THE MIRAGE OF FLOATING EXCHANGE RATES

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During the past few years, many countries have suffered severe currency and banking crises, producing a staggering toll on their economies, particularly in emerging market countries. In many cases, the cost of restructuring the banking sector has been in excess of twenty percent of GDP and output declines in the wake of crisis have been as large as 14 percent. An increasingly popular view blames fixed exchange rates, specifically "soft pegs," for these financial meltdowns. Not surprisingly, adherents to that view advise emerging markets to join the ranks of the United States and other industrial countries that have chosen to allow their currency to float freely.[2]

At first glance, the world—with the notable exception of Europe—does seem to be marching steadily toward floating exchange rate arrangements. According to the International Monetary Fund (IMF), ninety-seven percent of its member countries in 1970 were classified as having a pegged exchange rate; by 1980, that share had declined to thirty-nine percent and, in 1999, it was down to only eleven percent.[3] Yet, this much-used IMF classification takes at face value that countries actually do what they say they do. Even a cursory perusal of the Asian crisis countries' exchange rates prior to the 1997 crisis would suggest that their exchange rates looked very much like pegs to the U.S. dollar for extended periods of time. Only Thailand, however, was explicitly classified as a peg; the Philippines was listed as having a freely-floating exchange rate, while the others were lumped under the catch-all label of managed floating.

In this note, I summarize some of the key findings of Guillermo Calvo and Carmen Reinhart (2000), who analyze the behavior of exchange rates, foreign exchange reserves, the monetary aggregates, and interest rates across the spectrum of exchange rate arrangements to assess whether the "official labels" provide an adequate representation of actual country practice. To illustrate some of the main points, I present evidence for a few regimes that are drawn from the analysis of a much larger population of exchange rate arrangements. The data spans monthly observations for thirty-six countries during the January 1970-April 1999 period.

Some of key findings are: First, countries that say they allow their exchange rate to float mostly do not—there seems to be an epidemic case of "fear of floating." Relative to more committed floaters—such as the United States, Australia, and Japan—observed exchange rate variability is quite low. The low variability of the nominal exchange rate is not owing to the absence of real or nominal shocks in these economies—indeed, relative to the United States and Japan most of these countries are subject to larger and more frequent shocks to their terms of trade, hardly

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2. See, for example, Morris Goldstein (1999).

3. Maurice Obstfeld and Kenneth Rogoff (1995), make this point as well.

surprising, given the high primary commodity content of their exports in many cases. Second, the low relative exchange rate variability is the deliberate result of policy actions to stabilize the exchange rate. Reserve volatility (contrary to what we should expect in the context of a floating exchange rate or relative to what we observe in the more committed floaters) is very high. Third, interest rate volatility (both real and nominal) is significantly higher—and in a different league altogether—from that of the "true(r)" floaters. The high volatility in both real and nominal interest rates appears to have had two main explanations. It suggests that countries are not relying exclusively on foreign exchange market intervention to smooth fluctuations in the exchange rates—interest rate defenses are commonplace.The high variability of interest rates also suggests that there are chronic credibility problems. Lastly, since countries that are classified as having a managed float mostly resemble noncredible pegs—the so-called "demise of fixed exchange rates" is a myth. Instead, the fear of floating is pervasive, even among some of the developed countries.[4] Our finding, that most of the episodes that come under the heading of floating exchange rates look more like noncredible pegs, may help explain why earlier studies, which relied on the official classifications of regimes, failed to detect important differences in GDP growth rates and inflation, across peg and the "floating" regimes.[5]

In the next section, I present a brief review of what economic theory predicts for the behavior of exchange rates, foreign exchange reserves, the monetary aggregates, and interest rates across the spectrum of exchange rate arrangements. The following section confronts these theoretical priors with the actual data, while the concluding section discusses some of the reasons for "fear of floating."

BASIC CONCEPTS

Let, i, i^* denote the domestic and foreign nominal interest rate, respectively, while E is the nominal exchange rate. The expected devaluation rate and default risk premia are given by å and ñ, respectively, and R denotes the level of foreign exchange reserves. The variance of any variable, x, is denoted by Var (x).

Now let us first consider a floating exchange rate regime with a money supply rule, under which shocks to money demand, expectations about the exchange rate, or default risk are not accommodated. Under such circumstances, one should expect to see in the data that: Var(E) > 0; Var(i) > 0, to the extent that there are shocks to the demand for money; and Var (R) = 0, as there is no central bank intervention. If, as in the United States, there is no explicit targeting of monetary aggregates, the exchange rate floats, and interest rates are smoothed, then shocks to money demand are accommodated, but shocks to exchange rate expectations or the default risk premia are not. In this case, Var(E) > 0, Var(i) = 0, Var (R) = 0, as money supply adjusts through open market operations rather than through purchases and sales of foreign exchange reserves.

At the other extreme, if a country has a fully credible peg (which is defined to include the confidence that there would be no default), the interest rate parity condition is simply $i = i^*$. In that case, we should expect: Var(E) = 0; Var(i) =Var(i^*) because of full credibility; and, Var (R) > 0, as money demand shocks are accommodated. Noncredible pegs, which include likelihood of default and are much more common, break down the one-to-one relationship between i and i^*. As before, Var(E) = 0 and Var (R) > 0, but now the interest rate parity condition is given by equation (1),

$$i = i^* + å + ñ \quad \textbf{(1)}$$

$$\text{Var}(i) = \text{Var}(i^*) + \text{Var}(å) + \text{Var}(ñ) + \text{covariance terms} \quad \textbf{(2)}$$

Hence, lack of credibility implies that Var(i) >Var(i^*).

However, as noted earlier, countries frequently depart from their stated exchange rate arrangements. Pegs or quasi-pegs are not always made explicit. One increasingly common form of "peg-in-disguise" or

4. See Calvo and Reinhart (2000) for a fuller discussion of why there is fear of floating.

5. See Atish Ghosh, Anne-Marie Gulde, Jonathan Ostry, and Holger Wolf (1997).

"Fear of Floating I" (Table 1) is when the exchange rate is stabilized through open market operations rather than through purchases and sales of foreign exchange. Examples of this type of arrangement include Peru since August 1990 and Mexico since December 1994. Assuming imperfect credibility (since the arrangement is not made explicit), the implications are identical to that of the noncredible peg (i.e., Var(E) = 0, Var(i) =Var(i^*)+Var(å) +Var(ñ) + covariance terms) except Var(R) = 0. If, despite having an announced float, the attempt to stabilize the exchange rate is less well disguised (as is the case of South Korea in 1999 up to the present) then the predictions from theory are hardly distinguishable from a noncredible peg. This case is depicted in Table 1 under the row "Fear of Floating II."

Having reviewed the theoretical priors of what to expect from the behavior of exchange rates, international reserves and, interest rates across exchange rate regimes (which are summarized in Table 1), we proceed to confront these priors with the actual data .

Table 1. Predicted Behavior Under Alternative Exchange Rate Arrangements

Exchange rate arrangement	Var(E)	Var (i)	Var (R)
Float/ money supply rule	high	?	0
Float/ interest rate smoothing	high	low	0
Credible peg	0	Var (i^*)	?
Noncredible peg	0	high	high
Noncredible quasi-peg in disguise (Fear of Floating I)	low	high	low
Noncredible quasi-peg in less of a disguise (Fear of Floating II)	low	high	high

THE EVIDENCE

Our data are monthly for thirty six countries in Africa, Asia, Europe, and the Western Hemisphere during the January, 1970-April 1999 period. Selected examples are presented here and the full range of episodes are given in Calvo and Reinhart (2000). Countries are grouped into four types of exchange rate arrangements according to IMF classification: peg, limited flexibility, managed floating, freely-floating. Limited flexibility has, almost exclusively, been used to classify European countries (prior to the monetary union) with exchange rate arrangements vis-a-vis one another (i.e., the Snake, the Exchange Rate Mechanism, etc.).

Despite occasional bouts of foreign exchange market intervention, sometimes even in co-ordinated fashion, the United States dollar (US $) floated about as freely against the German Deutschemark (DM) and now the euro and the Japanese Yen (¥) as any currency is allowed to float. For this reason, we compare countries that have regimes that are classified as freely-floating or managed-floating against this "G-3" benchmark. Given well-defined priors for the behavior of exchange rates, foreign exchange reserves, the monetary aggregates, and interest rates across the spectrum of exchange rate arrangements, we proceed by examining these variables one at a time. In what follows, we analyze monthly percent changes.

Table 2 presents evidence of the frequency distribution of monthly exchange rate changes (in percent). For the United States, for example, less there is about a fifty-nine percent probability that the monthly US $/DM exchange rate change falls within a relatively narrow plus/minus two-and-a-half percent band. By contrast, for Bolivia, Canada, and India (all declared floaters during that period), that probability is in the ninety-four-to-ninety-six percent range.[6] An alternative way of stating the same facts is that there is only about a five percent probability in those countries that an exchange rate change will exceed two-and-a-half percent on any given month (versus more than forty percent for the US$/DM). The absence of moderate-to-large monthly fluctuations in the exchange rate is equally absent among the so-called "managed float" episodes (Table 3). For Egypt and Bolivia, the probability of a monthly exchange rate change greater than two-and-a-half percent is nil. Even for self-proclaimed flexible-rate advocates, such as Chile and Singapore, the frequency distribution of their monthly exchange rate fluctuations relative to the U.S. dollar do not vaguely resemble that of the

6. These patterns are representative of a broader set of countries, see Calvo and Reinhart (2000).

Table 2. Exchange Rate Volatility in Recent or Current "Floating" Exchange Rate Regimes

		Probability that the monthly percent change in nominal exchange rate falls within:	
Country	**Period**	**+/- 1 percent band**	**+/- 2.5 percent band**
United States$/DM	February 1973-April 1999	26.8	58.7
Japan	February 1973-April 1999	33.8	61.2
Bolivia	September 1985-December 1997	72.8	95.9
Canada	June 1970-April 1999	68.2	93.6
India	March 1993-April 1999	82.2	93.2
Mexico	December 1994-April 1999	34.6	63.5

Table 3. Exchange Rate Volatility in Recent or Current "Managed" Exchange Rate Regimes

Country	**Period**	Probability that the monthly percent change in nominal exchange rate falls within:	
		+/- 1 percent band	**+/- 2.5 percent band**
United States$/DM	February 1973-April 1999	26.8	58.7
Japan	February 1973-April 1999	33.8	61.2
Bolivia	January 1998-April 1999	100.0	100.0
Chile	October 1982-April 1999	45.5	83.8
Egypt	February 1991-December 1998	95.7	98.9
Pakistan	January 1982-April 1999	77.8	92.8
Singapore	January 1988-April 1999	61.5	89.6

US$/DM or US$/¥, with a significantly higher proportion of observations falling within a narrow band. By this metric, post-crisis Mexico approximates a float more closely than any of the others—including Canada.

As discussed in the previous section, however, exchange rates tell only part of the story. We cannot glean from exchange rates alone what would have been the extent of exchange rate fluctuations in the absence of policy interventions—that is, we do not observe the counterfactual. To assess the extent of policy intervention to smooth out exchange rate fluctuations, we examine the behavior of foreign exchange reserves. As Table 1 highlights, the variance of reserves should be zero in a pure float. In reality, reserves may also change owing to changes in valuation. Table 4 reports excerpts from the frequency distribution of monthly reserve changes (in U.S. dollars). With the exception of the United States, most countries in Table 4 hold the lion's share of their foreign exchange reserve holdings in dollar-denominated assets, hence, valuation changes are not an issue. As Table 4 highlights, there is about a seventy-four percent probability that Japan's monthly changes in foreign exchange reserves falls in a narrow plus/minus two-and-a-half percent band. In the case of Mexico, there is only a twenty-eight percent probability that changes are that small, while in the case of Bolivia that probability is even lower. Indeed for all other countries, large swings in foreign exchange reserves appear to be commonplace, consistent with a higher extent of intervention in the foreign exchange market—even relative to what is to be expected a priori from a freely floating exchange rate regime.

Policy intervention to smooth exchange rate fluctuations does not appear to be limited to transactions in foreign exchange markets. While interest rates in the United States and Japan are predominantly set with domestic policy objectives in mind, interest rate policy in most of the other countries accord a much higher weight to the stabilization of the exchange rate. It would be difficult to justify the very high relative volatility of nominal and real interest rates in these countries on the basis of changes domestic "policy fundamentals," as Table 5 makes plain. The probability that interest rate changes will be confined to a narrow plus/minus fifty-basis-point band for the United States is about eighty-two percent—even including the historically turbulent inflation stabilization period of the early 1980s. For Japan, that probability is even higher. By contrast, during Mexico's "floating exchange rate" regime, there is only a nine

Table 4. Foreign Exchange Reserve Volatility in Recent or Current "Floating" Exchange Rate Regimes

		Probability that the monthly percent change in foreign exchange reserves falls within:	
Country	Period	+/- 1 percentband	+/- 2.5 percent band
United States	February 1973-April 1999	28.6	62.2
Japan	February 1973-April 1999	44.8	74.3
Bolivia	September 1985-December 1997	8.1	19.6
Canada	June 1970-April 1999	15.9	36.6
India	March 1993-April 1999	21.6	50.0
Mexico	December 1994-April 1999	13.2	28.3

Note: Reserves are in US dollars. Since the United States holds its reserves in foreign currencies, much of the fluctuations in these simply reflect valuation changes arising from fluctuations in the dollar.

Table 5. Nominal Interest Rate Volatility in Recent or Current "Floating" Exchange Rate Regimes

		Probability that the monthly change in nominal interest rate falls within:	
Country	Period	+/- 0.25 percent (25 basis points)	+/- 0.5 percent (50 basis points)
United States	February 1973-April 1999	59.7	80.7
Japan	February 1973-April 1999	67.9	86.4
Bolivia	September 1985-December 1997	16.3	25.9
Canada	June 1970-April 1999	36.1	61.8
India	March 1993-April 1999	6.4	15.9
Mexico	December 1994-April 1999	5.7	9.4

percent probability that interest rate changes will be less-than or equal-to fifty basis points. Such stability in interest rates seems to elude most emerging markets—even those with capital controls (such as India). Indeed, major interest rate changes (by G-3 standards) appear to be the rule. While the probability that interest rates change by 500 basis points (five percent) on any given month is about zero for the United States and Japan, that probability is close to thirty percent for Mexico. A recent example of Mexico's use of high interest rates as a means to limiting exchange rate pressures (despite a slowing economy and an adverse terms-of-trade shock) comes from the aftermath of the Russian crisis in August of 1998. Nor is Mexico unique in this regard among emerging markets. Such interest volatility is not the byproduct of adhering to strict monetary targets in the face of large and frequent money demand shocks. In effect, most of these countries do not have explicit or implicit money supply rules. It is a combination of trying to stabilize the exchange rate (without giving the explicit signal that foreign exchange market intervention yields) and lack of credibility.[7]

"FEAR OF FLOATING"

Going beyond superficial classifications and taking the wealth of evidence at hand, if results are any guide to the future, promises and statements by countries to move in the direction of a floating exchange rate may be devoid of real consequences. There appears to be a widespread "fear of floating" that is closely linked with credibility problems.

The root causes of the marked reluctance by emerging markets to float their exchange rates are multiple. When circumstances are favorable (i.e., there are capital inflows, positive terms-of-trade shocks, etc.), many emerging market countries are reluctant to allow the nominal (and real) exchange rate to appreciate. This probably stems from fears of the "Dutch disease" type problems—loss of competitiveness and serious setbacks to export diversification. When circumstances are adverse, the case against allowing

7. The results for real interest rates paint a similar picture; these are available from the author.

large depreciations becomes, possibly, even more compelling. The fear of a collapse in the exchange rate comes from pervasive liability dollarization, as in most emerging markets the debt of both the government and the private sector are largely denominated in hard foreign currency. For this and other reasons, devaluations in developing countries have a history of being associated with recessions, not export-led booms. Furthermore, the authorities may resist large devaluations because of their inflationary consequences and the credibility problems these may feed.

If "fear of floating" continues to be the serious policy issue it has been in the past, and if, as the stylized facts on interest rates suggest, lack of credibility remains a serious obstacle, then the only way to simultaneously avoid the "floating and credibility problems" may be full dollarization. A corner solution indeed!

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