

Exchange-Rate Pegging in Emerging-Market Countries?

by

Frederic S. Mishkin
Graduate School of Business, Columbia University,
and
National Bureau of Economic Research

Phone: 212-854-3488, Fax: 212-316-9219
E-mail: fsm3@columbia.edu

June 1998

I thank Adam Posen, Robert Hodrick, an anonymous referee and participants in the macro lunch at Columbia University for their helpful comments. Any views expressed in this paper are those of the author only and not those of Columbia University or the National Bureau of Economic Research.

ABSTRACT

This paper examines the question of whether pegging exchange rates is a good strategy for emerging-market countries. Although pegging the exchange rate provides a nominal anchor for emerging market countries that can help them to control inflation, the analysis in this paper does not provide support for this strategy for the conduct of monetary policy. First there are the usual criticisms of exchange-rate pegging, that it entails the loss of an independent monetary policy, exposes the country to the transmission of shocks from the anchor country, increases the likelihood of speculative attacks and potentially weakens the accountability of policymakers to pursue anti-inflationary policies. However, most damaging to the case for exchange-rate pegging in emerging market countries is that it can increase financial fragility and make the potential for financial crises more likely. Because of the devastating effects on the economy that financial crises can bring, an exchange-rate peg is a very dangerous strategy for controlling inflation in emerging market countries. Instead, this paper suggests that a strategy with a greater likelihood of success involves the granting of independence to the central bank and inflation targeting.

Frederic S. Mishkin
Graduate School of Business
Uris Hall 619
Columbia University
New York, New York 10027
and NBER
fsm3@columbia.edu

I. Introduction

In recent years, there has been a growing consensus, even in emerging-market countries, that controlling inflation should be the primary or overriding long-term goal of monetary policy. Past experience with high inflation in emerging-market countries has not been a happy one, and there is a growing literature that suggests that high inflation can be an important factor that retards economic growth.¹ Although central bankers, as well as the public, in emerging-market countries now put more emphasis on controlling inflation, there is still the crucial question of how best to do this. To achieve low inflation, one choice that emerging-market countries have often made is to peg their currency to that of a large, low-inflation country, typically the United States.² Is this choice a good one?

This paper examines the question of whether pegging its exchange rate is a good strategy for emerging-market countries. The analysis here suggests that the answer is usually no, except in extreme circumstances where a particularly strong form of exchange-rate pegging might be worth pursuing. Indeed, an important point in the analysis of this paper is that pegging the exchange rate is a less viable strategy for emerging-market countries than it is for industrialized countries.

After examining rationales for exchange-rate pegging, the paper discusses criticisms of exchange rate pegging and why it is so dangerous for emerging-market countries. Because the paper argues that exchange-rate pegging is highly problematic for emerging-market countries, it then goes on to explore what other strategies for inflation control might be reasonable alternatives in these countries. The paper ends with some concluding remarks.

II.

¹See, for example, Anderson and Gruen (1995), Briault(1995), Bruno (1991), Feldstein (1997), Fischer (1993, 1994) and Sarel (1996).

²In some cases, this strategy involves pegging the exchange rate at a fixed value to that of the other country so that its inflation rate will eventually gravitate to that of the other country, while in other cases it involves a crawling peg or target in which its currency is allowed to depreciate at a steady rate so that its inflation rate can be slightly higher than that of the other country.

Rationales for Exchange-Rate Pegging

Fixing the value of an emerging-market's currency to that of a sounder currency, which is exactly what an exchange-rate peg involves, provides a nominal anchor for the economy that has several important benefits. First, the nominal anchor of an exchange-rate peg fixes the inflation rate for internationally traded goods, and thus directly contributes to keeping inflation under control. Second, if the exchange-rate peg is credible, it anchors inflation expectations in the emerging-market country to the inflation rate in the anchor country to whose currency it is pegged. The lower inflation expectations that then result bring the emerging-market country's inflation rate in line with that of the low-inflation, anchor country relatively quickly.

Another way to think of how the nominal anchor of an exchange-rate peg works to lower inflation expectations and actual inflation is to recognize that if there are no restrictions on capital movements, then a serious commitment to an exchange-rate peg means that the emerging-market country has in effect adopted the monetary policy of the anchor country. As long as the commitment to the peg is credible, the interest rate in the emerging-market country will be equal to that in the anchor country. Expansion of the money supply to obtain lower interest rates in the emerging-market country relative to that of the low-inflation country will only result in a capital outflow and loss of international reserves that will cause a subsequent contraction in the money supply, leaving both the money supply and interest rates at their original levels. Thus, another way of seeing why the nominal anchor of an exchange-rate peg lowers inflation expectations and thus keeps inflation under control in an emerging-market country is that the exchange-rate peg helps the emerging-market country inherit the credibility of the low-inflation, anchor country's monetary policy.

A further benefit of having an exchange-rate peg as a nominal anchor in an emerging market country is that it helps provide a discipline on policymaking that avoids the so-called time-inconsistency problem described by Kydland and Prescott (1977), Calvo (1978) and Barro and Gordon (1983). The time-inconsistency problem arises because there are incentives for a policymaker to pursue discretionary policy to achieve short-run objectives, such as higher growth

and employment, even though the result is poor long-run outcomes -- high inflation. The time-inconsistency problem can be avoided if policy is bound by a rule that prevents policymakers from pursuing discretionary policy to achieve short-run objectives. Indeed, this is what an exchange rate peg can do if the commitment to it is strong enough. With a strong commitment to it, the exchange rate peg eliminates discretionary monetary policy and implies an automatic policy rule that forces a tightening of monetary policy when there is a tendency for the domestic currency to depreciate or a loosening of policy when there is a tendency for the domestic currency to appreciate.

As McCallum (1995) has pointed out, simply by recognizing the problem that forward-looking expectations in the wage- and price-setting process creates for a strategy of pursuing expansionary monetary policy, central banks can decide not to pursue expansionary policy which leads to inflation. However, even if the central bank recognizes the problem, there still will be pressures on the central bank to pursue overly expansionary monetary policy by the politicians that can lead to this outcome, so that the time-inconsistency problem remains: the time-inconsistency problem is just shifted back one step. The simplicity and clarity of an exchange rate peg can help reduce pressures on the central bank from the political process because the exchange-rate peg is easily understood by the public, providing a "maintenance of a sound currency" as an easy-to-understand rallying cry for the central bank. Thus, an exchange-rate peg can help the monetary authorities to resist any political pressures to engage in time-inconsistent policies.

With all of these advantages of an exchange-rate peg as a strategy for controlling inflation in emerging market countries, it is not surprising that many of these countries have adopted this strategy.³ However, as we will see in the next two sections, there are sufficient dangers in pursuing an exchange-rate peg, that it may produce poor economic outcomes in most emerging market countries.

³Another potential advantage of an exchange-rate peg is that by providing a more stable value of the currency, it might lower risk for foreign investors and thus encourage capital inflows which could stimulate growth. However, as we will see in Section IV, capital inflows may be highly problematic for an emerging market country because they may help encourage a lending boom which eventually weakens the banking sector and helps stimulate a financial crisis.

III.

General Criticisms of Exchange Rate-Pegging

There are several criticisms in the literature that are leveled against exchange-rate pegging in both developed and emerging market countries which we will examine first.⁴ These include the loss of an independent monetary policy, the transmission of shocks from the anchor country, the likelihood of speculative attacks and the potential for weakening the accountability of policymakers to pursue anti-inflationary policies. However, there is an additional criticism of exchange-rate pegs in emerging market countries that does not apply to developed countries: the potential in emerging market countries for an exchange-rate peg to increase financial fragility and the likelihood of a financial crisis. It is this last criticism that we will focus on in the next section which suggests that an exchange-rate peg is a very dangerous strategy for controlling inflation in emerging market countries.

Loss of Independent Monetary Policy

One prominent criticism of adopting an exchange-rate peg to control inflation is that it results in the loss of an independent monetary policy for the pegging country. We have already seen that with open capital markets, interest rates in the country pegging its exchange rate are closely linked to those of the anchor country it is tied to, and its money creation is constrained by money growth in the anchor country. A country that has pegged its currency to that of the anchor country therefore loses the ability to use monetary policy to respond to domestic shocks that are independent of those hitting the anchor country. For example, if there is a decline in domestic demand specific to the pegging country, say because of a decline in the domestic government's spending or a decline in the demand for exports specific to that country, monetary policy cannot respond by lowering interest rates because these rates are tied to those of the anchor country. The result is that both output and even inflation may fall below desirable levels, with the monetary authorities powerless

⁴An excellent additional discussion of these criticisms is contained in Obstfeld and Rogoff (1995).

to stop these movements.

This criticism of exchange-rate pegging may be less relevant for emerging market countries than it is for developed countries. Because many emerging market countries have not developed the political or monetary institutions which result in the ability to use discretionary monetary policy successfully, they may have little to gain from an independent monetary policy but a lot to lose. Thus, they would be better off by, in effect, adopting the monetary policy of a country like the United States through exchange-rate pegging than in pursuing their own independent policy.

Transmission of Shocks from the Anchor Country

Another criticism of exchange-rate pegging is that shocks in the anchor country will be more easily transmitted to the pegging country, with possible negative consequences. For example, in 1994 concerns about inflationary pressure in the United States led the Federal Reserve to implement a series of increases in the federal funds rate. Although this policy was appropriate and highly successful for the United States, the consequences for Mexico, who had adopted a peg to the dollar as part of its stabilization strategy, were severe. The doubling in short-term U.S. rates from around three to six percent was transmitted immediately to Mexico who found its short-term rates doubling from around ten to twenty percent. This rise in rates was damaging to the balance sheets of both households, nonfinancial business and the banks, and was a factor in provoking the foreign exchange and financial crisis in Mexico which began in December 1994. (See Mishkin, 1996.)

Speculative Attacks

A further criticism of exchange-rate pegging is that, as emphasized in Obstfeld and Rogoff (1995), it leaves countries open to speculative attacks on their currencies. As we have seen in Europe in 1992, Mexico in 1994 and more recently in southeast Asia, it is certainly feasible for governments to maintain their exchange rate peg by raising interest rates sharply, but they do not always have the will to do so. Defending the exchange rate by raising interest rates can be very costly because it involves having to tolerate the resulting rise in unemployment and damage to the

balance sheets of financial institutions from these high rates. Once speculators begin to question whether the government's commitment to the exchange-rate peg is strong because of the now high costs to maintain it, they are in effect presented with a one-way bet, where the only way for the value of the currency to go is down. Defense of the currency now requires massive intervention and even higher domestic interest rates.

With all but the strongest commitment to the exchange-rate peg, a government will be forced to devalue its currency. The attempted defense of the currency will not come cheaply because of the losses sustained as a result of the previous exchange-market intervention. For example, in the case of the September 1992 crisis, the British, French, Italian, Spanish and Swedish central banks had intervened to the tune of an estimated \$100 billion. Reports in the press estimated that these central banks lost \$4 to \$6 billion as a result of their exchange-rate intervention in the crisis, an amount that was in effect paid by taxpayers in these countries. Although the losses suffered by central banks in emerging market countries after an unsuccessful defense of the currency are harder to estimate, they are likely to have been very substantial.

Weakened Accountability

In the United States, the long-term bond market provides signals that make overly expansionary monetary policy less likely. If the Federal Reserve pursues overly expansionary monetary policy or politicians put a lot of pressure on the Fed to do so, the bond market is likely to undergo an inflation scare of the type described in Goodfriend (1993) in which long-term bond prices sink dramatically and long-term rates spike upwards. Concerns about inflation scares in the long-bond market help keep the Fed from pursuing expansionary policy actions to meet short-run employment objectives, which ameliorates the time-inconsistency problem. Thus, the signals from the long-bond market make the Federal Reserve more accountable for keeping inflation under control. Similarly, politicians are more reluctant to criticize Federal Reserve anti-inflation actions because of their fears of what the long-bond market's reaction will be. The long-bond market thus not only produces signals which help diminish the time-inconsistency problem by making the central bank more accountable, but also by reducing political pressure for overly expansionary

monetary policy to increase employment in the short-term.

In many countries, particularly emerging market countries, the long-term bond market is essentially nonexistent. In these countries, however, the foreign exchange market can play a similar role to the long-bond market in constraining policy from being too expansionary. In the absence of an exchange rate peg, daily fluctuations in the exchange rate provide information on the stance of monetary policy, thus making monetary policymakers more accountable. A depreciation of the exchange rate can provide an early warning signal to the public and policymakers that monetary policy is overly expansionary. Furthermore, just as the fear of a visible inflation scare in the bond market that causes bond prices to decline sharply constrains politicians from encouraging overly expansionary monetary policy, fear of immediate exchange rate depreciations can constrain politicians in countries without long-term bond markets from supporting overly expansionary policies.

An important disadvantage of an exchange rate peg is that it removes the signal that the foreign exchange market provides about the stance of monetary policy on a daily basis. Under a pegged exchange-rate regime, central banks often pursue overly expansionary policies that are not discovered until too late, when a successful speculative attack has gotten underway. The problem of lack of accountability of the central bank under a pegged exchange-rate regime is particularly acute in emerging market countries where the balance sheets of the central banks are not as transparent as in developed countries, thus making it harder to ascertain the central bank's policy actions. Although, an exchange-rate peg appears to provide rules for central bank behavior that eliminates the time-inconsistency problem, it can actually make the time-inconsistency problem more severe because it may actually make central bank actions less transparent and less accountable.

IV.

Why Exchange Rate Pegging is So Dangerous for Emerging Market Countries

The potential dangers from an exchange-rate peg described above apply to both developed

and emerging market countries and are indeed serious ones. On these grounds alone, using an exchange-rate peg to control inflation is problematic. However, there is an additional danger that arises for emerging market countries from an exchange-rate peg that does not apply to developed countries: the potential for an exchange-rate peg to promote financial fragility and possibly a full-fledged financial crisis. Indeed, this additional danger is so severe that it suggests that emerging market countries would be well advised to avoid an exchange-rate peg except in very rare circumstances.

Emerging market countries have a very different institutional structure in their credit markets than in developed countries. Industrialized countries typically have long duration debt almost all of which is denominated in the domestic currency and also have a fair degree of credibility that they will not allow inflation to spin out of control. On the other hand, the institutional features of credit markets in emerging market countries are diametrically opposite. Because of past experience with high and variable inflation rates these countries have little inflation-fighting credibility and debt contracts are therefore of very short duration and are often denominated in foreign currencies. As we shall see, this structure of debt markets in emerging market countries means that an exchange-rate peg can make it more likely that they will experience financial crises, which have disastrous effects on their economies.

To see why exchange-rate pegs in an emerging market country make a financial crisis more likely, we must first understand what a financial crisis is and why it is so damaging to the economy. In recent years, an asymmetric information theory of financial crises has been developed which provides a definition of a financial crisis [Bernanke (1983), Calomiris and Gorton (1991), and Mishkin (1991, 1994 and 1996).] A financial crisis is a nonlinear disruption to financial markets in which asymmetric information problems (adverse selection and moral hazard) become much worse, so that financial markets are unable to efficiently channel funds to economic agents who have the most productive investment opportunities. A financial crisis thus prevents the efficient functioning of financial markets, which therefore leads to a sharp contraction in economic activity.

With a pegged exchange-rate regime, depreciation of the currency when it occurs is a highly nonlinear event because it involves a devaluation. In most developed countries a devaluation has little direct effect on the balance sheets of households, firms and banks because their debts are

denominated in domestic currency.⁵ This is not true, however, in emerging market countries with their very different institutional structure. In these countries, but not in developed countries, a foreign exchange crisis can trigger a full-scale financial crisis in which financial markets are no longer able to move funds to those with productive investment opportunities, thereby causing a severe economic contraction.

There are three reasons why an exchange-rate peg make emerging market countries more prone to financial crises. First, a devaluation under an exchange-rate peg can cause a nonlinear deterioration in the balance sheets of nonfinancial and financial firms, that can cause a collapse in the ability of financial markets to move funds to firms with productive investment opportunities. Second, when exchange-rate pegs break down, this can lead to a sharp surge in inflation that causes a further weakening of balance sheets, with the negative effects described above. Third, an exchange-rate peg may encourage capital inflows, which lead to a lending boom, bad loans, and a deterioration in bank balance sheets which interferes with the ability of these institutions to intermediate funds to those with productive investment opportunities. We examine each of these reasons in more detail below.

With debt contracts denominated in foreign currency as in emerging market countries, when there is a depreciation or devaluation of the domestic currency, the debt burden of domestic firms increases. On the other hand, since assets are typically denominated in domestic currency, there is no simultaneous increase in the value of firms' assets. The result is a that a depreciation or devaluation leads to a deterioration in firms' balance sheets and a decline in net worth, which, in turn, means that effective collateral has shrunk, thereby providing less protection to lenders. Furthermore, the decline in net worth increases moral hazard incentives for firms to take on greater risk because they have less to lose if the loans go sour. Because lenders are now subject to much higher risks of losses, there is now a decline in lending and hence a decline in investment and

⁵Indeed, a devaluation in developed countries can actually stimulate economic activity because it makes the country's goods more competitive internationally, thereby increasing its net exports and hence aggregate demand. Indeed, this was exactly the experience of the United Kingdom after the September 1992 foreign-exchange crisis when it was forced to devalue its currency. Its economic performance after the devaluation was substantially better than that of France which did successfully defend its currency in 1992.

economic activity.

Although depreciation in an emerging market country under a floating exchange-rate regime does promote financial fragility for the reasons discussed above, it is less likely to cause a full-fledged financial crisis in which financial markets seize up and stop performing their role of moving funds to those with productive investment opportunities. Under a pegged exchange-rate regime, when a successful speculative attack occurs, the decline in the value of the domestic currency is usually much larger, more rapid and more unanticipated than when a depreciation occurs under a floating exchange-rate regime. For example, during the Mexican crisis of 1994-1995, the value of the peso fell by half in only a few months time, while in the recent Southeast Asian crisis, the worst hit country Indonesia has seen its currency decline to one-quarter of its pre-crisis value, also in a very short period of time. The damage to balance sheets after these devaluations has thus been extremely severe. In Mexico, there was a several-fold increase in the net debtor position of business enterprises from before the devaluation in December 1994 till March 1995, while in Indonesia the four-fold increase in the value of foreign debt arising from the currency collapse has made it very difficult for Indonesian firms with appreciable foreign debt to remain solvent. The result of this collapse in balance sheets were sharp economic contractions. In Mexico, real GDP growth in the second and third quarters of 1995 fell to rates around -10 percent, while current forecasts predict similar rates of decline for Indonesia over the coming year.

In addition, the depreciation of the domestic currency can lead to deterioration in the balance sheets of the banking sector. In emerging market countries, banks typically have many short-term liabilities denominated in foreign currency which increase sharply in value when a depreciation occurs. On the other hand, the problems of firms and households mean that they are unable to pay off their debts, also resulting in loan losses on the assets side of the banks' balance sheets. Once there is a deterioration in bank balance sheets, with the substantial loss of bank capital, banks have two choices: either 1) they can cut back on their lending in order to shrink their asset base and thereby restore their capital ratios, or 2) they can try to raise new capital. However, when banks experience a deterioration in their balance sheets, it is very hard for them to raise new capital at a reasonable cost. Thus, the typical response of banks with weakened balance sheets is a contraction in their lending, which slows economic activity. In the extreme case in which the deterioration of

bank balance sheets leads to a banking crisis which forces many banks to close their door, thereby directly limiting the ability of the banking sector to make loans, the affect on the economy is even more severe. The nonlinear nature of the decline in the value of the domestic currency when an exchange-rate peg collapses means that the possibility of an especially sharp deterioration in bank balance sheets is greater under an exchange-rate peg than a floating exchange-rate regime. Thus the potential for a collapse of the banking system is greater when an emerging market country adopts an exchange-rate peg.

An additional danger from using an exchange-rate peg to control inflation in emerging market countries is that a successful speculative attack can actually lead to a rapid surge in inflation that can be especially damaging to the ability of financial markets to move funds to those with productive investment opportunities. Because many emerging market countries have previously experienced both high and variable inflation, their central banks are unlikely to have deep-rooted credibility as inflation fighters. Thus, a sharp decline in the value of the currency after a speculative attack that leads to immediate upward pressure on prices can lead to a dramatic rise in both actual and expected inflation. Indeed Mexican inflation surged to 50% in 1995 after the foreign exchange crisis in 1994 and current forecasts for Indonesia predict that the same will happen there.

The sharp rise in expected inflation after a successful speculative attack against the currency of an emerging market country is another factor exacerbating the financial crisis because it leads to particularly sharp rises in interest rates as has occurred in Mexico and Indonesia. The interaction of the short duration of debt contracts and the interest rate rise leads to huge increases in interest payments by firms, thereby weakening firms' cash flow position and further weakening their balance sheets. Then, as we have seen, both lending and economic activity are likely to undergo a sharp decline.

Another potential danger from an exchange-rate peg is that by providing a more stable value of the currency, it might lower risk for foreign investors and thus encourage capital inflows.⁶

⁶Capital inflows are not only encouraged by exchange-rate pegs but also by convertibility, the right of domestic citizens to convert currencies into one another without restrictions. Capital controls can enable a country to maintain an exchange-rate peg while restricting capital inflows and outflows. It is far beyond this paper to debate the desirability of capital controls. Suffice it to say, there are some serious doubts as to whether capital controls can be effective in todays financial environment with

Although these capital inflows might be channeled into productive investments and thus stimulate growth, they might promote excessive lending, manifested by a lending boom, because domestic financial intermediaries such as banks play a key role in intermediating these capital inflows [Calvo, Leiderman and Reinhart (1994)]. Indeed, Folkerts-Landau, et. al (1995) found that emerging market countries in the Asian-Pacific region with the large net private capital inflows also experienced large increases in their banking sectors. Furthermore, if the bank supervisory process is weak, as it often is in emerging market countries, so that the government safety net for banking institutions creates incentives for them to take on risk, the likelihood that a capital inflow will produce a lending boom is that much greater. With inadequate bank supervision, the likely outcome of a lending boom is substantial loan losses and a deterioration of bank balance sheets.⁷

The deterioration in bank balance sheets can damage the economy in two ways. First, the deterioration in the balance sheets of banking firms leads them to restrict their lending in order to improve their capital ratios or can even lead to a full-scale banking crisis which forces many banks into insolvency, thereby directly removing the ability of the banking sector to make loans. Second, the deterioration in bank balance sheets can promote a foreign-exchange crisis because it becomes very difficult for the central bank to defend its currency against a speculative attack. Any rise in interest rates to keep the domestic currency from depreciating has the additional effect of weakening the banking system further because the rise in interest rates hurts banks' balance sheets. This negative effect of a rise in interest rates on banks' balance sheets occurs because of their maturity mismatch and their exposure to increased credit risk when the economy deteriorates. Thus, when a

many instruments that make it easier to get around these controls. Furthermore, capital controls have the undesirable feature that they may block funds from entering a country which will be used for productive investment opportunities. Elsewhere, Mishkin (1997b), I have argued that there is a strong case to improve bank regulation and supervision so that capital inflows are less likely to produce a lending boom and excessive risk taking by banking institutions, and this may be the more appropriate way to make sure that capital inflows do not lead to excessive risk taking rather than by restricting convertibility through capital controls.

⁷Gavin and Hausman (1996) and Kaminsky and Reinhart (1996) do find that lending booms are a predictor of banking crises, yet it is less clear that capital inflows will produce a lending boom which causes a deterioration in bank balance sheets. Kaminsky and Reinhart (1996), for example, find that financial liberalization, rather than balance of payments developments inflows, appears to be a more important predictor of banking crises.

speculative attack on the currency occurs in an emerging market country, if the central bank raises interest rates sufficiently to defend the currency, the banking system may collapse. Once investors recognize that a country's weak banking system makes it less likely that the central bank will take the steps to successfully defend the domestic currency, they have even greater incentives to attack the currency because expected profits from selling the currency have now risen. The outcome is a successful attack on the currency, and the resulting foreign exchange crisis causes a collapse of the economy for the reasons already discussed.

The scenarios we have seen recently in emerging market countries such as Mexico, Thailand, South Korea, Malaysia and Indonesia illustrate how dangerous exchange-rate pegs can be. These countries experienced massive capital inflows which were intermediated by the banking sector, and the resulting lending booms led to large loan losses and a deterioration in bank balance which helped promote the subsequent foreign-exchange crises. The collapse of domestic currencies then led to a huge number of insolvencies and sharp rises in inflation and interest rates which caused further deteriorations in balance-sheets. The outcome has been severe depressions in all these countries, which has also engendered substantial social unrest. Their experience suggests that using an exchange-rate peg to control inflation is highly problematic.

V. When Might the Benefits of an Exchange-Rate Peg Outweigh the Costs for an Emerging Market Country?

So far the discussion has been sufficiently negative on exchange-rate pegging in emerging market countries that one might conclude that it should never be adopted as a strategy to control inflation. However, this view is too strong. Exchange rate pegging can be an especially effective means of reducing inflation quickly if there is a very strong commitment to the exchange rate peg. In the extreme situation where there is no alternative way to break inflationary psychology, then it is an option that might be considered, although it is a dangerous course.

A particularly strong form of commitment mechanism to a pegged exchange rate is a

currency board. A currency board requires that the note-issuing authority, whether the central bank or the government, announces a fixed exchange rate against a particular foreign currency and then stands ready to exchange domestic currency for foreign currency at that rate whenever the public requests it. In order to credibly meet these requests, a currency board typically has more than 100% foreign reserves backing the domestic currency and allows the monetary authorities absolutely no discretion. In contrast, the typical fixed or pegged exchange rate regime does allow the monetary authorities some discretion in their conduct of monetary policy because they can still adjust interest rates or conduct open market operations which affect domestic credit. The currency board thus involves a stronger commitment by the central bank to the fixed exchange rate and may therefore be effective in bringing down inflation quickly and in decreasing the likelihood of a successful speculative attack against the currency.

An important recent example in which a currency board was implemented to reduce inflation is Argentina. Because of continuing bouts of hyperinflation and previous past failures of stabilization programs, the Argentine government felt that the only way it could break the back of inflation was to adopt a currency board, which it did in 1990 by passing the Convertibility Law. This law required the central bank to exchange U.S. dollars for new pesos at a fixed exchange rate of 1 to 1. The early years of Argentina's currency board looked stunningly successful. Inflation which had been running at over a 1,000% annual rate in 1989 and 1990 fell to well under 5% by the end of 1994 and economic growth was rapid, averaging almost an 8% annual rate from 1991 to 1994.

Although the stronger commitment to a fixed exchange rate may mean that a currency board is better able to stave off a speculative attack against the domestic currency than an exchange-rate peg, it is not without its problems. In the aftermath of the Mexican peso crisis, concern about the health of the Argentine economy resulted in the public pulling their money out of the banks (deposits fell by 18%) and exchanging their pesos for dollars, thus causing a contraction of the Argentine money supply. The result was a sharp contraction in Argentine economic activity with real GDP dropping over 5% in 1995 and the unemployment rate jumping to above 15%. Only in 1996, with financial assistance from international agencies such as the IMF, the World Bank and the Inter-American Development Bank, which lent Argentina over \$5 billion to help shore up its banking system, did the economy begin to recover. Because the central bank of Argentina had no

control over monetary policy under the currency board system, it was relatively helpless to counteract the contractionary monetary policy stemming from the public's behavior. Furthermore, because the currency board does not allow the central bank to create money and lend to the banks, it limits the capability of the central bank to act as a lender of last resort, and other means must be used to cope with potential banking crises.

Although a currency board is highly problematic, it may be the only way to break a country's inflationary psychology and alter the political process so that it no longer leads to continuing bouts of high inflation. However, there are two issues that policymakers must confront in order to make a currency board successful. First they must pay particular attention to preventing excessive risk-taking by the banking sector. As we have seen, weakness of the banking sector because of excessive risk-taking is an important factor that can help trigger a speculative attack on the currency. If the currency board does not survive the speculative attack, the resulting financial crisis is likely to be especially severe because a characteristic of debt markets in countries with a currency board is that they have an especially large amount of debt denominated in the foreign currency to which the domestic currency is pegged. Thus a devaluation hits the balance sheets of business firms and banks particularly hard, with even more damaging effects on the economy. Even if the currency board survives the speculative attack, the resulting exchange of the domestic currency for foreign currency leads to a sharp contraction of the money supply, as occurred in Argentina, which also is highly damaging to the economy.

Furthermore, because a currency board limits a central bank's ability to engage in lender-of-last resort operations, coping with banking crises is very difficult.⁸ Because problems in the banking sector can be so costly to an economy with a currency board, it is especially important to the success of the currency board that policymakers keep banks from taking on too much risk which can lead to deterioration in bank balance sheets. Indeed, this has been recognized by policymakers in

⁸However, as pointed out in Mishkin (1996), the ability to successfully engage in lender-of-last resort operations to cope with financial crises is limited in emerging market countries even if they do not have a currency board. This is because pumping liquidity into the system is likely to lead to a rise in inflation expectations and a depreciation of the currency which lead to further deterioration in balance sheets, thus making informational problems worse in financial markets.

Argentina and is an important reason why they have been among the most serious in Latin America about developing a system of bank regulation and supervision that will preserve the health and soundness of the banking sector.⁹

The second issue that policymakers contemplating institution of a currency board must confront is the need for an exit strategy. The longer a currency board stays in existence, the greater the likelihood that there will occur a sufficiently large shock that leads to the collapse of the currency board. Furthermore, once inflation is under control, a country with a currency board is subject to the disadvantages of first being strongly affected by shocks to the far-away country to whose currency it is pegged, second not having its own independent monetary policy, and third not having the ability to engage in lender-of-last resort operations. Thus, even if the currency board is successful, at some point it may outlive its usefulness. The key question for policymakers is how it can exit from the currency board arrangement.

Clearly exiting a currency board when the currency is under attack is not an option, because it is exactly in this situation that the collapse of the currency board would lead to a financial crisis and an explosion in inflation. On the other hand, when there is no pressure on the currency, so there is no threat to the currency board, then the usual attitude is "if it ain't broke, don't fix it." Exiting a currency board is thus not a trivial task. It is exactly when things are going well that smooth transition out of the currency board is feasible. On the other hand, this is when the political will to exit from the currency board may be weakest, even if the country would be better served by a different monetary regime.

The discussion in this section provides a qualified answer to the question posed in this section of when might an exchange-rate peg be a worthwhile option for an emerging market country. Under extreme circumstances in which past poor inflation performance suggests that there is no other way to alter inflationary psychology, pegging the exchange rate has advantages, although it also presents substantial dangers. However, because the costs of being driven off the exchange-rate peg by a successful speculative attack are so high, if this option is chosen, a very strong

⁹For a description of the Argentine bank regulatory system, see Banco Central de la Republica Argentina (1997) and Calomiris (1997).

commitment mechanism to the exchange-rate peg, such as a currency board, is absolutely necessary. In-between measures such as an exchange-rate peg with the option for discretionary monetary policy are likely to be doomed to failure and to end up highly damaging to the economy. If the currency-board option is chosen, then it is also imperative that policymakers focus on developing a system of bank regulation and supervision that preserves the soundness of the financial system and also prepare for an exit strategy once the currency board has outlived its usefulness.

VI. Alternative Strategies for Inflation Control

So far this paper has argued that an exchange-rate peg is a dangerous strategy for inflation control in emerging market countries. If exchange-rate pegging is not an option, then what other strategies can be used by emerging market countries to control inflation?

A basic strategy for inflation control in emerging market countries requires two basic components. First, the central bank must be given sufficient independence so that it can pursue long-run objectives such as a price stability goal. Politicians in both industrialized and emerging market countries are likely to be shortsighted because they are driven by the need to win their next election. With their focus on the upcoming election, they are unlikely to focus on long-run objectives, such as promoting a stable price level. Instead, they will tend to seek short-run objectives, like low unemployment and low interest rates, even if the short-run objectives may have undesirable long-run consequences. If the central bank is controlled by the government, then it is likely to accede to these political demands, resulting in high inflation and low credibility for the central bank. Only with a grant of independence, can the central bank be sufficiently insulated from short-run political pressures so that it can focus on the long-run goal of inflation control. Recent evidence seems to support the conjecture that macroeconomic performance is improved when

central banks are more independent. When central banks are ranked from least legally independent to most legally independent, the inflation performance is found to be the best for countries with the most independent central banks.^{10 11}

The second component of a successful strategy for inflation control in emerging market countries is an explicit nominal anchor. As we have discussed earlier, an explicit nominal anchor helps to establish credibility for monetary policy and anchor inflation expectations, while it also helps to avoid the time-inconsistency problem. It is true that industrialized countries have often been able to conduct successful monetary policy without an explicit nominal anchor, but it is far more imperative to have an explicit nominal anchor in emerging market countries which have typically had high and variable inflation rates in the past and therefore suffer from a lack of monetary policy credibility.¹²

There are two basic alternatives to an exchange-rate peg for an explicit nominal anchor: monetary targets and inflation targets. Although monetary targets have been used successfully in some countries, particularly Germany, they may not be nearly as effective in the emerging market country context. Because of velocity shocks, the relationship between monetary aggregates and inflation has not been very tight, even in Germany.¹³ Thus hitting the monetary target will not always produce the desired inflation outcome and may not be a sufficiently good signal about the appropriate stance of monetary policy. Because of instabilities in the money-inflation relationship, no monetary targeter has strictly adhered to their targets: indeed, even the Germans miss their monetary target range on the order of 50 percent of the time. This is not a serious problem in the German context because of the high credibility of the German central bank, which is able to explain away the deviations from the target and yet not lose the public's belief in its commitment to price

¹⁰See Alesina and Summers (1988), Cukierman (1992), and Fischer (1994) among others.

¹¹However, there is some question as to whether causality runs from central bank independence to low inflation, or rather, whether a third factor is involved such as the general public's preferences for low inflation that create both central bank independence and low inflation (see Posen (1995)).

¹²Even in industrialized countries, there is a strong case for an explicit nominal anchor such as inflation target [e.g. Mishkin (1997a)].

¹³See Estrella and Mishkin (1997), for example.

stability. Because the credibility of central banks in emerging market countries is so much less than that of the Bundesbank, this strategy is unlikely to be nearly as successful in these countries.

The other alternative nominal anchor for emerging market countries is an inflation target. Inflation targeting not only involves the public announcement of medium-term numerical targets for inflation with an institutional commitment by the monetary authorities to achieve these targets, but also includes increased communication with the public and the markets about the plans and objectives of monetary policymakers and increased accountability of the central bank for obtaining its inflation objectives.¹⁴ As is outlined in Bernanke and Mishkin (1997), Mishkin and Posen (1997), Mishkin (1998) and in our forthcoming book, Bernanke, Laubach, Mishkin and Posen (1998), the primary advantage of inflation targeting is its transparency to the public. Like an exchange-rate peg, it is readily understood by the public, but, even more directly than the others, it makes clear the commitment to price stability. Inflation targeting keeps the goal of price stability in the public's eye, thus making the central bank more accountable for keeping inflation low which helps counter the time-inconsistency problem.

In contrast to the exchange rate target, inflation targets enable monetary policy to focus on domestic considerations and to respond to shocks to the economy. Finally, inflation targets have the advantage that velocity shocks are largely irrelevant because the monetary policy strategy no longer requires a stable money-inflation relationship. Indeed, an inflation target allows the monetary authorities to use all available information, and not just one variable, to determine the best settings for monetary policy.

One criticism of inflation targets is that in contrast to exchange rates and monetary aggregates, inflation is not easily controlled by the monetary authorities. This can be a particularly severe problem for an emerging market country that is trying to bring down inflation from a previously high level and so is more likely to experience large inflation forecast errors. This suggests that hard targets for inflation might be worth phasing in only after there has been some successful

¹⁴Other detailed analyses of experiences with inflation targeting can be found in Goodhart and Vinals (1994), Leiderman and Svensson (1995), Haldane (1995) and McCallum (1996). A variant of inflation targeting is targeting of nominal GDP growth. As discussed in Mishkin (1997a), although nominal GDP growth targeting is close to inflation targeting it does suffer from distinct disadvantages.

disinflation. This is exactly the strategy that has been followed by Chile [see Morande and Schmidt-Hebbel (1997)], which adopted inflation targeting in September 1990. Initially, inflation targets were announced and interpreted as official inflation projections, rather than as hard targets. However, over time as inflation fell, this procedure was changed and inflation targets came to be viewed by the central bank and the markets as hard targets. Waiting to harden inflation targets until after some success has already been achieved on the inflation front, is also consistent with what inflation-targeting industrialized countries have done; they did not institute inflation targeting until after substantial disinflation had already been achieved.¹⁵

Another criticism of inflation targets is that a sole focus on inflation may lead to large adverse effects on output. Although this could be a problem if the inflation targeting implied that monetary authorities must try to reduce inflation very rapidly without concern for output fluctuations, this is not the way inflation targeting has been conducted in practice in the industrialized countries. All the inflation-targeting central banks we have studied have left themselves considerable scope to respond to output growth and fluctuations. When inflation starts at a level that is higher than the long-run inflation goal, inflation targets have been lowered gradually. This feature of inflation targeting is also characteristic of the Chilean case, in which inflation targets were lowered gradually from around a 25 percent annual rate when they started in 1991 to around 5 percent today.

Furthermore, inflation targeting can actually help minimize output fluctuations. This is because inflation targeting provides not only a ceiling for the inflation rate, but also a floor. Inflation targeting can therefore act to attenuate the effects of negative, as well as positive, shocks to aggregate demand. Indeed, this benefit of inflation targeting has been emphasized by the Canadian monetary authorities.

¹⁵ Israel is another high inflation country that like Chile has adopted a strategy of inflation targeting only after a successful disinflation. See Buffman and Leiderman (1995) and Bernanke, Laubach, Mishkin and Posen (1998). The example of Chile is used in the text because it is hard to classify Israel as an emerging market country.

VII. Conclusions

Although pegging the exchange rate provides a nominal anchor for emerging market countries that can help them to control inflation, the analysis in this paper does not provide support for this strategy for the conduct of monetary policy. First there are the usual criticisms of exchange-rate pegging, that it entails the loss of an independent monetary policy, exposes the country to the transmission of shocks from the anchor country, increases the likelihood of speculative attacks and potentially weakens the accountability of policymakers to pursue anti-inflationary policies. However, most damaging to the case for exchange-rate pegging in emerging market countries is that it can increase financial fragility and make the potential for financial crises more likely. Because of the devastating effects on the economy that financial crises can bring, an exchange-rate peg is a very dangerous strategy for controlling inflation in emerging market countries. Instead, this paper suggests that a strategy with a greater likelihood of success involves the granting of independence to the central bank and the adoption of inflation targeting.

References

- Alesina, Alberto, and Lawrence H. Summers. 1993. "Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence." *Journal of Money, Credit, and Banking* 25: 151-62.
- Anderson, Palle, and David Gruen. 1995. "Macroeconomic Policies and Growth," in Palle Anderson, Jacqui Dwyer and David Gruen, eds., *Productivity and Growth* (Reserve Bank of Australia: Sydney): 279-319.
- Barro, Robert J., and David B. Gordon. 1983. "A Positive Theory of Monetary Policy in a Natural Rate Model." *Journal of Political Economy* 91: 589-610.
- Bernanke, B.S. 1983. "Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression", *American Economic Review*, Vol. 73, pp. 257-76.
- Bernanke, Ben S. and Frederic S. Mishkin. 1997. "Inflation Targeting: A New Framework for Monetary Policy?" *Journal of Economic Perspectives* forthcoming.
- Bernanke, Ben S., T. Laubach, F.S. Mishkin and A. Posen. 1998. *Inflation Targeting: Lessons from International Experience* (Princeton University Press: Princeton, forthcoming).
- Banco Central de la Republica Argentina. 1997. "Main Features of the Regulatory Framework of the Argentine Financial System," mimeo. (April).
- Briault, Clive. 1995. "The costs of inflation." *Bank of England Quarterly Bulletin* 35 (February): 33-45.
- Bruno, Michael. 1991. "High Inflation and the Nominal Anchors of an Open Economy," Princeton University, International Finance Section, Essays in International Finance No. 183, June 1991.
- Bufman, Gil, Leonardo Leiderman, and Meir Sokoler. 1995. "Israel's Experience with Explicit Inflation Targets: A First Assessment." In Leonardo Leiderman and Lars E. O. Svensson, eds., *Inflation Targets*, 169-91. London: Centre for Economic Policy Research.
- Calomiris, C.W. 1997. *The Postmodern Bank Safety Net: Lessons from Developed and Developing Countries* (AEI Press: Washington, D.C.)

- Calomiris, C.W. and Gorton, G. 1991. "The Origins of Banking Panics: Models, Facts and Bank Regulation" in Hubbard, R.G. (ed.) Financial Markets and Financial Crises. University of Chicago Press, Chicago, pp. 109-173.
- Calvo, Guillermo. 1978. "On the Time Consistency of Optimal Policy in the Monetary Economy," *Econometrica* 46: 1411-28.
- Calvo, G.A., Leiderman, L. and C.M. Reinhart, 1994. "The Capital Inflows Problem: Concepts and Issues," Contemporary Economic Policy 12, July: 54-66.
- Cukierman, Alex. 1992. *Central Bank Strategy, Credibility, and Independence: Theory and Evidence*. Cambridge, Massachusetts: The MIT Press.
- Estrella, Arturo and Frederic S. Mishkin. 1997. "Is There a Role for Monetary Aggregates in Conduct of Monetary Policy," forthcoming in the *Journal of Monetary Economics*, October.
- Fischer, S. 1993. "The Role of Macroeconomic Factors in Growth," *Journal of Monetary Economics* 32:485-512.
- Fischer, S. 1994. "Modern Central Banking," in Forest Capie, Charles Goodhart, Stanley Fischer and Norbert Schnadt, eds. *The Future of Central Banking: The Tercentenary Symposium of the Bank of England*. Cambridge University Press: Cambridge, England and New York: 262-308.
- Folkerts-Landau, D., Schinasi, G.J., Cassard, M., Ng, V.K., Reinhart, C.M., and M.G. Spencer, 1995. "Effect of Capital Flows on the Domestic Financial Sectors in APEC Developing Countries," in M.S. Khan and C.M. Reinhart, eds. Capital Flows in the APEC Region (International Monetary Fund: Wash. D.C. 1995): 31-57
- Gavin, M. and R. Hausman, 1996. "The Roots of Banking Crises: the Macroeconomic Context," in R. Hausman and L. Rojas-Suarez, eds., Banking Crises in Latin America (Interamerican Development Bank and Johns Hopkins University Press: Baltimore): 27-63.
- Goodfriend, Marvin. 1993. "Interest Rate Policy and the Inflation Scare Problem: 1979-1992," *Federal Reserve Bank of Richmond Economic Quarterly* 79, no. 1 (Winter): 1-24.
- Goodhart, Charles and Jose Vinals. 1994. "Strategy and Tactics of Monetary Policy: Examples from Europe and the Antipodes," in Jeffrey Fuhrer, ed., *Goals, Guidelines, and Constraints*

- Facing Monetary Policymakers*, Federal Reserve Bank of Boston.
- Haldane, Andrew G. 1995. *Targeting Inflation*. Bank of England: London.
- Kaminsky, G.L. and C.M. Reinhart, 1996. "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," Board of Governors of the Federal Reserve System, International Finance Discussion Papers No. 544 (March).
- Kydland, Finn E., and Edward C. Prescott. 1977. "Rules Rather Than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85: 473-91
- Leiderman, Leonard and Lars E. O. Svensson, eds. 1995. *Inflation Targets*. Centre for Economic Policy Research, London.
- McCallum, Bennett T. 1995. "Two Fallacies Concerning Central-Bank Independence." *American Economic Review* 85 (May): 207-11.
- McCallum, Bennett T. 1996. "Inflation Targeting in Canada, New Zealand, Sweden, the United Kingdom, and in General," NBER Working Paper no. 5597, May.
- Mishkin, F.S. 1991. "Asymmetric Information and Financial Crises: A Historical Perspective", in Hubbard, R.G. (ed.) Financial Markets and Financial Crises. University of Chicago Press, Chicago., pp. 69-108.
- Mishkin, F.S. 1994. "Preventing Financial Crises: An International Perspective," Manchester School, 62, (1994): 1-40.
- Mishkin, F.S. 1996. "Understanding Financial Crises: A Developing Country Perspective," in Michael Bruno and Boris Pleskovic, eds., *Annual World Bank Conference on Development Economics 1996* (World Bank: Washington D.C. 1996): 29-62.
- Mishkin, F.S. 1997a. "Strategies for Controlling Inflation," in Phillip Lowe, ed., *Monetary Policy and Inflation Targeting* (Reserve Bank of Australia: Sydney 1997): 7-38.
- Mishkin, F.S. 1997b. "International Capital Movements, Financial Volatility and Financial Instability," forthcoming in the *Proceedings of the Annual Conference 1997* of the German Association of Economic and Social Sciences.
- Mishkin, F.S. 1998. "International Experiences with Different Monetary Policy Regimes," mimeo. for the Riksbank-IIES Conference on Monetary Policy Rules, Stockholm, Sweden, June 12-13, 1998, forthcoming in the *Journal of Monetary Economics*.

- Mishkin, F.S. and A.S. Posen. 1997. "Inflation Targeting: Lessons from Four Countries," Federal Reserve Bank of New York, *Economic Policy Review*, 3 (August): 9-110.
- Morande, Felipe and Klaus Schmidt-Hebbel. 1997. "Inflation Targets and Indexation in Chile," manuscript, Central Bank of Chile, August.
- Obstfeld, Maurice and Kenneth Rogoff. 1995. "The Mirage of Fixed Exchange Rates," *Journal of Economic Perspectives* 9 (Fall): 73-96.
- Posen, Adam S. 1995. _Central Bank Independence and Disinflationary Credibility? A Missing Link?_ Federal Reserve Bank of New York Staff Reports, May 1995, no. 1.
- Sarel, Michael. 1996. _Nonlinear Effects of Inflation on Economic Growth._ *International Monetary Fund Staff Papers* 43 (March): 199-215.