now more serious consideration of coordinated regional policy responses and institutions, which complicates things even further.

Bob's paper neatly highlights these complexities. Typical of Bob, it is a paper broad in coverage and rich in detail. Also typical of Bob, it is subtle and objective. In my comments, I will take up just a few of the items on his menu.

The objective of monetary policy

Policy-makers face a choice in terms of objectives, and of the tools and institutions, formal or otherwise, to realise them. But for all the objectives that we talk about, it is essential to keep the real aim in mind: maximising the economic welfare of the people. The perennial issue is how to do this. Invariably, to my mind, some flexibility in the policy framework and its application is essential.

For example, as much as price stability is important, inflation targeting should be seen as a flexible discipline on policy-makers, and should not be applied without regard to the variability of output and employment or the stability of the financial system. The danger is that when countries adopt inflation targeting, they become obsessed with proving themselves and hence become vulnerable to being too focused on keeping inflation on target in the short run. This is relevant to east Asia because as more countries in the region adopt some form of inflation targeting, they may feel compelled to over-deliver on their commitment to the target in order to establish their credibility (including among their central bank peers). This can prove

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1. See Nellor (2001) for a discussion.

unnecessarily costly in terms of lost output, as shown by the New Zealand experiment.

Similarly, central bank independence (CBI), transparency and accountability – the accoutrements of the modern central bank – are means to an end and never aims in themselves. They are not sacrosanct. The aim is *constructive* CBI, transparency and accountability. The criterion is a practical one: how, in the case at hand, do they improve well-being?

Providing more and more information may not improve policy-making. There is a perennial debate, for example, about whether central banks should release the minutes of their policy meetings. Does it improve policy-making? Providing the reasons for why a monetary-policy decision was made the way it was is important information for private decision-makers and helps keep the monetary authority accountable. But there is such a thing as too much information. For example, providing full details of discussions is not helpful if it makes participants reluctant to debate the issues for fear of looking stupid or being wrong.[2]

Making the central bank report to parliament may not increase accountability and improve policy-making if the parliamentarians are purely partisan or don't know anything about economics. Similarly making a central bank independent will generally help overcome the political bias in monetary policy but it can have downsides. For example, it may weaken the coordination of monetary, fiscal and wages policies. It can also be costly if the central bank does not have the necessary human resources or skill to make 'good' decisions or if it is more worried about inflation being above target than below. The gains (if any) from independence need to be compared to the costs (if any). The focus needs to be on substance not form.

More generally, this should be applied to all the policy proposals that we discuss here today: on balance, does a policy add to, or detract from, stability? And in so doing, we are more likely to beware of overstating and overgeneralising the benefits of the particular policies we advocate.

The exchange rate

Policy-makers and commentators in east Asia are deeply concerned about excessive exchange-rate variability. This is so for a number of reasons: concern that the exchange rate will overshoot if it is set by the market, especially in times of crisis (which is just when there is a premium on stabilising forces); concern that exchange rate movements can create uncertainty and, in the case of appreciations, hurt export competitiveness; and concern about emerging east Asia's exports remaining

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2. This is how a long-standing insider to the FOMC described to me the effect of the Gonzales Bill, which requires the release of detailed minutes from FOMC meetings after five years. This person said that meetings have become more rigid and formal as a result, with FOMC members more inclined to make prepared presentations and less willing to enter discussion. Some of the discussion shifts away from the formal meeting to informal chats, effectively boosting the control and power of the Chairman of the Fed and subverting the intention of the legislature.

competitive in the United States, Japan and the European Union when there are big movements between the major currencies.

This is a rich field for analysis, and I will defer most of my comments to the general discussion on John Williamson's paper. But let me make two observations. First, volatility is not necessarily the issue. It is really how stabilising the exchange rate is to the shocks that hit the economy, and whether the interaction of the exchange rate system, policy-making and financial-market behaviours (like herding) create instabilities and shocks of their own. Volatility can arise for any number of reasons and is typically symptomatic of something else in the economy. It arises for 'good' or 'bad' reasons and its effect can be stabilising or otherwise.

Second, there is some concern that countries are reverting to implicit dollar pegging, which, given the diverse export dependence of most of non-Japan east Asia, is potentially costly if there are large swings in major currencies. My friend Eiji Ogawa (2000), for example, argues that correlations between daily movements in some regional currencies and the US dollar have strengthened since the crisis. If this is so, the argument for basket pegs is strengthened. But Bob questions this and I suspect he is right.

Figure 1 plots the baht, rupiah and won against the US dollar on a monthly basis for a two-year period before the crisis, from mid 1995 to mid 1997, and after the crisis, from 1999 to 2000.[3] The axes are scaled so that the percentage movement for each currency is the same in both periods. The won has been more stable against the dollar in the post-crisis period, but the baht and rupiah have certainly not been, making it difficult to accept as a general proposition that there has been a return to implicit dollar pegging in east Asia in the past few years. If the time period is restricted to 2000, then none of the three currencies appear stable against the dollar (relative to periods of pre-crisis implicit dollar pegging).

I would go even further and say that even if there were stability of regional currencies against the US dollar, this would not necessarily be a reliable indicator of implicit dollar targeting. The crisis-affected economies have successfully sought to build up their foreign exchange reserves in the past few years, largely in the form of dollars. In practice, they will be buying dollars when they are cheap – that is when their own currency is strong – and holding back their purchases when the dollar is expensive. This will tend to limit currency movement against the dollar but it is not right to characterise this as implicit dollar targeting.

It is also not clear which bilateral rate is being targeted. The yen/US dollar exchange rate has been relatively stable in the past few years, and it is not clear whether the crisis-affected economies are targeting the dollar or the yen. In Korea's case, in particular, there now appears to be a greater focus on bilateral stability with the yen than before the crisis.[4] Won/US dollar stability may simply be masking won/yen stability.

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3.   See de Brouwer (2001a).

4.   See Wang, Kim and Ryou (2000) and de Brouwer (2001a).

Figure 1: The Baht, Rupiah and Won Before and After the Crisis

The baht

Jul 1995–Jun 1997 (LHS)

Jan 1999–Dec 2000 (RHS)

The rupiah

The won
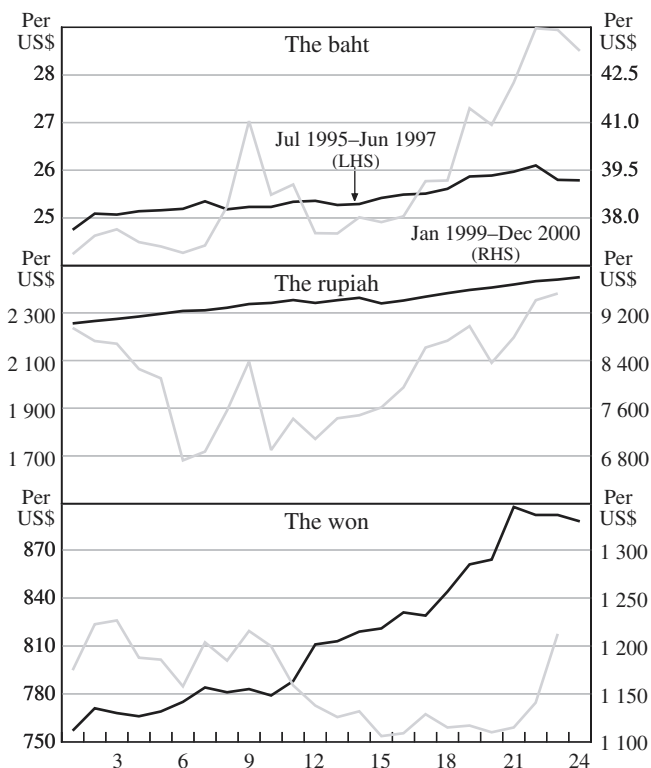
Capital controls

Concern about exchange-rate volatility has led a number of governments in east Asia to limit access by non-residents to domestic currency swap facilities as a means to control offshore speculation in their foreign exchange market. This is meant to head-off an excessive build-up of short positions.

As the experience of Singapore suggests, this can be an effective tool for reducing exchange-rate volatility. The Singapore on/offshore interest differential widened substantially when speculative activity in east Asia in 1997 and 1998 was most intense (Figure 2), indicating the success of Singapore's controls on local currency swap and forward markets.

I have no problem with Singapore's approach. Despite its vulnerability in the east Asian crisis, Singapore's financial prices moved substantially less than those of its neighbours, due not just to its good fundamentals but also its system of effective financial controls.[5] But it is not clear that its approach is as useful a tool in limiting exchange-rate volatility for that many other economies, especially developing ones.

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5.   See de Brouwer (2001b).

Figure 2: On and Offshore 1-month Interest Rates – Singapore
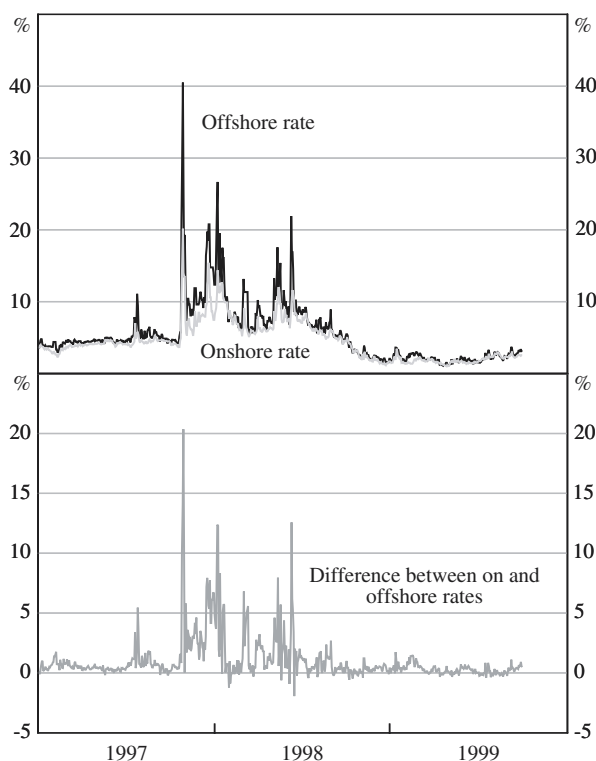
In the first place, limiting offshore access to swap markets depends on two conditions being satisfied: there must not be a substantial offshore market which can provide an alternative source of funding, and the controls must be strictly and effectively enforced.

If a substantial offshore market in the local currency exists, then speculators can use it to fund their short speculative positions, bypassing the onshore market. The Malaysian authorities, for example, limited swap funding in the onshore market to non-residents in August 1997 but this did not stop speculative activity because a large offshore market existed in Singapore. For this reason, Malaysia revoked the convertibility of ringgit located offshore in September 1998, effectively destroying the offshore ringgit market.

The strategy of limiting swap access also needs to be strictly enforced by banks if it is to work. South Africa, for example, had swap limits in place for non-residents in 1998 but these were completely ineffective, not just because of the large offshore rand market but also because the laws were simply ignored by local banks and not enforced by the central bank. By way of contrast, the same distinction on swap funding exists in Malaysia and Singapore but banks in both countries strictly enforce the distinction because they deeply fear the penalties that their respective monetary

authorities may impose in case of breach.[6] Frankly, few other central banks in the region have the credibility, means, or willingness to do so. (And in some cases, like Indonesia, imposing limits on offshore access to swap financing is not the answer since the onshore players, not the offshore players, are the ones doing the selling.)

Moreover, limiting the development of offshore markets is a two-edged sword. While it might reduce the vulnerability of a currency to speculative attack and contagion,[7] it stops firms and banks from passing foreign exchange and other risk to offshore parties who want that risk. This can be a serious disadvantage for countries which may want to borrow internationally in their own currency. This is not a problem for a rich city-state with excess savings like Singapore, but it is (or should be) for countries like Korea, Indonesia, and Thailand.

When banks are unable to pass on foreign exchange rate risk, they do one of two things. Either they have to bear that risk themselves, in which case they are more vulnerable to currency shocks and more likely to need bail-outs by the prudential and monetary authorities. Indonesia is an obvious case (Pangestu and Habir 2001). Or else they force local firms to bear the risk, in which case the corporate sector is more vulnerable to currency shocks. Ultimately, the taxpayer or consumer pays. It is up to policy-makers to decide how to deal with this trade-off, but we can't kid ourselves that it is not there.

Asian regionalism

In the past few years there has been a tectonic shift in east Asia toward developing regional policy responses and frameworks. It is most obvious in the formation of the ASEAN+3 group, the Chiang Mai Initiative, and the focus on bilateral trade arrangements. While there are certainly legitimate questions about particular elements of these initiatives, the process of regionalism is well and truly under way and is an important and welcome development.

Regional cooperation cannot help but have an effect on the moulding of national policies and institutions in the region. For example, the basket-peg proposal of John Williamson at this conference, and made by many others in the region,[8] involves changes to regional exchange-rate arrangements, which go to the heart of a country's monetary policy arrangements. There is also renewed focus on expanding regional financial support and policy-making, which, if it works, means sharing financial resources and information and letting others have a say in domestic policy formation.

These developments are a fundamental challenge to autonomous decision-making and action driven by narrowly defined national interest. It is certainly within the scope of east Asia to make this shift but the challenge that it poses should not be

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6. See the report of the FSF Working Group on HLIs (2000).

7. See Rankin (1999).

8. See Ito, Ogawa and Sasaki (1998), Ogawa and Ito (2000), Dornbusch and Park (1999), Murase (2000), Kawai and Akiyama (2000), Kawai and Takagi (2000) and Yoshino, Koji and Suzuki (2000). On a regional currency unit, see Moon, Rhee and Yoon (2000) and Moon and Rhee (forthcoming).

underestimated. There is plenty of fine rhetoric about regionalism but substantive action is much harder to come by.

In this, there is no need for the region to simply copy what other countries and regions have done. The European experience, for example, can inform east Asia but it is not the only model and it is not necessarily the one that most enhances the economic and social well-being of people in the region. It would be useful during this conference to highlight practical ways that regional developments could be used to build up and reinforce effective and welfare-improving national institutions and policies in east Asia. The strengthening of regional policy discussion is one way to do this. Indeed, the strengthening of regional policy dialogue and institutions is an important goal in its own right.

In closing, I would like to congratulate and thank Bob for his comprehensive, deep and useful analysis.

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2.   General Discussion

While covering many areas the main issue of discussion was the relationship between interest-rate volatility, exchange-rate volatility and openness portrayed in Figures 1 and 2 (and Appendix B) of Bob McCauley's paper. Some participants supported the graphs as highlighting a real relationship while others felt that there were problems with the construction of the measures and interpretation of the relationship. One pointed out that Japan, with zero interest rates, would confound the volatility measure. Others suggested that using the short interest rate could also be misleading. While monetary policy operates through the short rate it is the long rate that is of more relevance for the economy. Thus, the interest-rate volatility measure might be more illuminating if it made use of a long interest rate rather than a cash rate. Other participants indicated a desire to see some formal econometric testing of the proposed negative relationship between volatility and openness. (Which McCauley has included in the revised version of the paper in this volume.)

Some participants questioned whether it was even sensible to talk about a trade-off between foreign-exchange volatility and interest-rate volatility. It was suggested that the relationship really revealed the nature of shocks hitting the various countries while the reduced form evidence of the graphs could not determine whether it was a conscious choice or a difference in the shocks hitting each country that led to the observed variation.

On exchange-rate regimes, it was argued that the forces that pushed countries towards floating exchange rates – huge capital flows – were no longer present in many countries. In this case countries could engage in some management without triggering massive speculative attacks. The point was made that the evidence in the paper does not rule out the possibility that countries are now managing their exchange rates more than they used to. In a related point, one participant noted that it is difficult to evaluate the performance of Asian floating rate regimes after so few years. While Australia is clearly regarded as a freely floating country, it took almost ten years for operating procedures to evolve to their current form. This participant argued that during that period it would have been possible to question the exact nature of the Australian regime – for example, the extent of management taking place.

Some participants pursued the question of how much freedom countries had to choose their exchange-rate regime. It was felt that many countries had the regime forced upon them. For example, because of massive capital flows, some countries were forced to float; in this situation an obvious nominal anchor was an inflation target. Similarly, participants referred to the experience of South American countries where some countries may have been forced to fix their exchange rate to combat inflation by importing the monetary credibility of some other country, typically the US.

One participant questioned whether the measures of central bank independence were still relevant. The Cukierman index had not been updated beyond 1989 while much has changed in the central banking world since then. Concern was also expressed at how useful these indices were in practice. Finally, a participant was interested in whether capital controls could be effective in the long run. He suggested that, while controls can work for a while, they are eventually subverted as people find ways around them, and hence would not be effective in the long run.

The Case for Inflation Targeting in East Asian Countries

Guy Debelle[1]

1.   Introduction

Over the past decade, a number of countries have adopted an inflation-targeting framework for the conduct of monetary policy. The majority of these have been developed countries, although Chile and Israel have also pursued some form of inflation targeting for the best part of ten years. In part spurred on by the successful economic performance of the countries that have adopted inflation targeting, and in part driven by concerns about their policy frameworks in the aftermath of the Asian crisis, a number of east Asian countries are seriously considering, or have recently adopted, inflation targeting.

This paper assesses whether inflation targeting is indeed a viable monetary policy strategy for an emerging market economy. Are there aspects of inflation targeting that do not translate well from a developed economy to an emerging market economy? Are these features critical for the successful practice of inflation targeting? Does the absence of these features imply that an alternative monetary policy framework would help deliver superior economic outcomes, or are the alternatives similarly compromised?

These questions have been addressed by Masson, Savastano and Sharma (1997). The general conclusion of their analysis was that most developing countries are not well placed to pursue an inflation-targeting framework. Their negative conclusion derived from their assessment that two crucial preconditions are not present in most developing countries: the ability to conduct an independent monetary policy and the subordination of an exchange rate objective to the inflation target. In addition, they highlighted technical problems, particularly difficulties in forecasting inflation, the volatility of the inflation process and a lack of knowledge about the transmission mechanism.

This paper reaches a more optimistic conclusion.[2] It argues that the problems identified by Masson *et al* apply to most of the alternative frameworks for monetary policy – not just inflation targeting. Furthermore, many of the technical problems

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1. This paper is based on an earlier paper, 'The Viability of Inflation Targeting for Emerging Market Economies', prepared for a conference on 'Financial Markets and Policies in East Asia', held at the Asia Pacific School of Economics and Management, Australian National University, 4–5 September 2000. I thank Ben McLean for research assistance and David Gruen for helpful comments. The views expressed are those of the author, and not necessarily those of the Reserve Bank of Australia.

2. Mishkin (2000), Mishkin and Savastano (2000), Schaechter, Stone and Zelmer (2000) and Morandé and Schmidt-Hebbel (1999) reach similar positive conclusions.

they identified also applied to the developed economies when they first adopted inflation targeting. For most emerging market economies in the Asian region, inflation targeting is a viable policy framework should they want to pursue it, particularly given that these economies are starting from a position of already low inflation.

The next section describes the key components of an inflation-targeting framework. Section 3 discusses whether these key components are present in emerging market economies, and whether there are other features of emerging market economies that would hinder the practice of inflation targeting. Section 4 examines the role of the exchange rate in an inflation-targeting framework while Section 5 considers the viability of alternative monetary policy strategies. Section 6 concludes.

2.   What Is Inflation Targeting?

The goal of monetary policy in many countries is to achieve a low inflation rate. Many countries announce a forecast for inflation over the coming year: in a recent survey by the Bank of England, 55 of 93 central banks characterised themselves as having an inflation target (Fry *et al* 1999). Despite this, only a subset of countries could be characterised as having a formal inflation target (the same survey identified only 16 central banks as inflation targeters).

This section discusses the defining features of an inflation-targeting regime: the primacy of the inflation objective, instrument independence, and transparency and accountability.[3]

2.1   The primacy of the inflation target

The central feature of an inflation-targeting framework is that the inflation target is the primary objective for monetary policy. This feature differentiates an inflation-targeting framework from one in which the central bank simply announces a forecast for inflation that it would like to achieve. In such situations, there is no obligation on the central bank to set policy to ensure that the inflation forecast is realised, particularly if to do so would compromise other macroeconomic objectives.

The primacy of the inflation target does not imply that other objectives, most notably employment and output objectives, are ignored.[4] That is, inflation targeting is not 'inflation only' targeting. Most inflation-targeting countries have adopted 'flexible' inflation-targeting regimes, where output and employment growth play an important role in monetary policy decisions. Even in 'strict' inflation-targeting regimes, output considerations are still important because of the critical role output plays in determining future inflation: output should always feature in the reaction

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3.   The literature on the practice of inflation targeting has burgeoned in recent years. For a collection of papers discussing the early experience with inflation targeting, see Haldane (1995) and Leiderman and Svensson (1995). Lowe (1997) and Bernanke *et al* (1999) provide more recent commentaries. The websites of the central banks that have adopted inflation targets contain much material that discusses the technical aspects of inflation targeting.

4.   These issues are discussed in more detail in Debelle (1999).

function of the central bank. The extent to which output and employment objectives are taken into account is influenced by the flexibility of the regime and will be reflected in the design features of the inflation-targeting framework. This is discussed in more detail in Section 3.

An inflation target need not preclude the simultaneous pursuit of an exchange rate objective, although to date, most inflation-targeting countries have floating exchange rates. At a basic level, the exchange rate can be an important determinant of the outlook for inflation and output, and to that extent, exchange rate changes are already adequately addressed in an inflation-targeting regime. But in a number of emerging market economies, exchange rate instability has a first-order impact, which requires that more weight be given to exchange rate considerations. This is discussed in more detail in Section 4.

Goal independence

In a number of inflation-targeting countries – for example, New Zealand, the United Kingdom and Korea – the adoption of inflation targeting has been associated with the introduction of new central banking legislation. In these cases, the new legislation has generally specified that price stability is the primary (and in some cases, sole) objective for monetary policy. In these circumstances, the central bank generally does *not* have goal independence.[5] The legislation (and hence the legislature) specifies the goal(s) for the central bank, rather than the central bank nominating its own goals.

The operational definition of price stability has generally not been provided in the legislation. Instead, in many cases the inflation target has been adopted as the practical interpretation of price stability. The precise definition of the inflation target is agreed on jointly by the central bank and the government, or, as in the case of the United Kingdom, is specified unilaterally by the Chancellor, after consultation with the Bank of England. The target has often been specified in an accompanying document, such as the Policy Targets Agreement in New Zealand, or the Statement on the Conduct of Monetary Policy in Australia.[6]

Where the adoption of an inflation-targeting framework has not coincided with the passage of new legislation, the central banks have regarded the inflation target as the operational interpretation of the objectives in the existing legislation. In only a few cases, does the central bank have complete goal independence and unilaterally pursue an inflation target.

The goal dependence of the central bank helps to ensure that the government retains ownership of the ultimate goals of monetary policy, as is appropriate in a democratic society. Similarly, the joint determination of the inflation target bolsters the government's own commitment to the inflation target, thereby serving to increase the credibility of the regime.

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5. Debelle and Fischer (1994) develop the concepts of goal and instrument independence.

6. These can be found at: <http://www.rbnz.govt.nz/monpol/pta/index.html> (New Zealand) and <http://www.rba.gov.au/MonetaryPolicy/> (Australia).

2.2   Instrument independence

While goal independence is generally absent in most inflation-targeting regimes, it is crucial that the central bank have instrument independence. To successfully pursue an inflation target, the central bank must have the freedom to adjust its instrument of monetary policy in the manner it feels necessary to achieve the inflation target. Instrument independence is desirable in any monetary policy regime, but it is essential in an inflation-targeting regime, given the greater degree of discretion allowed. To counterbalance this independence, the central bank should be accountable to the democratic process as discussed below.

The main constraint on the instrument independence of the central bank is the need to finance the government's deficit. Absence of fiscal dominance is a vital prerequisite for an inflation-targeting regime. Fiscal dominance can take the direct form of a requirement to fund the government's deficit on the central bank's balance sheet. The central bank needs to be freed from the obligation to act as the buyer of last resort of government paper, and to engage in other quasi-fiscal activities. Where there is a long history of fiscal dominance, it may be beneficial to legislate against it. For example, the *New Central Bank Act* in the Philippines in 1993 granted the central bank increased fiscal autonomy, and forbade it from engaging in development banking or financing.

Government endorsement of the inflation target should also reduce the pressure on the central bank to accommodate slippages in fiscal policy. Nevertheless, the government must be aware that it cannot fund its spending by money creation. A country which must rely on seigniorage revenue because it lacks any other source of budgetary funding is not suited to an inflation-targeting regime, as Masson *et al* (1997) argue.

Fiscal dominance can also take more subtle forms such as pressure on the central bank to lower interest rates to decrease the cost of servicing the public debt. The public accountability of the central bank can help to ameliorate this pressure by bringing any disputes between the central bank and the government into the open. To this end, there are a number of institutional changes which can be made to shore up this independence: the central bank governor and board can be appointed for terms longer than the political cycle, and politicians can be prohibited from serving on the central bank board. The governor can also be called to testify to a bipartisan review committee to explain the central bank's actions.

2.3   Accountability and transparency

A distinguishing feature of inflation-targeting regimes has been the high degree of transparency of the practising central banks. More recently, this aspect of transparency has become commonplace amongst many central banks, and should be a central feature of any monetary framework. The distinguishing feature of the transparency and accountability in an inflation-targeting framework, however, is that the central bank is accountable for the achievement of a well-defined numerical

target. All changes in the stance of monetary policy are motivated publicly with reference to the inflation target.

In practice, transparency has taken a number of forms. These have included the regular publication of the central bank's assessment of current and future economic conditions, and the announcement by the central bank of changes in the stance of monetary policy at the time they occur, generally accompanied by a press release and/or press conference to explain the reasons for the change. In a number of countries, the governor is required to testify before a parliamentary committee on a regular basis to explain the central bank's actions in achieving the inflation target.

One motivation for the increased transparency of inflation-targeting central banks has been to enhance public accountability, thereby serving as a counterbalance to the greater independence that has occurred over the past decade or so. Another major motivation for the increased transparency and accountability has been to act as a means of distinguishing the new inflation-targeting regime from the less successful, inflation-prone monetary regimes of the past. In both cases, the inflation target provides a clear benchmark with which to assess the performance of the central bank. In this sense, transparency is more useful in an inflation-targeting regime than in other regimes that do not provide such a definitive benchmark.

The increased transparency has been characterised as 'cheap talk of the weak' (Kuttner and Posen 1999). That is, the public utterances of central banks may only be a form of window-dressing to keep financial markets convinced that price stability is the goal of monetary policy, when instead the central bank may still be pursuing other objectives. While this is overstated, it reflects the inflation histories of the inflation-targeting countries. Given the lack of a track record, increased transparency can help to build reputation and credibility more quickly. Kuttner and Posen provide some evidence that the transparency of the inflation-targeting central banks has helped to build public trust in their actions.

Finally, the increased transparency serves as a useful means of communicating with the public. A greater public understanding of the inflation-targeting regime in particular, and the monetary policy process in general, is likely to contribute to the longevity of the regime. The clear specification of the inflation goal, and the actions taken to achieve the goal, help to provide a nominal anchor for wage- and price-setters. This is particularly important in economies which have a history of indexation, where the inflation target can serve as a forward-looking focal point for indexation thereby helping to reduce the costs of disinflation.

3.   Issues for Emerging Market Economies

This section considers issues that might be regarded as obstacles to the implementation of inflation targeting in emerging market economies, and east Asian economies in particular. It highlights that, in many instances, these same obstacles were present in a number of the inflation-targeting countries at the time they commenced inflation targeting and hence should not be regarded as prohibitive barriers against the adoption of an inflation-targeting regime.

3.1   Objectives of monetary policy

As discussed in the previous section, successful inflation targeting requires that the inflation target be the primary objective for monetary policy and that the central bank have instrument independence. In many emerging market economies, monetary policy has traditionally had a multiplicity of objectives, including the exchange rate, full employment, the current account and financing the government's budget.

To establish a clear break from the past, a number of emerging market countries have found it beneficial to rewrite the central bank law to state that the primary goal of monetary policy is to achieve price stability. This has been the case, *inter alia*, in the Philippines which in 1993 enacted a new Central Bank Charter that established 'maintaining price stability conducive to the balanced and sustainable growth of the economy' as the primary objective of monetary policy. Similarly, the *Bank of Korea Act*, when revised in 1997, stipulated that the purpose of the Bank of Korea was 'to contribute to the sound development of the national economy by pursuing price stability' (Article 1).

Where there are other objectives specified in the central bank act, it may be useful to continually stress the primacy of the price stability objective in the early stages of the inflation-targeting regime. Once a track record has been established, there is likely to be scope to take greater consideration of other goals such as full employment, although, as noted above, output or employment goals are not necessarily inconsistent with the attainment of the inflation target in many economic conjunctures. The interaction of an exchange rate goal and an inflation target is discussed in the next section.

The goal of price stability stated in the central bank act rarely provides an operational definition. Instead, this is generally provided in the wording of the inflation target and, as discussed above, there are considerable benefits from either agreeing on the target jointly with the government or at least having the government publicly endorse the target. A sense of co-ownership of the inflation target by the government serves to increase the credibility of the regime, reduces the scope for fiscal dominance, and generally facilitates a consistent approach to macroeconomic policy-making. The *Bank of Korea Act* requires that the price stability target be set each year in consultation with the Government.

Many central banks also have the goal of preserving financial stability. In general, this should not conflict with the goal of price stability. But in the aftermath of the Asian crisis the banking systems in many countries in east Asia were particularly fragile. This raised the possibility that rises in interest rates to preserve price stability may have generated more financial distress. In an inflation-targeting framework, the central bank should be taking the deflationary forces emanating from financial distress into account in making its assessment about the appropriate policy stance. Consideration of this credit channel of monetary policy should ameliorate the need for tighter policy to counter inflation in these circumstances. Hence the possibility of conflict should not be overstated, although the difficulty of the appropriate decision for monetary policy in such circumstances will still remain.

3.2 Instruments of monetary policy

Many emerging market economies do not have the financial depth of developed countries. This can pose problems for the implementation of monetary policy changes and the transmission of those changes through to the rest of the economy.

The instrument(s) of monetary policy that the central bank has at its disposal is *not* critical to the success of an inflation-targeting regime. In every developed country that pursues an inflation target, an indirect instrument of monetary policy is used – generally the overnight interest rate on deposits of the banking system with the central bank. Despite this, inflation targeting is compatible with the use of monetary measures as the instrument of monetary policy. It is also compatible with the use of direct instruments such as credit controls. The important issue is that whatever the instrument of monetary policy, it is adjusted in order to achieve the inflation target.

A related problem is that in less-developed financial systems there may be greater uncertainty about the link between monetary policy actions and the final objective of the inflation target. While knowledge of the transmission mechanism of monetary policy is a key ingredient of an inflation-targeting regime, this should not be exaggerated. The adoption of inflation targeting in developed countries generally followed the failure of other monetary regimes: fixed exchange rates in the UK and Sweden, and monetary targeting in New Zealand, Canada and Australia. Hence past economic experience was not necessarily of great assistance in understanding the effects of monetary policy changes under the new regime. Moreover, in these countries, as is the case in nearly every developed country, there is still a great deal of uncertainty about the timing and potency of the transmission of monetary policy.

3.3 The inflation process

The inflation process in many emerging market economies has tended to be considerably more volatile than in developed countries (Table 1). This volatility can pose problems for the ability of the central bank to control the inflation process sufficiently to achieve its inflation target consistently.

There are a number of reasons for the greater volatility of consumer prices in emerging market economies. Food items, whose prices are subject to the vagaries of the weather, tend to have a larger weight in the consumer price basket of emerging market countries. For example, food accounts for just under 20 per cent of the consumption basket in Australia, while it accounts for around 50 per cent in the Philippines and over 40 per cent in Indonesia. The fifth column of the table shows that food prices tend to be more variable in emerging market countries and hence their higher weight in the CPIs of emerging markets economies will imply more variability in inflation.

Figure 1 illustrates the problem facing emerging market economies. It shows that food prices have contributed significantly to swings in CPI inflation in Korea and the Philippines, whereas they have had much less of an effect in Australia. The figure also shows that the swings in food prices tend to be relatively temporary and are often reversed over the course of the next year or so. Provided the inflation target is

Table 1: Inflation in Emerging Market and Developed Economies
1990s

	CPI		Food[a]			Administered prices
	Mean	Variance	Share in CPI	Mean	Variance	Share in CPI
Emerging market economies						
Malaysia	3.7	0.9	35	5.1	4.1	11
Korea	5.6	5.4	30	6.2	11.3	–
Philippines	8.9	15.4	50	8.0	16.9	–
Indonesia[b]	23.5	446.9	42	32.0	958.1	–
Brazil	123.1	16 424.5	22	–	–	21
Czech Republic[c]	7.2	11.9	33	3.5	22.0	18
Mexico	18.3	70.4	12	14.8	153.8	18
Developed economies						
Australia	2.5	4.6	19	2.8	1.7	16
Canada	2.2	2.8	18	1.9	2.7	–
New Zealand	2.1	3.3	18	1.8	6.1	10
United Kingdom	3.8	4.2	13	2.7	6.6	15

(a)   Includes beverages for Czech Republic, Mexico and the Philippines and tobacco for Czech Republic and Mexico
(b)   January 1997–December 1999
(c)   March 1996–December 1999

sufficiently forward-looking, such swings in prices should not engender a monetary policy response. In such circumstances, it is useful for credibility if the central bank explains that they expect the price movements to be temporary.

Another factor that affects the nature of the inflation process which can complicate the central bank's task is the number of prices regulated by the government. Table 1 shows that while this share is quite large in emerging market economies, in many cases it is not much greater than that in developed countries. However, in emerging market economies, administered prices tend to be more affected by the demands of the government's budget constraint. Furthermore, if the adoption of the inflation target coincides with a general program of economic reform, there may be large upward spikes in these prices as they are withdrawn from government control, given that many of them apply to essential goods and services whose prices have been artificially suppressed for social welfare purposes. The central bank may need to accommodate the initial price level impact of the removal of the government price controls but should aim to prevent the price rises becoming entrenched in higher ongoing inflation.

Figure 1: Inflation in Korea, the Philippines and Australia
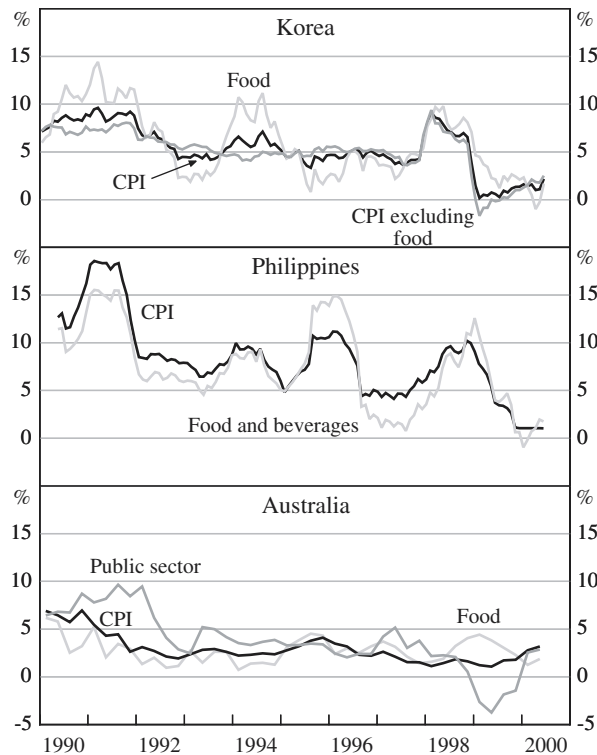
If the inflation process is too volatile, there may be little point in the central bank explicitly pursuing an inflation target and enduring the loss of credibility as the target is continually missed. Rather, it may be preferable to implicitly target the inflation rate and only move to a more transparent form of inflation target if the inflation process becomes less volatile over time. Nevertheless, the design of the inflation-targeting regime can help to lessen the impact of volatile price movements by conditioning the response of inflation expectations to them.

3.4 Designing the inflation target

Output or employment goals as well as the volatility of the inflation process can be accommodated within the inflation-targeting framework through the appropriate design of the framework. The features of the framework that can help to accommodate these objectives include:

- the definition of the target inflation rate – that is, whether the targeted rate is the CPI inflation rate published by the statistical bureau or another underlying rate;
- the use of 'caveats' or exclusion clauses;

- whether the target is specified as a band or a point; and

- the target horizon.

The decision about each of these features of the targeting regime involves a trade-off between credibility and flexibility. The central bank may prefer to allow itself more flexibility in achieving the inflation target, but in doing so, it may undermine the credibility of the regime, particularly in its initial stages.

Targeting an underlying measure of inflation, rather than the published measure, provides the central bank with the flexibility to abstract from volatile movements in, for example, the prices of food or petrol. However, this may undermine the central bank's credibility, because the public is most familiar with the published measure of inflation. It may therefore be preferable for the inflation target to be defined in terms of the published measure of inflation to increase public acceptability, but for the central bank to focus on underlying measures in its own internal policy deliberations.

This approach has been taken in Brazil where it was considered that using a published, rather than an underlying, measure of inflation was necessary to enhance the credibility of the regime because in the past, price indexes had been manipulated for political purposes (Bogdanski, Tombini and Werlang 2000). In addition, the index that was chosen for the inflation target, the IPCA, was selected from amongst the wide range of consumer price indexes available in Brazil because of its broader geographical coverage and its greater familiarity to the public. Internally, however, the Banco Central uses a number of different measures of underlying inflation to gain a better understanding of the inflationary pressures in the Brazilian economy.

If an underlying rate is to be used as the target rate, it is beneficial for it to be calculated, using a known and accepted technique, by an agency other than the central bank – preferably the national statistical authority. If this is not possible, the central bank should make public the method of calculating the underlying measure, so that it can be independently verified.

As an alternative to using an underlying measure of inflation, 'caveats' or exclusion clauses can be used to specify events which the central bank wishes to abstract from in its conduct of monetary policy because they only have a temporary effect on inflation. These caveats should be specified *ex ante* rather than *ex post*. For example, in New Zealand these events are specified in the Policy Targets Agreement, which defines the inflation target, and include: large movements in commodity prices, changes in indirect taxes and natural disasters.[7] The intent in such situations is to abstract from the immediate price-level effect of such events but not from any second-round inflationary pressures that may occur. As with the measure of underlying inflation, excessive use of exclusion clauses can diminish the public's trust in the inflation-targeting regime.

The choice between defining the inflation target as a band or point provides another mechanism to cope with the inherent volatility in inflation and to take

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7. The latest copy can be found at <http://www.rbnz.govt.nz/news/1999/0092613.html>.

account of the variable and uncertain lags of monetary policy. A wider inflation target band also allows greater scope for output stabilisation.

The historical variability of inflation in emerging market economies illustrated in Table 1 would suggest that an inflation target band would need to be quite wide. If the band were wide enough to ensure that it was only infrequently breached, it may not be perceived to be credible. On the other hand, a narrower band may be perceived to be more credible initially, but if it were to be breached frequently because of temporary shocks to the price level, confidence in the inflation-targeting regime would soon be undermined.

The experience of inflation targeting to date suggests that the costs of small and temporary breaches of a target band are quite small, implying that a narrower band may be more suitable. In the case of any breach, the central bank must explain the factors that lie behind it, and whether the past policy actions are sufficient to ensure that inflation returns to the target within an appropriate horizon.

Similar concerns were expressed about this issue when inflation targets were being adopted in the developed countries (Stevens and Debelle 1995). The subsequent experience has seen only infrequent breaches of inflation target bands. In part, this is because inflation variability over the past decade has been noticeably lower than in the past. For example, in Australia, inflation variability has declined from around 2.5 per cent in the decade prior to the adoption of the inflation-targeting regime in 1993 to around 1.3 per cent subsequently, while in the UK, it has declined from around 1.5 to 0.4 per cent over a similar period.[8] Whether this is an outcome of the shift to inflation targeting or whether it simply reflects a generally benign world economic environment is not clear.

Besides variability considerations, the choice between a band and a point should also focus on the use of the inflation target as an anchor for wage and price expectations. It may be beneficial to express the target as a point (perhaps with a tolerance interval) rather than a band to provide a better focal point. Otherwise, expectations may focus only on the upper end of the target band. This approach has been adopted in Brazil, where the target was initially announced as 8 per cent with a tolerance interval of 2 percentage points.

Finally, the longer the horizon of the inflation target, the longer the timeframe over which the central bank can return inflation to the target, and the greater scope for output stabilisation. A longer horizon also provides a mechanism to deal with temporary volatility in food prices. Again, if the horizon is too long, there may not be much confidence that the central bank is committed to returning inflation to target. In Korea, the price stability goal is defined as an inflation rate of $2^1/_2$ per cent in the medium term. However, to provide a shorter-term focus and to contend with temporary price shocks, an annual inflation target is announced every December by the Bank of Korea following consultation with the government. For 2000, the target was 2.5±1 per cent, which was raised to 3±1 per cent for 2001.

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8. Calculated as the standard deviation of year-ended CPI inflation (excluding interest) in Australia and RPI-X inflation in the UK.

It is important that decisions about the design of the inflation target are taken in advance of the events they are intended to contend with, and that the design features are changed as infrequently as possible. For example, a decision to target a medium-term measure of inflation should be taken before the familiar CPI measure is affected by a temporary price movement rather than during the period when it is diverging from the targeted rate.

Choices about these four aspects of the design of the inflation target all involve a trade-off between flexibility and credibility. If there is not a strong track record of inflation fighting, it may be beneficial for the central bank to make an upfront investment in credibility which can then permit it to be more flexible in the future. Against this, an over-zealous pursuit of an inflation target should be avoided, as it too can undermine public support for the regime.

3.5   Forecasting inflation

Monetary policy must be forward-looking in an inflation-targeting framework given the lags between changes in the instrument of monetary policy and inflation. Hence, forecasts of inflation play an important role in monetary policy decisions. Masson *et al* (1997) argue that the difficulty in forecasting inflation is one of the major obstacles to adopting an inflation-targeting regime in emerging market economies.

In many emerging market economies, the historical volatility of the inflation process and the large structural changes that have taken place in the economy make developing a model of the inflation process particularly difficult. In a number of cases, the sheer lack of historical data for the main macroeconomic variables further complicates the issue.

These analytical hurdles should not be overstated. Similar problems beset many inflation-targeting countries when they first adopted their regimes. For example, when inflation targets were first adopted in New Zealand at the end of the 1980s, the economy was undergoing extensive reform along many dimensions and the history of inflation in New Zealand to that point had been particularly volatile.

While it is clear that a well-developed analytical framework to forecast inflation would enhance the efficacy of monetary policy, it is not necessary. Most developed country inflation-targeters have progressively refined their inflation forecasting techniques as they have accumulated more experience, and some of the pitfalls encountered along the way can be avoided by emerging market countries. Nevertheless, a large amount of judgement is still involved in forecasting in the inflation-targeting countries. Thus, the benefits of inflation forecasting should not be oversold. There need not be a desire to have the state-of-the-art forecasting technology in place before an inflation-targeting regime is adopted.

In many countries, the current inflation rate is often a reasonable guide to future inflation and could usefully be employed as a starting point in developing a forecast in emerging market economies. This can be supplemented in a informal manner with information from other sources about near-term inflation pressures. Over time, this

information can be included more formally. The effect of past policy actions must be kept in mind, so that monetary policy is not continually adjusted until there is an obvious change in current inflation. Such an approach can lead to excess volatility in monetary policy.

The lack of an advanced forecasting framework does not appear to have been a major impediment to the outcomes in the inflation-targeting countries. Notwithstanding this, the adoption of an inflation target may require a reallocation of resources within the central bank, with more resources being devoted to monitoring and analysing developments in prices and the real economy (Schaechter *et al* 2000, ch 6). Resources may also need to be assigned to data collection. Over time, increased resources should be allocated to developing modelling and forecasting frameworks.

4.   Inflation Targeting and the Exchange Rate

One important difference between east Asian countries and most inflation-targeting countries is their greater openness (Table 2). Consequently, movements in the exchange rate play a much more prominent role in economic management in the former. Not only do changes in the exchange rate act as a potent transmission channel for monetary policy, exchange rate volatility may also have first-order effects on the traded sector of the economy. What role should the exchange rate have in an inflation-targeting regime in a very open economy?

Table 2: Openness
Per cent of nominal GDP, 2000

	Exports	Imports
Australia	22	23
Canada	46	41
United Kingdom	27	29
United States	11	15
Brazil	11	12
Chile	32	31
Indonesia	39	31
Israel	40	47
Korea	45	42
Malaysia	126	106
Singapore	180	161
Thailand	66	58

Source: CEIC database; IMF *International Financial Statistics*

It is useful to consider this question in terms of the standard objective function for monetary policy used in the inflation-targeting literature. The objective function normally comprises squared deviations of inflation from its target level (π^*) and output from potential (y^*). The exchange rate appears in this formulation of the objective function only indirectly through its effect on output and inflation. The central bank will therefore respond to exchange rate changes because of their large impact on output and inflation, and the response will be greater, the more open the economy. To the extent that a more volatile exchange rate generates more variability in traded goods prices and hence inflation, this can be accommodated in the design of the inflation target as discussed in Section 3.4.

In very open economies, the standard form of the objective function may not adequately capture the full effect of exchange rate changes on output: excessive volatility in the exchange rate may be detrimental to trade and growth. Consequently, it may be appropriate to extend the objective function to explicitly take account of the exchange rate:

$$L_t = E_t \sum_{s=t}^{\infty} \delta^{s-t} \left[(1-\lambda)(\pi_s - \pi^*)^2 + \lambda(y_s - y_s^*)^2 + \kappa(e_s - e_s^*)^2 \right]$$

This form of the objective function highlights the possibility of a trade-off between exchange rate variability and inflation variability, alluded to by Fischer (2001), which is similar to the oft-analysed trade-off between output variability and inflation variability that arises from the standard version of the objective function. The trade-off can be illustrated by considering an economy where the exchange rate channel of monetary policy is the most effective in the short term because the pass-through of exchange rate changes to consumer prices is rapid. In a situation where inflation was expected to increase temporarily, interest rates could be raised to engender an exchange rate appreciation and a fall in tradable goods prices. Once the inflationary pressure had dissipated, interest rates could be lowered again and the exchange rate allowed to depreciate. In these circumstances, inflation variability has been reduced but at the expense of increased volatility in the exchange rate.

The question that is posed by this extended objective function is, what are the relative benefits of a more flexible exchange rate versus a more stable exchange rate? Frankel (1999) summarises the benefits of a more flexible exchange rate regime as the ability to pursue an independent monetary policy, while he characterises the benefits of a fixed regime as reducing transactions costs and exchange rate risk for the traded sector, and providing a credible nominal anchor. The latter concern is partly addressed by the role of the inflation target itself as a nominal anchor, although fixing the exchange rate may deliver more credibility upfront. A cost of flexibility not raised by Frankel is the possibility of instrument instability if monetary policy is continually adjusted to counter sharp swings in the exchange rate. Eichengreen and Hausmann (1999) also identify the problem caused by sharp movements in exchange rates in a country with a large stock of foreign-currency-denominated

debt. In the end, the relative benefits and costs of exchange rate flexibility is to a large extent an empirical issue that will vary with the characteristics of different economies. The title of Frankel's 1999 paper succinctly summarises the issue: 'No single currency regime is right for all countries or at all times'.

An intermediate solution to this trade-off is the combination of an inflation target and an exchange rate band along the lines proposed by Williamson (2000). One advantage of such a band, highlighted by Williamson, is that it would provide an anchor for expectations about the exchange rate similar to the way in which the inflation target anchors the expectations of wage- and price-setters.

An exchange rate band can then be regarded as a supplement to the inflation target that has the benefit of contributing to exchange rate stability. In a stable economic environment, the monetary policy decision would not be constrained by the exchange rate band and can be directed solely at the inflation target. The difficulty arises in the event of a conflict between the exchange rate band and the inflation target. This was the fundamental incompatibility highlighted by Masson *et al* (1997). The experiences of Chile and Israel show that exchange rate objectives can be accommodated within an inflation target but also highlight the problems that can arise.

4.1 Inflation targets and exchange rate goals: the experience of Chile and Israel

Chile and Israel pursued exchange rate objectives concurrently with an inflation target for much of the 1990s.[9] Both economies are relatively open to trade, although not to the extent of some east Asian economies. Figure 2 shows the paths of inflation and the exchange rate, and their respective target bands over the 1990s.

In Chile, a crawling peg had been in place since 1984. When the inflation target was first introduced, soon after the new legislation granting increased independence to the Bank of Chile in 1989, the exchange rate band was flexible with a band of around ±10 per cent. The exchange rate band was primarily used to achieve a desired outcome for the current account deficit and hence the rate of crawl was set to achieve a real exchange rate goal.[10] It was supported by intervention, controls on capital inflows, and, to the extent that it did not conflict with the inflation target, by monetary policy. Morandé (2000, p 155) notes 'whenever there was a clear conflict … the Central Bank chose to maintain the inflation target and proceeded to modify the exchange rate band'. From 1990, the emphasis on the inflation target as the primary objective of monetary policy was gradually increased until finally, the exchange rate band was abandoned completely in 1999.

In Israel, a crawling peg had been adopted as the exit strategy from the successful exchange rate based stabilisation in the second half of the 1980s. The genesis of the

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9. Landerretche, Morandé and Schmidt-Hebbel (1999) discuss the Chilean experience, Leiderman and Bufman (2000), the Israeli experience.

10. Mishkin and Savastano (2000) argue that monetary policy should not be used to address external competitiveness issues.

Figure 2: Inflation and the Exchange Rate in Chile and Israel
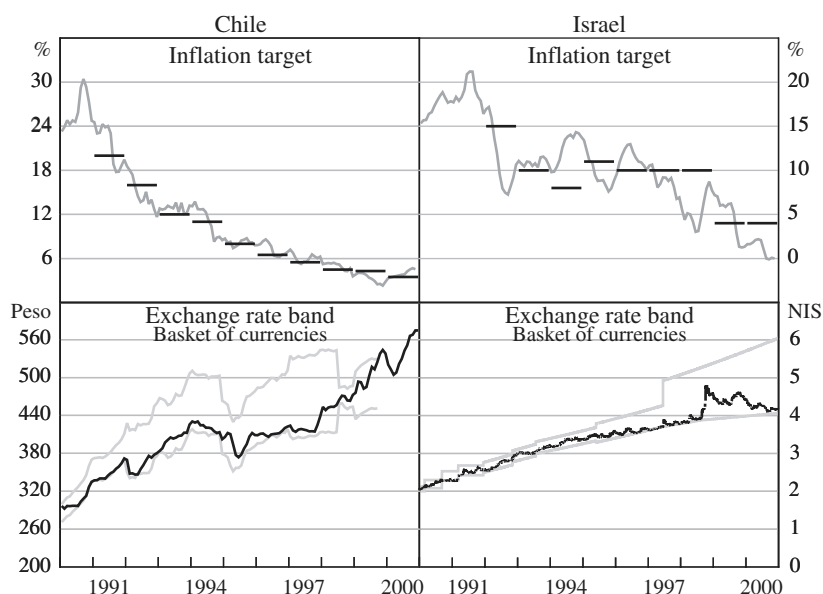
inflation target was, in part, the need to have a forecast for Israeli inflation. The forecast was then used to set the rate of crawl of the exchange rate in a forward-looking manner, to achieve a goal for the real exchange rate. The exchange rate band was progressively widened as conflict arose between the inflation target and the exchange rate band. Leiderman and Bufman (2000, p 76) highlight the problem:

> The level of the interest rate that was required to ensure the inflation target was met [was higher] than the level of the interest rate that would have resulted in no pressures on the exchange rate band limits. Since the exchange rate band limits became a binding constraint, a large degree of sterilised intervention of capital inflows was required – sterilization that carried with it a sizable quasi-fiscal cost – and monetary policy could not fully affect inflation developments through the very important exchange-rate channel of monetary transmission.

In both Chile and Israel, the exchange rate had served a useful role as a nominal anchor in stabilising from high rates of inflation. The inflation target gradually took over that role as lower rates of inflation were maintained. While there was some benefit in maintaining an exchange rate band to provide 'guidance about the desirable trend of the real exchange rate and to reduce excessive exchange rate volatility' (Morandé and Schmidt-Hebbel 1999), whenever a conflict arose between the inflation target and the exchange target, monetary policy decisions were determined by the need to achieve the inflation target, and the exchange rate target was modified.

This experience shows that the presence of an exchange rate objective is not incompatible with an inflation target most of the time. However, in the event of a conflict, both Chile and Israel found it necessary to have a clear lexicographic ordering between the inflation target and the exchange rate, which resulted in monetary policy being directed towards maintaining the inflation target and the exchange rate goal being adjusted. The inflation target provided the framework with which to consider whether and how it was appropriate to modify the exchange rate target.

4.2   Capital flows

Large and volatile capital flows pose a significant problem for east Asian economies.[11] Through much of the 1990s, the capital flows into the region were large relative to the size of the economies and the financial systems. These flows create difficulties for an exchange rate goal, even if it is simply to maintain stability rather than to target any particular level of the exchange rate. In addition, the presence of volatile capital flows can create a conflict with an inflation target.

There are some principles which can provide some guidance on the appropriate response to capital flows. If capital inflows are temporary, sterilised intervention to maintain exchange rate stability should not be inconsistent with the inflation target. If the capital inflows are more sustained, attempting to maintain exchange rate stability will either be too costly (if the inflows are sterilised) or would potentially lead to inflation (if they are not).

If the capital inflows are more sustained and reflect improved fundamentals, an appreciation of the real exchange rate is likely to be required. It is generally preferable to achieve this real appreciation through an appreciation of the nominal exchange rate rather than through higher domestic inflation. Allowing the nominal exchange rate to appreciate contributes to lower domestic inflation and avoids the need for a costly disinflation at a later date. Resisting the nominal appreciation blocks an important channel of monetary transmission and contributes to imbalances which can create greater instability further down the track.

While these principles are relatively straightforward in theory, in practice it is often difficult to determine whether the capital inflows do indeed reflect improved domestic fundamentals, and hence whether an appreciation is appropriate. A nominal appreciation could potentially lead to the exchange rate overshooting, even if the initial part of the rise was based on fundamentals, with adverse consequences for the current account balance and the tradable goods sector. If the capital flows are volatile, then a decision to allow the exchange rate to fluctuate in response forces all the burden of adjustment to fall on the traded sector of the economy.

Large and volatile capital flows are difficult to deal with in any monetary framework. As the experiences of Chile and Israel demonstrate, the inflation target can help by providing a consistent framework to weigh up the inflationary

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11. See Haque, Mathieson and Sharma (1996) for a discussion of these issues.

consequences of capital flows against the possible costs of increased exchange rate instability. In doing so, it helps the central bank to 'ask the right questions' about the forces driving the movements in the exchange rate.

5.   What are the Alternatives in East Asia?

An inflation-targeting regime presents a number of analytical hurdles to an emerging market economy, and hence it might be regarded as premature to adopt such a regime until these analytical hurdles are overcome. If that is the case, what are the alternative monetary policy regimes that could be pursued?[12] This section considers four possibilities – monetary targeting, nominal income targeting, a fixed exchange rate, and a regime of 'unconstrained discretion' – and compares them to inflation targeting.

5.1   Monetary targeting

A monetary-targeting regime has the potential advantage of relative controllability. With a floating exchange rate and in the absence of fiscal dominance, the central bank can be reasonably confident of its ability to achieve a narrow monetary target. A strict approach to monetary targeting also limits the central bank's discretion in its approach to monetary policy. While inflation targeting has been termed 'constrained discretion',[13] the constraints are usually much tighter in a monetary-targeting regime. It is easier and more timely to determine whether the central bank is meeting its monetary targets than it is to determine whether it is achieving its inflation target, given the long lags of monetary policy and the influence of exogenous shocks on the inflation rate in the interim.

However, this begs the question of what is the ultimate goal of the monetary targeting. Little is achieved if the central bank successfully meets its monetary target but inflation and output growth are not close to their desired rates. If the ultimate objective of the monetary target is a particular inflation rate, then an intermediate monetary target is consistent with inflation targeting. It may be beneficial to move towards a more explicit inflation-targeting regime and emphasise the final inflation objective, rather than the intermediate monetary target, to better anchor pricing behaviour.

Inflation targeting also has the advantage of making use of all the available economic information in determining the outlook for inflation, whereas monetary targeting focuses narrowly on the information in the money demand function. As the east Asian economies have undergone financial deregulation, the information provided by money demand has been distorted (Dekle and Pradhan 1997). While this also poses problems for an inflation target, it is not as critical because the inflation target makes use of a much wider set of information.

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12. Mishkin and Savastano (2000) provide an extensive examination of this question and support their answer with examples from Latin America.

13. Bernanke and Mishkin (1997).

The choice between these two approaches boils down to one between a regime where the discretion of the central bank is limited, but the effects of its policy on the ultimate goal are less clear (monetary targeting), and one where there is a much greater opportunity for discretion, but policy actions are aimed directly at the ultimate objective of policy (inflation targeting).

5.2 Nominal income target

Another alternative policy regime is nominal income targeting,[14] which shares many similarities with a flexible inflation-targeting regime. A nominal income target explicitly takes into account developments in both prices and output, but is not as concerned about the decomposition of the nominal income growth into inflation and output growth. For example, under a flexible inflation target, in the event of a price shock, some of the adjustment may be taken in the form of temporarily higher inflation while some of the adjustment is taken in the form of lower growth, but the primary focus is on returning inflation to the target.

The main advantage of a nominal income target is that it does not rely on knowledge of the output gap. The size (and sign) of the output gap is an important element in an inflation target, but historically it has proven difficult for central banks to measure it. Against this, a major difficulty in a nominal-income-targeting regime arises from the fact that monetary policy affects real output and inflation with different lags. Consequently a policy response aimed at nominal income may generate instability through time. A further disadvantage may arise from the problems of communicating a nominal income target to the public. An inflation target has the benefit of acting as a transparent anchor for inflation expectations that may be lost with a nominal income target.

5.3 Nominal exchange rate target

A fixed exchange rate target or a currency board place even greater constraints on the discretion of the central bank than monetary targeting. The advantages and disadvantages of such regimes are discussed extensively elsewhere and some of the benefits and costs of exchange rate flexibility have been raised in Section 4.[15] A rigidly fixed exchange rate regime and an inflation target should be regarded as alternative strategies to achieve price stability. The trade-off is between the flexibility allowed with a floating exchange rate and the credibility gains of a rigid anchor (particularly with a country with a poor monetary policy history). As Frankel (1999) argues, the choice of exchange rate regime depends on the country and on the circumstances.

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14. Hall and Mankiw (1994) advocate such a regime. Bean (1983), McCallum (1997) and Rudebusch (2000) discuss its relative merits. McKibbin and Singh (2001) compare a nominal income target and a policy rule that responds only to inflation (which they mislabel as inflation targeting) in a model of the Indian economy.

15. Recent papers examining the choice of exchange rate regime include Eichengreen and Hausmann (1999), Frankel (1999), Glick (2000), Fischer (2001) and Dornbusch (2001).

5.4   Unconstrained discretion

Finally, the central bank can set monetary policy taking into account all the information available, as with inflation targeting, but without a clear specification of the ultimate goals of policy. Objectives for policy such as price stability and full employment may be specified, but with no clear articulation of what they mean operationally and how conflicts between objectives are to be resolved. Such a strategy, which to some extent describes the approach taken by the US Federal Reserve, is possible when the central bank has a proven track record but is less suitable for central banks which do not have such a track record.

The principal disadvantage of this approach is that it lacks the structure that an inflation target provides to the monetary policy decision. This organising structure is useful both for the internal policy discussion and also for explaining the reasons underpinning monetary policy decisions to the general public. Another disadvantage of unconstrained discretion is that it is easier for the central bank's independence to be compromised. The priority of the goals can be more easily influenced from outside the central bank, without that being clear to the general public. Continual changes in the priorities of the central bank are also likely to undermine the public's confidence in the central bank.

6.   Conclusion

Inflation targeting presents a number of hurdles for east Asian economies. However, these hurdles are, in many cases, not much larger than those that confronted the inflation-targeting countries when they adopted their regimes in the early 1990s. The experiences of Chile, Israel and, more recently, Brazil provide examples of how the hurdles can be overcome.

Nevertheless, there are some necessary conditions that should be met before an inflation-targeting regime is adopted. Most importantly, the central bank should have the independence to pursue the inflation target and should not be constrained by the strictures of fiscal dominance. Secondly, there should be a commitment to the inflation target that extends beyond the walls of the central bank. Without the backing of the government the credibility of the regime will be weakened and the ability of the central bank to achieve the inflation target will be compromised.

There is greater scope for political interference in discretionary regimes, such as an inflation target, than in rule-based regimes, such as fixed exchange rates. Thus, it is essential that a supportive institutional structure be put in place. Providing legislative backing for the institutions is a necessary first step but will not ensure credibility overnight. Doubts about the credibility of institutions can only be assuaged by the establishment of a track record of sound performance, which requires that a start be made at some time.

The absence of a finely honed forecasting and analytical framework should not be seen as a prohibitive barrier. Learning from the experience gained from over a decade of inflation targeting allows a central bank adopting inflation targeting today

to be better placed than the pioneers of inflation targeting ten years ago. Nevertheless, the adoption of an inflation-targeting regime is not an instant cure for inflation problems.

The current conjuncture seems an opportune time to adopt inflation targeting in a number of east Asian countries. Inflation is already low, the disinflation costs are already sunk. While these countries have had some success in maintaining low inflation in the past without a well-defined monetary policy framework, inflation targeting would appear to be a viable monetary framework with which to lock-in a low-inflation environment for the future.

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Discussion

1. Alejandro Werner

Introduction

Guy Debelle's paper makes a strong case for the adoption of an inflation-targeting framework by east Asian countries. This is in stark contrast to the conclusion reached by Masson, Savastano and Sharma (1997), who claim that for most developing countries, inflation targeting is not suitable because central banks lack the ability to conduct an independent monetary policy, their inflation forecasting models are highly uncertain and the inflation objective is subordinated to an exchange rate goal. In the present paper, the author claims that some of these problems apply to any alternative monetary policy framework and others were also present when developed countries first adopted inflation targeting. Therefore, the author concludes that for most east Asian countries inflation targeting is a viable alternative.

Implicit in the paper is the idea that, in a world of floating exchange rates and unstable relationships between monetary aggregates and prices, the only viable option for central banks is forward-looking monetary policy. That is the way monetary policy is conducted by inflation targeters and non-inflation targeters alike. Therefore, the main strength of inflation targeting is that it establishes a transparent framework for the conduct of monetary policy that is useful as a marketing device, a communication tool and a mechanism of accountability to the public at large. This feature is even more valuable when a central bank does not enjoy full credibility.

Following this line of thought, the author highlights three defining features of inflation-targeting regimes: the primacy of the inflation objective, instrument independence, and transparency and accountability. In this respect, it is interesting to draw on the Latin American experience to see how, as some of these features fell into place, some regional central banks have shifted to inflation targeting. The main factors that influenced the transformation of central banks in Latin America were:

(i) The mounting evidence that shows the costs of inflation in terms of output growth, income distribution and financial sector deepening, and the regional experience with high rates of inflation, that in some cases became hyperinflation. These factors temporarily closed the door to any short-term benefit associated with discretionary monetary policy, and increased the awareness of the high costs and limited benefits of the monetary authority not focusing on price stability.

(ii) After years of fiscal mismanagement, there has been an important strengthening of public finances and a trend towards improving fiscal institutions, eliminating pressures for monetising public sector deficits.

(iii) The balance of payments and financial crises of the 1990s highlighted the difficulties faced by countries that try to fix their exchange rates in a world of

highly mobile capital. Since the Mexican crisis of 1994–1995 several countries of the region have abandoned their predetermined exchange rate systems and adopted some form of floating regime.

The first two factors led in the late 1980s and early 1990s to a move towards granting independence to some regional central banks and assigning them with the clear objective of pursuing price stability. The independence gained by the regional central banks gave incentives for further consolidations of public finances, given that it forbade the monetary authority from financing public sector deficits. In most cases, the independence was granted during a period when predetermined exchange rate regimes were in place; therefore, the operational aspects of monetary policy did not change much.

The third point, the adoption of floating regimes, proved to be the other big influence that affected monetary policy in the region. It seems that, given the vulnerability of many Latin American economies to changes in commodities' prices and capital flows, a floating regime is an appropriate currency arrangement.

As exchange rate regimes were made more flexible and central banks gained independence, inflation-targeting regimes were adopted. Chile and Mexico underwent a gradual transition where, for some time, an inflation-targeting framework coincided with a crawling exchange rate band in the first case, and monetary targets in the second. On the other hand, Brazil embraced a fully fledged inflation-targeting framework immediately after the devaluation of the real, as a way to generate sufficient confidence in the new regime to avoid the inflationary effects of the devaluation. Until now, these experiences have been positive for our countries, proving that developing countries have been able to overcome the obstacles mentioned by Masson *et al* (1997) and consolidate their inflation-targeting frameworks.

In the rest of my comments I would like to complement the arguments made in the paper regarding the independence of the central bank and the role of transparency and accountability in inflation-targeting regimes. In addition, I would like to focus on the role of the exchange rate in the monetary policy framework and the co-existence of inflation targets with exchange rate objectives or monetary targets.

Goal and instrument independence

The paper highlights the fact that goal independence is generally absent in most inflation-targeting countries while instrument independence is useful for the implementation of these regimes. Also, the author states that goal dependence is appropriate in a democratic society and by increasing the government's commitment to the inflation goal, its credibility is enhanced. In addition, the theoretical work from which the recommendations for central bank independence arise stresses instrument independence, not goal independence. The basic argument this literature addresses is how to overcome the time-inconsistency problem faced by the monetary authority when trying to achieve an inflation objective that comes from the social utility function. Therefore, in all these papers, the implicit assumption that is made is that

the central bank should be goal-dependent, and that to be able to achieve the public's inflation objective it is useful to grant instrument independence and generate incentives for the monetary authority to make it more inflation averse than society. Therefore, the theoretical literature also points towards goal dependence and instrument independence.

Accountability, communication and the effectiveness of monetary policy

The paper stresses the importance of transparency and accountability to balance the greater independence enjoyed by central banks. However, the paper does not mention another key benefit of increased transparency and accountability, that is to increase the effectiveness of monetary policy.

Establishing a clear set of short- and medium-run objectives, and setting up the channels through which central banks communicate what actions are being undertaken to accomplish these goals, increases the efficiency of monetary policy. This is the case because the effects of monetary policy actions on the whole yield curve, other asset prices and wage- and price-setting behaviour hinge heavily on expectations. Therefore, if the actions undertaken by the monetary authority are clearly interpreted by market participants, their effect on inflation expectations, price- and wage-setting behaviour, long-term interest rates and other asset prices will be closer to the ones desired by the authorities. Second, by providing a structure that allows short-term deviations from the target when negative shocks appear, while maintaining the long-run inflation objective, the long-run target plays the role of a successful nominal anchor. Third, by explicitly talking about the balance of risks in the inflation projection, and in some cases even quantifying it, the monetary authority is able to convey the message that there is a need for constant monitoring, and quick reactions in case a negative shock arises, by clearly specifying what would happen in the absence of a policy response. Fourth, by establishing clear mechanisms of accountability, the inflation-targeting framework provides a useful technology to discipline the monetary authority and support compliance with the targets. Finally, by increasing society's awareness of the benefits of price stability and raising the visibility of the goals of monetary policy, the central bank influences other macroeconomic policies to be consistent with the inflation targets. In sum, an active communication policy and a transparent policy framework enhance the efficiency of monetary policy.

The role of the exchange rate in the monetary policy framework

The greater openness of many emerging markets does open the door for the exchange rate to play a larger role in the transmission mechanism and in the monetary policy framework. However, in my opinion, this should be captured by the macroeconomic model itself in its output gap and price equations and, to a first approximation, does not warrant the inclusion of an extra term in the objective function. In addition, the link between monetary policies and exchange rates might

be tenuous in the short term, thus compromising the credibility of the monetary authority. Having said that, I do agree with the author that, under exceptional circumstances, the monetary authority should react to disorderly exchange rate movements when they threaten the stability of financial markets. However, these cases are sufficiently infrequent and hard to describe *ex ante* in terms of exchange rate movements that they should be treated more as an escape clause than an integral part of the central bank's objective function.

In addition, the paper raises the point made by Eichengreen and Hausmann (1999) who claim that in most emerging markets the magnitude of the stock of foreign-currency-denominated debt biases the monetary authority towards reducing exchange rate flexibility. This should be more a transition issue than a steady state problem for the monetary authorities. This is the case because, in many instances, the dollarisation of liabilities is the product of the previous predetermined exchange rate regimes where, through an implicit exchange rate guarantee, the private sector did not fully internalise the currency risk of their portfolio decisions. The Mexican experience with foreign-currency exposure of the corporate sector is a good example of this argument. If we look at the ratio of foreign-currency-denominated debt to exports of Mexican corporates we observe a significant decline after the adoption of the floating regime (Table 1). This result holds for all types of firms.

Table 1: US Dollar Debt/Exports
Per cent, medians

	1992	1994	1996	2000
All firms	**246**	**389**	**192**	**156**
Small firms	131	300	132	116
Medium firms	223	442	209	158
Large firms	385	377	209	199
Firms with USD debt	279	399	200	156

Source: Martínez and Werner (2001)

Inflation, exchange rate and money targets

The paper views the co-existence of an inflation target with an exchange rate band as feasible, as long as a clear lexicographic ordering in favour of the inflation goal is established. Although in principle this argument is correct, in practice there have been cases where the co-existence of the inflation target with other intermediate targets has proven problematic. This has been due either to the lack of public understanding of the lexicographic ordering or to the fact that in some instances, when an exchange rate band is under pressure, it is not the best time to abandon it, and so the lexicographic ordering is reversed. To illustrate this argument, I will draw

on the Chilean and Mexican experiences where, for a while, inflation targeting was implemented together with an exchange rate target zone in the first case and a base money commitment in the second.

Chile: During 1998 the Chilean currency was subject to intense pressures as a result of the fall in the terms of trade and contagion from the international financial crisis. Because of this the exchange rate depreciated within the band and the authorities decided to narrow the band. The increases in interest rates needed to defend the exchange rate generated an undershooting of the inflation target. This result and the future adoption of a fully floating exchange rate regime suggest that in that instance, it was not clear whether interest rate policy was able to implement the desired lexicographic ordering (Figures 1 and 2).

Figure 1: Chilean Federal Funds Target Rate
1998–2001, per cent
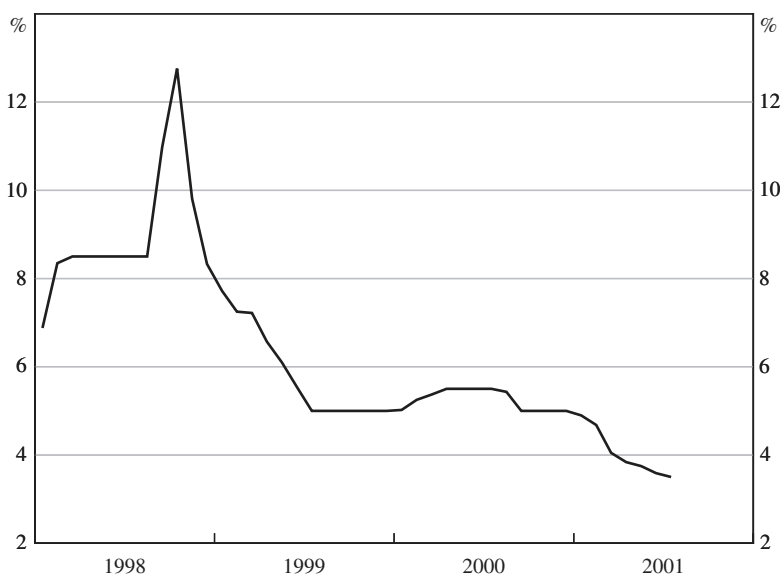
Source: Banco Central de Chile

Figure 2: Chilean Annual Inflation and Inflation Targets
1998–2001, per cent
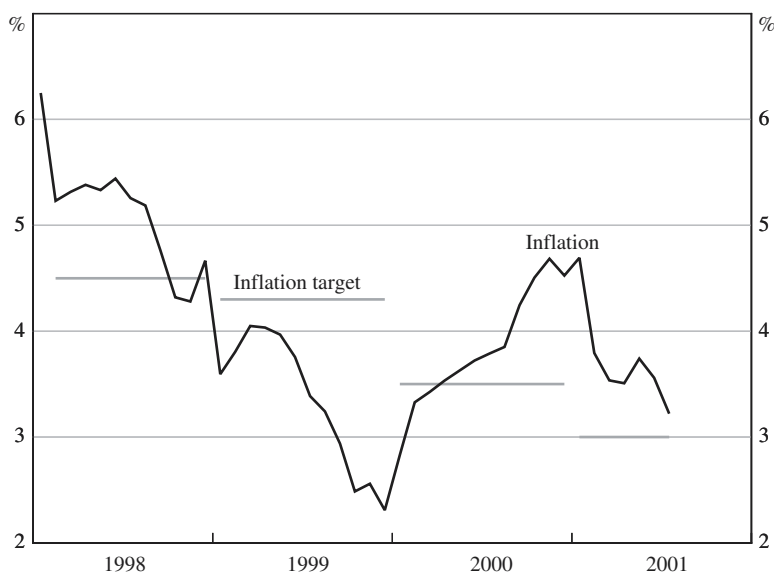
Source: Banco Central de Chile

Mexico: Since 1995 the central bank has published, at the beginning of the year, a projection of the expected growth of the monetary base in the year to come. Since 1997 the bank has published the expected daily trajectory of the monetary base. Because of this many analysts viewed this trajectory as an intermediate target, generating confusion in the way the private sector interpreted the central bank's reaction function. This confusion was amplified by the fact that during this period the relationship between money growth and inflation was negative due to financial innovation and the remonetisation process the economy went through (Figure 3).

As a result of this, in those years in which the inflation target was met, money growth stood above its projection. On the contrary, when the central bank missed the inflation target, money growth was equal to the projection. Therefore, in this experience, there were many instances when the public focused too much on money growth exceeding the projection while inflationary pressures were receding. As a result of this experience money growth projections have been significantly downplayed in Mexico's monetary policy framework (Table 2).

To conclude, I would like to stress that the recent experience of those Latin American countries that have adopted inflation targeting lends support to the thesis presented in the paper that this is a suitable monetary framework for many emerging markets.

Figure 3: Mexican Annual Monetary Base Growth and Inflation
1995–2000, per cent
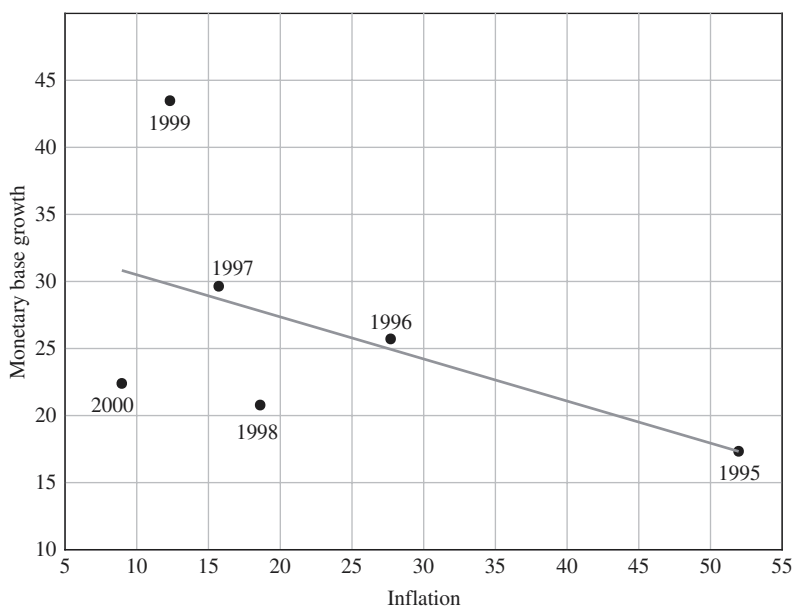
Source: Banco de México

Table 2: Mexican Monetary Base and Inflation
Per cent

	Inflation objective	Observed inflation	Targeted monetary base growth	Observed monetary base growth	Inflation expectations at start of year
1995	42.0	52.0	29.1	17.3	29.9
1996	20.5	27.7	28.6	25.7	28.6
1997	15.0	15.7	24.5	29.6	18.2
1998	12.0	18.6	22.5	20.8	13.2
1999	13.0	12.3	18.1	43.5	16.5
2000	10.0	8.9	20.6	22.4	11.1

Source: Banco de México

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Martínez L and A Werner (2001), 'The Exchange Rate Regime and the Currency Composition of Corporate Debt: The Mexican Experience', Banco de México, mimeo.

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2.   General Discussion

While discussion covered a number of topics, the central theme was the nature of inflation targets and how they could be structured. Some participants would have preferred to see more explicit consideration of the difference between flexible targets and hard targets. For example, it may be impossible to establish credibility without first using hard targets; however, these hard targets may be ultimately counterproductive to growth.

Given the option canvassed in both Debelle's and Williamson's papers that inflation targeting and exchange rate management could co-exist, one participant wondered how conflicts between inflation targets and exchange rate targets could be managed. He suggested that a medium-term target on inflation would allow some flexibility to deal with short-term exchange rate fluctuations. Another alternative offered was that an inflation-targeting country might choose to have wider bands on their exchange rate target than otherwise. Yet another participant emphasised that the choice was not strictly between a hard inflation target or a hard exchange rate target but that intermediate regimes were possible in just the same way that BBC regimes were possible for exchange rates. A response offered was that questions of whether to use hard or soft targets are not unique to inflation but affect practically all targeting regimes. As the ultimate objective of the inflation target was to improve welfare this could be used as the arbiter when conflicts between, say, inflation and exchange rate targets emerged.

In further discussion the examples of Chile and Israel were introduced. Chile was given as an example of the problems that can emerge with two targets. One participant suggested that the problem was not that Chile had two targets but that it alternated between governors with different objectives and targets. Another participant responded that central banks may well adopt targets before they publicly announce the change as a way of testing the water. In that case there may be a difference between public announcements of policies and actual actions. In a similar vein to Chile there was some discussion of exactly how Israel operated. While some participants believed that Israel operated both an exchange rate and inflation target,

others suggested that Israel used the exchange rate as the instrument to achieve their inflation target. These discussions highlighted the problems of interpretation when looking at the actions of central banks around the world – people frequently had differing understandings of the same actions.

In discussing the objectives of monetary policy one participant suggested that there was a feeling that confining monetary policy just to inflation targeting was too narrow a role for such a powerful instrument. It was felt, in some quarters, that you should be trying to smooth the cycle as well as achieving many other objectives. This view, it was suggested, may well create problems when trying to persuade countries to adopt inflation targets in Asia.

One participant raised the issue of a potential conflict of interest between political ownership of monetary policy targets and independence. Another participant responded that the central bank should not have goal independence but should have flexibility on how to achieve its goal(s).

Finally, a participant suggested that asset price inflation should be included in the inflation measures used in developing countries due to the large influence of asset prices on developing economies. Another participant responded that we may not know enough about asset prices to include them in an appropriate way – the advantages from doing so may not be that large even if they are included. Additionally, it was cautioned that central banks should be modest about what they can achieve and including asset prices in the inflation measure would implicitly suggest that the central bank would try to control asset price inflation as well as consumer price inflation, and that this was not desirable.

The Case for a Basket, Band and Crawl (BBC) Regime for East Asia

John Williamson[1]

According to the IMF, four of the key developing countries of east Asia (Indonesia, Korea, Philippines, and Thailand) are independently floating, while Singapore has a managed float, China and Malaysia peg to the dollar, and Hong Kong pegs to the dollar via a currency board. Singapore's own description of its regime is a basket, band, and crawl (BBC), with undisclosed parameters. The principal regional currency not included in the IMF tabulation, the New Taiwan dollar, floats; most of us would probably want to call its float a managed one, though whether that is the way the IMF would classify it is unknowable. The smaller regional currencies are described as managed floats (Cambodia and Laos), a horizontal band (Vietnam), or pegged to the dollar (Myanmar).

It is not clear that the countries with floating currencies are all happy with that choice: in the case of Korea, reserve changes seem bigger than is consistent with a policy of floating as practiced by the industrial countries. In any event, it is clear that if monetary coordination is to be extended beyond the currency swaps agreed at Chiang Mai to cover exchange rate management, then some of the countries of the region are going to have to make a major policy change. The question to be discussed at this conference is whether such a change should be made and, if so, what regime(s) the region should adopt. The question that I have been asked to consider is whether a BBC regime would be a good choice. The paper therefore starts by outlining what such a regime involves. It proceeds to discuss the monetary implications of this exchange rate regime, before turning to a consideration of whether it might be a good choice for the principal countries of east Asia and of the steps that would be involved in its introduction.

1. Essentials of a BBC Regime

The **basket** part of the BBC proposal suggests that countries with diversified trade would do better to peg to a basket that would roughly stabilise their effective exchange rate[2], rather than to a single currency. This proposal goes back to the academic writing of the 1970s on the optimal exchange rate peg. This literature was

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2. An 'effective exchange rate' is the weighted-average exchange rate against all currencies, where the weights are generally chosen to reflect the pattern of trade. (An alternative weighting system, based on trade elasticities, recognises that countries are also important competitors, rather than just trade partners.) A 'real effective exchange rate' corrects for changes in relative inflation so that the index does not change if prices increase as much at home as the weighted average of the country's trading partners.

aimed at developing countries, which at that time had not joined the move to float, but had discovered that floating among the industrial countries confronted them with a new problem. Specifically, countries with diversified trade found that, if they pegged to any single (industrial country) currency, exchange rate variations among the industrial country currencies could alter their effective exchange rates, and thereby disrupt their macroeconomic balance.

The questions asked in the literature on the optimal peg were: under what circumstances was it desirable to peg to a basket of currencies rather than a single currency? And, how was the optimal basket composed? I surveyed that literature as it was reaching maturity (Williamson 1982), and argued that one could draw some stylised answers. First, the objective should be to choose a basket that would stabilise the effective exchange rate. Second, although the weights in the basket should in principle be based on trade elasticities, in practice it was likely that trade weights would be the best that would be feasible. In general, therefore, countries should be advised to peg to a trade-weighted basket of the currencies of their principal trading partners. Of course, countries whose trade is heavily concentrated on a particular country, or currency area, do not face the dilemma of having to peg to a basket in order to avoid gyrations in their effective exchange rates: they can sensibly peg to the currency of their dominant trading partner.

There were four purposes in suggesting a wide **band** (interpreted as up to ±10 per cent, or even ±15 per cent). One was to make sure that the authorities did not get into the no-win situation of trying to defend a disequilibrium exchange rate, given that no one imagined it would be possible to estimate equilibrium at all precisely. A second was to permit the parity (the centre of the band) to be adjusted, to keep it in line with the fundamentals, without provoking expectations of discrete exchange rate changes that might destabilise the markets. A third was to give some scope for an independent monetary policy, to be used for anti-cyclical purposes when a country found its cycle out of sync with the world norm. The fourth was to help a country cope with strong but temporary capital inflows. As long as a band is (even partially) credible, arbitrageurs will allow for the expected reversion of the exchange rate toward its parity, and deduct an appropriate discount from (or add an appropriate premium to) the local currency yield when they compare their expected return from holding funds locally with foreign yields to decide whether to place funds in the country. Moreover, investors in the tradable goods industries may tend to look at the parity rather than the market rate when assessing whether to go ahead with potential investment projects, implying that a given deviation from equilibrium will have less effect in distorting investment decisions.

The final element of the BBC formula is the **crawl**. This is most often used with a view to neutralising differential inflation. It can also be used to steer inflation down over time, as was done in Israel, though this could run the risk of undermining competitiveness if pursued too dogmatically (as happened in Mexico and Russia). A crawl can also be adjusted in a fast-modernising economy in order to reflect an

expectation of Balassa-Samuelson productivity bias[3] and accomplish the real appreciation that such an economy requires over time in order to maintain equilibrium. Finally, the rate of crawl can be changed, or occasional small parity adjustments can be superimposed on the regular crawl, in order to facilitate needed real adjustment.

2.   Monetary Implications

The standard view underlying today's bipolarity conventional wisdom is that choice of an exchange rate regime is essentially the same as choice of a monetary policy. Choosing a fixed exchange rate implies using the exchange rate as a nominal anchor. Using an inflation target as the nominal anchor implies allowing the exchange rate to float. Anything else reflects confusion, which is why it is prone to lead to crises.

This view would be completely convincing if the standard models of exchange rate determination were correct. These models postulate that exchange rates are determined by relative national price levels (purchasing power parity – PPP), relative inflation rates, relative interest rates, and portfolio positions. But there is now a long literature, going back to Meese and Rogoff (1983), that concludes that these models are all dismal empirical failures, at least for time horizons of less than a year or two. The failure to explain the current weakness of the euro (not to mention the Australian dollar) in terms of the US dollar is merely the latest of a long list of cases where textbook theories have not worked, and where developments in the foreign exchange markets seem to be explicable only in terms of fads and bubbles.

Suppose, for a moment, that it is indeed true that the movements of floating exchange rates are dominated by fads and bubbles rather than by the fundamentals posited by economic theory. This supposition provides no grounds for questioning the traditional view that exchange rates have important real effects, like influencing the trade balance and thus an economy's accumulation of foreign debt, or its rate of inflation, or unemployment, or investment, or the strength of protectionist forces. What it does suggest is that it may be possible to influence exchange rates by measures that alter fads or break bubbles, and that these need not necessarily operate through what economists have traditionally thought of as the fundamentals, notably monetary policy. It opens the possibility that sterilised intervention may be able to affect exchange rates, and not only in the very short run. It is consistent with a view that the markets might become a whole lot more self-stabilising again if only the authorities could re-establish their credibility.

This is in fact the view that underpins proposals to establish a BBC regime. In particular, a BBC regime should not be viewed as an *alternative* to inflation targeting, but as a *complement* to it. Inflation targeting may be thought of as the modern version of what Keynesian economists used to call 'internal balance' and implement through a call to maintain unemployment at a level that history had

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3.   See Balassa (1964) and Samuelson (1964). Chile built a 2 per cent per annum real appreciation to reflect this factor into the formula for its crawl from 1995 to 1999.

suggested would be non-inflationary (or not too inflationary). As we have all understood for many years now, that policy prescription runs into deep trouble if the choice of how much inflation is not too much is such as to ignite inflation expectations or when some shock increases the 'natural rate of unemployment', since the prescribed policy then results in *accelerating* inflation unless expectations are quite implausibly inelastic. Inflation targeting is immune to that potential instability, and, if undertaken in a forward-looking way and with an appropriate choice of inflation rate to be targeted so as to exclude the first-round effects of exogenous shocks, it can amount to seeking the highest sustainable level of employment, i.e., pretty much the Keynesian concept of internal balance.

The standard Meade approach to macro policy (popularised in the 'Australian analysis' of Salter (1959) and Swan (1960)) postulated that policy should seek simultaneously to secure 'internal balance' and 'external balance'. A little thought may convince one that it is irrational to give equal priority to both. The ill-effects of excess inflation today would be compounded rather than negated by deflation tomorrow, while today's unemployed will not have their utility restored by working twice as much tomorrow. It follows that there is a strong social interest in securing continuous internal balance. In contrast, a short-run payments imbalance can be financed in the short run by a change in reserves (or a short-term capital flow) and reversed tomorrow for essentially zero social cost. It follows that a rational objective is to seek continuous internal balance but to allow short-run payments imbalances to be used as a shock absorber, and be content with securing external balance in the medium term. Hence the exchange rate objective in the BBC regime has always been specified as one that would secure external balance in the medium run. This is the concept of the 'fundamental equilibrium exchange rate', or FEER, that I introduced and first sought to measure in Williamson (1985).

One would expect the FEER to prevail on average over the cycle if the standard theories of exchange rate determination were correct. It is because they fail that it is rational to have an exchange rate policy and not be content to leave exchange rates to the market. Specifically, the objective of exchange rate policy is to prevent rates being carried far away from the rate that makes sense in terms of the fundamentals, given that policy is seeking internal balance. The exchange rate is targeted to secure (medium-run) external balance.

How can a country go about trying to prevent the exchange rate moving away from its FEER, or becoming misaligned? There are basically three options (although others, such as commercial policy, have had their adherents in the past): monetary policy, sterilised intervention, and capital controls.

Monetary policy is the classic instrument for trying to manage an exchange rate: indeed, a number of economists would claim that it is the only effective instrument, and others would regard it as the only legitimate instrument. The association between monetary stringency and a stronger exchange rate goes back all the way to David Hume.[4] Similarly, the Dornbusch model of a floating exchange rate postulates

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4.   See Hume (1969) for a reprint of his essay on the balance of trade.

that the exchange rate deviates from its long-run equilibrium value (often characterised as PPP) by the integral of expected future short-term interest rate differentials between now and the long run.

It is only recently that the hypothesis that a higher interest rate can be relied on to strengthen the currency has been challenged. But during the Asian crisis Joseph Stiglitz argued that a rise in the domestic interest rate might have perverse effects on the exchange rate (see Furman and Stiglitz (1998) for the published version).[5] Specifically, he argued that what interests a creditor thinking of holding a currency is the expected value of his return, which is the product of the coupon rate and the probability that he will receive the contractual return. A higher interest rate can be relied on to increase the coupon rate, but it may threaten some debtors with bankruptcy and thus decrease the probability that the creditor will receive the contractual return. Stiglitz argued that there is no *a priori* reason why the first effect necessarily outweighs the second, so that it is theoretically possible that the effect of raising the interest rate could be perverse. One also got the impression that he actually thought this had been the case in east Asia in the second half of 1997.

Furman and Stiglitz presented some empirical evidence in support of this position, but in discussing their paper Steven Radelet argued 'the evidence that currencies might depreciate in the face of higher interest rates…simply is not convincing' (p 120). Ohno, Shirono, and Sisli (1999) undertook a Granger-causality test on daily data for the east Asian currencies that covered the crisis period and showed that the normal positive relationship from interest rates to exchange rates evaporated during the crisis period, but even they did not claim to have shown a negative relationship. Empirical investigations at the IMF have concluded against the Stiglitz conjecture (Basurto and Ghosh 2000; Goldfajn and Baig 1998; Zettelmeyer 2000). Nonetheless, there is some reason to believe the relationship weakens during a crisis, and the theoretical possibility of a perverse effect remains open.

My own view has tended to be that this is like the Laffer curve: a theoretical curiosity that may come into play in extreme situations, but that is not usually of policy relevance. Under most situations I have taken it as axiomatic that a higher interest rate could be expected to strengthen the currency. I was therefore taken aback to read in the press a couple of months ago that the euro had weakened because the European Central Bank had *not* cut its interest rate. Surely no one imagines that many European borrowers were bordering on insolvency and liable to be pushed over the edge unless the European interest rate was cut. Another possible explanation points to the fact that the only variable that seems to be at all capable of explaining the strength of the US dollar in terms of the euro in the past two or three years is the relative growth rate. When one asks why faster US growth should strengthen the dollar (for relative growth rates do not appear independent of relative interest rates among the variables in the standard models of exchange rate determination), one is told that faster growth increases profits which raises share prices and that equities

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5.   Ito (1999) subsequently took up the argument.

rather than bonds are now the main destination for internationally mobile capital. That has a certain air of plausibility to it, even if one hesitates to embrace lower interest rates as a general remedy for strengthening a currency.

Two implications seem to follow. The first is to cast yet more doubt on the standard models of exchange rate determination that underlie the bipolarity thesis. The second is to throw into question the efficacy of what has heretofore been the one policy variable that everyone was confident could be used to manage a currency, if only the authorities were prepared to bear the costs in terms of possible damage to internal balance. Now one has to confess that one is not quite sure that it can be relied on to work in the right direction. And even if it does, the cost in terms of loss of internal balance may prove more severe than had previously been assumed.

Consider therefore the second policy variable that may be called on in the cause of exchange rate management, namely sterilised intervention. The tradition became established in the early 1980s, when people had recognised that capital mobility was high and when they still believed the standard models of exchange rate determination, of denying that sterilised intervention could have any significant or long-lasting effect on exchange rates. This conventional wisdom was enshrined in the Jurgensen Report (1983). The tradition has largely survived to the present day, even though the standard models of exchange rate determination that underlay the conclusion have long since been discredited. Meanwhile the empirical evidence has tended to suggest a more positive appraisal of the potential value of sterilised intervention (Catte, Galli, and Rebecchini 1994; Dominguez and Frankel 1993; Sarno and Taylor (forthcoming)). This is not to claim that governments can drive exchange rates where they want them and ignore market realities simply by spending reserves; we all know that attempts to maintain a target exchange rate in the face of strong market pressures have repeatedly been overwhelmed by the markets. But it is to suggest that intervention often fails to have an effect because it is undertaken on such a puny scale and without both parties being clearly committed to combating what they agree to be a misalignment. If undertaken boldly, publicly, jointly, and with an agreed objective of curbing a misalignment, sterilised intervention can often be helpful.

The third potential policy variable is capital controls. Once again, a tradition has developed of claiming that capital controls are ineffective. One suspects that this is more in the nature of wishful thinking rather than the conclusion of rigorous analysis. Of course, no one believes that capital controls can be made leak-proof; the question is whether they can limit the size and speed of capital flows across national borders. The recent experience of Malaysia makes it difficult to doubt that they can be used to that effect in a country with a reasonably effective bureaucracy. Earlier instances surveyed by Cooper (1999), including the British experience prior to 1979 when the premium on the investment dollar was usually in the range of 30 to 40 per cent, suggest that it is far from impossible to achieve significant market segmentation by capital controls. I examined the large literature on Chile's *encaje* (or unremunerated reserve requirement, URR) in Williamson (2000, pp 37–45), and concluded that there was overwhelming evidence that it influenced the composition of capital inflows (toward longer maturities) and reasonably persuasive evidence that it served to limit the overall volume of inflows.

The general conclusion suggested by this review is that it is unwise to imagine that exchange rates can be fine-tuned, even if domestic monetary policy is subjugated to that end, at least without a willingness to risk an excessive cost in terms of internal objectives. On the other hand, it is silly to regard exchange rates as the modern equivalent of acts of god – the result of immutable, all-powerful, all-wise market forces. If policy-makers decide that they do not trust the market to set the exchange rate, but wish to limit deviations from the rates that would seem to be implied by standard theory, they can command a battery of instruments that should enable them to achieve their objective in normal circumstances.

3. Suitability of BBC for East Asia

At a conference in Seoul in 1996 (Williamson 1999), I argued that there would be advantages to the east Asian currencies[6] in using a *common* basket of the three major world currencies (US dollar, yen, and now euro) to define their parities and thus the bands that would orient or specify their intervention policies.[7] Use of a currency basket in place of a peg to a single currency, the US dollar, would tend to stabilise their effective exchange rates against capricious variations as a result of movements in third-currency exchange rates, notably the gyrations between the yen and the dollar. I showed that the economies in question would lose little in terms of stabilising their effective exchange rates by all using the same basket (which I argued should be based on the direction of extra-regional trade of the region as a whole) rather than adopting different baskets based on their individual trade patterns.[8] However, a common peg would offer the important gain of ensuring that their exchange rates *vis-à-vis* one another were not destabilised by shocks to the dollar/yen/euro rates, thus avoiding the possibility of inadvertent competitive devaluation, or the suspicion of deliberate competitive devaluation, as a result of different pegging policies. I argued that there was no reason why individual economies could not continue to pursue different policies as regards changes relative to their parity: some could have a hard fix, like Hong Kong with its currency board; others might crawl against the basket, as Indonesia had been doing against the dollar; and others could use it simply as a guide to how they intervene in the foreign exchange market, as Singapore has done.

Perhaps the strongest argument for why the east Asian countries would have gained by moving to a basket peg has been made by Kwan (1998), who showed that the yen/US dollar exchange rate had a statistically significant effect on output growth in the nine Asian economies I included in my hypothetical basket prior to the Asian crisis. A strengthening of the yen depreciated their real effective exchange rates,

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6. To be specific, I was thinking of the currencies of China, Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand.

7. Other advocates of the use of a common basket peg by the east Asian countries include Reisen and van Trotsenburg (1988) and Ogawa and Ito (2000). Mussa *et al* (2000, p 59) also show some sympathy for a currency basket approach in east Asia.

8. Indonesia would have found the common basket most out of line with its individual needs, but even in this case the problem that would have been created did not seem to be serious.

given their *de facto* dollar pegs, and thus accelerated their growth, while a weakening of the yen had the opposite effects. Even Ronald McKinnon (2000), in his paean to the east Asian dollar standard, admits that 'the dollar zone was…buffeted by fluctuations in the yen/dollar exchange rate', and that the effect of Thailand's (*de facto*) dollar peg 'was to cause Thailand's REER to drift upward before the currency attacks began in mid 1997'. Oddly enough, McKinnon is in no way inhibited in his enthusiasm for the dollar standard by these considerations, even though the reasons he gives for advocating the dollar link – that this provided a non-inflationary nominal anchor, and that it stabilised exchange rates among the east Asian currencies – would have been equally well-served by a common basket peg. Some of us will conclude instead that we would prefer to have the advantages of the dollar peg without its disadvantages, which is what a basket peg would offer.[9]

Another critic of the proposal to base east Asian exchange rate policies on a common basket peg is Gordon de Brouwer (2001). Some of his criticisms relate to the idea of any type of pegging rather than floating, but he also challenges the merits of a common basket peg as opposed to some other form of peg. Specifically, he presents an interesting table (Table 4) in which he examines the effect of 10 per cent depreciations of yen and euro against the US dollar on the effective exchange rates of every country in east Asia if they were using a common dollar-yen-euro basket peg. Excluding Australia and New Zealand, it turns out that the only countries that would suffer a change in their effective exchange rate greater than 1.1 per cent in the face of either of those shocks are Cambodia, Laos, and Vietnam. At first glance this suggests that ASEAN's new members would be less well served by a common basket peg than the countries on which I had focused in my earlier analysis. However, the concept of the effective exchange rate that de Brouwer uses appears to be measured solely in terms of the three major currencies. This is misleading. Since much of Asia's trade is with other countries of the region the correct concept of the effective exchange rate would recognise this. By definition, a common peg involves no change in competitiveness relative to those other countries that are using the same peg, which means that the change in this measure of the effective exchange rate would be less than the one used by de Brouwer. This would appear to be of particular importance in the cases of Cambodia, Laos, and Vietnam, since de Brouwer tells us that 'Trade patterns for these countries are highly skewed to other countries in the region, especially Thailand and Singapore'. I conclude that there is no evidence for believing that a common basket peg would not be suitable for these countries as well.[10]

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9.   To be fair, McKinnon advocates stabilising the yen/US dollar rate, which would also resolve the problem. But the basket peg, which can be implemented by the east Asian countries themselves rather than requiring an intellectual conversion in the US Treasury, is a more relevant option.

10. de Brouwer also examines export similarity indices of the east Asian economies and concludes that six of the nine economies are closer competitors to at least one of the three major areas (Japan, US and EU) than they are on average to other east Asian economies (and four are closer competitors to all three). This throws some doubt on my finding that these economies are strikingly close competitors with each other. But the implication of this is limited: a basket peg is still on average better at limiting variability with the major economies, and the differences between individual and common basket pegs are marginal.

A possible variant would be a system of mutual pegging among the east Asian currencies similar to the European snake and the exchange rate mechanism (ERM) prior to the evolution of the euro, instead of common pegging to a basket. There would seem to be several obstacles to east Asia taking that alternative route. Perhaps the most important is that the region contains no dominant economic power that could fulfil the role of anchoring the system as Germany did in Europe (unless Japan were to participate, but that would create its own problems of pulling the other countries around in the wake of the vagaries of the yen). Another problem is that it would impose a far more drastic change on Hong Kong than a BBC regime would, since Hong Kong would have to revert to (circumscribed) floating rather than simply changing the currency unit to which its currency board is keyed. A third is that China and Taiwan would have to defend their bilateral exchange rate (assuming both participated), something that might be politically problematic given their reluctance to acknowledge reality. For these reasons it seems to me that east Asia would be well advised to focus on a common basket peg rather than creating an Asian snake.

The case for the band part of the BBC regime is in my view less compelling. It is true that a demonstrated commitment to defending the edge of a band is the way to earn credibility with the foreign exchange market, and thus make speculation stabilising as explained in Paul Krugman's (1991) model of 'the bias in the band'. On the other hand, the best way to totally destroy a government's credibility is to make promises to defend a band that cannot be sustained in the face of attack. In weighing those two considerations I tend to give more weight to the second than the first, and thus to favour relatively loose commitments – a band that is wide rather than narrow, one with soft rather than hard edges, or even a band that has a centre (a parity) but no defined edges at all, i.e., the reference rate proposal. But I am not convinced that there are strong externalities in getting all countries in the region to make the same call on this issue. If China or Hong Kong wish to maintain a narrow band and are prepared to adopt the policies needed to defend it, then as long as the central rate is not misaligned it is not obvious that there are adverse consequences for their neighbours. This would not be true if the defence of the band involved severe and prolonged deflationary policies, but that seems unlikely in the absence of currency overvaluation.

An important question is whether the parameters of the band, and particularly its margins, should be published. On this issue the world's most successful practitioner of a BBC regime adopts a policy contrary to that which I have always advocated: Singapore does not publish the parameters of its band. I can understand that this makes life simpler, and perhaps safer, for central bankers, but it seems to me that non-publication thwarts the main purpose of having a band, which is to try and focus expectations so as to make speculation more stabilising.

The crawl part of the BBC proposal is about ensuring that central rates do not become misaligned. It is predicated on the assumption that it is important to avoid both misalignments in market exchange rates and also misalignments in the central rates or parities toward which policy may be directed. This is a lesson that east Asia certainly needs to ensure has been internalised if it returns to any exchange rate regime other than unmanaged floating. The appreciation of the US dollar was not the

only reason that the Thai baht had become overvalued by 1997. There had also been a long period of excess inflation – moderate excess, but cumulatively larger than could be safely afforded, as shown by the large and persistent current account deficit.[11] The region is also at that stage of development where it can expect countries to be benefiting from Balassa-Samuelson productivity bias, as Singapore already has done over the years, and therefore able to benefit from modest, gradual real appreciation. It makes sense to provide for this to be accomplished by nominal appreciation rather than by excess inflation.

One also has to expect that there will sometimes be real shocks, such as changes in the terms of trade or the willingness of the international capital market to lend to a country. An efficient response to such shocks will normally include a change in the real exchange rate. If the region is involved in any sort of cooperative monetary management, parity changes determined as a response to such shocks will need to be decided collaboratively rather than individually. That will put a premium on making sure that the changes made, or even discussed, are always small relative to the width of the band, since otherwise rumours of what may be decided will create havoc in the markets. Given a wide band, this need not in most cases preclude making changes that are agreed to be needed in a single step, which will have the advantage of not compelling a country to adopt an interest rate that allows for the subsequent crawl in its exchange rate. An anticipated crawl requires an offsetting interest differential to neutralise the incentive to shift funds, but this is a price worth paying if it is necessary to make a change that is too large to be accommodated comfortably within the band. Better to make a change gradually than to allow credibility capital to be destroyed.

An exception may arise where a country confronts contagion (something that east Asians are now painfully aware is possible). Singapore's experience in 1997 is interesting in this context. In place of the gradual upward crawl of the Singapore dollar, the Monetary Authority of Singapore (MAS) allowed a 14 per cent depreciation relative to the SDR (17 per cent relative to the US dollar) between the middle and end of 1997. Since the Singapore authorities do not publish the parameters of their BBC regime, it is not possible to be sure that this involved a change in the parity rather than simply a movement within the band, but it looks as though it did. Yet this event seems to have had little if any cost in terms of undermining the credibility of the MAS with the market, which presumably found it easy to recognise that Singapore was faced by unusual circumstances beyond its control that legitimised a deviation from its standard regime.

This suggests the type of circumstance in which a country with a soft band can take advantage of the softness to allow its exchange rate to go outside its announced band. The shock should be exogenous and of a character that could not reasonably have been anticipated when the regime was announced. A sensible strategy might be to cease defending the band until the new circumstances have become sufficiently clear to permit the authorities to decide whether, and how much, to change the band. In

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11. Producer prices rose 21.8 per cent in Thailand from 1992 to 1997, as opposed to 8.9 per cent in the US. Consumer prices rose 28.3 per cent as against 14.3 per cent in the US.

the interim the market would know that in due course a new parity will be chosen, and market operators will know that they risk losing money if they are holding currency at a rate too far away from the new parity when it is announced. This should do something to discourage the rate shooting off to values far removed from those that can be justified in terms of the fundamentals.

4. Possible Evolution of a BBC Regime

It is possible to envisage at least four possible future paths for exchange rate policy in east Asia. One is that the region reverts to the US dollar standard (a system that the arguments already presented imply to be clearly inferior to a BBC regime). The second is that the region comes to acquiesce in the Anglo-Saxon norm of unmanaged floating. A third is that it moves to some form of permanent BBC regime. A fourth is that it uses a BBC regime as a transition mechanism toward monetary union. (Short-run adoption of a BBC regime need neither imply nor preclude a subsequent move to monetary union, but it is difficult to imagine a move straight to monetary union without an intermediate regime.) Inflation targeting should not be regarded as an alternative to the latter three possibilities; it is something that could sensibly be adopted under any of them (on a collective basis, of course, if and when monetary union is achieved).

The paper concludes with a brief consideration of how the region might move from its present mix dominated by fixed rates in some countries and ostensible floating in others toward a BBC regime throughout the region.

Perhaps the first step should be to negotiate the creation of an Asian currency unit (ACU) with composition suitable for a common basket peg. The considerations of the direction of trade that were discussed earlier would suggest that this should consist of something in the range of 35 to 40 per cent US dollar, 30 to 35 per cent yen, and about 30 per cent euro. The governments of the region might start issuing some of their debt in the form of ACUs in order to create a market in the unit. This would facilitate private sector trade once countries shifted to pegging to the ACU, since forward markets could quickly be established between the ACU and each of the main world currencies. In some cases, where regional currencies seemed likely to fluctuate a lot in terms of the ACU, forward markets might also be established between the regional currencies and the ACU. A functioning ACU market would eliminate the most obvious reason that governments have at the moment for seeking stability in terms of the dollar rather than their effective exchange rates, which is the microeconomic inconvenience to traders of not being able to use the peg currency for their transactions.

Once a market in ACUs was functioning, one would look for an agreement to use the ACU as the common reference point for the exchange rates of all countries of the region. Countries with pegged exchange rates (China, Hong Kong, Malaysia, Myanmar, and Vietnam) would shift their parity from dollars (or any currency composite they may currently be using) to the ACU. Countries with managed exchange rates that have been using an undisclosed basket as a basis for managing their exchange rates (Singapore, and perhaps Cambodia and Laos) would use the

ACU instead. Countries with floating currencies could announce a reference rate in terms of the ACU.

This operation presents three potential problems, in addition to the obvious one of persuading all the countries of the region that they would be better off using an ACU peg rather than a dollar peg. It is amazing how some people can convince themselves that a basket would be too complicated to carry credibility: senior Hong Kong officials seriously give this as a reason for not changing their policy of dollar pegging, in a city where every third person seems to be a currency trader willing to offer a quotation on the Zambian kwacha. One would hope that prior familiarity with the ACU would relieve the anxieties of those who so lack faith in the analytical abilities of their citizens.

The first is that countries with pegged exchange rates could find themselves locking-in a misaligned exchange rate if they shifted from a dollar to an ACU peg on a day when the dollar was on average overvalued relative to the yen and euro, assuming that the shift is to be made without imposing a discontinuous change in the market exchange rate. It is of course highly desirable to avoid any market suspicions that there may be discontinuous changes in market rates, so as to avoid provoking speculative pressures. This problem will be more acute the narrower are the margins. Probably the best way to resolve this problem would be to wait to make the shift until a time when the dollar is close to its FEER.

The second problem is that it would require all countries to disclose the content of their basket and the central value at which they peg to it. These are among the parameters of its managed float that Singapore has heretofore kept secret. Certainly the content of the basket would be public knowledge. Conceivably, knowledge of the parity could be kept confidential among the monetary authorities that were party to the agreement, although it seems somewhat improbable that secrecy would in practice be maintained. My own view is that such public knowledge would be a thoroughly good thing; a secret parity can never play any role in helping to focus expectations and thus stabilise exchange rates. But, as I have already noted, my view is not shared universally – specifically, it is not held by the Monetary Authority of Singapore.

The third problem is that the countries that have been floating would need to agree on reference rates for their currencies. It is central to the whole concept of cooperative exchange rate management that these should be mutually agreed values rather than unilateral declarations. This would mean not only that the countries themselves should have a clear concept of what macroeconomic strategy they wish to pursue (in particular, in terms of balance of payments objectives), but that these should be objectives that their partners regard as acceptable. It would of course ease matters to pose the initial task as one of agreeing reference rates, since these do not imply specific intervention obligations.

The principle of multilateral agreement of parities is one that should be maintained even after the initial set of parities had been agreed. This would imply continual consultation on each country's crawl relative to the ACU. Those countries that started off with fixed exchange rates might start to allow their rates to crawl, based

on the same principles as were being developed to govern changes in reference rates. This should enable these countries to solve the 'exit problem' that otherwise sooner or later confronts any country with a fixed exchange rate that is not prepared to subjugate its domestic policies to the priority of maintaining a fixed exchange rate.

In due course one would hope to see those countries with reference rates start to act with a view to limiting deviations from their announced parities. One would hope that this process would gradually build up credibility for the monetary authorities. Only when substantial credibility had been accumulated would it seem wise to announce bands (limits on the deviations from parity). At that point it would be possible to begin considering whether there is a desire to proceed further and pursue a goal of eventual monetary integration, but that is the topic of another paper in this conference.

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Discussion

1.   Edward Surendran Robinson[1]

Introduction

In the immediate aftermath of the Asian crisis, many commentators were prompted to dismiss **intermediate exchange rate regimes** in favour of one of two '**corner solutions**' – a rigidly fixed exchange rate (often backed up by a currency board) on the one hand, or a cleanly floating exchange rate on the other.

More recently however, there have been suggestions that perhaps academics and policy-makers may have been too hasty in ruling out all but the corner solutions. Fischer (2001), for instance, suggests that 'the choice between a hard peg and floating depends in part on the characteristics of the economy, and in part on its inflationary history', and admits that 'proponents of what is known as the bipolar view – myself included – probably have exaggerated their point for dramatic effect'. This has occurred even as studies are increasingly demonstrating that the corner hypothesis is not consistent with reality. Calvo and Reinhart (2000) show that despite countries' *de jure* stances, an inherent *de facto* 'fear of floating' still persists. The reality is that most countries, in fact, continue to adhere to some interior solution between the corner solutions of rigid fixity and free float.

Amidst the changing tide of opinion and evidence about choice of exchange rate regimes, John Williamson has – since as early as 1965[2] – remained steadfast in advocating the view that the intermediate solution and the crawling peg, in particular, may be a possible option for some open economies. Williamson's paper today represents yet another important contribution in this regard and takes the further step of illustrating how the basket, band and crawl (BBC) framework might be extended to a regional grouping of countries.

The main contribution of my discussion today will be to comment on Singapore's experience with its interior solution, based on an exchange-rate-centred monetary policy since the 1980s. I would like to focus my interventions around two broad points. First, I would like to briefly describe some of the features of the exchange rate system and how the flexibility accorded by the managed float system has been advantageous to us in facilitating adjustment to shocks to the economy as well as accommodating longer-term structural changes in the economy. Second, I would like to advance the view that the key issue facing policy-makers lies not in the particular choice of the exchange rate system *per se*, but in the institutions and other policies underpinning it.

Managed floating in a small open economy

Since 1981, monetary policy in Singapore has been centred on management of the exchange rate. The primary objective has been to promote price stability as a sound basis for sustainable economic growth. The framework incorporates the key features of the BBC system as Williamson describes it.

First, the Singapore dollar (SGD) is managed against a basket of currencies of our major trading partners and competitors. The various currencies are given different degrees of importance, or weights, depending on the extent of Singapore's trade dependence on that particular country.

Second, the Monetary Authority of Singapore (MAS) operates a managed float regime for the SGD. The trade-weighted exchange rate is allowed to fluctuate within an undisclosed policy band, rather than kept to a fixed value.

Third, the exchange rate policy band is periodically reviewed to ensure that it remains consistent with the underlying fundamentals of the economy.

Why the managed float?

The choice of the exchange rate as the intermediate target of monetary policy is predicated on the openness of the Singaporean economy to trade and capital flows.[3] The small size and high degree of openness of the Singaporean economy is evidenced by the high ratio of its international trade relative to GDP. Total exports and imports are each well in excess of 100 per cent of GDP, while exports account for approximately two-thirds of total demand. Changes in the value of the trade-weighted SGD have therefore a significant influence on inflation and GDP outcomes.

The trade-weighted exchange rate for Singapore is as close to an ideal intermediate target of monetary policy as we can expect. It is relatively controllable and has a powerful and stable relationship with price stability, the final target of policy, over the medium term.

Coping with short- and long-term movements in the exchange rate

Williamson (1999) outlined several key issues that are fundamentally important in guiding and evaluating the choice of exchange rate regime. He distinguished

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3. The choice of the exchange rate as the intermediate target of monetary policy implies that the MAS cedes control over domestic interest rates. In the context of free movement of capital, interest rates in Singapore are largely determined by foreign interest rates and investor expectations of future movements in the SGD. Results from a recent empirical study (MAS 2000) found that various interest parity conditions held during the 1990s prior to the Asian crisis, which provides price-based evidence of capital account openness. Not only did covered interest parity hold, as is the case with most countries with well-developed money and foreign exchange markets, but the uncovered interest parity condition also held during this period, unlike most other countries. The parity conditions indicate that Singapore's money market has been fully integrated with international markets.

between the two distinct dimensions of exchange rate variability: ***short-term volatility*** on the one hand, and ***longer-term currency misalignments*** on the other – and discussed how various exchange rate systems cope with these. (He suggested that on the first criterion, free floating and managed floats cope well, while the crawling peg does the best on the second.) I shall now illustrate these points briefly using Singapore's experience.

Short-term volatility

In the short term, managing the SGD within a band provides the flexibility to prevent volatility in the financial markets from adversely affecting the real economy, as evidenced, for example, by the recent Asian crisis episode. During that period, the MAS was able to widen policy bands as volatility increased in foreign exchange markets and subsequently narrow them when some degree of calm had returned to the regional markets. Reflecting the MAS's targeting of the nominal effective exchange rate (NEER), Singapore's trade-weighted exchange rate has remained fairly stable. Volatility as measured by the monthly standard deviation of the NEER was significantly lower for the SGD compared to that of the United States dollar (USD) or Japanese yen (JPY). The standard deviation of the SGD NEER was 1.46 per cent between 1981:Q1 and 2001:Q1, compared to 3.45 per cent for the USD and 4.82 per cent for the JPY.[4]

At the same time, movements of the SGD against major currencies, especially the USD, have been less volatile than movements among the major currencies. Table 1 shows that the SGD has been less volatile with respect to the other currencies than if it had been pegged to any of the main currencies. For example, if the SGD were pegged against the USD, the monthly standard deviation against the JPY and DM would have been 3.42 per cent and 3.27 per cent respectively instead of 2.99 per cent and 2.92 per cent. The 'basket' characteristic of the managed float system has therefore also helped to mitigate some volatility as compared to if the SGD were on a bilateral peg.

Table 1: Standard Deviation of Monthly Currency Movements since 1981
Per cent

NEER	S$/US$	S$/Yen	S$/DM	US$/Yen	US$/DM	DM/Yen
1.46	1.57	2.99	2.92	3.42	3.27	3.11

Longer-term currency misalignment

Over the longer term, the managed float has provided the flexibility for the MAS to prevent currency misalignments by allowing the equilibrium (real) value of the

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4. The NEER series for the USD and JPY are based on the quarterly series published by the IMF.

exchange rate to reflect changes in underlying fundamentals, such as a trend increase in the savings rate and higher productivity in the export sector. Notably, the trade-weighted SGD has been on a secularly appreciating trend since 1981 in both nominal and real terms.

Corroborating this, Gan (2001), using a 3-variable SVAR methodology based on Clarida and Gali (1994), finds that supply shocks which have permanent effects on output account for more than 30 per cent of real exchange rate movements. In particular, the estimated impulse response functions show that a positive supply shock leads to a persistently higher level of relative output and a permanent appreciation in the real exchange rate (see Table 2).

Table 2: Decomposition of Forecast Error Variance from 3-variable SVAR for Singapore

Variables	Horizon Quarters	Structural shocks		
		u^s	u^d	u^n
Relative output	1	57.5	32.2	10.3
	2	60.1	30.6	9.3
	3	67.8	23.2	9.0
	4	72.8	18.5	8.7
	8	81.9	15.0	3.1
	12	82.0	14.6	3.4
	20	89.8	7.1	3.1
Real exchange rate	1	20.8	51.6	27.5
	2	24.9	51.4	23.7
	3	20.8	52.2	27.0
	4	27.5	51.9	20.6
	8	32.3	51.3	16.4
	12	31.3	53.5	15.2
	20	30.8	54.0	15.2
Relative prices	1	25.3	19.2	55.5
	2	25.7	18.9	55.4
	3	32.3	17.3	50.4
	4	32.7	17.4	49.9
	8	37.2	13.0	49.8
	12	38.9	11.3	49.8
	20	38.6	11.2	49.8

Notes: The endogenous variables in the SVAR are relative output (the ratio of Singapore real GDP to trade-weighted average foreign GDP), Singapore's real exchange rate (defined such that an increase in the index implies an appreciation) and relative price level (ratio of Singapore CPI to the trade-weighted CPIs). The SVAR was estimated on quarterly data over the period 1985:Q1 to 2000:Q4.

The paper reports another interesting finding, one that provides evidence that the real effective exchange rate responds to shocks in a manner consistent with macroeconomic stability. Specifically, it finds that while the qualitative dynamic responses of the real exchange rate and the relative price level are similar, a supply shock leads to a greater appreciation in the exchange rate than the increase in relative prices. This indicates the role of nominal appreciation in facilitating the equilibrium adjustment in the real exchange rate. The nominal appreciation absorbs the productivity shock and prevents the increase in the relative price of non-traded goods from spilling over into more serious overall inflationary pressure.

The secular appreciation of the SGD exchange rate has helped to keep inflationary pressures in check. Between 1981 and 1987, domestic inflation averaged 2.3 per cent – markedly less than external inflation (as proxied by a trade-weighted average of foreign composite CPI) which averaged 4.6 per cent over the same period.

A multi-dimensional approach to exchange rate management

Williamson has graciously dubbed Singapore 'the world's most successful practitioner of a BBC regime'. While I have recognised the flexibility accorded by the managed float system above, my second main argument in this discussion is to recognise that the challenges posed by the vagaries and dynamics of global financial markets cannot be met by the judicious choice of exchange rate regime alone. They need to be supported by a framework of consistent macroeconomic and microeconomic policies, and by strong institutions. The exchange rate system may therefore be viewed as a 'monetary overlay' on the real economy foundations. In this sense, exchange rate policy has moved beyond the confines of the traditional parameters of instruments, targets, transmission mechanisms and inflation–output trade-off issues.[5] Some key support factors are identified below.

First, **sound and credible macroeconomic policies** are essential to avoid the build-up of major macro-imbalances in an economy. This will reduce its vulnerability to speculative attacks and swings in capital flows by preventing misalignments in the value of its currency. It is also worth highlighting the importance of coordinating macroeconomic policies across the relevant agencies so as to achieve consistency in promoting conditions conducive to sustained growth of the economy.

In Singapore, for instance, prudent fiscal policy absolved the MAS of the need to finance the government, allowing it to concentrate on its primary responsibility of maintaining price stability. At the same time, the MAS has also established considerable credibility with the market, earned through its track record of running a monetary policy that has yielded low inflation and sustained economic growth over a long period. Singapore's large foreign reserves and macro-prudential policy limiting the extension of credit to non-residents also discourage speculative attacks on the SGD.

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5.   This section draws on Khor and Robinson (2001).

The public sector in Singapore has no foreign debt, while banks and corporations have generally not borrowed from abroad in foreign currencies given low domestic interest rates. The lack of balance sheet vulnerabilities has been an important factor in preventing the economy from being pushed into the 'zone of vulnerabilities' and hence facing the risks of intense speculative attacks on the currency in times of regional turmoil, market contagion or a significant shock to our terms of trade.

Second, the **flexibility of product and factor markets** is essential in order to cope with and adjust to shocks arising from the volatility of currency markets and swings in the terms of trade in world product markets. This is particularly true for small open economies, which are dependent on exports of goods and services.

Third, it is crucial to **develop and strengthen financial systems in order to enhance robustness to shocks**. Cooper (1999) makes the pertinent point that countries with small and poorly developed capital markets may face even more limited options within the 'open economy trilemma' of fixed exchange rates, independent monetary policy and free capital movement. Such countries may also find the combination of floating rates, independent monetary policy and free capital movement incompatible with weak corporate and banking sectors. In comparison, well managed financial institutions which adhere to sound credit practices and have built up strong capital positions are better able to withstand business cycle shocks. In addition, a sound and efficient banking system together with deep and liquid capital markets contribute to the efficient intermediation of financial flows. This helps prevent the emergence of vulnerabilities in the financial system by minimising unsound lending practices that could lead to the build-up of excessive leveraging in the corporate sector and exposure to foreign borrowings. Deep and liquid markets also help absorb the effects of external shocks and prevent their spillover to the rest of the economy.

Recognising this, the MAS undertook a strategic review of its financial sector policies in 1997 in order to keep pace with the rapid changes in global financial markets. This resulted in measures to develop the bond market, asset management industry and the insurance industry as well as open up the domestic banking industry to greater competition. We also liberalised our policy on the restriction of credit to non-residents in order to allow foreign investors to issue SGD bonds and to finance their SGD investment with domestic funds. Through these measures we hope to foster the development of a more diversified and robust financial system.

Fourth, countries need to **build up their regulatory and supervisory capabilities** to keep pace with financial innovations, the growing complexity of financial institutions' activities, and new products and services. Regulators need to ensure that financial institutions have proper credit and risk management systems in place and that they provide adequately for market and operational risks. This also implies that financial reforms need to be managed in a controlled and orderly manner. Countries that have not fully liberalised their capital accounts should do so at a pace that is commensurate with the strength and efficiency of their financial systems. Concomitantly, regulators need to build up their capabilities to cope with an enlarged

supervisory role. In Singapore, the 1997 policy review also resulted in a shift of our supervisory regime from one-size-fits-all regulation to risk-based supervision.

Fifth, policy-makers should promote **greater disclosure and transparency**. This will help to foster market discipline, as well as reduce the likelihood of markets over-reacting due to lack of information or information asymmetries. Increased transparency can be brought about on several fronts. These include raising bank disclosure standards, improving corporate governance, providing more information on how government policies are conducted, and releasing economic and financial data in a timely and regular fashion.

Finally, we have made a major effort in the last two years to increase the transparency of our monetary policy framework. In particular, we have provided more data and substantially increased the flow of information to the market and public through our publications and internet website with our analyses and views on developments in and the outlook for the economy and financial markets.

The latest initiative is the recent decision to publish a *Monetary Policy Statement* soon after we complete each semi-annual review of exchange rate policy. In our latest Statement in July 2001 we also revealed more information about the trade-weighted SGD including its most recent movements within the policy bands. These (ongoing) efforts go some way towards addressing concerns that have been raised in the literature (see, for example, Frankel *et al* (2000), Frankel, Schmukler and Servén (2000)) that fixed or floating regimes are more readily verifiable than the interior solutions. In the final analysis though, credibility in monetary policy derives from a track record of adhering to consistent and appropriate policies that are firmly oriented towards achieving price stability over the medium term.

Conclusion

Emerging economies certainly face a difficult choice amidst the ongoing debate over the disappearing middle option along the continuum running from fixed to flexible exchange rate systems. Cooper (1999) notes that 'The choice of exchange rate regime was not always so vexing; during much of the modern era it was in practice dictated by convention, by internationally agreed rules, or by uncontrollable external circumstances'.

Williamson's paper has provided a useful framework to reassess the middle option, specifically a system that offers the advantages and flexibility of the BBC regime. I have tried to highlight the aspects of such a framework that have accorded an ultra small open economy some flexibility in coping with external shocks. However, I have also emphasised that Singapore's experience suggests that policy-makers in small emerging economies also face the difficult *task* of building up their macroeconomic policy framework and supporting institutions as a firm foundation to support the chosen exchange rate/monetary policy regime.

Finally, let me make a brief comment on Williamson's suggestion for a common basket peg for east Asia. I think it is an interesting idea and one that deserves serious

consideration. The paper though readily admits some of the practical difficulties associated with implementing the proposal.

As a general observation, it is my view that countries in the region are some way off from implementing closer forms of monetary cooperation and integration. This is especially so given the relatively wide divergences in economic characteristics such as GDP per capita, business cycle synchronisation and price and wage flexibility.

Asian countries would want to focus their efforts instead on deepening the integration of their markets. This would include developing greater intra-regional trade linkages, integrating financial markets and establishing regional production networks. Underpinning this should be an evolution of common codes of conduct and standards of corporate governance, as well as greater regulatory cooperation and harmonisation. Perhaps in the longer term, when Asia has achieved a certain degree of integration in its factor and capital markets, some form of closer monetary cooperation and integration can be an effective means for the benefits of the economic linkages to be secured.

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2.   Takatoshi Ito

First of all, let me say that I broadly share John Williamson's views, so my comments are more sympathetic and constructive than critical. The main thrust of his paper is that the east Asian/south-east Asian economies will be better off adopting a BBC regime than either of the extreme 'corner solutions'. (Williamson argued for this position as early as 1996, published as Williamson (1999).) First, he argues for a **basket** because east Asian countries' trading partners are diversified; so a basket is essential to keep the real effective exchange rate (REER) stable. Second, a **band** is desirable because of uncertainty about the equilibrium exchange rate, and the drift of the appropriate basket, may necessitate some flexibility. Third, a **crawl** is good because of adjustments for inflation differentials and Balassa-Samuelson effects.

Proving the desirability and feasibility of the exchange rate management inherent in a BBC regime is key. Williamson feels that a free float would allow too much volatility of the exchange rate. As the exchange rate is often subject to fads and bubbles, policies to stem both tails of the distribution are desirable. Additionally, the desirability of exchange rate management may be justified by the conventional wisdom that excess volatility will damage trade and foreign direct investment. Portfolio capital flows also tend to be pro-cyclical, exacerbating appreciation and depreciation. For all these reasons, it is understandable that emerging economies will have a 'fear of floating' à la Calvo and Reinhart (2000). Thus, the case for desirability can be made.

Turning to the issue of feasibility, Williamson lists three tools for exchange rate management: monetary policy; sterilised intervention; and capital controls. Let me comment briefly on each of these three. On monetary policy, Williamson criticises the effectiveness of interest rates in the defence of a currency in crisis. I, however, would differentiate between the impacts of monetary (interest rate) policy during peacetime and during the height of a currency crisis. I would argue that raising the interest rate to an annualised rate of 500 per cent (a little above 1 per cent on a daily basis) has minimal impact if the peg is about to be abandoned with a possibility of depreciation of 15 per cent or more within several days. However, during peacetime, I think that the interest rate differential is one of the important variables that affect the exchange rate.

On sterilised intervention I share the view that this is effective in checking extreme volatility by influencing market expectations. To illustrate the effectiveness of sterilised intervention consider the example of Japan. The Japanese Ministry of Finance recently disclosed its history of intervention from April 1991 to March 2001. The Japanese monetary authority intervened in the yen/US dollar market 200 times in 10 years (and 12 times in other currency markets). All interventions in support of the yen (selling dollars and buying yen) occurred when the yen was weaker than 125 yen/US dollar, and all interventions to weaken the yen (selling yen and buying dollars) occurred when the yen was stronger than 125 yen/US dollar. This shows that the Japanese monetary authority was consistent in their view of where the equilibrium

exchange rate (approximately) lies, and made capital gains from buying the dollar low and selling it high. As Milton Friedman stated, those 'speculators' that make profits stabilise the exchange rate. In this sense, the Japanese monetary authority succeeded in stabilising the yen/US dollar exchange rate.

Finally, on capital controls, Williamson has a convincing argument that Chilean-type prudential controls on short-term capital inflows are effective (Williamson 2000). In the last three years, some Asian countries have 'de-internationalised' their currencies, namely, by banning offshore forward trading of currencies without any corresponding underlying trade or investment transactions. Nonetheless, it is hard to gauge what their effect would have been during the Asian crisis. For example, an interesting counterfactual question is whether Thailand's crisis could have been less severe if these prudential measures had been in place before the spring of 1997.

It is also important to consider the relationship between a BBC regime and inflation targeting (IT). According to corner-solution advocates, having a nominal anchor is important, and either a hard peg (e.g. currency board) or inflation targeting with free floating gives such a nominal anchor. Moreover, pursuing both inflation targeting (or an independent monetary policy in general) and a soft peg was considered to be incompatible, given the free mobility of capital.

In contrast, Williamson asserts that 'the BBC regime should not be viewed as an *alternative* to inflation targeting, but as a *complement* to it' (see this volume, p 99). I would characterise the relationship between a BBC regime and IT as follows. When the exchange rate is inside the band, monetary policy can be independent, and can pursue an inflation target. However, when the exchange rate comes near the edge of the band (either the floor or the ceiling), monetary policy gives way to exchange rate policy. In other words, intervention will be employed with monetary policy being conducted with more weight on exchange rate management. This view may be slightly different from the view Williamson had in mind.

Finally, I would like to emphasise the importance of coordination among the Asian – in particular south-east Asian – countries in the implementation of a BBC regime. Suppose that a country uses trade weights for its currency-basket weights. Suppose also that the country trades equally with the US, Japan, EU, and its neighbouring countries. Trade weights should then be 25 per cent for each of the US dollar, the yen, the euro, and the basket of regional currencies. If the neighbouring countries have adopted a US dollar peg, then the weight on the dollar for this country increases to 50 per cent. In contrast, if the neighbouring countries also adopt basket-currency arrangements with trade weights, and the trade weights are the same with this country, another equilibrium with currency weights of one-third on the dollar, the yen, and the euro will be achieved (see Ogawa and Ito (2000) for details). Therefore, coordination is important to pull countries away from inertia to a common basket.

As a first step towards closer economic and financial cooperation, the Chiang Mai Initiative, including the ASEAN nations, Japan, Korea and China, was launched in May 2000. It was aimed at developing a network of swap arrangements for

currencies. By May 2001, Japan had reached an agreement with Thailand, Korea, and the Philippines for building bilateral swap agreements. Separately, the ASEAN 10 nations agreed to expand the existing $200 million ASEAN swap facility among five countries to a $1 billion facility. While economic surveillance will be a key to preventing a crisis in the region, the Chiang Mai Initiative may contribute to prevention as well as crisis management. Thus, steps are already being taken towards greater coordination and cooperation.

Further questions can be posed of Williamson's paper. First, is a BBC regime a first step toward monetary integration? This depends on how inter-regional trade proceeds. If a common basket encourages the countries to trade more with each other, then a move toward monetary integration will be accelerated. Second, how often should the basket be revised? If it is too often, the basket cannot establish its reputation, while if it is too rare, there is a danger of misalignment. Third, should Australia adopt a BBC regime? Fourth, will the Chiang Mai Initiative develop into a BBC regime? Fifth, can a currency board country adopt a basket without a band, in other words, a BxC regime? Finally, will Argentina succeed?

Each of these topics may need substantial work, but these questions are important in developing closer cooperation in the region.

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3.   General Discussion

Initial discussion centred on the specifics of any BBC regime in east Asia. One participant commented on the different models put forward by Wyplosz and Williamson. Specifically, Williamson argues for a G3 basket with some degree of flexibility both between Asian countries and with the rest of the world while Wyplosz suggests that Asia should fix internally and float with respect to the rest of the world. What arrangement would be more appropriate? The participant then raised the possibility that there could be some game playing involved in choosing the basket weights. The choice of currency basket by one country could influence the choice of currency basket for other countries in the region.

Another participant asked which countries should be members of an Asian BBC regime. Cambodia and Vietnam are essentially dollarised and this would not sit well with a BBC arrangement. A response offered was that Cambodia and Vietnam would not necessarily have problems in a BBC regime unless there was an imbalance between their assets and liabilities denominated in US dollars. If more liabilities were denominated in dollars this could present problems but should not otherwise.

Following this, discussion turned to more general features of BBC regimes. In particular, a participant pointed out that the attraction of an inflation target is its transparency. A problem with a BBC regime is that it is quite opaque. However, some participants felt that transparency was not a problem as markets could easily work out the parameters of the regime – only a little residual uncertainty would remain. An analogy was drawn with the introduction of floating exchange rates – there was a lot of concern about their behaviour when they were first introduced but people have learned to live with them; similarly, people should learn to live with BBC regimes.

One participant raised the question of how flexibility and inter-regional cooperation might affect the implementation of a BBC regime. Most international agreements are difficult to form and respond only slowly to change. Given this, how flexible could a regional BBC arrangement be in the face of significant shocks? This is particularly relevant as the principal value of a flexible exchange rate is that it can respond quickly to crises; not its behaviour during normal times. In the following discussion it was pointed out that crashes are large shocks that have to be absorbed somewhere; the problem is not to avoid exchange rate changes but to deal with the cause of the shock – the exchange rate is just one possible shock absorber.

One participant questioned what was the important difference between the exchange rate regimes of Singapore and Australia or New Zealand. The only difference, it was proposed, is in how automatic intervention is. Intervention is discretionary in Australia and New Zealand while it is automatic in a BBC regime – this automatic intervention could be a problem in the face of determined speculators.

Many participants wondered what the appropriate policy responses at the edge of the bands of a BBC regime might be. Some participants feared that as soon as you reach the edge of a band markets will initiate a speculative attack. These speculative attacks are not based on a consideration of what the right target is, but on the presence of an arbitrary line the monetary authority has committed to holding. On this basis, it was suggested, a BBC arrangement is no better than a soft peg. In response, one participant hoped that the edges would act as stopping points if the authorities were credible. If the authorities were credible, there should be stabilising speculation at the edges of the bands as market participants traded on the expectation that the monetary authority would be intervening to support the band – Krugman's 'smooth pasting' argument. Other participants were less confident of the stabilising properties of announced edges to an exchange rate band.

Finally, it was suggested that, while BBC regimes may be easier to set up, they are not necessarily best for the long run. Currency unions, on the other hand, are much harder to set up but, once going, provide a set of institutions that may be more durable.

A Monetary Union in Asia?
Some European Lessons

Charles Wyplosz[1]

1.   Introduction

Some ten years ago the European Union countries agreed in Maastricht to launch a monetary union. To many, the project was deemed unrealistic and doomed to failure. Yet, it came about, on time and as planned. To be sure, the first two years have not been free of trouble and controversies, but few now doubt that it is viable. Indeed, it is sometimes seen as a blueprint for other regions in the world. Some in Asia, Oceania and Latin America have started to express interest in this kind of undertaking. While it is far too early to assess the experience with the European Monetary Union (EMU), much less to call it a success, such international interest is testimony to how quickly monetary orthodoxies can shift.

The attraction of EMU lies less in its own demonstrated successes than in the recent popularity of the hollowing-out hypothesis. According to Eichengreen (1999), this hypothesis holds that, in a world of high capital mobility, the only sustainable exchange rate regimes are purely flexible rates and hard pegs (monetary unions, currency board, dollarisation). In this view, arrangements that fall in the middle, fixed and adjustable exchange rates with constant or crawling pegs, are ultimately open to lethal speculative attacks.

Of course, the hollowing-out hypothesis is nothing but an implication of the stainless Mundell-Fleming model, previously christened the impossible – or unholy – trinity: the incompatibility between capital mobility, monetary policy independence and a fixed exchange rate regime. The new twist is that limiting capital mobility is not seen as an option anymore; full capital mobility is axiomatically taken as the world's destiny. If that is indeed the case – a view that is challenged further below – the choice now comes down to either monetary policy independence with freely floating exchange rates, or a complete loss of monetary policy independence. In this brave new world, commitments to a fixed-but-adjustable exchange rate are not seen as credible enough. Monetary unions – or dollarisation – become less outlandish options.

Until recently, fully giving up monetary policy was seen as a curiosity circumscribed to special cases like Panama or Liberia. The experience with currency boards in such diverse countries as Argentina, Estonia or Hong Kong, has started to shake that view. EMU further suggests that 'normal' countries (i.e., countries not plagued by

endemic hyperinflation, transition challenges or larger than a city-island) may reasonably elect to give up monetary policy altogether.

Fischer (2001), summarises the new conventional wisdom:

> The trend away from softly pegged exchange rate regimes toward floating rates and hard pegs appears to be well established, both for countries that are integrated into international capital markets and those that are not. This is no bad thing and it looks set to continue.

Yet, Calvo and Reinhart (2000) observe that there is a gap between what countries say and what they do. In particular, many floaters keep a close eye on their exchange rates and, one way or another, limit their variability. This is not surprising. The choice of an exchange regime involves a wide range of economic and political trade-offs, and the best response to trade-offs is typically to be found in the middle, not at the corners. This is where collective arrangements become appealing. Both the European Monetary System (EMS) and EMU can be seen as a combination of exchange rate fixity (among members of the arrangement) and flexibility (*vis-à-vis* the rest of the world). The shift from EMS to EMU can be further interpreted as the socialisation of monetary policy, initially in the hands of the Bundesbank and now shared within the European Central Bank (ECB).

It is a far cry, however, from the observation that 'normal' countries give up monetary policy to the conclusion that it is a desirable policy option. In many respects, Europe is unique. This paper attempts to examine more precisely what has been unique to Europe, with a view to drawing lessons for the east Asian countries that contemplate to travel the same route. A few papers have previously examined this question. Kwan (1994) presents the case for adopting the yen as the anchor of east Asian countries. Eichengreen and Bayoumi (1996) review the optimum currency area arguments and cautiously conclude that the time is not ripe. Their conclusion is based less on economic than on political considerations, a view largely shared by the present paper. Williamson (1999), who also favours some degree of exchange rate fixity, shares Eichengreen and Bayoumi's doubts that the political will to move far in this direction is there. He suggests the implementation of his long-held proposal for basket pegs, a roundabout way to stabilising regional exchange rates. Coleman (1999) looks at another part of the broad region, Australia and New Zealand. Reviewing the modern literature, he concludes that for New Zealand the costs of a monetary union are smaller than often believed and the benefits larger, making it a viable, possibly desirable option.

The present paper takes the view that optimum currency area arguments have not been prominent in the European debate, a point also noted by Eichengreen and Bayoumi. Exchange rate stability has been the paramount objective among countries seeking to achieve and maintain a high degree of trade integration. Fear of competitive devaluations and of the protectionist reactions that they create has always been a key concern and the incentive for a cooperative approach to interdependence. Achieving a high degree of exchange rate stability was made relatively easy by a fairly extensive use of internal and external financial repression.[2]

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2. Financial repression in post-war Europe is documented in Wyplosz (2001).

Once the commitment to full capital mobility was made, and set in concrete in the *Single European Act* adopted in 1988 for implementation in 1992, the authorities gradually realised the full implication of the hollowing-out principle. Unique political conditions made it possible to quickly take the step and cement the by-then shaky EMS. Sections 2 and 3 provide a more precise discussion of these points, looking first at the role of exchange rate stability and then at the irrelevance of optimum currency area criteria in the European debate, as well as presenting some comparative evidence on Europe and east Asia. Section 4 moves to the political economy and develops the view that Europe has followed a unique path of institution-building. The lessons from the European experience are applied to Asia in Section 5. Section 6 concludes.

2.   The Goal of Exchange Rate Stability

2.1   Why exchange rate stability?

When the choice is between a peg – soft or hard – and a floating rate, the burden of the proof now lies on those who argue for a peg. Tying the exchange rate requires the loss of an important policy tool and we certainly do not have too many macroeconomic policy instruments to deal with shocks. This cost is further increased by the fact that fluctuations of the currency to which the peg is established can represent an additional disturbance, as has been the case with the east Asian (soft and possibly unofficial) pegs during the period leading to the 1997–1998 crisis. Implicitly, free floating is the natural benchmark, if only because the authorities cannot be blamed for making the wrong choice.

In fact, there is no reason for adopting such a lopsided view. After all, the founding fathers of the Bretton Woods agreement based their strong preference for fixed-but-adjustable pegs on dramatic inter-war evidence of the dangers of floating rates. They identified the mismanagement of floating rates as a major source of inefficiency and frictions that ultimately led to tariff wars. In today's world, such drastic outcomes are hopefully ruled out, yet large exchange rate fluctuations remain conspicuous and are quite problematic, for both economic and political reasons.

It has long been a puzzle as to why the intuitive presumption that exchange rate variability hurts trade could not be empirically supported. Part of the difficulty is that the post-war period does not offer long enough sample periods, prompting researchers to examine high-frequency volatility. The usual result that high-frequency exchange-rate volatility does not hurt trade is not surprising since there exist cheap financial instruments that offer hedging against currency risk at horizons up to one year. More interesting are longer-term currency cycles which durably shift competitive advantage, allowing firms to invest in entering markets and to close down some production units to open others elsewhere. Frankel and Rose (1996) and Froot and Rogoff (1995) provide evidence of long exchange rate cycles, and Pozo (1992) finds a non-negligible adverse effect of low-frequency exchange rate variability on trade.

Some recent studies have established the presence of a 'border effect', as summarised in Coleman (1999) for example. For reasons which remain unclear,

international trade is much less developed than intra-national trade. One potential explanation is the presence of exchange rates, which could operate via conversion costs but also exchange rate variability. Another piece of evidence is provided by Rose (2000) who reports a powerful trade-enhancing effect of common currencies. Put together, such evidence increasingly confirms that exchange rate volatility discourages trade. For countries that seek regional integration, the costs could be significant.

An additional consideration lies in the political economy domain. Truly free floating is the exception, not the rule, as convincingly shown by Calvo and Reinhart (2000) and Reinhart (2000). That most of the floaters are dirty floaters raises the following question: why agree on detailed trade agreements if relative prices can be freely changed by large amounts? When the exchange rate can be manipulated it is inevitable that trade partners become suspicious of each other, thus threatening the best-crafted trade agreements.[3]

2.2 What kind of stability?

Once the option of some degree of exchange rate management is rehabilitated, we need to consider the various ways of achieving it. The new wisdom states that the only sustainable fixed exchange rate regime is a hard peg – dollarisation or a currency board. Indeed, Eichengreen (1999) observes that normal pegs (fixed-but-adjustable exchange rates, crawling bands) have never lasted very long. On the other side, the hard pegs currently in vogue are a recent phenomenon and it is far too early to conclude that their endurance significantly exceeds that of previous peg arrangements. The Argentine experiment, for example, is shaky. The Estonian currency board is scheduled for reinforcement as the euro is adopted. Hong Kong's resilience has been impressive but not free of speculative attacks. It can be noted that the closest equivalent to modern currency boards, the gold standard, did not last for very long either. In fact, its abandonment is often considered as a major step forward. At any rate, in the case of Europe, soft pegs have been an important transition step – and a period of learning how to deepen cooperation – towards hard pegs (the monetary union).

Another view is that fixed-but-adjustable exchange rates do not deliver the sought-for stability. This view argues that the sharp changes which occur sporadically at the time of realignments introduce as much, if not more, volatility as the small movements inherent in floating rates. Hopefully, Figure 1 should dispose of this view. It reports the standard deviation of exchange rate fluctuations around their trends, at monthly and annual frequencies.[4] Two main conclusions can be drawn. First, by adopting an explicit system of fixed-but-adjustable rates, the European countries have achieved more stability than the other countries shown in the figure: the standard deviation of their effective exchange rate is on average half of that

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3. A good European example is the Italian devaluation of 1992. The French Prime Minister then publicly stated that he suspected foul play.

4 . The trends are calculated using Hodrick-Prescott filters.

Figure 1: Effective Exchange Rates
Standard deviations,1975–1999
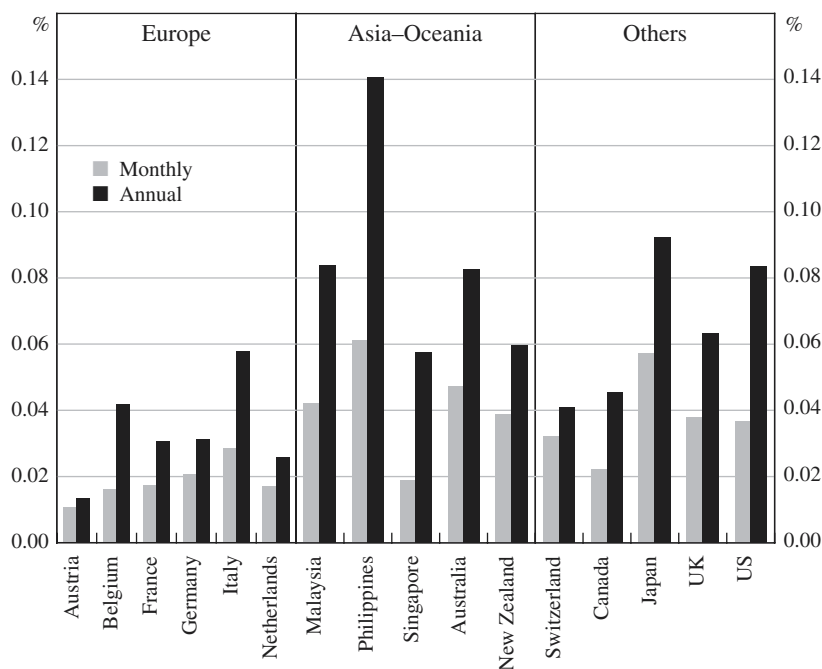
observed in the main countries with floating rates (the 'others' group), themselves about 50 per cent less volatile than those of the Asia–Oceania group. Second, the lower-frequency volatility, which matters most for trade, is typically higher (on average 90 per cent) than the higher-frequency volatility.

Two conclusions can be drawn at this stage. First, exchange rate stability is increasingly found to enhance trade. Second, the choice between soft and hard pegs is less of a foregone conclusion that current fashion suggests. Fixed-but-adjustable rates deliver exchange rate stability. While their shelf-life is undoubtedly limited, they can be an efficient arrangement during a transition period. Bretton Woods can be seen, in retrospect, as a transitional arrangement set up to last until the largest economies were ready to float. The EMS achieved its aims until the European countries were ready for a single currency, having restored trade links and built up adequate institutions.

2.3   Costs of exchange rate stability

None of the above should be read as implying that exchange rate stability comes for free. Three important costs need to be examined. First is the loss of the monetary policy instrument. This affects both the short and the long run. In the short run, the macroeconomic stabilisation function can be precious, especially once it is recognised that the fiscal policy instrument is blunter and more politically sensitive. In the long

run, the main difficulty lies with inflation, which becomes endogenous with hard pegs. Hong Kong has long had a higher inflation rate than it wished while Argentina is undergoing a painful deflation. With soft pegs, the cost is largely eliminated since realignments or crawling bands allow a country to choose its trend rate of inflation.[5]

The second cost is specific to soft pegs: realignments invite speculative attacks which can be extremely costly.[6] This is certainly Europe's experience, since most EMS realignments have been accompanied – usually anticipated – by speculative attacks. On the other side, the costs of crises are likely to have been modest in Europe, largely because they did not translate into banking crises where most of the costs usually lie.

The last cost is associated with one antidote to crises, the use of capital controls. Whether capital controls mitigate the crisis problem is a highly controversial view. The most extreme statements, that controls are useless or that they are highly effective, are certainly unwarranted (see Eichengreen, Rose and Wyplosz (1995), Edwards (1998), De Gregorio, Edwards and Valdés (1998) and Bordo *et al* (2001)). A more nuanced assessment is that controls increase the frequency of currency crises while reducing the incidence of banking crises. Moral hazard may explain both results. Controls embolden authorities to conduct undisciplined macroeconomic policies while they may deter imprudent risk-taking in the banking sector. But how costly are controls *per se*, especially concerning growth? The evidence on the growth effects of capital liberalisation (Rodrik 1998; Arteta, Eichengreen and Wyplosz 2001; Wyplosz (forthcoming)) is inconclusive. A plausible interpretation is that the much celebrated efficiency cost of capital controls is more a theoretical result than a reality in a world where financial markets suffer from serious failures associated with pervasive information asymmetries.

2.4   Strategies for exchange rate stability

Summarising so far, I argue that some degree of exchange rate stability may be desirable for countries that trade heavily – or wish to expand trade links – among themselves. Both trade and political economy considerations call for transparent rules of the game, which implies a verifiable approach to the exchange rate. Free floating simply does not fit the need. Currency boards make adjustment to serious shocks extremely costly. Monetary unions are less demanding, but require considerable preparation. This is why soft pegs were invented in the first place and remain an appealing option for many small open economies, especially those which have good reasons to pursue a regional strategy.

The remaining question concerns the way exchange rate stability is established. Hard pegs include dollarisation and currency boards. For soft pegs, the available menu is wide, ranging from fixed-but-adjustable rates, to crawling pegs and large or

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5.   Exchange rate pegs are often used to discipline monetary policy. In that case, the endogeneity of inflation is precisely what is desired.

6.   Bordo *et al* (2001) find that the costs of crises are on average close to 10 per cent of GDP.

fuzzy bands. As a first order of approximation, differences among soft pegs matter little. More important are the procedures to enforce and verify the arrangement. If the adoption of a peg is to be part of a regional agreement, it must be supported by adequate institutions (see Section 4).

Another question concerns the choice of the anchor. The role of the US dollar as an anchor has been dominating, partly as a reflection of the importance of the US economy and particularly its financial markets, and partly as a legacy of Bretton Woods. The danger of mechanically adopting the dominating financial currency for arrangements that primarily affect trade has been exemplified by the Asian crisis. This has led Williamson (1999) and others to argue in favour of a basket. While a basket goes some way towards solving the problem at hand, its main drawback is that it fails to recognise the regional dimension. The EMS solution has been to agree on *internal* pegs, letting member currencies float jointly *vis-à-vis external* currencies.

3.   Optimum Currency Area Principles: Are They Relevant?

One lesson from the European experience is that the priority bestowed upon exchange rate stability was part and parcel of a commitment to develop trade links. Another lesson is that, up until the mid 1980s, monetary policy was not entirely ditched thanks to the preservation of restrictions to capital mobility and, when capital controls were repealed, monetary union was preferred to national monetary policies.

The most commonly used arguments to study the desirability of an increasingly limited role for monetary policy is the optimum currency area (OCA) approach. For the Asian countries, Eichengreen and Bayoumi (1996) develop an OCA index that takes into account the extent of asymmetric shocks, the composition of the export structures, bilateral trade intensity and country size. Based on their index, they conclude that some pairs of countries achieve scores comparable to those in Europe: Singapore–Malaysia, Singapore–Thailand, Singapore–Hong Kong, Singapore–Taiwan, and Hong Kong–Taiwan. Other pairs, those including Indonesia, South Korea and the Philippines, do not rank well, and the Malaysia–Thailand pair displays a very weak score. A problem with the Eichengreen-Bayoumi indicator is that some of the explanatory variables are clearly likely to change in the event exchange rates are stabilised. More generally, Frankel and Rose (1998) have warned that *any* OCA criterion is potentially endogenous.

Another problem is that the choice of an exchange rate regime is never a black-or-white issue. Typically arguments for and against any arrangement are finely balanced. Average behaviour over a sample period, as explored in the OCA index approach, fails to recognise that 'big' shocks, even if rare, may be more important than frequent minor shocks. It may well be that Malaysia and Thailand are, on average, subject to mostly asymmetric shocks but, over 1997, they faced the same massive shock that revealed more commonality of interest than may have been suspected beforehand.

In this section, I proceed along the same reasoning as Eichengreen and Bayoumi (1996) but I do not attempt to develop a synthetic indicator. In Section 3.1 I look at trade integration, while I look at output shocks in Section 3.2.

3.1   Trade integration

A good starting point is to examine how much trade integration has already been achieved in east Asia. Trade integration is believed to be an important OCA argument for it reduces the likelihood of asymmetric shocks and enhances the transmission of any shocks. Trade integration is typically examined by looking at direct bilateral flows. Table 1 presents bilateral trade as a per cent of total trade for Asian and European pairs. On that measure, the Asian countries appear to be at least as integrated as the European countries.

This comparison is not fully informative, however, because it omits a huge range of potentially important 'special effects'. For example, distances between Asian countries are often larger than within Europe, with sea instead of land connections. Looking at trade to GDP ratios also assumes that the effect of size on trade is linear. A more accurate assessment requires a model of bilateral trade to set a benchmark. Over recent years, the gravity model has emerged as a successful empirical model (see Leamer and Levinsohn (1995)), with reasonably convincing theoretical underpinnings (Anderson 1979). The gravity model has been used by Rose (2000) to study the effect of monetary unions on bilateral trade. I use Rose's specification and database to predict what trade among the Asian and European countries 'should be'. These are within-sample predictions based on estimates which are obtained from a modified version of Rose's model.

Rose uses a sample that includes 186 countries, some of which are dependencies, or very small islands, or both. His quest is driven by the need to include geographical units that share the same currency in order to measure the currency union effect. My purpose is different: I am interested in determining a 'normal' level of bilateral trade as justified by each pair's characteristics. To that effect, I have restricted the sample quite drastically by focusing only on reasonably advanced and large economies from the two areas under examination, east Asia and Europe, along with North America and Oceania. Appendix A lists the 31 countries that have been retained, sampled every five years over the period 1975–90. Given some missing observations, the sample includes 2 351 pairs/years out of the theoretical 4 650.

The dependent variable is the log of bilateral trade (in US dollars, deflated by the US GDP deflator). The independent variables are those used by Rose with the exception of the common currency dummy, which does not apply. The results are shown in Table 2 (year dummies not reported). With this sample, two explanatory variables are not significant: the common coloniser dummy (which is quite reasonable) and the common border dummy (which is more surprising) and they are dropped in the second column. Otherwise, the results are quite similar to those reported by Rose with a few differences: the exchange volatility effect is stronger, maybe because the countries in this sample do not share a common currency; the free trade area and

Table 1: Bilateral Trade
Per cent of total trade, 1999

	China	Japan	Korea	Malaysia	New Zealand	Philippines	Thailand	Hong Kong	Indonesia	Singapore
Australia	2.1	4.0	3.2	2.3	10.0	1.1	2.0	1.8	2.6	3.4
China		9.1	6.3	1.4	0.3	0.8	1.4	25.7	1.8	2.7
Japan			6.9	4.2	0.7	3.0	4.2	5.3	3.4	4.7
Korea				2.7	0.5	2.3	1.4	3.7	3.1	3.3
Malaysia					0.5	2.3	3.4	2.0	2.0	16.5
New Zealand						0.3	0.4	0.3	0.4	0.5
Philippines							1.9	1.8	0.9	3.5
Thailand								2.0	1.9	5.9
Hong Kong									0.9	4.5
Indonesia										5.1

	Denmark	France	Germany	Italy	Netherlands	Sweden	UK	Austria	Finland	Greece	Ireland	Portugal	Spain
Belgium	1.1	10.9	8.3	4.0	12.3	2.5	7.1	1.2	1.0	0.7	1.9	1.3	3.6
Denmark		1.5	3.2	1.3	2.1	7.7	2.4	0.9	3.0	0.8	1.1	0.8	1.3
France			13.2	11.1	7.3	1.1	11.4	1.7	1.1	1.0	2.2	2.5	11.8
Germany				10.2	12.3	3.4	9.3	8.7	2.0	1.0	1.9	1.9	5.9
Italy					4.4	1.8	5.6	3.8	1.0	2.5	1.2	1.7	7.2
Netherlands						3.4	8.8	1.7	1.6	0.9	2.1	1.2	3.6
Sweden							3.9	1.1	6.7	0.8	1.1	0.9	2.2
UK								1.4	1.9	0.8	9.1	1.8	5.2
Austria									0.9	0.6	0.4	0.6	1.7
Finland										0.8	0.7	0.7	1.0
Greece											0.4	0.4	1.2
Ireland												0.4	1.5
Portugal													11.1

	Asia	Asia–Oceania	Europe
Average	4.2	3.4	3.5

Table 2: Gravity Equations
Dependent variable: log of bilateral trade
1970–90, 5-year frequency

	Regression (1)	Regression (2)
Output	0.745	0.745
	(0.015)	(0.015)
Output per capita	0.637	0.633
	(0.039)	(0.039)
Distance	–0.843	–0.850
	(0.030)	(0.028)
Contiguity	0.094	
	(0.122)	
Language	0.823	0.860
	(0.065)	(0.075)
Free trade area	0.240	0.243
	(0.069)	(0.069)
Same coloniser	0.263	
	(0.442)	
Colonial relationship	1.515	1.489
	(0.134)	(0.138)
Exchange rate volatility	–0.145	–0.145
	(0.019)	(0.019)
Number of observations	2 351	2 351
$\bar{R}^2$	0.744	0.744
SEE	1.216	1.216

Note: Standard errors in brackets beneath coefficients

distance effects are smaller, an indication that more advanced countries tend to trade more than the others; the common language effect is stronger.

The regression shown in the second column is used to predict trade for all pairs. Table 3 reports the ratio of actual to predicted bilateral trade in 1990 for three country groupings: North America, Asia–Oceania and Europe. The striking result is that, on average, the European pairs seem less integrated than predicted, while the opposite is true for most Asian country pairs. Interestingly, Australia and New Zealand are also more integrated with the Asian countries than predicted by the gravity model.

Obviously, scepticism is called for in considering these results. To check their robustness, I have explored various different specifications: using the whole sample, eliminating the large number of small geographical units (the six lower deciles in terms of population size), allowing for non-linear effects of distance. Table 4 reports

Table 3: Ratio of Actual to Predicted Bilateral Trade
1990

	Mexico	US	China	Hong Kong	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Taiwan	Thailand
Canada	0.37	1.43											
Mexico		0.58											
Australia			1.37	2.11	1.12	2.18	2.79	2.03	6.03	1.41	6.28	2.57	1.23
China				14.65	2.84	1.31	0.50	2.04	0.87	0.68	6.68	1.28	1.07
Hong Kong					4.43	2.08	3.60	3.09	2.08	2.42	16.26	3.54	2.09
Indonesia						4.68	4.46	0.68	1.43	1.09	5.38	3.86	0.91
Japan							1.01	3.97	2.19	1.75	8.02	2.15	3.42
Korea								4.85	2.98	1.92	9.43	1.26	2.12
Malaysia									3.06	2.41	20.31	4.33	2.63
New Zealand										2.30	5.00	2.53	0.49
Philippines											7.80	1.90	1.57
Singapore												15.79	11.45
Taiwan													2.74

	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	Switzerland	UK
Austria	0.69	0.39	0.72	0.34	1.00	0.44	0.53	0.33	1.22	0.65	0.44	0.89	0.54	0.38
Belgium		0.55	0.99	1.77	1.76	1.17	1.09	1.27	2.09	1.38	0.92	1.53	0.63	0.92
Denmark			1.46	0.49	0.54	0.69	0.78	0.54	0.58	1.15	0.47	2.48	0.55	0.63
Finland				0.70	1.22	0.62	0.97	0.59	1.02	1.43	0.62	1.31	0.79	1.05
France					0.81	0.73	0.91	0.69	1.00	0.98	0.57	0.75	0.35	0.74
Germany						1.47	1.37	1.21	0.95	1.71	1.29	1.36	0.85	0.98
Greece							0.87	0.86	1.50	0.38	0.49	0.67	0.41	0.78
Ireland								0.91	1.51	0.68	0.69	1.17	0.68	1.50
Italy									1.02	0.98	0.95	0.75	0.46	0.77
Netherlands										1.66	0.98	1.11	0.60	0.92
Portugal											0.57	1.67	0.73	1.12
Spain												0.80	0.41	0.82
Sweden													1.01	1.04
Switzerland														0.76

Table 4: Ratio of Actual to Predicted Bilateral Trade – Summary Statistics
1990

	Benchmark regression		
	North America	Europe	Asia–Oceania
Average	0.79	0.92	3.83
Standard deviation	0.56	0.41	3.98
	Average of all regressions		
	North America	Europe	Asia–Oceania
Average estimates	0.58	0.87	4.15
Standard deviation of estimates	0.20	0.34	1.60

the average ratios of actual to predicted trade, along with the standard deviations of these ratios, obtained from six regressions. They confirm the results shown in Table 3.

As suggested by the R-bar-squareds in Table 2, gravity equations do not fully explain bilateral trade, even though the coefficients are estimated with a high degree of precision. This suggests that the within-sample forecasts are inaccurate. Yet, the differences between the Asian and European countries reported in Tables 3 and 4 are too large to be attributed to inaccuracies. The conclusion that trade integration is deeper in Asia than it is in Europe, more than 40 years after the creation of the Common Market, is likely to be robust. If so, it is conceivable that the trade effect from forming a currency union could be smaller than those expected in Europe.

3.2 Correlations of shocks

Trade matters mostly because it raises the probability that shocks will be symmetric, either because of a common origin or because idiosyncratic shocks will be transmitted. This is why a standard practice is to look at the degree of correlations of shocks.[7] The shocks are identified here as the residuals from simple AR(2) regressions of real GDP for the Asian and European countries, as well as Australia and New Zealand, using annual data over the period 1961–98. Table 5 reports the bilateral correlations of these residuals. The table suggests two main observations.

First, the shocks are significantly more correlated within the European sample than within the Asian sample, with Australia and New Zealand clearly on their own *vis-à-vis* the Asian countries. Thus, a high degree of trade integration does not translate into strong output correlations, a healthy warning that OCA arguments are far from straightforward. Second, in Asia: Korea, Malaysia and Thailand seem to

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7. The EMU project has led to a large literature in the early 1990s, e.g. Cohen and Wyplosz (1989) or Calmfors *et al* (1997).

Table 5: Correlations of GDP Shocks
1961–98

	China	Hong Kong	Indonesia	Japan	Korea	Malaysia	New Zealand	Australia	Philippines	Singapore	Thailand
China		-0.010	-0.041	0.081	0.022	-0.160	0.132	0.026	-0.258	-0.027	0.215
Hong Kong			0.387	0.303	0.470	0.554	0.383	0.106	0.405	0.439	0.478
Indonesia				0.341	0.540	0.656	0.034	0.132	0.152	0.305	0.478
Japan					0.446	0.217	-0.098	0.250	0.166	0.150	0.527
Korea						0.470	0.281	0.123	0.274	0.296	0.511
Malaysia							0.286	-0.077	0.291	0.554	0.460
New Zealand								0.241	0.072	0.172	0.003
Australia									-0.054	0.167	0.128
Philippines										0.324	0.318
Singapore											0.413
Minimum	-0.258	-0.010	-0.041	-0.098	0.022	-0.160	-0.098	-0.077	-0.258	-0.027	0.003
Maximum	0.215	0.554	0.656	0.527	0.540	0.656	0.383	0.250	0.405	0.554	0.527
Average	-0.002	0.352	0.298	0.238	0.343	0.325	0.151	0.104	0.169	0.279	0.353

	Austria	Belgium	Switzerland	Germany	Denmark	Spain	Finland	France	UK	Greece	Ireland	Italy	Netherlands	Portugal	Sweden
Austria		0.636	0.682	0.579	0.467	0.427	0.302	0.601	0.121	0.183	0.026	0.518	0.510	0.530	0.256
Belgium			0.782	0.590	0.531	0.522	0.434	0.776	0.198	0.329	0.225	0.722	0.741	0.631	0.533
Switzerland				0.495	0.373	0.448	0.355	0.639	0.113	0.134	0.232	0.654	0.665	0.551	0.280
Germany					0.633	0.374	0.239	0.558	0.358	0.524	0.021	0.439	0.646	0.509	0.365
Denmark						0.314	0.411	0.631	0.386	0.494	0.030	0.385	0.644	0.361	0.425
Spain							0.442	0.540	0.227	0.226	0.233	0.513	0.241	0.353	0.204
Finland								0.510	0.361	0.374	0.283	0.226	0.229	0.177	0.618
France									0.372	0.423	0.204	0.678	0.595	0.567	0.478
UK										0.555	0.135	0.230	0.215	0.476	0.438
Greece											0.016	0.184	0.283	0.308	0.394
Ireland												0.051	0.220	0.135	0.168
Italy													0.531	0.627	0.403
Netherlands														0.445	0.436
Portugal															0.247
Minimum	0.026	0.198	0.113	0.021	0.030	0.204	0.177	0.204	0.113	0.016	0.016	0.051	0.215	0.135	0.168
Maximum	0.682	0.782	0.782	0.646	0.644	0.540	0.618	0.776	0.555	0.555	0.283	0.722	0.741	0.631	0.618
Average	0.417	0.546	0.457	0.452	0.435	0.362	0.354	0.541	0.299	0.316	0.141	0.440	0.457	0.423	0.375

form a subgroup of more tightly linked economies, displaying some correlation with Japan. China stands apart, with fairly frequent negative but small correlations.

These results are not directly comparable to those obtained by Bayoumi and Eichengreen (1994) who propose a decomposition between demand and supply shocks as they study both output and price shocks, using the Blanchard-Quah identification approach. Bayoumi and Eichengreen find little difference – for both types of shocks – between Europe and Asia, and they identify different country groupings: Hong Kong, Indonesia, Malaysia, Singapore and Thailand for demand shocks and, for supply shocks, one group comprised of Japan, Korea and Taiwan, and another group including Hong Kong, Indonesia, Malaysia and Singapore. The difference can be related to the different methodology or to the sample period (Bayoumi and Eichengreen's sample covers the years 1972–89).

This difference reveals the limited reliance that one can put on historical shocks as a guide to the choice of an exchange rate regime. One interpretation is that these shocks are partly endogenous to the exchange and capital regimes. Another is that OCA arguments are relatively uninformative, indeed, OCA principles have played a limited role in the European debate which has rather been dominated by political economy considerations.[8] This is the issue now taken up.

4. Political Economy Considerations

This section argues that EMU came about as the pragmatic response to a wider process of economic and political integration.

4.1 Europe's choice between exchange rate stability and capital mobility

It has been argued above that a mainstay of European thinking about exchange rate regimes has been the conviction that stability is the key to economic integration. This should have implied a willingness to give up the use of monetary policy for domestic purposes. That has not been the case. Until the mid 1980s, most European countries fully intended to retain their monetary policy instrument. The first country to completely and explicitly give up monetary policy independence, the Netherlands, did so only after 1982. In fact, in a large number of countries, monetary policy was not only seen as a macroeconomic tool, but also as an instrument to support fiscal policy through the financing of budget deficits, and even to conduct industrial policies. Bank lending was often directed to favoured sectors and to firms identified as national champions, and interest rates were generally kept low, often negative in real terms.

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8 . It may be that OCA principles should have been taken more to heart and that having ignored them may result in serious difficulties once EMU is in place. Indeed, in Wyplosz (1997) I argue that the costs of EMU will be highest where Europe ranks most poorly on the OCA scale (labour mobility and, more generally, labour market flexibility).

The conflict between exchange rate stability and the active use of monetary policy was reconciled through internal and external financial repression, i.e., the use of widespread regulation limiting the normal activities of financial markets. Domestic financial repression included quantitative limits on bank credit, ceilings on interest rates, directed lending, priority to budget financing, limits on the development of stock markets, etc. External financial repression took the form of capital controls, including administrative restrictions on inflows and outflows, the interdiction of lending to non-residents, the banning of forward transactions, the obligation for exporters to remit foreign-currency earnings, etc. Domestic financial repression allowed the authorities to control the interest rate independently of credit and money supply growth. External financial repression supported domestic repression by preventing arbitrage relative to the world interest rate. It also limited the ability of markets to attack the currency. Thus, while Europe has been quite fast at deepening its internal trade, it has been notoriously slow at liberalising its financial markets, both internally and externally.

External liberalisation occurred several years after internal liberalisation. Various measures were in place to restrict capital movements. They mostly relied on direct administrative controls affecting citizens, firms and financial intermediaries. Belgium operated a dual exchange market separating commercial from financial transactions. Full, unconditional liberalisation was not mandatory until the *Single European Act*, with accelerated effect from July 1990, except for Greece, Portugal and Spain which were granted grace periods.

The main aim was to keep domestic interest rates lower than implied by the interest parity condition. While it is often asserted that capital controls are ineffective, this has not been the case in Europe, as documented in Figure 2. The figure shows that the controls succeeded in creating long-lasting wedges between the two exchange rates (commercial and financial) in Belgium, and between the internal and external franc interest rates in France. Such deviations represent large, riskless profit opportunities. Their existence is proof that, even though capital controls were routinely evaded, markets were unable to arbitrage away profit opportunities for significant periods of time – often more than one year. The figure also indicates that, in quiet periods when controls were not needed, the wedge disappeared. This is clear evidence that the controls were effective. Even if this observation runs against today's conventional wisdom, it is not surprising. Because evasion is costly, immediate full arbitrage is not profitable. When needed, capital controls achieve the aim of insulating domestic financial markets. In the longer run, or when they are lifted, the effect rubs off, but the controls can be reactivated at will.

Thus, Europe's experience is fully compatible with the principles underlying the hollowing-out view. But it puts trade integration and exchange rate stability at centre stage, in lieu of financial integration. It sets the choice of an exchange rate regime as part of a package that may include, if needed, some degree of financial repression. Nor does it deny that soft exchange rate regimes are inherently unstable. But Europe's experience runs against the view that financial markets ought to be liberalised and if that means giving up the exchange peg, so be it. It provides support

Figure 2: Effectiveness of Capital Controls
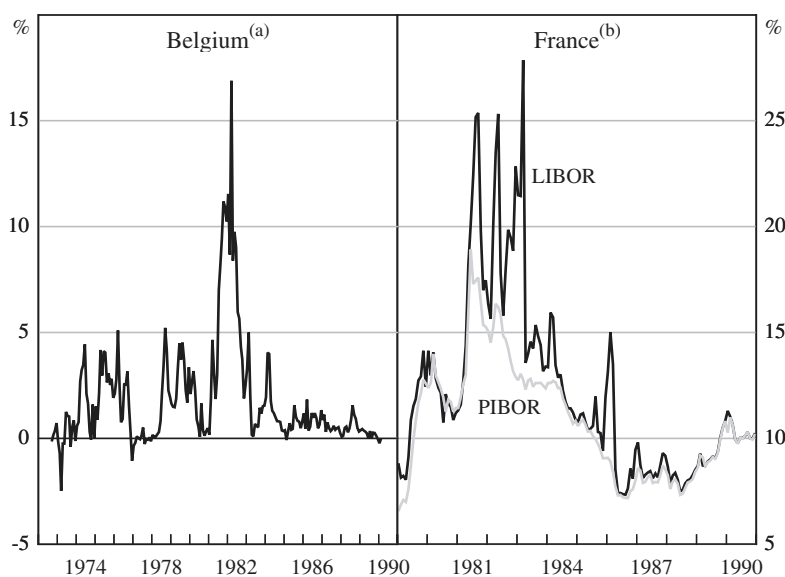
(a)   Percentage difference between commercial and financial franc

(b)   3-month offshore and onshore interest rates. LIBOR – London interbank offered rate; PIBOR – Paris interbank offered rate.

Sources: Belgium – Bakker (1996); France – Burda and Wyplosz (1997)

for a strategy of regional integration that starts with trade opening and exchange rate stability, leaving capital mobility as a distant goal.

4.2   The building-up of institutions

EMU is sometimes seen as a long-planned step in the unfinished process that ultimately aims at creating the United States of Europe. This is not quite accurate. Divergence of opinions about the ultimate aim of European integration runs deep, and cuts across countries and traditional party lines. For that reason, each step has always been discussed on its own merits. Any attempt to link any step to a broad master plan would most likely trigger lethal opposition. Pragmatism is the first ingredient of Europe's successful integration progress.

The second ingredient is institution building. The main institutions today are the European Commission and the ECB. The Commission was created along with the Common Market. With limited powers initially, it has been the repository of each abandonment of national sovereignty, in trade matters initially, progressively extending its role to industrial and antitrust policies, agriculture, research, diplomacy, etc. The Commission's natural role is to be the main advocate of the

integration process, which often brings it into conflict with its member governments. The Commission's arcane functioning is often derided, for good reason, but it reflects the inherent difficulty of its mission: it represents the common interest which often comes at the expense of national or corporate interests. It uses the powers grudgingly given up by member countries to try and force them to act in a way that is collectively desirable. Its legitimacy is devolved by member governments, which are prompt to call it into question when they feel threatened.[9] Its task is thankless but essential.

The ECB's structure well reflects the fundamental ambiguity in relinquishing national sovereignty. It is the (n+1)th central bank, forming the European System of Central Banks (ESCB or Eurosystem) along with the n national central banks ($n = 12$ at present). The policy decisions are taken by the ESCB's Council which includes the n central bank governors and the six members of the ECB's Board. The Council is clearly too large to be efficient, and its size will increase with each new admission. Officially the ESCB is prevented from taking into account national interests and, yet, n of its n+6 Council members serve as representatives of national central banks. No wonder then that it often appears adrift and slow to move.

The European Parliament is the only pan-European elected body. Yet, elections are conducted at the national level, the candidates are appointed by national parties, and the issues debated at election times always refer to national politics with lip service paid to European issues. The Parliament's powers are mostly advisory and jealously restricted by the national parliaments. But it exists and is likely to see its role grow whenever it is politically expedient.

For all their shortcomings, the mere existence of European institutions has been crucial. They embody the principle of a common good and common aims which transcend national interests and objectives. They make retrenchment, never far below the surface of national instincts, virtually impossible. Importantly, their staff can develop analyses and proposals that match those carried out by national governments. They provide neutral grounds for dealing with conflicts among member countries. They give integration forces a name and a face.

In the end, Europe's integration has always been characterised by a process of muddling-through, two steps forward and one step backward, with deep and lingering divergences as to what the end objective is. But each integration step makes the next one more likely. The existence of institutions ready to transform projects into reality has been essential.

For example, when the liberalisation of capital movements was decided upon, it was soon realised that the EMS was under immediate threat, which was itself perceived as a clear danger to the very existence of the Common Market. The desirability of adopting a monetary union was being discussed and studied, but it was staunchly opposed by Germany, Britain and a few other countries. What made a crucial difference was that the project was available on the shelf when the Berlin

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9. This is why European integrationists have long called for an elected Commission, which would then have democratic legitimacy.

Wall fell and Germany was ready for an historic political deal in return for support for its unification. The Commission had done all the preparatory background work and could carry the plan to the next step, the Delors Commission that recommended adopting a common currency.

Thus, integration can be seen as a dynamic process, but one that is not predetermined, at least in policy-makers' eyes. It makes bold, unplanned moves possible when the occasion arises unexpectedly. Time is not of the essence, opportunities are.

4.3   A centre country?

A common view is that EMU has only been made possible by the presence of a strong currency, backed by a large economy. The role of Germany is, thus, often seen as pivotal, with the implication that other regions cannot proceed as far as Europe unless they can rely on a large champion. As discussed further in Section 5, this could be a serious problem for east Asia (and for Latin America as well given the traditional rivalry between Argentina and Brazil). This view is, at best, partly correct.

There is no doubt that it was crucially important that Germany was both the largest economy and home to the anchor currency within the EMS. Furthermore, the Bundesbank had many features that have become the hallmark of modern central banks and could be used as a blueprint: a clear price stability objective and an independent monetary policy committee (the Direktorium) that was designed for a federal state.

On the other side, the central role of Germany and of the Deutsche Mark was never planned and, when it existed, was studiously underplayed. For example, the EMS would never have been created had it been built as an asymmetric arrangement based on the Deutsche Mark. In fact, the EMS formally was a set of identical bilateral arrangements with no centre currency. Intervention rules were explicitly symmetric, with parallel obligations on strong and weak currency countries. It took several years before the Deutsche Mark organically emerged as the system's centre. It did so because the other large countries had failed to develop responsible monetary policies, thus having only themselves to blame for the speculative attacks that sapped their positions. In retrospect, it could be seen as clever strategy on the part of Germany but this would be a revisionist view. Much of this evolution was unplanned and, most likely, unforeseen.

What is true is that some form of leadership is needed, but one that is not seen as threatening. Historical experience counts a great deal. Germany's post-war acceptance of a subdued role – the self-imposed price to pay for Nazism – largely removed suspicions that it wanted to exert leadership. Its professed desire to develop its influence only within the context of a united Europe has been, and will remain, crucial. In practice, Europe has been driven by the Franco-German partnership. Being the two largest countries made their joint positions influential. That they had been bitter foes for centuries quieted down fears of national dominance. Their own disagreements – fundamental in most relevant issues – were seen as a guarantee that

the leadership would be balanced. Importantly, all these national influences are mediated through institutions that guarantee that important decisions cannot be forced upon reluctant minorities.[10]

The crucial lesson is that, more than a leading country, deep integration requires confidence-building steps and safety mechanisms backed by strong institutions. This is a slow, evolving process.

5.   Lessons from Europe for East Asia

5.1   Exchange rate regime

5.1.1 Preliminary observations

The crises of 1997–1998 have opened a window of opportunity as a number of painful lessons have been learnt. First, the east Asian countries have found that economic success (growth) does not automatically bring about financial stability. Financial markets are fundamentally crisis-prone. The likely existence of self-fulfilling crises implies that most countries can be hit even though they do not have to be. Second, once again fixed exchange rates have been found to be fragile. When they fail, misalignment can become massive, with widespread and costly implications. The time to think about the exchange rate regime is when conditions are stable, not when clouds gather. Third, the assistance from international financial institutions is open to criticism. There is more than one way to deal with a crisis and the one that is chosen may not coincide with the one that is preferable from a national viewpoint. In particular, political motives are never far below the surface, which may call for friendly support. The Japanese proposal of an Asian Monetary Fund clearly reflected such concerns.

The first question is whether the Asian exchange rates should be allowed to float freely. The already achieved high degree of regional trade integration suggests that there could be serious costs associated with misalignments. Free floats are clearly undesirable. The quest for some degree of exchange rate stability must consider a wide menu of choices. In considering them, the following principles must be kept in mind.

5.1.2 Which parities must be stabilised?

If trade is the main reason for seeking a degree of stability, Table 6 indicates that about half of east Asian trade is within the region. This is less than in Europe, even if this is more than predicted in Section 2. The contribution of trade with the US is accordingly larger in east Asia than in Europe, hence a higher attractiveness of the

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10. Here again, it is worth noting that the decision-making process, now with three required majorities, is extremely cumbersome and often ridiculed for its arcane features. But this is a decent price to pay for having a common, binding decision process at all.

Table 6: Regional Trade Patterns
Per cent

	Trade with region:				Trade with region:	
	East Asia	Asia–Oceania	US		Europe	US
Australia	42.0	47.8	13.5	Belgium	71.6	6.7
China	54.8	56.5	14.7	Denmark	66.1	4.7
Japan	30.7	33.9	24.8	France	69.2	7.3
Korea	38.0	40.8	19.6	Germany	58.5	8.0
Malaysia	54.3	57.0	17.7	Italy	58.5	7.1
New Zealand	26.5	52.0	13.6	Netherlands	68.6	6.9
Philippines	51.7	53.6	26.2	Sweden	61.4	7.9
Thailand	44.5	46.8	15.4	UK	56.4	13.7
Hong Kong	47.2	48.6	15.5	Austria	65.2	3.8
Indonesia	51.4	55.3	11.4	Finland	61.2	6.6
Singapore	50.9	52.6	17.0	Greece	62.3	5.0
				Ireland	61.9	14.7
				Portugal	83.5	4.1
				Spain	73.5	4.5
Average	**44.7**	**49.5**	**17.2**	**Average**	**65.5**	**7.2**

Note: Each entry for each country is the value of that country's exports and imports with the region as a proportion of its total trade.

US dollar. Presumably, this difference lies behind the proposal by Williamson (1999) to establish a band with a common basket *vis-à-vis* the dollar, the yen and the euro.[11] The attractiveness of this proposal is that it would stabilise exchange rates both internally and *vis-à-vis* the other trading partners, the US and Eurozone. The disadvantage, in view of Europe's experience, is that such an arrangement comes without any institutional backup as it solely relies on separate decisions by individual countries.

One possible response to this shortcoming is the Chiang Mai Initiative. Mutual swap arrangements provide for some degree of collective defence against speculative pressure. In association with common basket bands, Chiang Mai comes close to an EMS-type arrangement. But only close, there are two crucial differences. First, the exchange rate mechanism (ERM) of the EMS provided for automatic and unlimited

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11. Kwan (1994) argues that a yen link is preferable.

support of bilateral pegs.[12] The arrangement conveyed an essential message to the markets: any attempt at tearing apart any one currency from the others is bound to face strong official resistance since the strong currency central bank is committed to download unlimited amounts of its currency. In contrast, the amounts to be swapped within the Chiang Mai arrangement are limited, hence unlikely to be commensurate with the amounts that markets can mobilise. Worse for the basket proposal, two of the three currencies (the US dollar and the euro) to be included in the basket are not part of the arrangement, which rules out the kind of concerted interventions that gave the EMS its teeth. Thus, the combination of a common currency basket and mutual swaps is unlikely to work in the face of determined speculation. The essential lesson that fixed rates are open to possible self-fulfilling attacks is lost.

The natural response is to aim at a less roundabout approach to the stabilisation of east Asian exchange rates, i.e., to stabilise the bilateral rates. This would still leave the possibility of managing the common exchange rate *vis-à-vis* the dollar and the euro. But, in that case, it would require the setting-up of a coordinating mechanism. Such a mechanism requires an institution, a useful step at any rate.

5.1.3 How much to stabilise?

Williamson's response is to propose wide bands. If the bands are wide, the risks of lethal currency attacks decline but, obviously, the stabilising properties of the arrangement are eroded. Bands of ±15 per cent allow for fluctuations of 30 per cent, far larger than the kind of tariff barriers which are seen as harmful to trade among tightly linked partners.

If it is deemed desirable to limit fluctuations *vis-à-vis* the dollar or the euro, the bands must probably be quite wide, and possibly crawling to account for the Balassa-Samuelson effect. The reason, as already noted above, is that reserves in dollars and euros are inevitably limited, always short of the amounts that speculative attacks typically muster. However, with ±15 per cent margins, top-to-bottom movements of bilateral parities within the region can reach an amplitude of 60 per cent. If the aim is to stabilise bilateral parities – with trade typically representing a share of 50 per cent – the result is bound to be disappointing. Narrower bands for bilateral parities are obviously desirable. The EMS experience is that bilateral pegs can be stabilised within (much) narrower bands if backed by proper swap arrangements. Such arrangements can only concern the mutual provision of national currencies, not currencies from outside the area. This is another reason why basket pegs are too roundabout.

A monetary union is the next logical step. It delivers complete exchange rate stability and fully dispenses with the need for swap arrangements. In that sense, it

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12. When the Bundesbank declined to provide unlimited support to Italy and Great Britain in 1992, the lira and sterling were forced to withdraw from the ERM. It then appeared that the Bundesbank had an agreement with the German government to withdraw from the agreement if it perceived a threat to price stability. This episode and the German arrangement are studied in detail in Eichengreen and Wyplosz (1993).

is the perfect solution. Three difficulties need to be contemplated, however: the depth of the economic and political requirements, the viability of the system, and the need for real exchange rate variability.

The complete renunciation of monetary policy is a major economic and political step. While the economic requirements, the OCA criteria, may be less crucial than often believed, the sudden and irrevocable increase in interdependence calls for a battery of agreements which further erode national sovereignty. These include limits on public debts, the harmonisation of banking regulation and supervision, seigniorage sharing rules, and provisions for lender-of-last-resort operations. Politically, it requires the creation of a powerful multinational institution, the central bank, which is bound to raise delicate issues of delegation of authority and democratic accountability. Finally, it requires an understanding on the management of the common exchange rate. Free floating is the easy way out, but it presumes that the member countries share a commonality of interests. Kwan (1994) reports that exchange rate fluctuations *vis-à-vis* currencies outside the region have divergent effects on the Asian countries, suggesting that an agreement will not come easily.

The creation of a monetary union is properly regarded as a one-way commitment. Its viability is therefore of paramount importance. Since the OCA criteria are unlikely to be fulfilled, there will always be costs in sharing the same currency. At this stage, we simply do not know how to evaluate these costs. A complicating factor is the distinct possibility that fulfilment of the OCA criteria is endogenous to the existence of the monetary union itself.

What is clear, is that real exchange rates are unlikely to remain stable within a monetary union. Asymmetric shocks call for short-run variability. Different stages and speeds of development call for long-run variability. This requires wage and price adjustments, raising two main issues. First, goods and labour markets need to display the required flexibility to permit such adjustments without unacceptably large macroeconomic disturbances. Second, real convergence matters a great deal. The more disparate are the monetary union members, the larger will be the necessary variability of price changes. The choice of a union-wide inflation objective, formal or informal, must allow for such variability without forcing deflation in some countries. Europe's approach has largely ignored this issue, focusing instead on nominal convergence. Real convergence is coming to the forefront now.[13]

5.1.4 Capital mobility?

Most countries in the region have now fully liberalised their capital accounts. The European experience is that such a move greatly endangers any attempt at formally stabilising exchange rates. It also suggests that restrictions on capital movements do not seriously impede growth (Wyplosz (forthcoming)). Should there be any back-tracking from liberalisation? Such a view is clearly seen as unorthodox.

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13. This difficulty is compounded by the fact that several formerly planned economies of eastern and central Europe are knocking at the door.

The debate on restrictions is often presented as black-and-white. Opponents claim that restrictions greatly affect the proper allocation of resources and fail to prevent speculative attacks. Reasonable supporters (e.g., Eichengreen, Tobin and Wyplosz (1995); Rodrik (1998)) argue that restrictions have, at worst, limited effects on the allocation of resources and can help with speculative attacks. Some restriction may thus be an acceptable way of increasing the odds that exchange rate pegs will withstand moderate market pressure. Coupled with disciplined monetary and fiscal policies, they can make all the difference between a stable arrangement and one that withers away when markets, as they occasionally do, over-react. Furthermore, restrictions on capital mobility do not have to rely on old-fashioned administrative measures. Prudential measures, in the spirit of the Tobin tax or Chilean *encaje*, respect the market mechanism while acting as a deterrent to moderate speculative challenges.

Europe's successful integration has been achieved because of a particular sequencing. It started with trade integration and fixed-but-adjustable exchange rates, while keeping domestic and external financial markets under tight control. Once the Common Market was fully developed, a process that took 30 years, financial markets were liberalised and exchange rate stability was enshrined into EMU.[14] Given the Asian resistance to a regional trade agreement (see below) and the high degree of financial liberalisation already achieved, the question is whether the sequencing can be reversed.

In principle, a common currency could indeed be first adopted and fulfil the integrating role that the Common Market played in Europe. The view that OCA characteristics are endogenous provides support for such a strategy, as does the result by Rose (2000) that a common currency powerfully enhances trade. Three difficulties must, however, be taken into account. First, as previously noted, for a monetary union to be viable some minimum degree of real convergence must have been achieved. Europe achieved this level through its Common Market. The results reported in Section 2 reassuringly suggest that Asian trade integration is no less deep than Europe's, but it leaves aside many aspects dealt with below. Second, the irrevocable fixing of exchange rates assumes that we have a reasonably clear view of where the equilibrium lies. Our ability to pin down equilibrium exchange rate levels is very limited. Europe's solution to this problem has been to experiment for decades with fixed exchange rates, ensuring that prices and parities were reasonably aligned. This is unlikely to be case in Asia following the massive shake-up of Asian exchange rates since 1997. Third, the setting-up of a common central bank requires a high degree of political commitment. At present, a common currency looks good only because of the bruising legacy of the 1997–1998 crisis. Such a negative reason is unlikely to withstand closer scrutiny by countries that have so far been unwilling to adopt a less politically demanding regional trade framework.

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14. The evolution was not quite so tidy. The 10-year gap between the lifting of capital controls and the adoption of a common currency was marked by a severe currency crisis which all but emptied the EMS of its content. A small mistake in the greater scheme.

5.2   Institutions

It has been argued above that the existence of collective institutions has been instrumental to Europe's continuing integration. Collective institutions become the advocates of integration. They move the debate from the purely political sphere to the technical level, allowing for professional assessments and avoiding costly mistakes. They provide analyses that would not be carried out otherwise. They can prepare blueprints that can be readily put to use when the occasion arises, often unexpectedly. If the support for collective undertakings is limited, such institutions can start with limited terms of references and be allowed to grow once they have established their credentials. A range of institutions, each with a precise mission, may be less intimidating than an all-encompassing one.

5.2.1 Trade

The current pattern of regional trade agreements in east Asia is bewildering.[15] The driving force seems to be various existing groupings in Asia and the Pacific Basin (APEC, ASEAN, CER, etc). The pattern essentially consists of a web of bilateral arrangements, many of which are still on the drawing board. There has apparently been no attempt at building a regional multilateral agreement similar to the Common Market. Given the depth of trade integration this comes as a surprise to a European eye. It suggests the widespread existence of mutual trade frictions that need to be dealt with. For the task at hand bilateral agreements are highly cumbersome. Bilateral bargaining is unlikely to foster a collective framework, i.e., established rules and arbitration processes. Of course, the WTO can fulfil this need but, given the commonality of interests, it seems natural that initial efforts at resolving disputes be first dealt with at the regional level.

The usual explanation for the lack of a broad regional agreement (e.g., Kwan (1994)) is that political sensitivities stand in the way. The three largest economies, Japan, China and Korea, are needed for any arrangement to make a difference, but these countries deal uneasily with each other, and are often viewed with suspicion by the others. This calls for confidence-building steps. A possibility would be to set up a permanent secretariat in charge of mapping various options for comments by the authorities. This could include exploring the list of countries to be included and the minimum set of agreements required to call it a start.

5.2.2 Exchange rate management

The creation of the EMS was not accompanied by the establishment of any new institution. The detailed mode of operation did not require any particular administration, but it was based on identical bilateral agreements and made use of the Commission. Business was conducted during regularly scheduled meetings of finance ministers and central bank governors. Unscheduled meetings were called for by the country holding the rotating presidency of the Community when a realignment

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15. Scollay and Gilbert (2001) provide a complete description.

was deemed necessary, at the request of the country seeking to change its parity. Surveillance was conducted routinely by the European Commission.

The setting-up of any exchange rate arrangement in Asia, be it common basket pegs or an EMS-type system of bilateral parities, similarly would not require the creation of a specialised agency. Meetings of ministers and central bank governors already occur on a regular basis. Their role can be enhanced and systematised, possibly including the setting-up of a small, permanent secretariat. A monetary union would of course be considerably more demanding at the outset. It would need the transfer of competence from national central banks to a common monetary authority. It would also require detailed agreement on the governance of this institution.

5.2.3 Mutual surveillance

Any common exchange rate arrangement is a source of externality which requires some mechanism to deal with possible threats to the system. Obviously, macroeconomic policies must be compatible with the targets, and the tighter they are, the more exacting must be the surveillance process. Under EMS, as long as capital controls were in place, mutual surveillance was limited to peer pressure at the time of negotiations on the size of realignments when the need arose. Once capital movements were freed, peer pressure was replaced by the determination to avoid realignments, which led to growing imbalances that eventually led to the system's demise, and the adoption of wide bands of fluctuation (±15 per cent).

The requirements for a monetary union are deeper. Within EMU, the Growth and Stability Pact requires an annual reporting on budgetary matters over the following two years. Clear guidelines and targets allow for a range of sanctions, ranging from private warnings to public statements and, if needs be, fines. Less progress has been reached regarding banking supervision and regulation. Of course, a common core of principles has been adopted but implementation remains at the national level – a growing source of concern (Begg *et al* 1998).

The likely existence of self-fulfilling crises greatly complicates matters in the case of soft pegs. Such crises are hard to prevent for they prey on countries that exhibit fragilities. The list of what counts as fragility grows after each round of crises. The EMS crisis has been linked to weak growth and high unemployment. The Mexican crisis has shown the danger for foreign-currency sovereign borrowing while private borrowing has emerged as a source of fragility during the Asian crisis. No doubt future crises will extend the list further. In contrast, first-generation crises are not left to the whims of the markets, they systematically sanction undisciplined macroeconomic policies. The commitment to pegged exchange rates thus requires adequate macroeconomic policies and a determined effort at reducing fragility.

Europe's lesson is that mutual surveillance works, especially when backed by clear procedures carried out by a multi-national institution to limit the extent of unavoidable politicisation. Such an arrangement can be evolutionary. It can start

with pure peer pressure through regular reviews and move on to ongoing surveillance carried out by a special, less political institution.

5.3   How deep and wide?

Finally, comes the delicate question of which countries should join in a collective undertaking of exchange rate stabilisation, and how far they should go. In theory, the OCA criteria could be used to identify the best suited groupings. It has been argued above that these principles played no role in Europe, probably for good reasons. What other criteria can then be called upon to shed some light? Given the generally high level of trade integration already achieved the economics ought to focus on real convergence, the rest is likely to be politics.

5.3.1 Real convergence

Real convergence mainly refers to the stage of development of a country. While trade integration yields welfare gains irrespective of the differences in economic development, monetary integration is more difficult the wider the gap. Table 7 reports measures of GDP per capita in 1998. It is clear that the Asian countries exhibit considerably more variability than the current European Union and even more than the 'New Europe', i.e., the Union with the five accessing countries (AC5) from eastern and central Europe (the Czech and Slovak Republics, Hungary, Poland and Slovenia). This variability reflects deep differences in terms of economic structure. The absence of real convergence is Asia's Achilles' heel.

Table 7: GDP per Capita in 1998
Purchasing power parity (PPP), 1995 US$

	Asia	Asia–Oceania	Europe	AC5	New Europe
Average	11 624	13 123	20 350	10 841	17 847
Standard deviation	9 008	8 796	3 165	2 563	5 215

Source: World Bank, *World Development Indicators*, CD-ROM 2000

Several conclusions could be drawn. One could conclude that any arrangement should be rather light and flexible (managed floats rather than a monetary union) and limited to a small subset of relatively homogenous countries. Alternatively, one could argue that a strong structure is needed to hold the integrative effort together, and that binding together a relatively homogenous subset of countries would have a disintegrative effect *vis-à-vis* the countries left out. This question mirrors the long-debated question of creating a free-trade area in Asia, a question never resolved. Europe's experience has been to follow a beachhead strategy: start with a small number of homogeneous countries and expand gradually. It may not be the best solution, but it has worked.

5.3.2 Leadership

A closely related question is whether any cohesive move must be carried out around one, or a few leading countries. The role of the Franco-German leadership is discussed above in Section 4.3, where it is noted that political and historical sensitivities are considerably more complex in Asia. From a European viewpoint, the lingering weight of history in Asia is not easy to comprehend. Eichengreen and Bayoumi (1996) interestingly observe that Asia does not share Europe's two-century old legacy of debates about a common destiny and that could well be the answer: deep economic integration will have to wait for decades or more. On the other side, Europe's experience is that old foes can turn history's pages.[16]

While it is clear that some form of political commitment is needed before significant components of national economic sovereignty are surrendered, another lesson from Europe is that gradualism and opportunism work. A frequently held view is that Europe's successful integration has only been possible because it was carried out with much wider objectives than just a common market. In that view, the required political will was steadied by an ambitious vision that included, from the start, a monetary union and eventually a federal union. This view is both correct and misleading.

It is true that the underlying logic has been reconciliation after centuries of wars. On the other side, there has never been any detailed master plan, nor any set deadline. For example, a German proposal has recently brought back to life the goal of a 'United States of Europe'. But opposition to this proposal runs deep, with profound national divergences and national public opinions equally divided, an indication that there is no master plan, and there never was any. A telling example is the monetary union. In 1971, the Werner Plan was deemed wholly unrealistic and it was immediately scuttled. As late as 1988, when the idea of a monetary union resurfaced, it was widely met with the same scepticism. It took an exceptional event, the collapse of the Berlin Wall, to trigger a deep reassessment that no political leader would have predicted just a few weeks before.[17] Even the celebrated countdown to monetary union, with a terminal date set in concrete, was only accepted in Maastricht at the last minute.

The only feasible path for Asia must combine confidence-building steps and limited ambitions. In the end, sequencing (in Europe's case, starting with trade integration, stabilising exchange rates, moving on to capital openness and ending up with a monetary union) matters less than the building-up of common institutions. It does not really matter much what is the function attributed to the institutions. Any integration move inevitably brings head-to-head national and common interests.

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16 . Europe's success in this respect has been based partly on the military defeat and occupation of Germany. Asia may have missed its chance in the aftermath of WWII.

17. Gros and Thygesen (1998) argue that one does not need to invoke a political deal to explain Germany's acceptance of EMU. Once the other countries had recognised the pre-eminence of price stability and central bank independence, they claim, Germany was willing to give up the Deutsche Mark. From an economic viewpoint, this makes sense, but the political costs were considerable and required a 'sweetener'.

What matters is to embody the region's common interests in an institution that acts as a counter-weight to purely national interests. Politics will take care of the pros and cons.

6.   Conclusions

Europe's message to Asia is that monetary union is a long way down the path of gradually increasing cooperation. Europe started with trade agreements among a small number of like-minded countries striving to restore trade links in order to replace political (and military) competition with common economic interests. Financial integration, and therefore exchange rate stability and ultimately monetary union, was the means to the end of trade integration, not an objective in itself. Exchange rate stability within Europe was identified early on as a prerequisite to trade integration, and was maintained with the help of capital controls. When controls were lifted, monetary union emerged as the next logical step.

Asia seems to be considering travelling a different route. Stung by the 1997–1998 financial crisis many Asian countries appear to be seeking ways of stabilising their exchange rates, but with four major differences from Europe. First comes sequencing. Europe started with trade cooperation, Asia envisions monetary cooperation while having failed, so far, to develop a framework for common trade agreements.

The second difference between Europe and Asia is that the Asian countries seem to be concerned at least as much with exchange rate stability *vis-à-vis* the world at large (i.e., the yen, the US dollar and the euro) as with stability within the region. The result is plans to adopt common pegs and to establish swap arrangements, rather than plans to jointly float *vis-à-vis* the rest of the world while agreeing to mutual support to defend regional parities. This is surprising given the paramount importance of regional trade links.

The third difference is the apparent reluctance to engage in collective institution-building. Trade agreements are slow to materialise and are left to a complex web of bilateral agreements. Similarly, the Chiang Mai Initiative focuses on bilateral swap agreements, each potentially different in size and mode of operation.

The last difference is that capital liberalisation has been achieved before exchange rate stability. This raises the stakes, making soft pegs – politically easier to establish – a non-starter. One can question this strategy.

There is no reason to believe that the European approach is the only viable one, nor even that regional integration should be an overriding aim. In fact, one interpretation of the Asian approach is a commitment to multilateral integration with the minimum set of regional agreements. In that view, exchange rate stability is more a defensive objective – to avoid a repeat of the crises of 1997–1998 – than a step towards regional integration. This is a perfectly acceptable approach, but is it viable?

Monetary union requires a deep abandonment of sovereignty and the setting-up of a common central bank. In view of the absence of institution-building in the region, such a step seems far-fetched. The Chiang Mai Initiative can be seen as a

pragmatic first step, and Europe's experience is that pragmatism is the only way to proceed. Attempting to embed each step into a more ambitious framework is a good recipe for failure. The problem is that the Chiang Mai Initiative carefully eschews institution-building, thus failing to plant the seeds for an eventual next step. From the point of view of regional integration, the risk is that the initiative will be both a beginning and an end. It does not lead to a monetary union.

Undoubtedly, the Asian experience so far suggests the absence of political will towards the kind of cooperation that Europe has nurtured over several decades of increasing regional integration. One possibility is that only a subgroup of Asian countries undertake to deepen cooperation. Such a subgroup would probably not include initially the three largest economies (Japan, Korea and China). This again would be the opposite of the European experience, but it could set an example and eventually attract the large economies. The role of Australia and New Zealand also needs to be thought through. These two countries are less integrated with east Asian countries than the Asian countries themselves, yet they clearly belong to the region.

Finally, one can ask what can be done short of a regional agreement, be it of the EMS or EMU variety. Freely floating exchange rates are likely to imply too much bilateral volatility given the extent of trade integration. Broad basket pegs may seem to be a better alternative. They could indeed be a pragmatic first step. The problem with such an arrangement is that the devil lies in the details. If these are wide bands with little coordination regarding their design and implementation, they amount to little more than floating. If the bands are narrower they call for far more coordination, in effect not very different from the EMS: intervention rules, swap agreements, and the management of parities *vis-à-vis* third currencies (e.g., the US dollar and yen). Without some institution, it is unlikely to be a lasting experiment.

The last solution is a hard peg, dollarisation or currency boards *vis-à-vis* the US dollar and, possibly, the euro. Relative to an Asian monetary union, this implies the same sacrifice of sovereignty. It carries the distinct disadvantage of tying the Asian currencies to far-away economies. It would be a very roundabout way of mimicking a monetary union, with most of its drawbacks and few of its advantages.

Appendix A

Sample countries

North America	Europe	Asia	Oceania
Canada	Austria	China	Australia
Mexico	Belgium	Hong Kong	New Zealand
US	Denmark	Indonesia	
	Finland	Japan	
	France	Korea	
	Germany	Malaysia	
	Greece	Philippines	
	Ireland	Singapore	
	Italy	Taiwan	
	Netherlands	Thailand	
	Norway		
	Portugal		
	Spain		
	Sweden		
	Switzerland		
	UK		

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Three Perspectives on an Australasian Monetary Union

Andrew Coleman[1]

1.   Introduction

Whether Australia and New Zealand should have a single currency is periodically debated in New Zealand. There was a resounding 'No' when the question was discussed in the early 1990s, but there was less agreement when the debate resurfaced two or three years ago.[2] Indeed, the idea now has considerable support within New Zealand amongst academics, businessmen, and the general public.[3] Even the Prime Minister, Helen Clark, has suggested that an Australasian monetary union might be sensible. While there have been different motives for the debate, underlying them all is the following question: what policy goals are New Zealand hoping to achieve by having an independent currency and monetary policy, and are there alternative means to achieving these goals?

Whether Australia and New Zealand should have a single currency is hardly debated at all in Australia. Australian financial and political leaders have not considered the issue to be important, as it is assumed that a monetary union involves New Zealand adopting the Australian dollar, with control of the dollar remaining in Australian hands. While the lack of debate in part reflects greater confidence in the optimality of Australian monetary arrangements, it is odd that New Zealand's debate has been so half-heartedly followed. A monetary union decreases trade costs and increases economic integration, so it is at least possible that non-trivial benefits would accrue to Australians and Australian companies were New Zealand to adopt the Australian dollar.

The literature examining the probable costs and benefits of New Zealand forming a monetary union with Australia/adopting the Australian dollar is large, and growing larger. The literature analysing monetary unions is vast. This paper is not a summary of either literature, although it does note that the recent academic literature is broadly

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2.   See Lloyd (1990) and Grimmond (1991). Hargreaves and McDermott (1999) and Grimes and Holmes (2000) are excellent examples of the literature discussing a possible Australia–New Zealand monetary union.

3.   Grimes and Holmes (2000) report that of 400 firms responding to a survey about their attitudes toward a monetary union with Australia, 57 per cent were favourably disposed, 14 per cent opposed and the remainder neutral. The One News-Colmar Brunton Poll of the general public, 18 September 2000, reported that 50 per cent were in favour of the idea, 36 per cent opposed to the idea, and the rest undecided.

supportive of monetary unions.[4] Rather, it approaches the issue of an Australasian monetary union from three different perspectives with the intention of raising the following questions:

(a)   why should Australia care?

(b)   what makes New Zealand different to Queensland?

(c)   when should a currency go quietly? and

(d)   can New Zealand have its cake and eat it too?

The first perspective is a comparison of the reasons why Queensland might want to adopt a separate currency with the reasons why New Zealand has its own currency. This analysis has two objectives: to identify the reasons why New Zealand may be sufficiently special to warrant not using the Australian dollar; and to identify the implications for Australia if New Zealand were to adopt the Australian dollar. The main implication for Australia is the possibility of a big increase in trade with New Zealand. The main reason for New Zealand to keep a separate currency is to have different nominal interest rates.

The second perspective concerns the lessons learnt from commodity futures markets. Currency markets have many features similar to commodity markets, in part because modern financial markets trace their antecedents to Chicago's wheat markets; but unlike currency markets, commodity futures markets cease to exist when they are no longer useful. This section outlines when a commodity futures market is no longer useful, and assesses how well the New Zealand dollar stands up to the comparison. Two essential criteria are that their yield curves remain distinct, and that the market remains liquid.

Finally, I wish to raise a question asked a century ago by Alfred Marshall (1923): should the state consider adopting new indexed units of account so that consenting parties could contract debt agreements in a unit other than money? If so, New Zealand could simultaneously adopt the Australian currency and continue to have peculiarly New Zealand financial contracts, thus gaining the microeconomic advantages of a single currency without losing the potential macroeconomic advantages of economic stabilisation. Fortunately there is some new evidence about the practicality of this vision from Chile's experience with the Unidad de Fomento.

Before beginning, I should define the phrase 'form a monetary union/adopt the Australian dollar'. I mean, 'adopt the Australian dollar'. The relative size of the economies means that an Australasian monetary union would be dominated by Australian concerns, and it is difficult to imagine how it would differ in practice from New Zealand simply adopting the Australian dollar. Moreover, no matter the formal constitutional arrangements of the monetary authority, it is unlikely to ignore the economy of a seventh of its monetary region even if it were only interested in the welfare of the remaining six-sevenths. Thus for the purposes of this paper, the

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4.   For example, see the papers by Dornbusch (2001), Rogoff (2001), Broda (2001), Alesina and Barro (2001), and Rose and van Wincoop (2001) in the May 2001 *American Economic Review*. Except Broda, these papers support monetary unification.

alternative to New Zealand maintaining a separate currency is for New Zealand to adopt the Australian dollar as its unit of account, and to declare the Australian dollar to be legal tender in New Zealand.[5] Naturally, for New Zealand to do this implies a great deal of trust in Australian political institutions, trust which may well exist given the close ties between the countries over the last century.

2.   Should Queensland Adopt a Separate Currency?

It proves insightful to compare the reasons why Queensland might want to adopt its own currency with the reasons why New Zealand might want to retain its own currency. The parallels are obvious:

- in population terms both are long thin countries whose three million residents are split about equally between a single large metropolitan area and a scattering of medium-to-large towns;

- both regions are separated by over a thousand kilometres from either Sydney or Melbourne;

- both have large agricultural industries with specialties different from the rest of Australasia (sugar and beef in Queensland and dairy and forestry in New Zealand); and

- in each region the service sector is three-quarters of the economy.

Of course, Queensland has a much larger mineral sector than New Zealand, but this is capital intensive and largely owned by non-Queenslanders.[6]

The literature assessing the costs and benefits of a region adopting a separate currency has evolved from that begun by Mundell (1961) and McKinnon (1963) forty years ago, but is still quite recognisable, and can be summarised in the following list.

(a)   Queensland would have its own medium of account (the 'quirk'[7]) in which wage, price and loan contracts would be denominated. Queensland would choose its own inflation rate and its own interest rate structure.

(b)   If Queensland's 'foreign' exchange earnings changed, an offsetting exchange rate change might occur, stabilising export incomes in terms of quirks and thereby stabilising demand in Queensland's non-tradable sectors.

(c)   Queensland's Government could order the Queensland central bank to print money as a means of repaying debt or of funding expenditure if it wished, a fund raising option that is occasionally useful and low cost.

(d)   There will be additional direct exchange rate costs for both Queensland and Australia.

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5.   New Zealand could adopt the Australian dollar as legal tender without making it the unit of account. Prior to the Civil War the US dollar and the Spanish real were both legal tender in the US.

6.   The mining sector produces 6.5 per cent of Queensland's GDP, but employs only 1.5 per cent of its workforce.

7.   Queensland interest rate krona.

(e)   The volatility of the real quirk/Australian dollar exchange rate would increase, altering the distribution of income between the export, import, and non-tradable sectors.[8,9] There will be increased uncertainty about the value of Queensland's exports to the rest of Australia in terms of Queensland non-tradable products, possibly making Queensland firms less willing to export to Australia, and vice-versa. If some interstate trading arrangements were altered because firms were uncertain about future prices in the other region, there would be resource costs for Australia and Queensland.

(f)   There would be indirect resource costs for Australia and Queensland if pricing decisions that are currently centralised and applied to the whole of Australia have to be made separately in Queensland.

The first two points represent the traditional macroeconomic advantages of having a separate currency, while the third concerns the political advantages of monetary sovereignty. The last three are the costs associated with having a separate currency, costs which are shared by both Australians and Queenslanders.

2.1   Benefits of monetary independence

An independent currency provides a country or region with the ability to achieve five main policy objectives. These are:

(1)   the ability to alter the value of the currency to stabilise economic output;

(2)   the ability to change interest rates to stabilise output;

(3)   the ability to choose the inflation rate;

(4)   the ability to change interest rates to alter income distribution; and

(5)   the ability to commandeer resources by issuing legal tender.

2.1.1   Monetary independence, exchange rate flexibility and economic stabilisation

Monetary independence enables a region to stabilise output in the face of regionally specific economic shocks. By adjusting interest rates or the value of its currency, a region alters the relative value of wages and prices through time or between sectors, thereby altering the pattern of demand. The focus of the traditional optimum currency area literature is the way in which the exchange rate stabilises an

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8.   Economists suppose that there is a distribution of possible exchange rate values at every moment. The distribution and its mean may vary through time. The statement simply means that the spread of the distribution around its mean value will increase.

9.   When Queensland uses the Australian dollar as its currency, the real exchange rate is the ratio of the Queensland and rest-of-Australia price indices. Coleman and Daglish (1998) showed that the variance of annual changes in the Australia–New Zealand real exchange rate, 1966–1996 was approximately one hundred times as large as the variances of changes to the various state real exchange rates. Almost all evidence shows that the variance of the real exchange rate is much higher for flexible exchange rates than for fixed exchange rates: see for instance Flood and Rose (1995), Frankel and Rose (1995) or Flood and Taylor (1996).

economy in the face of economic shocks. It argues that exchange rate flexibility is useful when three conditions hold:

(1)   shocks are regionally specific;

(2)   alternative mechanisms for adjusting to shocks are weak; and

(3)   exchange rate changes are effective as a means of alleviating idiosyncratic shocks.

The case that either New Zealand or Queensland should have separate currencies begins by showing their economies are subject to regionally specific shocks. Several authors have examined the extent to which New Zealand's and Australia's economic cycles are correlated to ascertain if the temporary shocks affecting the two countries are similar. Typically GDP and the terms of trade have been analysed. One method is to examine whether new shocks to the economies occur at the same time, by analysing whether quarterly changes in output or the terms of trade are correlated. Another method is to see whether extended periods of booms or recessions occur at the same time, by analysing whether deviations from trend output are correlated. The former method is straightforward, but the latter depends on the way that trends in the data are treated. The results of these studies have been mixed, but it does not appear that the shocks to the New Zealand and Australian economies are that similar.[10]

Crosby and Otto (2000) examined the correlation of Australian and New Zealand GDP in both the 1980s and 1990s. They found little correlation between quarterly changes in GDP in either decade, the correlation coefficient being small and negative in the 1980s ($\rho=-0.20$), and small and positive in the 1990s ($\rho=0.19$). They argued, however, these correlations reflect both long-term supply shocks and short-term demand shocks hitting the economy, the latter being influenced by government attempts to stabilise the economy through monetary policy. By using statistical methods to isolate the supply shocks, they also showed that the correlation between the supply shocks was small, with $\rho= 0.29$ in the 1990s.

Crosby and Otto also estimated the extent to which deviations from trend output levels were correlated. During the 1980s there was practically zero correlation; during the 1990s the correlation coefficient was 0.53, indicating some tendency for the two economies to move in tandem during the last decade. Hall, Kim and Buckle (1998) used a similar procedure for the 1977–1995 period, but estimated a correlation coefficient of 0.69 for the whole period. It is not clear why this estimate is so much higher, but possibly indicates that the results are sensitive to the way the trends in the data are treated.

Grimes and Holmes (2000) compared Australia's and New Zealand's terms of trade, adjusted for trend, between 1986 and 1998 and found them to be highly correlated ($\rho=0.69$). Using the same methodology, they showed that the correlation between New Zealand's trade-weighted exchange rate index and the terms of trade was small and negative ($\rho=-0.06$) indicating that the New Zealand dollar did not offset external price shocks. In fact there was a higher correlation between the Australian trade-weighted exchange rate index and New Zealand's terms of trade,

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10. See the review by McCaw and McDermott (2000).

although this was still small (ρ=0.28). While they did not estimate the correlation coefficient between the quarterly changes in Australia's and New Zealands' terms of trade, this is also small, approximately ρ= 0.16.

The Queensland State Government publishes estimates of the state's trade with the rest of Australia, so it is possible to calculate the correlation between Queensland's GDP and the GDP of the rest of Australia, and the correlation between Queensland's terms of trade and the terms of trade of the rest of Australia. Note that Queensland's terms of trade are calculated in terms of Queensland's trade with the rest of the world including the rest of Australia. Table 1 summarises these correlations. The data are graphed in Figures 1 and 2.

Table 1: Correlation Coefficients of Shocks with Australia

	Queensland	New Zealand
GDP		
Trend correlation[a]	0.68	0.69
	(Coleman, 1984–2000,	(Hall, Kim and Buckle,1977–1995)
	vs Australia excl Queensland)	0.53
		(Crosby and Otto, 1990s)
		0.01
		(Crosby and Otto, 1980s)
Quarterly change correlation	0.09	0.19
	(Coleman, 1984–2000,	(Crosby and Otto, 1990s)
	vs Australia excl Queensland)	–0.20
		(Crosby and Otto, 1980s)
Terms of trade		
Trend correlation[a]	0.25[b]	0.69
	(Coleman, 1984–2000,	(Grimes and Holmes, 1986–1998)
	vs Australia excl Queensland)	0.56[b]
		(Coleman, 1984–2000,
		vs Australia excl Queensland)
Quarterly change correlation	0.25	0.17
	(Coleman, 1984–2000,	(Coleman, 1984–2000,
	vs Australia excl Queensland)	vs Australia excl Queensland)

(a) Each series has a trend removed before correlation coefficients are calculated. Coleman removes a simple time trend from the logarithm of the data. Other authors use more sophisticated procedures.
(b) The residuals may contain unit roots. If so, there is no long-term relationship between the terms of trade of Queensland, the rest of Australia, and New Zealand.
Sources: Queensland data – Office of the Government Statistician. Available at <http://www.oesr.qld.gov.au/views/economy/publications/qsa/qsa_fs.htm>. GDP data are seasonally adjusted. Terms of trade data are 'trend' data, ratio of all exports to all imports. New Zealand data – Statistics New Zealand, Terms of Trade Index, Series ref OTISTTZZ5. Available at <http://www.stats.govt.nz/b1statsnz.htm>.

Figure 1: Queensland and Rest of Australia – Quarterly Production
1984–2000, seasonally adjusted
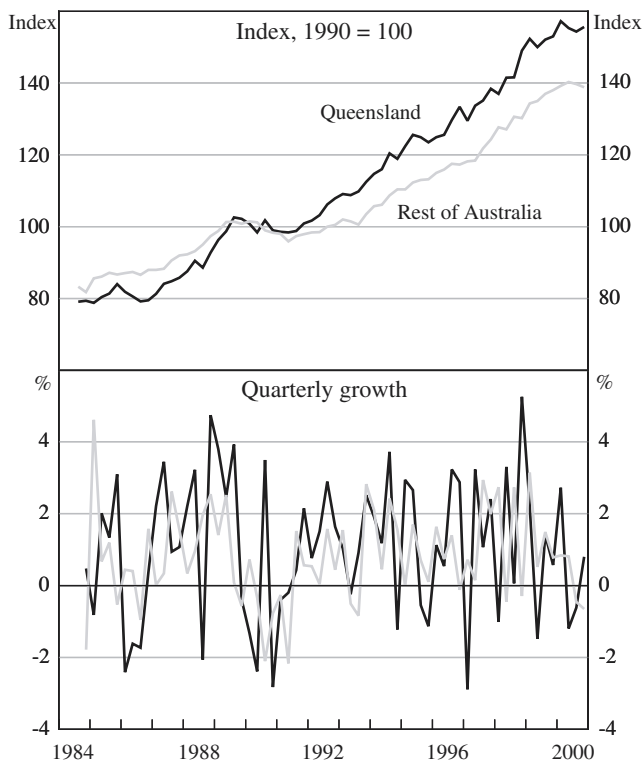
**Figure 2: Queensland, New Zealand and Rest of Australia –
Terms of Trade**
1984–2000
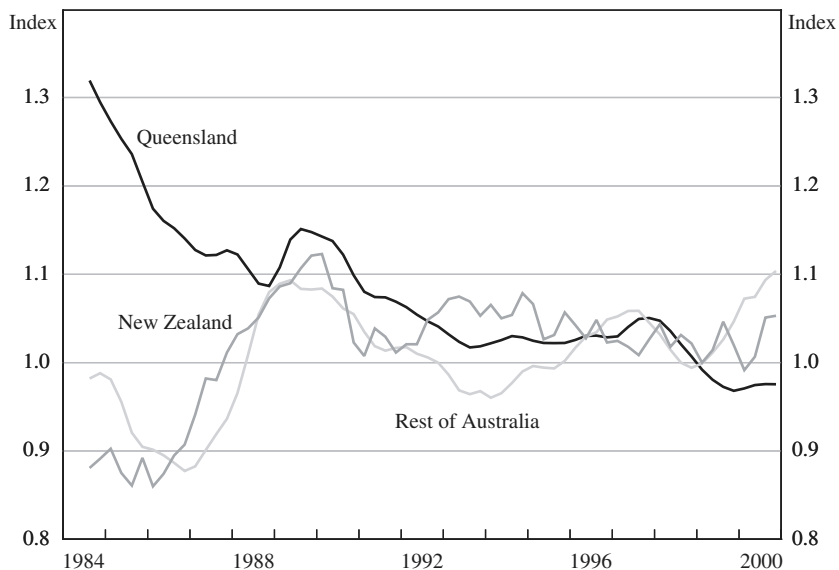
It is evident from Table 1 that neither the shocks affecting Queensland nor the shocks affecting New Zealand are highly correlated with those affecting the rest of Australia. On the basis of the New Zealand evidence, several authors have questioned whether the two countries are suitable for a monetary union (e.g. Crosby and Otto (2000), Wilson (2000)). They may be correct in raising such doubts; but as the Queensland data shows, having highly correlated economic cycles is not a necessary condition for successful inclusion in a monetary union.

If the shocks hitting Queensland and New Zealand are reasonably distinct from those hitting Australia, it is useful to consider whether the mechanisms for adjusting to shocks under a fixed exchange rate are similar. The extent to which a regionally specific economic shock affects income and output in a fixed exchange rate regime depends on wage and price flexibility, factor mobility across sectors and regions, and the degree to which private capital markets and government transfers smooth income and expenditure patterns. If wages and prices are flexible, exchange rate flexibility is redundant as goods and labour markets will adjust rapidly to ensure that total output (but not the composition of output) is stable in the face of shocks. If factors are mobile between sectors, the decline of one sector will be offset by the expansion of others as resources move. If factors are mobile across regions, regional unemployment (but not output) will be stable as people and firms migrate in response to a shock. If private capital markets operate efficiently, capital income will be distributed widely and regional expenditure patterns will adjust by little, so that an income loss in one sector will not be translated into lower demand for other sectors. If there are government transfers to and from an outside region, regional expenditure will be less affected by shocks than regional income, also reducing the transmission of an income loss from one sector to another.

Much can be and has been said about the importance of these conditions in determining whether two regions are suitable for a monetary union. The difficulties of making a case for separate currencies solely on these grounds are increasingly recognised, however. To do so, four propositions need to be believed:

(i)   that an economy is substantially more stable in a flexible exchange rate environment than a fixed rate environment;

(ii)   that this increased stability justifies the accompanying accelerated adjustment of the tradable sector in response to economic shocks;

(iii)   that the exchange rate will actually adjust in the required direction in response to economic shocks; and

(iv)   the potentially stabilising effect of exchange rate flexibility will not be offset by destabilising 'random' movements in the exchange rate.

The last three of these arguments apply equally to Queensland and New Zealand, but there are some differences in the first that mean Queensland has less to gain from exchange rate flexibility than New Zealand. Suppose under a fixed exchange rate regime there was a negative shock affecting the income earned by one export sector (say sugar). If wages and prices were inflexible, and if those experiencing the decline in income did not borrow, the loss of income will cause demand for goods and services sold in Queensland to fall, thereby lowering output generally. Some of the

flow-on effect would be mitigated by a decline in tax payments to the central government. The low output and high unemployment would continue until sugar industry resources move into other sectors, or some of the Queensland economy migrates to New South Wales, or wages and prices in other sectors adjust downwards.

In contrast, if an exchange rate depreciation occurs, incomes for other export industries (in quirks) will increase and the ratio of domestic prices to foreign prices will decrease, offsetting the demand flow-on effect on domestic industries. While output will have been stabilised, several adjustments will nonetheless still occur. First, wages in Queensland will have decreased compared to those in New South Wales, so some parts of the Queensland economy might still migrate south. Secondly, the sugar sector will still have suffered a decline in income compared to other export sectors, so resources will migrate to other sectors. The pressure for the sugar sector to adjust will be smaller, however, since its decline in profitability relative to the domestic sector will have been smaller.

A similar story applies to New Zealand, but with two differences. First, the migration to New South Wales will be less rapid, because it is financially and psychologically more expensive to cross the Tasman than to slip by Point Danger. That said, it is not expensive for New Zealanders to cross the Tasman, there are few legal restrictions preventing them crossing, and large numbers of New Zealanders have done so. Migration, while not as elastic as that between states, is still very elastic (Poot 1995). Secondly, a negative shock will not change the amount of tax sent from New Zealand to Australia, or the transfers sent the other way. This is not important if the New Zealand government can borrow, run down its reserves, or simply accumulate fewer reserves; in short, it is not important. In fact, because the New Zealand government can borrow more easily than the Queensland government, it could undertake greater countercyclical fiscal activity than is possible in Queensland. Consequently, adjustment in New Zealand under a fixed exchange rate regime should not be much slower than in Queensland.

There is, therefore, a possible answer to the first of the four questions: neither the Queensland or New Zealand economies are likely to be substantially more stable under a flexible exchange rate system than a fixed rate system. The Queensland economy is not notably unstable; the New Zealand economy is not notably stable; and each economy has several means of adjusting to economic shocks that do not involve exchange rate changes. This simple comparison has of course not proved this assertion, but it is consistent with the international evidence that the exchange rate regime is not an important determinant of output variability (Baxter and Stockman 1989; Flood and Rose 1995).

Moreover, even if the economy were more stable in response to external shocks, the other three questions need to be answered. In opting for flexible exchange rates, Queensland or New Zealand would be implicitly deciding that the benefits of more stable aggregate output outweighed the potential disadvantages of the different adjustment dynamic on the tradable sector. Two problems associated with adjustment under flexible exchange rates are possible. The first is the famous 'Dutch disease', when the expansion of one export sector causes such a rapid exchange rate appreciation that firms in other tradable sectors quickly shut down, resulting in

substantial unemployment. Such exits would occur under a fixed exchange rate regime, but they would take longer as firms in these sectors left in search of higher profits elsewhere, rather than being driven out by their own diminished profitability. The second is when exchange rate depreciations in the face of persistent negative price shocks slow down the movement of resources from the declining sectors by so much that an extensive reallocation to profitable sectors does not occur.[11]

The last two points are more problematic still. It is possible that an exchange rate is excessively volatile in the sense that it takes on values not warranted by economic fundamentals. If so, changes in the exchange rate may be the cause of shocks to the economy rather than a means of stabilising the economy; for instance, exchange rate movements unrelated to fundamentals may cause factories to shut down in one country and reopen in another. Economists have taken this argument seriously in the last decade, in response to both the volatility of exchange rates and a new theoretical understanding of the operation of incomplete financial markets. The incomplete financial markets literature is important for the optimum currency area literature because it suggests and formalises reasons why a separate currency can be welfare reducing. The main insight is that if the value of a currency is partially determined by factors unrelated to economic fundamentals, the use of the currency distorts the ability of agents to enter contracts aimed at reducing the fundamental risk they face. Moreover, if the 'noisiness' of the currency is sufficiently great, agents forced to use the currency will be worse off than if they were able to use a different currency.[12] This idea is one of the main economic reasons forwarded by the European Commission for forming a monetary union (Emerson *et al* 1992). As they wrote:

> The performance of flexible exchange rates is generally considered disappointing for several reasons… [the] stabilising properties of floating exchange rates are only apparent while facing country-specific i.e. asymmetric real shocks; symmetric shocks, especially supply shocks, give rise to beggar-thy-neighbour exchange rate policies as each country tries to export inflation or unemployment; moreover, monetary shocks to the exchange rate itself, which arise from failures in the international financial markets, are a source of instability. (p 56)

To summarise, therefore, it seems unlikely that a convincing case can be made for Queensland or New Zealand to maintain a separate currency simply on the basis of using the exchange rate to buffer the economy against shocks. The marginal benefits of such buffers may be small, and these benefits may be undermined by shocks stemming from unwarranted movements in the exchange rate. Other reasons are needed.

2.1.2   *Monetary independence, interest rates and the inflation rate*

Monetary independence enables a region to choose its own inflation rate and yield curve. In the past this often meant high inflation, but in the last decade most developed countries have achieved low inflation due to improvements in central

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11. Grubel (1999) argues that Canada is still overly dependent on commodity exports because the relative decline in the value of these exports has been disguised by a declining exchange rate.

12. Coleman (1999) offers a brief summary of this literature. See also Neumeyer (1998).

banking practice. As such, monetary independence is now both more practical and less useful, since most countries will have low inflation if they use a different currency. There are exceptions to this rule, countries such as Ireland or Hong Kong which have experienced extremely rapid productivity growth within a monetary union or fixed exchange rate regime and which have consequently experienced high 'Balassa-Samuelson' inflations. While New Zealand has lower productivity than Australia, the differences are not extremely large and it is not obvious that New Zealand would have noticeably higher inflation than it has now if it adopted the Australian dollar.[13] All the Australian states have almost identical inflation, for example, despite quite different economic structures. Consequently, a desire for low inflation is no excuse for New Zealand not to join the Australian dollar zone, assuming it trusts Australia to remain a low-inflation country.

The major problems with these Balassa-Samuelson inflations is not the price changes *per se*; such price changes do not represent a central bank failure to maintain the value of the currency in the wider monetary region. Rather it is the very low real interest rates available to agents living in the region. Local investors not wanting to purchase assets have no alternative but to receive very low, and possibly negative, real rates of return on debt instruments; consequently those whose ordinary preference is for debt instruments will find that high local inflation diminishes their real wealth. If a region is unhappy with the income distribution implicit in such low real interest rates, it may prefer monetary independence.

The argument for a region to have its own currency in order to influence income distribution is more general than this, however. Even if a region is not experiencing Balassa-Samuelson inflation, but the local inflation rate has a different cyclical pattern to that of other regions, people may prefer to have their own currency in order to determine their own local real interest rates. If local interest rates change in response to local economic conditions, asset prices will act countercyclically and thus agents can use contracts denominated in the local currency to provide themselves with income insurance. Conversely, as argued by Helpman and Razin (1982), a monetary union reduces the ability of agents to make financial contracts in a variety of units of account, and thus reduces the insurance possibilities open to these agents. The loss of these opportunities may entail a substantial loss of welfare.[14]

Monetary independence also gives a region the ability to implement countercyclical monetary policy. By altering the shape and level of the yield curve, the central bank can affect the rate of economic activity across the whole economy. The value of independent countercyclical monetary policy depends on the extent to which economic cycles are independent. In practice, however, whether monetary policy

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13. However, New Zealand would probably have slightly higher inflation than Australia because of differences in the way the two countries calculate inflation, particularly the housing component of inflation. Calculations by the author using disaggregated inflation data show that New Zealand CPI inflation between 1991 and 1996 would have been 9.2 per cent rather than 11.5 per cent if it were calculated using Australian methodology.

14. This need not be the case, however. If the value of the unit of account is excessively volatile, it can reduce welfare by increasing in a random manner the distribution of income (see Neumeyer (1998)).

can be fine-tuned to counteract the differences between New Zealand's and Australia's economic cycles, or the differences between Queensland's and Australia's economic cycles, is a moot point. Moreover, monetary independence can be costly, if foreign lenders demand an interest rate premium in return for holding domestic-denominated debt.

An independent yield curve means an independent currency, so the benefits of independent interest rates are accompanied with the potential costs and benefits of exchange rate flexibility. It is important to distinguish the two. By altering interest rates, the central bank alters the relative price of goods and services through time, affecting sectors which are time (interest rate) sensitive; when exchange rates change, the relative prices of goods and services between sectors are altered. These effects can reinforce one another, although they do not always do so. Interest rate changes affect a potentially wider range of sectors than exchange rate changes, and are thus a potentially more useful tool in stabilising economic output.

2.1.3   *Monetary independence and sovereignty issues*

Monetary independence provides a region with political powers, namely the ability to issue legal tender to raise funds. The inflationary consequences of raising funds in this manner normally mean it is a poor long-term option; but it can be extremely useful in emergencies. Many governments have issued legal tender to mobilise resources in the event of war; indeed, governments have historically controlled mints to prevent internal rivals from being able to do the same (Glasner 1997). More generally, control over money has been a right jealously guarded by governments as it provides them a means to redistribute income in the national interest from time to time. In the United States, for instance, the right to coin money and regulate its value was vested to Congress in the Constitution, and the US Government deliberately used this power to extensively change private contracts and redistribute income during the Great Depression.[15]

This is a major difference between Queensland and New Zealand. The Federal Australian government is not renowned for granting significant fund raising powers to the states, and Queensland has little use for the power to rapidly raise funds to wage war. In contrast, the New Zealand government may value the options provided by the control of the money supply. The value of these options depends on the marginal attractiveness of issuing legal tender in an emergency over the best alternative means of raising funds (e.g., a bond issue), or the value of being able to regulate the financial value of the currency over the next best means of regulating contracts. It would

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15. On June 5 1933, the US Congress passed a resolution stating that any debt contracts that had been written in terms of gold rather than dollars would be settled in terms of dollars. Consequently, when the government changed the value of the dollar from $20.67 to $35 per oz on January 31 1934, such 'gold clause' debt contracts were settled at a 40 per cent discount, that is, as if they had been contracted in dollars, not gold. Some $75 billion worth of contracts were affected. See Nussbaum (1957, pp 188–191).

appear the value of these options is small, given the readiness of European countries to forego them.[16]

The seigniorage earned by the government from the central bank is a different matter: while not extremely large, it is an appreciable sum, of the order of $NZ130m per annum in New Zealand. Australia could offer a proportionate share of the seigniorage earned by the Reserve Bank of Australia to New Zealand if New Zealand were to adopt the Australian dollar. The New Zealand government would have alternative options to obtain some of the seigniorage should Australia not willingly offer it: for example, it could allow banks operating in New Zealand to issue their own Australian-dollar-denominated banknotes, and tax some or all of the resultant revenue.[17] Nonetheless, New Zealand could rightfully wonder about the extent of cooperation between the countries were Australia not to share seigniorage.

2.2   The costs of a separate currency

Monetary and currency independence comes with two possible costs. First, the cost of trade with people outside the currency region rises, changing trade patterns. Secondly, an issue discussed in Section 3, agents may have to pay an interest rate premium in order to issue local-currency debt to foreign lenders. If these costs are sufficiently high, it may prove to be the case that there are better ways for a country to achieve its policy objectives.

2.2.1   *Queensland and New Zealand trade patterns*

When a country enters or exits a monetary union, its trade patterns change, altering foreign exchange costs and resource use. The basic trade patterns for New Zealand and Queensland for the 1998/99 financial year are presented in Table 2. Queensland's exports of goods and services to the rest of the world (including the rest of Australia) were 33 per cent of gross state product, compared to 31.5 per cent in New Zealand; Queensland's imports were 41 per cent of gross state product, compared to 33.5 per cent in New Zealand. In short, Queensland's trade with the rest of the world was larger than New Zealand's but not notably so. However, Queensland had much larger trade with the rest of Australia than New Zealand had with Australia: exports were 11.4 per cent versus 6.8 per cent for New Zealand, while imports were 25.1 per cent versus 7.8 per cent for New Zealand.

These data suggest two things. First, even if Queensland adopted the quirk and maintained its current trade patterns, the direct exchange costs would not be particularly large. Queensland's trade with the rest of Australia totals $35 billion per year; if Queensland had a separate currency, and direct costs were 0.4 per cent, there would be foreign exchange costs of $70 million each for Australia and

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16. Given the size of New Zealand's defence industry, the value of the New Zealand Government printing money to mobilise domestic resources to deal with a military emergency must be small.

17. Scottish banks issue their own banknotes, but all of the seigniorage is kept by the Bank of England.

Table 2: Trade Patterns of Queensland and New Zealand
1998/99

	Queensland		New Zealand	
	$billion	%	$billion	%
GSP/GNP	98.7		78.6	
Exports				
– Australia	11.3	11.4	5.4	6.8
– Rest of world	21.3	21.6	18.6	23.7
– Total	32.6	33.0	24.0	31.5
Imports				
– Australia	24.8	25.1	6.1	7.8
– Rest of world	15.6	15.8	20.2	25.7
– Total	40.4	40.9	26.3	33.5

Note: New Zealand figures converted to Australian dollars assuming 1A$ = $1.25 NZ
Source: Office of the Government Statistician (2001), Table 1

Queensland. Exchange rate transactions associated with financial transactions would raise these totals, but even if they were tripled they are only 0.2 per cent of Queensland's state product, and a much smaller fraction of Australia's GDP.[18] If New Zealand were to adopt the Australian dollar, the direct exchange rate savings would be smaller still, since trade is smaller; however, the 'shadow' savings could be of this magnitude, if trade patterns between Australia and New Zealand changed to resemble those between Queensland and the rest of Australia.

Secondly, some of Queensland's trade with the rest of Australia might end if Queensland were to adopt a new currency. This is an issue upon which economists have been unable to reach a conclusion: to what extent do regions with separate currencies trade less than they would if they used a single currency? Until recently, the consensus opinion was that the exchange rate regime was an unimportant determinant of trade patterns. For instance, there is a large empirical literature examining whether exchange rate volatility reduces trade, but because the results have not been consistent the consensus was that high exchange rate volatility has only a small negative effect on trade volumes.

This consensus has been subject to some recent re-evaluation. Research using Canadian and US data has shown that trade between regions within a country is much greater than trade between countries. For example, inter-provincial trade between any two Canadian provinces is approximately twelve times as great as trade between

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18. These totals would be higher if indirect costs associated with purchasing foreign exchange, including management costs and time spent transacting, were included.

Canadian provinces and US states, once distance and economic size are taken into account (McCallum 1995; Helliwell 1998).[19] The analysis of provincial 'exports' shows that Canadian firms do not find US destinations to be close substitutes for Canadian destinations; similar analysis for 'import' flows shows that US products are not close substitutes for Canadian products in Canadian provinces.

Helliwell (1998) showed that the Canadian 'home bias' was more pronounced for the industrial eastern provinces than for the western provinces that specialise in the production and export of natural resource commodities. In particular, it appears that intra-industry trade, not inter-industry trade is more sensitive to the effect of borders. He also found some evidence that the bias was in part a consequence of distribution chains that are organised along national lines, as goods are imported first into one province and then redistributed to others.[20]

Other evidence is broadly consistent with this result. Wei (1996) estimated a gravity model for OECD nations and found that on average a country's internal goods trade is 10 times as large as its external trade, conditional on distance and economic size. A more sophisticated estimation procedure suggested that this 10-fold home-bias reduced to 2.5 once additional allowance was made for the fact that countries typically have much greater trade with countries which share a common land border and which speak the same language.

New Zealand is yet to seriously countenance joining Australia, so the relevant question is how much external trade is reduced because different countries have different currencies. Helliwell does not answer this question; he argues that the home bias is caused by a combination of domestic distribution systems, foreign exchange costs, and the costs of dealing with different regulations and legal codes in different countries. In contrast, Rose (2000) estimated a gravity model of trade between countries, making an allowance for pairs of countries that were in a currency union and those that were not. While many of these countries are tiny (for instance the currency unions include Australia with Kiribati, Nauru, and Tuvalu, and New Zealand with Niue and the Cook Islands), others are not. Despite extensive re-estimation to take into account one set of controls or another, Rose, and subsequently Frankel and Rose (2000), consistently found that countries in a currency union trade three times as much as countries not in a currency union, conditional on all other factors. In addition, they estimate that over a 20-year period, this increase in trade converts into higher GDP per person, with a 1 per cent increase in the trade/GDP ratio leading to a $^1/_3$ per cent increase in GDP per capita.

These estimates were further revised by Rose and van Wincoop (2001). They estimated how trade would expand if two countries were to form a monetary union, taking into account the effect of existing multilateral trade relationships. The

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19. McCallum estimated a 'gravity' model which links trade flows between regions to the size of each region's GDP and the distance between them. His estimates, for 1988, suggested that province–province trade was 20 times as large as province–state trade. Helliwell subsequently showed that this bias reduced to a factor of 12 after the North American Free Trade Agreement was passed.

20. This was particularly evident in the transport sector.

expansion in trade is different for every prospective monetary union; for instance they estimate that the euro will cause a 58 per cent increase in trade within Europe, and if Canada were to dollarise this would increase Canada–US trade by 38 per cent. They estimated that an Australia–New Zealand monetary union would increase trade by 125 per cent, although the welfare effects of this increase would be small, about 2 per cent.

Both of these empirical literatures are consistent with the differences between Queensland's and New Zealand's trade patterns. As a fraction of GDP, Queensland's exports to the rest of Australia are 65 per cent larger than New Zealand exports to the whole of Australia, while imports are 220 per cent larger. While these numbers are consistent with Rose's estimates of the effect of a currency union on trade, they are smaller than the differences between inter-provincial and inter-country trade noted for Canada and the United States. Nonetheless, two aspects of Canada–US trade are consistent with the Queensland–Australia trade pattern. First, interstate trade is smaller in the Canadian states that specialise in resources rather than in manufacturing – and it will be recalled Queensland's exports are dominated by primary products, for which there is a smaller demand in Australia than abroad. Secondly, Queensland imports a very large fraction of its goods from the rest of Australia. Many of these imports are presumably imported into Sydney and Melbourne and then redistributed to Queensland through national distribution chains, just as transport equipment is distributed throughout Canada through Ontario.

The extent to which Queensland's markets are integrated with those of the rest of Australia is also evident in prices. Coleman and Daglish (1998) examined the prices of 30 items sold in supermarkets in each state capital and in New Zealand over the period 1984–1996. They found that prices in each state capital moved very closely with each other, whereas prices of identical items sold in New Zealand moved quite independently, even if the item were only produced in Australia. Many pricing decisions appear to be made centrally within Australia, but made differently in New Zealand. It may be the case that the potential for large changes in the Australia–New Zealand exchange rate means it is too risky to change New Zealand prices only when Australian prices change.

The big differences in the Queensland–Australia trade patterns and the New Zealand–Australia patterns is the major reason why Australia should care about forming a monetary union with New Zealand, and why Queensland might have reason to be concerned about monetary succession. If a large part of these differences is caused by the different exchange rate relationships, then New Zealand and Australia can expect a large increase in trade if they form a monetary union. It may be the case that many of New Zealand's import networks change, with imports increasingly distributed via Sydney and Melbourne.[21] Retailers on both sides of the Tasman may begin to look even more similar than they currently do, and some

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21. However, such centralisation might not occur if customs procedures in the two countries mean that goods going to New Zealand via Australia still have to be inspected twice.

distribution functions may migrate from New Zealand to Australia as New Zealand and Australian firms take advantage of economies of scale. At the same time, intra-industry trade between the manufacturing sectors should increase.

3.   Commodity Markets and Currency Markets

The similarities between commodity markets and currency markets frequently go unnoticed. Part of the reason is that commodities markets are not usually considered to be debt markets, even though the quintessential commodity market transaction, a commodity hedge, and the quintessential foreign exchange contract, a foreign exchange swap, have exactly the same characteristics. A foreign exchange swap agreement is when someone simultaneously purchases a currency for spot delivery and sells it for forward delivery, making or receiving a payment that depends on relative interest rates. This is equivalent to lending one currency while borrowing another. A commodity hedge is when someone simultaneously purchases the commodity for spot delivery and sells it for forward delivery, making or receiving a payment that depends on relative interest rates. This is equivalent to lending currency while borrowing the commodity. In this case, however, the second interest rate is not a currency rate, but the implicit 'own-interest rate' of the commodity.[22]

Own-interest rates were first noted by Sraffa (1932) and Keynes (1936), and have been subject to periodic research ever since. They are mainly implicitly defined – if you borrow a barrel of oil, the number of oil barrels you repay is calculated as the ratio of the spot price to the forward price adjusted for the money interest rate – but sometimes they are explicitly defined, as is the case with uranium.[23] Commodity futures markets have an array of possible forward contracts, so there is an implicit yield curve for each commodity, just as there is a yield curve for each separate currency. Commodity interest rates are volatile, in part because they are not controlled by central banks.

Some agents wish to borrow or lend a commodity and repay or be repaid in the same form since they have an underlying use for the commodity and find it easier to structure their business in terms of the commodity rather than money. For a commodity loans market – a futures market – to flourish, there need to be sufficient agents who benefit from lending or borrowing in that particular commodity rather than in some other commodity or currency. It appears that a necessary condition for such a market to exist is that the commodity futures prices are not highly correlated with other prices, so that holders of the commodity would be exposed to considerable price risk when repayment were due if their loan was contracted in another commodity or currency. In addition, transactions costs in the market need to be low. If there are more 'natural' borrowers – such as oil refineries wishing to access stocks of oil – than lenders, a premium will be paid and oil interest rates will be high.[24]

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22. Williams (1986) expands on this point at length.

23. $\left(1 + r_{commodity}\right) = \dfrac{P_{spot}}{P_{forward}} \times \left(1 + r_{money}\right)$

24. In particular, the spot price will be higher than the futures prices, so the market will be in backwardation.

Conversely, if there are more natural lenders than natural borrowers, interest rates will be low to induce people to borrow in a form that is not naturally convenient for them.

There is currently a natural demand for many New Zealanders to borrow and lend in New Zealand dollars because their other obligations are denominated in New Zealand dollars and they do not want to be bothered by exchange rate fluctuations or exchange rate transaction costs. Since New Zealanders are net borrowers on international markets, foreign lenders typically charge a premium. Hawkesby, Smith and Tether (2000) estimated the currency component of this risk premium against both the Australian and US dollars between 1990 and 2000. For 90-day rates, the premium exceeded 1.0 per cent against the Australian dollar, and 2.8 per cent against the US dollar; for 1-year rates, the premiums were 0.8 per cent and 2.4 per cent respectively; and for 10-year bond rates, the premium was near zero (and possibly –0.4 per cent) against Australia, but 1.9 per cent against the US. On the whole the premiums were much lower in the last two years of the period than the earlier years.

These commodity markets are of interest to the question of New Zealand forming a monetary union because commodity futures markets regularly start up and shut down. Carlton (1984) analysed the 180 different futures markets that operated between 1921 and 1984 and found that 57 per cent of them finished within 10 years of either their start date or 1921, and 78 per cent of them finished within 20 years. Including markets that already existed in 1921, the median life expectancy of a futures market was seven years; of those markets that began after 1921, the median life expectancy was only five years. In short, a large number of these markets simply ceased to exist when they were no longer considered useful. Some of these markets shut down because there was no interest in having two or more spatially separated futures markets for the same commodity; others shut down because technological developments made redundant previously important differences in sub-varieties of a single commodity.

Carlton (1984) used this historical experience to consider the salient features of successful and unsuccessful futures markets. Williams (1986) extended this analysis to consider why some maturities and not others were traded on successful futures markets. The answers consistently point to two factors:

(i)   a commodity yield curve's *spreads* need to move independently of other commodity yield curves; and

(ii)   a futures market needs sufficient liquidity that participants can be confident that they can trade without waiting excessively.

These two conditions are related, because if the yield curve for one commodity is highly correlated with another, or the futures price for different months of the same contract are highly correlated with one another, agents will substitute from one contract to the most liquid one. This is the reason why futures markets in commodities like gold tend to exist in one or two cities only. Yield curves are highly correlated if the cross-price demand or supply elasticities of the commodities are high. Note that

if two commodity yield curves simply differed by a constant amount, the above conditions would imply redundancy for one market: agents could arrange futures contracts in the other market knowing that the appropriate premium or discount would not change.

These criteria can be translated into several questions about New Zealand dollar debt markets. Since an extra currency is potentially useful if either its foreign exchange value or its interest rate structure are predictably different than other currencies in different states of the world, the first question is whether New Zealand interest rates have differed from foreign interest rates, and whether there is a good reason to expect them to be different in the future. The second question is whether the value of the currency in terms of other currencies (particularly the Australian dollar) is constant, or whether it systematically varies with the state of the world. The third question is whether New Zealand dollar debt markets are likely to remain sufficiently liquid that trading in New Zealand dollar paper remains low cost.

Full answers to these questions are beyond this paper, and I shall not attempt to address the second question other than to note that the New Zealand dollar is obviously not constant in terms of the value of other currencies, but its value is not clearly systematically related to the state of the world either.[25] Nonetheless, it is of interest to address the first question because, if New Zealand were to adopt the Australian dollar, it would no longer have separate interest rates.

Since 1985, both New Zealand and Australia have had different interest rates to most other countries. Australasian interest rates, shown in Figure 3, have been broadly similar over the period, in part because the two countries have had similar disinflation experiences. There were sizeable differences in both bill and bond rates prior to 1989, but since then bond rates in the two countries have paralleled each other closely. In contrast, Australasian bill rates differed substantially between 1993 and the end of 1998, despite being similar in 1991 and 1992. Since the end of 1998, and following the adoption of new operational procedures by the Reserve Bank of New Zealand, both 90-day bill rates and 10-year bond rates have been very similar in the two countries. This is evident from the means and standard deviations of the differences in Australian and New Zealand interest rates, calculated for sequential two-year periods and presented in Table 3.

While these data show that Australasian interest rates were not the same over the period, interest rates have been nearly identical since late 1998, and were this to continue it would raise doubts about the need for two currencies. The relevant question, therefore, is whether New Zealand dollar and Australian dollar interest rates can be expected to differ significantly in the future. To answer this question,

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25. The New Zealand dollar cross-rate with the Australian dollar is notably less volatile than other bilateral rates, however. The more general question of whether a separate currency can be justified because it is not perfectly correlated with other currencies is problematic because of the excessive volatility of exchange rates. It may be the case that currency variation is mainly extraneous noise. There is little evidence that movements in any exchange rate can be systematically related to macroeconomic variables over horizons shorter than two or three years, for instance.

Figure 3: Interest Rates
1985–2001
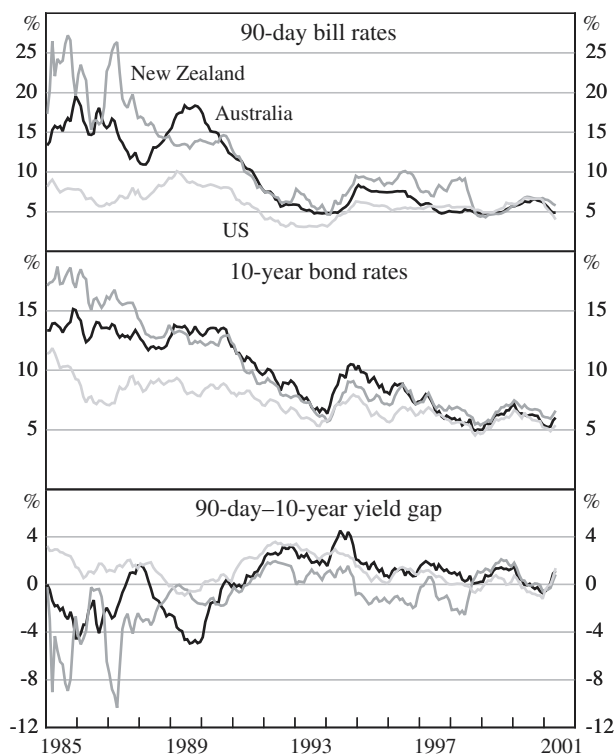
Table 3: Mean-difference between New Zealand and Australian Interest Rates

	90-day bank bill		10-year bond		Yield gap	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1985–1986	4.97	3.92	3.37	1.13	−1.61	3.12
1987–1988	4.97	3.23	1.81	0.86	−3.17	2.58
1989–1990	−2.36	2.19	−0.67	0.50	1.69	2.11
1991–1992	0.00	0.49	−0.77	0.43	−0.77	0.51
1993–1994	1.13	0.61	−0.88	0.62	−2.01	0.89
1995–1996	1.72	0.68	−0.83	0.74	−2.55	0.35
1997–1998	2.31	1.45	0.54	0.43	−1.76	1.25
1999–2000	0.08	0.32	0.46	0.21	0.38	0.24

Notes: New Zealand interest rates minus Australian interest rates. Yield cap is the bond rate minus
          the bill rate. Standard deviation is calculated from monthly level data.
Sources: Reserve Bank of Australia; Reserve Bank of New Zealand

the reasons why Australian and New Zealand interest rates ever need to differ should be considered.

There are three reasons why New Zealanders might want different interest rates.

First, they may prefer to borrow and lend in New Zealand dollars because the interest rates on these contracts are pro-cyclical with the New Zealand economy, providing them with insurance against shocks that would not be available if they contracted debt in the currency of another country.

Secondly, the Reserve Bank of New Zealand might wish to counteract shocks that are specific to New Zealand, altering the yield curve to offset local booms and busts or to ensure the value of the currency in terms of New Zealand prices is maintained. This is not a sufficient condition for separate currencies, however, for neither Queensland's nor New Zealand's real GDP are highly correlated with the real GDP of the rest of Australia, and European countries experience different real shocks. Nonetheless, if the Reserve Bank of New Zealand believes that it can accurately offset real shocks to the New Zealand economy by shifting the yield curve, that these interest rates shifts will be different to those implemented in Australia, and that there will be few adverse effects from such shifts (such as excessive exchange rate volatility), it has a reason why the New Zealand dollar should be kept.

Thirdly, the government may want to control the real interest rate structure in order to influence local income distribution. For instance, if Australia and New Zealand have different productivity growth rates, the inflation pressures will be different even in a monetary union, and under these circumstances New Zealand might want different interest rates, perhaps to ensure local real interest rates are positive. A related reason concerns the possibility of different house price inflation in each country. While this has not prevented a successful monetary union within Australia, central banks (and their subjects) in the two countries may have different opinions on the appropriate relationship between interest rates and asset price inflation. For example, New Zealanders may have a stronger preference for interest rates to be sensitive to house price inflation than Australians, so that the real value of debt in terms of house prices is more stable. If so, New Zealand may wish to have different interest rates to reflect this in the future. House price inflation has been important in New Zealand in the past: short-term interest rates and the exchange rate have been highly correlated with house prices since 1986. Grimes and Holmes (2000, p 65) estimated the correlation between the New Zealand trade weighted exchange rate index and the New Zealand house price index was $\rho=0.94$. In contrast they estimated the correlation between the Australian trade-weighted exchange rate index and the Australian house price index was $\rho=0.56$.

Notwithstanding these reasons for New Zealanders to want their interest rates to be different to those of Australia and the rest of the world, it is also possible that interest rates will be different to Australian interest rates even though this situation is not wanted. They will be different so long as cross-price elasticity of supply or demand for debt in the two currencies is not particularly high: that is so long as Australian dollar debt denominated contracts are not close substitutes for New Zealand dollar debt contracts. There are at least two reasons why this may be

the case. First, New Zealanders may wish to borrow in New Zealand dollars because their incomes and assets are in New Zealand dollars, and they prefer to match their liabilities in the same currency because they are concerned about exchange rate volatility or the cost of transacting in another currency. Even if everyone preferred the foreign currency, no one would use it because of the convenience of using the local currency when everyone else was using it. Secondly, New Zealanders may have little choice, because banks will only lend to them in New Zealand dollars, in part because concern about exchange rate volatility means the banks want to ensure the assets and liabilities of their customers are in the same currency as their incomes.[26]

These reasons for having a separate currency are artificial in the sense that the existence of a currency automatically creates its own demand by introducing additional transactions costs and volatility that make other alternatives costly. In this case, it is possible that interest rates and inflation rates would be different in the two countries because of different approaches to monetary policy in the two banks. Put crudely, interest rates might be different because of different responses to economic shocks, rather than different underlying shocks. This is not a good reason to preserve separate currencies, even if the yield curves in the two countries were quite distinct. Rather, welfare would be improved by eliminating the currency (Neumeyer 1998).

To summarise, there are some reasons why New Zealanders may continue to want to have their own yield curve. They may want to engage in counter-cyclical monetary policy against peculiarly New Zealand shocks; they may want the value of their assets to move counter-cyclically with the state of the economy; or they may want some hand in choosing their own real interest rates, for reasons of income distribution. Unfortunately, empirical evidence that the yield curve is independent is not sufficient evidence of these desires. The yield curve could have been independent inadvertently; it may have been independent because of the difficulty of maintaining the value of the currency in a small economy; and the fact that New Zealanders use New Zealand dollar debt may simply be a preference for local currency debt, whatever the local currency may be.

The second of Carlton's criteria concerns the liquidity of each market. Liquid markets have lower transactions costs than illiquid markets, as large trades can take place without altering prices. The Australian dollar foreign exchange market is much larger than New Zealand's foreign exchange market, and there has been some comment that liquidity in the New Zealand dollar market is becoming problematic. This may be so; unfortunately data on the topic are collected only periodically, and data for 2001 year are yet to be released. The best data come from the Bank for International Settlements. Daily turnover figures by currency for several small countries are presented in Table 4. The data show that turnover in New Zealand dollars is small by the standards of currencies of other small countries; whether it is sufficiently small to make trading difficult is unclear.

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26. Most New Zealand banks, predominantly Australian-owned, will not lend Australian dollar mortgages against New Zealand residential property.

Table 4: Daily Turnover in Local Currencies
US$billion

	1992	**1995**	**1998**
Australia	12.4	16.3	23.6
New Zealand	1.9	4.0	4.9
Norway	2.3	3.5	5.4
Singapore	2.4	5.9	17.6
Sweden	10.9	9.9	6.3
Switzerland	31.6	35.1	31.6

Source: Bank for International Settlements – 1992 data: *Central Bank Survey of Foreign Exchange Market Activity,* Table 2-D; 1995 and 1998 data: *Central Bank Survey of Foreign Exchange and Derivatives Market Activity*, Tables 1-G (1995 survey) and E-7 (1998 survey).

Figure 4: Australia–New Zealand Exchange Rate
1985–2001

Two points suffice to conclude this section. First, the parallels between commodity markets and currency markets can only be pushed so far. The government is a much more important factor in debt markets than in commodity markets. Unlike a redundant commodity market, the New Zealand dollar market will not slowly die from lack of liquidity; it has legal protection, and there are large externalities from the use of a single currency within a region that mean that New Zealanders will be slow to drop the dollar unless it is abolished by the Government (Dowd and

Greenaway 1993). Even if New Zealanders were better off if they all switched to the Australian dollar, it is extremely costly for an individual to switch when other New Zealanders do not.

Secondly, if New Zealand were to adopt the Australian dollar, this analysis predicts there would be two effects on Australian dollar financial markets. First, liquidity would increase, probably by a sixth, maybe more. This would be a positive advantage for Australia. Secondly, Australian dollar interest rates might rise (or the dollar might fall), as there would be an increased demand to borrow Australian dollars on international markets, and the risk premium for Australian dollar assets might increase. How one quantifies the size of this effect is difficult, because these premiums depend on factors other than just the volume of assets borrowed and lent.

4.   Indexed Unit of Accounts

The time has arrived for inquiring whether we cannot adopt the suggestion made early in this century, that the government should publish a tabular standard of value for optional use within the United Kingdom in all transactions which extend over a long period of time. It could be used, for instance, in long leases, in mortgages, and all other borrowings of capital for long periods…the index numbers with which we are already familiar would give a ten times better standard of value for optional use within the country in long-standing contracts than even a true bimetallic currency. (Marshall 1926, p 31)

An official index number, representing average movements of the prices of important commodities, might well afford the basis of a Unit of general purchasing power, in terms of which long term obligations might be expressed: and in this matter the State might advantageously lead. …A new contract for interest on loans and other long-standing obligations might then be arranged by free consent of both parties to it in terms of the standard unit, instead of money.

There might also be gradually set up special Units, each adapted to the conditions of particular classes of industries and trades: and any of these might be adopted, by consent of both parties, as the basis of a loan or other engagement: such bargains could be enforced without difficulty by Courts of Law. (Marshall 1923, p 36)

It is a curious fact that Marshall's vision of multiple units of account has been so wrong. There are liquid debt markets in a large number of different currencies, many of which have been badly prone to inflation; there are liquid loan markets in wheat, copper, oil, and live cows, all of which are used by specialists; but there are practically no liquid markets in indexed units of account. Yet a moment's reflection suggests such markets are potentially useful. CPI indexed debt provides protection against inflation, a cause of substantial wealth redistribution for most of the century. Debt indexed to nominal GDP would automatically generate pro-cyclical movements in nominal interest rates. Debt indexed to other indices could also be useful. If there were debt contracts indexed to Auckland house prices, for instance, people could save to purchase a house without fear that sudden house price increases would undermine their savings. Those borrowing to purchase a house, or their bankers, could do so without fear that a house price decline would leave them insolvent. Yet

such indexed units are conspicuous by their absence, and even when introduced have tended to be unsuccessful (Campbell and Shiller 1996).[27]

The major exception is the Unidad de Fomento (UF), a CPI indexed unit of account introduced in Chile in 1967. It became popular in the early 1980s and even though it is not legal tender it is used widely in the banking system. Most mortgages and car loans are denominated in UFs; long-term government securities and 90-day bank deposits are denominated in UFs (but 30-day deposits are typically denominated in pesos); houses offered for sale are often quoted in UFs; but smaller items, including cars and almost all retail items are quoted in pesos; and wages and salaries are quoted in pesos (Shiller 1998). The value of the UF is changed daily, using a formula that interpolates the previous month's CPI inflation rate. Given the way that the peso and the UF interact, most long-term contracts are protected from inflation while transaction costs for day-to-day economic activity are kept to a minimum. A person with one UF on deposit in a bank would be repaid $(1+r)$ UF on maturity, where r is an interest rate denominated in UFs, and the whole sum is then converted into pesos at the prevailing index rate and paid out in pesos. The parallel with a commodity loan is obvious.

Marshall's proposal is particularly intriguing in the context of a monetary union. The idea suggests a way that a country could gain the microeconomic advantages of a currency union without sacrificing all of the potential macroeconomic advantages of a separate currency and yield curve. The country could simultaneously adopt the currency of another country and introduce new units of account indexed to a local index such as GDP, the CPI, house prices, or the terms of trade. Those people who wanted contracts whose value depended on the state of the local economic cycle would be able to make such contracts assuming, of course, that the contracts were sufficiently liquid to justify a market. Those for whom such considerations were unimportant would simply make contracts in the new currency. If a large enough fraction of the population were interested in these contracts, changes in the indexed interest rates would have an effect on the economy. In this case a local central bank could use the contracts to counteract cyclical booms or recessions.[28]

Carlton's analysis of successful and unsuccessful commodity futures markets is directly relevant here. First, an indexed unit of account contract is only likely to be successful if its yield is not highly correlated with the yield on other contracts. House

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27. The reasons why such contracts have not been successful in the US are complex. Theis (1995) notes that in 1939 the Supreme Court extended its 1935 ruling on the Gold clauses [whereby Congress ruled that contracts denominated in gold had to be settled in devalued dollars] to rule void all forms of debt indexation. This ruling was not repealed until 1977. As he notes, 'The non-flood of debt indexation that followed could be because of the dependence of debt indexation on the will of the Congress' (p xii).

28. There are several unresolved issues inherent in this statement. There has been little analysis of the economics of multiple media of account within a single economy. An exception is Cowen and Kroszner (1994). A central bank is limited in the extent to which it can intervene to determine interest rates denominated in an indexed unit of account, because it cannot supply the unit perfectly elastically. Stabilising interest rates in this case is more akin to stabilising commodity prices.

price contracts and nominal GDP contracts would appear to have the necessary yield independence. However, a lack of yield independence may explain why ordinary CPI contracts have not been particularly popular. If the yield on currency deposits accurately anticipates inflation most of the time, the estimated correlation between the yields on indexed contracts and currency contracts will be high even if there is little correlation between the two yields because of rare bouts of extremely high inflation or deflation. In this case, interest in the contract may wane during ordinary periods when inflation was predictable. It is worth noting that the Unidad de Fomento was born in a period of high inflation, even though inflation in Chile is now moderate.

Liquidity is a second issue. On *a priori* grounds, there are no obvious reasons why contracts denominated in indices that have low correlation with currency yields do not exist in countries where they are legal. One explanation for the low popularity and general non-existence of such contracts is that there is little demand for contracts that protect individual income against inflation or relative price changes.[29] If so, it begs the question why governments find it important to maintain separate currencies to stabilise aggregate income. The second possibility, evident in the history of the Unidad de Fomento, in the histories of various failed commodity markets, and even in the history of the first indexed share market fund (introduced in the 1970s and phenomenally successful ever since) is that it takes considerable effort to create a successful, liquid market. Shiller (1993) argues this point in the context of indexed units of account; Williams (1986) makes the same point in the context of commodity futures markets. A new contract has to be specified properly, it needs to be well marketed to customers, and it needs to have low transactions costs. New contracts frequently fail early in life; for this reason they need nurturing during their early stages, even if there is high 'natural' demand for the contract. The history of the Unidad de Fomento is instructive; it took fifteen years and the introduction of daily indexing before the UF became widely used.

What then for New Zealand, or Australia? The question of indexed contracts raises curly questions and intriguing possibilities. If these contracts are not widespread because there is no demand for counter-cyclical asset price insurance, one of the main arguments in favour of either country maintaining a separate currency vanishes. To be sure, counter-cyclical monetary policy can be justified if it prevents downturns (or overly robust expansions) and not just provides insurance against them; but such belief in the potency of monetary policy is not universally held, even if it has been fashionable in the last decade. Moreover, even if it were true that central banks could effectively counteract large shocks affecting large areas, it is not clear that there are large gains to be had from small central banks, because it may not be possible to fine-tune monetary policy that finely.

In contrast, if indexed contracts are not widespread because they are difficult to introduce, even though there is considerable latent demand – a scenario which is suggested by the success of the Unidad de Fomento – the New Zealand government

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29. See the discussion in Shiller (1998).

should consider experimenting with the introduction of new indexed contracts. The government would be a natural issuer of debt indexed to nominal GDP, given that its tax revenues provide it with a natural hedge; it is therefore well placed to experiment retailing such contracts, or supporting financial institutions interested in creating private sector debt instruments. Such expenses would be warranted if a major fear of entering a monetary union were concern that real New Zealand interest rates would be too low in the future; the existence of these contracts would provide peculiarly New Zealand interest rates to those who wanted them.

The simultaneous introduction of new indexed units of account and the adoption of the currency of another country sidesteps the issue raised by Helpman and Razin (1982), that eliminating a currency reduces the ability of agents to insure against shocks when financial markets are incomplete. It also sidesteps the problem identified by Neumeyer (1998), that the insurance possibilities provided by large numbers of currencies may be undermined by the excessive volatility of these currencies, for there is no reason why indexed units of account should be volatile. Given the practical success of the Unidad de Fomento, it might be time to investigate Marshall's nineteenth century vision further.

5.   Conclusion

The paper began by posing four questions. I would like to end by furnishing four tentative answers.

5.1   Why should Australians care whether or not New Zealand adopts the Australian dollar?

There are several reasons. First, and most important, it is likely that there would be a big expansion in trade between the two countries; in fact a doubling of trade is not out of the question. This will raise incomes in both countries, although it will also generate winners and losers in each country, at least temporarily. Moreover, there will be a saving on foreign exchange costs; each country's firms are more likely to expand across the Tasman; and firms currently operating in both countries will be able to operate more efficiently. An increase in income is good for Australia, even if the increase is only modest; a richer New Zealand should also be good for Australia.[30]

Secondly, there will be an increase in the liquidity of Australian dollar financial markets. This increase will not be that large, but it should be welcome in a world where financial market consolidation is occurring. There may, however, be a rise in the currency risk premium paid by all Australian borrowers, although most likely it would be modest. Australia could also gain some seigniorage, although if the Australian government insisted on keeping all seigniorage it would prove expensive in terms of goodwill; in any case, New Zealand has some means of obtaining some

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30. This is not necessarily true either. A poorer New Zealand may be good for Australia if it means more New Zealanders migrate to Australia.

even if none were offered. Total net seigniorage in Australasia would increase, as the costs of operating one currency are lower than the cost of operating two currencies.[31]

Thirdly, Australia would benefit from finding out more about the operation of monetary unions. It may want to join a larger monetary union one day, and New Zealand's experience adopting the Australian dollar may be valuable. Of course, it may be more valuable for Australia to observe the effect of New Zealand adopting the US dollar, but that is a different question.[32]

5.2   What makes New Zealand different to Queensland?

In terms of some of the traditional criteria, Queensland is no better suited for a monetary union than New Zealand. The external shocks affecting Queensland are not similar to those affecting the rest of Australia; and GDP paths are quite different as well. While the economies of Queensland and the rest of Australia are more integrated than the economies of Australia and New Zealand, this is partly because they use the same currency, and to some extent this would change if Queensland were to adopt the quirk. Since no one is seriously advocating Queensland adopt the quirk, New Zealand should seriously reconsider the importance of exchange rate flexibility as a way of buffering economic shocks.

Obviously there are some differences, both political and economic, between New Zealand and Queensland. The economies of Queensland and the rest of Australia will remain more integrated than the economies of Australia and New Zealand, even if New Zealand adopts the Australian dollar, because Queensland and the rest of Australia share similar political institutions. They have the same taxes, the same central bureaucracies, the same regulations, and the same pension schemes. Consequently, Queensland and Australia will have more economic shocks in common than will New Zealand and Australia, and Queensland will have different risk-sharing mechanisms through the operation of the central government. The importance of fiscal transfers between Queensland and the rest of Australia in determining the suitability of a monetary union may not be very high, however; at least European governments, facing the same issues, do not think so. New Zealand does not need fiscal transfers to buffer regionally specific economic shocks as the New Zealand Government can readily change its asset position to buffer these shocks.

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31. The Reserve Bank of New Zealand would not need to be abolished, and to do so would probably be unwise. Banking supervision would remain, for instance; and the Reserve Bank of Australia would still need to understand the operation of the New Zealand economy to successful implement monetary policy.

32. This paper was written to explicitly consider an Australian–New Zealand monetary union. A US–New Zealand monetary union may also make sense for New Zealand. The advantages of this for New Zealand are the potential for much lower interest rates than are available if New Zealand adopted the Australian dollar. The trade expansion would be different, focused towards the US, Argentina, and Hong Kong rather than Australia. The trade expansion is likely to be less, however, as the countries are much further away, and currently there are many more barriers to trade than there are with Australia. The disadvantages concern the greater dissimilarity of the New Zealand and US economies. Nonetheless, it should not be assumed that an Australasian monetary union is the natural choice for New Zealand.

The political consequences of New Zealand adopting the Australian dollar are a major difference between Queensland and New Zealand. Queensland has no reason to want to print money in an emergency, and it implicitly gets a share of the seigniorage. Both New Zealand and Queensland politicians might desire the ability to choose their own inflation rates or otherwise determine the real value of money contracts, however, and there is no inherent reason why such powers should be a federal rather than regional prerogative. Giving up the right to coin money is a loss of power, and one which politicians may be loathe to do even if their subjects gain much convenience from them doing so.[33] Moreover, even if New Zealand does adopt the dollar, because it has the power to reverse the decision in the future the functioning of the monetary union may be seriously undermined, although it probably would not be so.[34]

5.3   When should a currency go quietly?

Currencies do not go quietly. Their existence is legally protected, they often enjoy a monopoly position, and local residents use them even if they would be better off if they all used a different currency. For this reason a lack of liquidity is rarely fatal, as local agents provide liquidity because it is too expensive to substitute to a different currency. In this sense currency markets are unlike commodity markets, although in rare cases ('dollarisation') agents will substitute to an alternative currency.

It is plausible, however, that currencies sometimes should vanish. The key condition appears to be that their yield curve becomes highly correlated with the yield curve of a different currency. As an empirical matter, this might be starting to happen to the New Zealand dollar with respect to the Australian dollar, and it might be starting to happen to the Australian dollar with respect to the US dollar. If so, the value of a separate currency diminishes, and so the cost/benefit ratio of having a separate currency rises. This condition is not a necessary condition, however, because yield curves that should be highly correlated may not be because of the way in which monetary policy is implemented.

Even if two yield curves are estimated to be highly correlated over short periods, it does not means that they are highly correlated, for the true correlation coefficient may depend on extremely important but rare differences. Thus New Zealand should consider why it might want to retain a yield curve that is different to that of Australia or the US. One reason is that it might want to change interest rates to ameliorate large regionally specific economic shocks. Switzerland appears to have made this choice. A more important reason is that it might want a different pattern of real interest rates because of concern about the welfare implications of nominal interest rates determined

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33. 'So much of barbarism, however, still remains in the transactions of most civilized countries, that almost all independent countries choose to assert their nationality by having, to their own inconvenience and that of their neighbours, a peculiar currency of their own' (Mill 1909).

34. Dooley (1998) argues that once in a monetary union it is extremely expensive to exit, as it is difficult for one country to unilaterally change the value of financial contracts in place with agents resident in the other country.

independently of local price movements. For example, a demand for positive real interest rates may be important if a large fraction of the population only invests in debt instruments.

It is unclear how New Zealanders perceive this issue. Survey evidence suggests a majority fraction wish to form a monetary union with Australia, but the reasons for this preference are far from clear. Perhaps this is an issue for further research.

5.4   Can New Zealand have its cake and eat it?

It should be obvious that this paper has been structured to answer this question, 'Yes'. It is plausible that New Zealand could simultaneously adopt the Australian dollar and introduce a new indexed unit of account, possibly in terms of nominal GDP, possibly in terms of the CPI index, and possibly in terms of house prices. Such a policy, if successful, would provide the benefits of greater integration with the Australian economy as well as a means for New Zealanders to insure against shocks peculiar to New Zealand. If such contracts were popular, the New Zealand central bank would also have some powers to engage in countercyclical monetary policy by altering the conditions on these contracts. In this scenario, even an independent Queensland Central Bank lies within the realms of the possible.

The success of the Unidad de Fomento provides some basis for imagining that 'Marshall's dream' could be implemented. Nonetheless, the evidence that indexed contracts are difficult to introduce should be taken seriously. People may not want them; even if they do want them it may be a long process to introduce the right type of contract and build minimal levels of liquidity; and they face political challenges from those who consider the right to control the currency to be of primary importance. Despite these problems, however, they appear to offer New Zealand the opportunity to reduce the cost of gaining the benefits of a monetary union with Australia, and for this reason they deserve serious investigation.

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Discussion

1.   **Don Brash**

Comments on the Coleman paper

At the outset, I would like to thank Andrew Coleman, not only for this very interesting paper, but more importantly for his personal contribution in opening up the issue of New Zealand joining a currency union.

Without Andrew's contribution I don't think that the discussion would yet have developed as far as it has, or reached into the territory that it has.

New Zealanders from all walks of life are currently trying to work out what drives economic success. As a topic of dinner table discussion, New Zealand's economic performance – both absolutely and relative to other countries, especially Australia – is starting to rival rugby and politics!

This is the territory into which Andrew has taken the discussion of currency union. Do the current monetary arrangements – which feature a floating exchange rate and an inflation target to tie down the independent monetary policy that results – maximise growth?

My standard response when asked what monetary policy can do to help maximise economic growth is to say that maintaining price stability is the best contribution that monetary policy can make. However, that contribution is a small one and more akin to removing an impediment than being an active accelerant or a catalyst for transformation.

I do not resile in any way from that answer when I say that it is incomplete. My standard answer addresses the mostly macroeconomic question of whether the long-run Phillips curve is vertical. But there are other, more complete, aspects of the question. What monetary arrangements would best support growth, and is what we currently have the best?

One might note at the outset the irony of asking this question now. We have recently learned how to deliver price stability, and thereby how to remove the impediment to growth that comes from an unstable pricing mechanism. So why are New Zealanders not satisfied?

We are not satisfied because, as we have progressively removed various impediments to growth, we have found that the gains have fallen short of expectations and desires. Macroeconomic and structural policy reforms almost certainly delivered an improvement in economic performance in New Zealand, but not sufficient to begin the process of clawing back New Zealand's four-decade long decline in relative living standards. So we are now looking for the deeper reasons for under-performance.

The case for the current monetary arrangements being perhaps a part of these deeper reasons for under-performance comes from four interconnected lines of thinking. Many of these points have been made by Andrew Coleman in this and earlier papers. Let me comment on each of them.

Floating exchange rates aren't what they were cracked up to be

This is the argument that the current monetary arrangements do not deliver the benefits that we used to think they would. In particular, floating exchange rates are not as good at insulating open economies from external shocks, or at keeping open economies close to equilibrium, as we previously believed.

Andrew Coleman has referred to a very significant body of work that goes to show how much 'noise' there is in market-determined exchange rates, and how difficult it is to relate exchange rate movements to economic fundamentals. I have a good deal of sympathy with the point he is making. Having been on the receiving end of much criticism about exchange rate developments that have not been justified by economic circumstances, and about which I could do nothing, that sympathy is heart-felt. I am sure that Ian Macfarlane likewise accepts the force of the point, especially in the context of the Australian dollar sitting at historic lows after a decade of truly outstanding economic performance and an unusually small degree of structural imbalance.

However, we should be careful not to get carried away with the idea that foreign exchange markets are imperfect. By and large, over the history of floating exchange rates, they do reflect relative economic circumstances. And that seems to be truer for smaller economies than the large, relatively closed, economies for which much of the research has been undertaken. International commodity prices do seem to have been very important determinants of both the Australian and New Zealand dollars (notwithstanding Arthur Grimes' results that Coleman cites, which relate the exchange rate to very odd looking – albeit official – terms of trade data). And I well recall the episode from early 1997 through 1998 when the New Zealand exchange rate fell rather faster than we could explain at the time, only to find that the fall was well justified by the gathering Asian financial crisis.

I think it is probably true to say that real exchange rates are more volatile, and 'unreasonably' so, for floating exchange rate economies than for regions within currency unions. The point is far more true at short-term frequencies than at business cycle frequencies, where for regions within a currency union the scale of real exchange rate change can also be very large, but it is also probably true at business cycle frequencies.

Exchange rate risk is a significant non-tariff barrier to trade

Second, it is argued that the current exchange rate arrangements create a barrier to the kinds of activities and enterprise that would contribute to faster growth. In particular, the existence of exchange rate risk inhibits trade, and hence economic integration with external markets, to a greater extent than we previously believed.

From my perspective, this is getting to the nub of the issue. It is one thing to argue that floating exchange rates aren't as useful as we previously thought. Once one allows for the point that real exchange rates sometimes have to adjust, whatever the monetary arrangements, one is trading off one imperfect monetary arrangement for another, and we don't know exactly how large the costs and benefits of such a trade-off actually are. But, if one monetary arrangement adds a barrier to trade that the alternative does not, there is an important issue to be addressed.

To be frank, I don't know what to make of the evidence that others have presented and that Andrew Coleman has cited. Logically, I would expect that the introduction of transactions costs would constitute a barrier. And I would expect that the introduction of risk would also constitute a barrier. But how big of a barrier, given the increasing efficiency and growing accessibility of financial markets? Past research has struggled to show that exchange rate volatility makes any difference to trade. The new research, such as that generated by Andrew Rose, shows that currency unions have a very big effect on trade above and beyond the effects of volatility – so big that I am left wondering about the plausibility of the results. For example, do we really think that trade between the Cook Islands and New Zealand is large because we have a common currency? Or are there other more important reasons?

Gains from trade with a larger region really matter for growth

It is one thing to argue that separate currencies inhibit trade. It is still another to argue that that inhibition to trade damages growth. Interestingly, in the recent thinking about growth that has been going on in New Zealand, economic integration with the rest of the world figures large. Our distance from markets, our relative scale, our relative lack of diversification, and the limited extent to which our potential risk-takers rub shoulders with more entrepreneurial types, all figure in the discussion. If greater trade with a larger area can break down or overcome these kinds of constraints, the growth gains might well justify giving up one's currency and monetary independence.

Again, however, I don't know what to make of the arguments. I am convinced that there are gains from trade that New Zealand hasn't yet exploited. We often describe New Zealand as a small open economy, but with exports now accounting for a little over one-third of total activity we are far from being as open as many economies of comparable size. To be sure, we are not located in the middle of Europe, but nor are Singapore or Malaysia or Hong Kong. Leaving aside the question as to whether the existence of a separate currency is a significant barrier to further openness, are the kinds of gains that *might* come with greater trade likely to be highly relevant to how fast New Zealand can grow? Or, instead, are such gains mostly relevant to the *level* of productivity and real incomes in New Zealand? Tariff barriers can make an economy poorer, but do they usually hamper growth?

Economic adjustment doesn't need the help of a floating exchange rate

Those of us in countries with a floating exchange rate regime normally suppose that, as circumstances change, the process of economic adjustment will be usefully smoothed by a changing nominal exchange rate.

Andrew Coleman asks some pointed questions about the standard analysis of adjustment to region-specific shocks. How prevalent are region-specific shocks? Are they big enough, and frequent enough, to make business cycles behave very differently? For the countries and regions that we are concerned about, how different is the mobility of factors between different regions within currency blocks and between the currency blocks themselves? And how much of such mobility differences as do exist is a product of the very existence of separate currencies? How important is a single fiscal authority, once one allows for the ability of separate fiscal authorities to smooth out income shocks by borrowing?

And one might add some other equally pointed questions. Do we want adjustment to be 'smoothed' by floating exchange rates or fiscal transfers in the first place? If the region-specific shock is temporary, won't individuals smooth consumption anyway; and if the shock is permanent, shouldn't we just get on with the adjustment process?

One of the more intriguing (and if correct, compelling) arguments in favour of currency union that I hear these days is that the floating exchange rate favours the 'wrong' kind of entrepreneur. An exchange rate that buffers swings in commodity prices makes commodity-based activities more attractive, and commodity-based activities are a less dynamic base for growth. And an exchange rate that is volatile and discourages potential entrepreneurs from engaging via trade with other entrepreneurial types also hampers dynamism.

These arguments about harm to the dynamism of the economy are important ones to get to grips with and we are only just starting to scratch the surface of the issue. Interestingly, if these arguments turn out to be valid, it probably points to the desirability for New Zealand of currency union with the United States rather than Australia.

Again, I'm not sure of the answer to these very important questions. One sense I have is that we haven't yet posed the question properly. It seems to me that we tend to analyse the issue of region-specific shocks as if the issue was adjustment to shocks within the 'normal' range of events that different regions are exposed to. For common-garden variety shocks, there's not much of an adjustment issue. The real question is whether one would desirably have a buffering mechanism available when a truly large region-specific shock hit. What if some disease took out New Zealand's dairy industry entirely, for several years? If we pose the question this way, we are asking about the scale of the premium we might be paying – if indeed we are paying a premium – in order to preserve the option to have a massive shift in the real exchange rate occur partly through a change in the nominal exchange rate.

Ladies and Gentlemen, I have spent too much time already telling you how little I know about the answers to these questions. I am, however, quite certain that the questions are much more important than we have allowed up until recently. Our understanding of the importance of the issue, and the growth-dynamic frame within which the issue should be set, has been greatly helped by the innovative contributions of people at this conference, such as Andrew Coleman and Andrew Rose. For that we owe a debt of gratitude.

2.   Andrew Rose

What should academics tell policy-makers about monetary union?

Introduction

When I began to work on monetary unions a few years ago[1] it was rare for academics outside Europe to be interested in the subject, and highly unusual to find advocates of monetary union outside a few continental Europeans. Now it is almost the majority view. Accordingly, I find myself in a difficult position, since I agree with almost all of what Coleman and Wyplosz write. In particular, I agree with Coleman that monetary union for New Zealand makes a lot of sense, and I agree with Wyplosz that any broad monetary union for Asia is and should be a long way off.

Currently there seems to be an emerging consensus in favour of monetary union, at least for many small open economies. What are its roots? At a broad level, there are two: (i) the benefits of floating exchange rates have been over-stated; and (ii) the benefits of monetary union have been understated. In my discussion, I will touch very briefly on the first, and review some of the most striking evidence for the second.

But I want to push the argument further. The academic arguments in favour of monetary union have remained … academic. Outside continental Europe and a few places in Central and South America, the political benefits of national monetary sovereignty are perceived to be high simply because the suggestion of abandoning the national money is usually met by the public with superficial scorn and mindless ridicule. At this point, academics should be persuading policy-makers to lower the perceived political benefits of a national money. Any debate on monetary union must leave the ivory tower of the academy; policy-makers must raise it publicly if the discussion is to be serious. Succinctly, academics should be trying to get policy-makers to raise monetary union to the level of national debate.

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1.   Quite a few, actually.

The benefits of floating exchange rates are lower than usually perceived

Floating exchange rates are said to provide insulation, and to be an additional tool of monetary policy. In practice, they just as often introduce shocks that have to be offset through other tools of economic policy. Rather than being part of the solution, they are frequently part of the problem. That's why so many countries seem to have a 'fear of floating' in the memorable phrase of Calvo and Reinhart.

No one knows why floating exchange rates seem to be so volatile. Indeed, it is accurate to describe this problem as possibly the most important problem in international finance. But no one denies it. Exchange rates – at least those of low-inflation developed countries – seem to fluctuate in a way that is disconnected from macroeconomic 'fundamentals' (money, income, prices, etc) for significant periods of time; this is the famous finding of Meese and Rogoff (1983). Further, when the exchange rate is fixed – especially in a hard fix – this volatility vanishes from the exchange rate and does not reappear elsewhere in macroeconomic fundamentals, as Flood and I have shown (Flood and Rose 1995). That is, eliminating exchange rate volatility seems almost to be a free lunch, a topic I have pursued in my work with Jeanne (Jeanne and Rose (forthcoming)). As a result, thinking about the exchange rate as an extra tool for macro-management is starting to seem unworldly. There are exceptions of course; everyone knows how depreciation allowed Australia and Canada to stave off most effects of the Asian crisis. But those cases are … exceptions.

The benefits of monetary union are higher than usually perceived

Much work has been done on monetary unions, usually from a theoretical viewpoint. Alesina and Barro (2000) are the latest word in the area and apply a model that combines the best elements of Mundell's celebrated optimum currency area criteria with more recent work on monetary discipline. From this long literature, one gets the reasonable view that monetary unions have both costs and benefits, but are usually inappropriate for most countries because of the imperfect synchronisation of business cycles or inadequate adjustment mechanisms (sticky prices and wages, few risk-sharing mechanisms and so forth).

Three things are new. First, many view the standard criteria as inappropriate. Wyplosz convincingly shows that the standard optimum currency area criteria were essentially irrelevant for EMU. I prefer more generally to think that data such as the degree of business cycle synchronisation are almost irrelevant, since they are based on historical data that would be irrelevant in the case of monetary union and the changes it induces, a subject I pursued in my work with Frankel (Frankel and Rose 1998).

Second and more importantly, the literature is now more empirical. It uses data on actual monetary unions to get some sense of their effects. For instance, in one of my papers (Rose 2000) I found that a pair of countries in a monetary union seems

to have substantially higher bilateral trade, holding a host of other factors constant. The magnitude of this effect is interesting for two reasons: (a) it is robust; and (b) it is astonishingly high. As a result of such work – the final innovation – monetary unions are now viewed under a much more favourable light. Since monetary union seems to be associated with greater trade, but insignificantly different macroeconomic volatility, the case for monetary union seems stronger than it did a few years ago.

Attention is usually focused with an example. Before 1967 the New Zealand pound had been in a long-term 1:1 very hard fix with the UK which I will treat as a *de facto* monetary union for international commerce. This ended in 1967 when New Zealand abandoned the pound upon decimalisation. As Figure 1 shows, New Zealand's bilateral trade with the UK started to decline around 1967. In particular, the figure shows that the natural logarithm of NZ–UK bilateral trade (adjusted for inflation) had fluctuated around a constant level for the twenty years prior to 1967. However, the establishment of the NZ dollar and the associated exchange rate volatility *vis-à-vis* the pound coincided with the beginning of a long-term trend decline in trade between New Zealand and the UK.[2]

Figure 1: The Effect of the NZ Dollar on NZ–UK Trade
Log of real US$ bilateral trade

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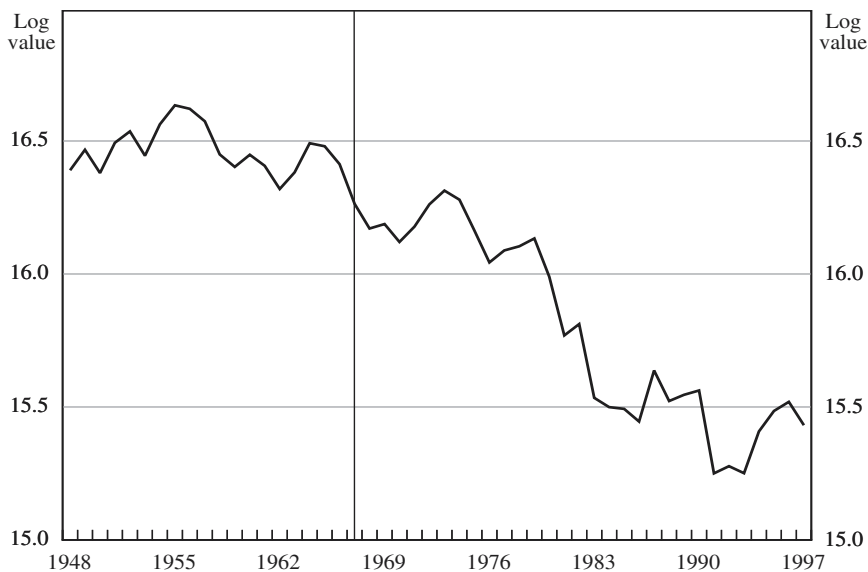
2. This ocular result can be made more rigorous with simple regression techniques; the decline in NZ–UK trade is a statistically significant 3.7 per cent per year after 1967 though no significant decline is present before 1967. Adjusting the log of trade through the 'gravity model' of bilateral trade still results in a significant downward trend of 2.9 per cent per year after 1967.

An accident? Hardly. My recent work with Reuven Glick (Glick and Rose 2001) exploits the 130 exits from currency unions in the 1948–1997 period using a large panel of IMF bilateral trade data.[3] Using only data on the countries that left or joined currency unions, we find that a pair of countries that dissolve a currency union experience a halving of trade. This is true even after controlling for a number of other things such as preferential trade agreements and income which also affect trade. My work with Jeffrey Frankel shows that the trade boost associated with monetary union seems to have a large effect on real income (Frankel and Rose 2000).

There is of course a caveat associated with this work. It is based on actual currency unions that typically involve small and/or poor countries; thus any extrapolation to large rich countries is…extrapolation. EMU and the recent dollarisations in Ecuador, El Salvador and Guatemala will eventually enable us to quantify the effects of currency union more effectively. Still the debate is slowing shifting the onus of proof towards the doubters of the benefits of monetary union.

De-mystifying the concept of monetary sovereignty

Which brings me to my last point. Suppose the effects of EMU and dollarisation turn out on net to be positive from an economic point of view. We as economists – whether academics or policy-makers – will then have an obligation to contemplate the policy option of monetary union. The main problem at that point will almost surely be the mass hysteria that is associated with any suggestion that a country should surrender its monetary sovereignty. To say that most people find the thought of relinquishing the national money unpalatable is a gross understatement. One only need read a British tabloid, or count the number of European referenda on monetary union, to realise how difficult it is to discuss monetary union sensibly on the national stage. The exceptions to the rule are just that; exceptions.

There are costs and benefits of monetary union. Coleman has provided us with a careful economic analysis as to whether it is in New Zealand's own interests to retain monetary sovereignty. Evidence like his may one day convince technocrats of the desirability of an ANZ monetary union. But even that very important step will mean little without proper preparation in the political sphere. It is time to try to begin educating the public so that any future discussion by the public on monetary union can be sober and thoughtful. Thinking the once unthinkable is a long slow process, as Wyplosz has shown. It is time in Asia to begin.

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3. General Discussion

There was a range of issues discussed in this session. Some participants expressed concern that a common currency would not be trade-creating but merely trade-diverting. In response to this argument, it was pointed out that a currency union just reduces costs of trade within the region – as such it should be welfare-enhancing as the old patterns of trade are still available to the countries. Furthermore, econometric evidence suggested that countries in currency unions trade more with everyone, not just their union partners.

There was some discussion of the figure Andrew Rose used on the effect of currency union dissolution on NZ–UK trade. A number of participants suggested that the main cause of the decline in trade was the entry of the UK to the European Union and the resultant loss of access by New Zealand to UK markets. In response to this argument, it was pointed out that econometric work that controlled for this and other factors still identified a significant effect from currency unions.

Some participants questioned how applicable the European experience was to Asia. They pointed out that countries within Europe are culturally similar and that there was a political imperative to tie Germany more closely to the rest of Europe. While cultural similarity is clearly relevant for Australia and New Zealand, it is probably less so for the rest of Asia. Other participants raised the question of what the best first step towards union should be. While trade integration was the choice in Europe it may be more appropriate to take some alternate route in Asia as the economies are more globally focused in their trade, making regional trade agreements difficult to develop. One participant suggested that the first step towards a wider Asian currency union would be small regional arrangements between similar countries, for example, the original ASEAN members, Australia and New Zealand, and Korea and Japan.

Some participants felt that the dismissal of the optimum currency area (OCA) analysis by Wyplosz went too far. They argued that European union was possible because none of the OCA conditions were grossly violated. In contrast, the experience of Argentina suggests that even with the greatest political will. gross violation of OCA conditions can lead to significant problems.

There was some discussion about the need for fiscal transfers in a currency union. It was suggested that while fiscal transfers may not be essential, a sharing of seigniorage was probably a minimum requirement in any workable union. In discussion about the Euro area it was suggested that development funds were used as *de facto* fiscal transfer mechanisms. Nonetheless, most people felt that the size of these funds were not large enough to have any significant stabilisation effect. In response to these points, it was suggested that, provided countries could borrow in international financial markets by issuing bonds, they could stabilise their economy using inter-temporal transfers rather than intra-regional ones. It was also pointed out that the empirical evidence suggested that currency unions would tend to synchronise countries' business cycles so the need for fiscal transfers would, in any event, diminish.

One participant, drawing on the experience of Latin America, suggested that the value of currency unions, in particular, those to the US could be overstated. He pointed to the experience of Panama, which had unilaterally adopted the US dollar, and Brazil and Chile which had floating rates. Brazil and Chile are doing well economically, however, Panama is not performing as well. There was also some discussion about Argentina's experience. People felt that they did not really have the option of an independent currency because, in contrast to New Zealand for example, people were unwilling to hold Argentinean pesos. It was also pointed out that Argentina was not in a monetary union with the US – the significant interest rate premium on peso-denominated, as opposed to US dollar-denominated, debt when both are issued by the Argentinean authorities, made it clear this was not the perception of international markets.

One participant suggested that the choice of floating or fixed rates could be thought of as a choice of how to take out insurance against large shocks. A floating exchange rate is truly valuable when there is a large shock but for the rest of the time it may possibly impose costs. A fixed exchange rate may, perhaps, be preferable during normal times but is not as good at dealing with large shocks. With a fixed exchange rate, fiscal transfers can be used to offset the effects of large shocks. The question then becomes, how frequent are large shocks and what price are countries willing to pay to insure against the risk of large shocks? In this interpretation the costs of a floating exchange rate for some countries may be too high relative to the insurance against large shocks that it provides.

Biographies of Contributors

Don Brash

Don Brash was born in New Zealand in 1940. He attended Canterbury University in Christchurch, completing a Bachelor of Arts Degree with a double major in economics and history. In 1962 he obtained his Master of Arts degree with first class honours, majoring in economics. In 1966, Dr Brash obtained a PhD in economics from the Australian National University, with a thesis on American investment in Australian industry. After a career serving with the World Bank in Washington, in the New Zealand banking sector, in the New Zealand Kiwi fruit industry, and as a public policy advisor, Dr Brash became Governor of the Reserve Bank of New Zealand in 1988.

Andrew Coleman

Andrew Coleman, Assistant Professor of Economics at the University of Michigan, received his PhD from Princeton University in 1998, and joined the faculty in 2000. His primary research interests concern the role of transport and storage costs in determining the spatial patterns of commodity prices and the location of producers, with an emphasis on the effect of transport and storage systems on the evolution of the US economy in the nineteenth century. He teaches development and international finance. Prior to Michigan he worked at the New Zealand Treasury from 1996-99, where as part of his work he investigated the case for a monetary union between Australia and New Zealand.

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Gordon de Brouwer is Professor of Economics at the Australian National University. His interests include the economies of Australia, Japan and East Asia, open economy macroeconomics and policy, monetary and financial economics, and international relations. His publications include *Hedge Funds in Emerging Markets* (CUP 2001), *Financial Markets and Policies in East Asia* (ed Routledge 2001), and *Financial Integration in East Asia* (CUP 1999). He is co-author of *Strengthening Australia-Japan Economic Relations*, a major report written for the Department of Foreign Affairs and Trade, released in April 2001. Before joining the ANU in January 2000, he was Chief Manager, International Markets and Relations, at the Reserve Bank of Australia.

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Guy Debelle is Head of Economic Analysis at the Reserve Bank of Australia. He has worked in the Economic Analysis and Research Departments of the Reserve Bank for a number of years. He has also worked at the Commonwealth Treasury and the International Monetary Fund. Dr Debelle completed his undergraduate studies

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David Gruen became Head of Economic Research Department at the Reserve Bank of Australia in May 1998. He has been with the Bank for twelve years, working in the Economic Analysis and Research Departments. From August 1991 to June 1993, he was visiting lecturer in the Economics Department and the Woodrow Wilson School at Princeton University. Before joining the Reserve Bank, he worked as a research scientist in the Research School of Physical Sciences at the Australian National University. He holds PhD degrees in physiology from Cambridge University, England and in economics from the Australian National University.

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Takatoshi Ito is a Professor at the Institute for Economic Research, Hitotsubashi University. He held the position of Deputy Vice Minister for International Affairs at the Ministry of Finance between July 1999 and June 2001. Professor Ito also held positions of Assistant and Associate Professor at the University of Minnesota (1979–88), visiting Professor at Harvard University (1992–94), and Senior Advisor in the Research Department, IMF (1994–97). He is an author of many books including *The Japanese Economy* (MIT Press, 1992), *The Political Economy of the Japanese Monetary Policy* (with T Cargill and M Hutchison, MIT Press, 1997), *An Independent and Accountable IMF (*with J De Gregorio, B Eichengreen, and C Wyplosz, Geneva Report, 1999), *Financial Policy and Central Banking in Japan* (with T Cargill and M Hutchison, MIT Press, 2000) and many journal articles on international finance and the Japanese economy.

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Robert N McCauley serves the Bank for International Settlements' Asian and Pacific Office in Hong Kong as Deputy Chief Representative and chief economist. After joining the BIS Monetary and Economic Department in October 1994, he followed international capital flows and foreign exchange markets. Highlights of his previous 13 years in research at the Federal Reserve Bank of New York included managing the International Finance Department and serving as lead economist to the interagency bank supervisors' committee that rates country risk. While on leave at the Joint Economic Committee of the US Congress in 1988, he organised the first modern hearing on US foreign debt. In 1992 he taught international finance and the multinational firm at the University of Chicago's Graduate School of Business.

Mr McCauley has written widely on topics such as bond-market volatility, offshore lending to US corporations, the profitability of direct foreign investment in the United States, national differences in the cost of capital, the impact of Japanese asset deflation on Pacific capital markets, foreign currency banking in greater China

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Andrew Rose is the Bernard T Rocca Jr Professor of International Trade and Business, at the Haas School of Business Administration, University of California at Berkeley. He studies international finance, macroeconomics and trade. Recently his research has focused on currency crises and the consequences of currency union. He is a research associate of various academic organisations and director of the Clausen Center for International Business and Policy at Berkeley. He has organised a number of academic conferences, and has consulted for a number of international financial institutions, central banks, and finance ministries.

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John Williamson was born in 1937 and educated at the London School of Economics and Princeton University. He has taught at the Universities of York (1963–68) and Warwick (1970–77) in England, the Pontifícia Universidade Católica do Rio de Janeiro (1978–81) in Brazil, as a Visiting Professor at MIT (1967 and 1980), LSE (1992), and Princeton (1996), and as an Honorary Professor at the University of Warwick (since 1985). He was an economic consultant to the UK Treasury in 1968–70, where he worked on a range of international financial issues, and an advisor to the International Monetary Fund in 1972–74, where he worked mainly on questions of international monetary reform related to the work of the Committee of Twenty. He has been a Senior Fellow at the Institute for International Economics in Washington, DC, since its founding in 1981. From 1996–99 he was on leave from the Institute to serve as Chief Economist for the South Asia Region of the World Bank. In 2001 he served as Project Director for the UN High-Level Panel on Financing for Development. He retains his British nationality.

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