

Exchange-Rate Policy in Brazil¹

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Dionisio Carneiro was one of my close colleagues at PUC during most of my time in Rio in 1977-81. I remember him fondly, and I am delighted to have received this invitation to contribute to the volume that is being assembled in his memory.

The macroeconomic regime implanted in Brazil during the second administration of Fernando Henrique Cardoso, and largely maintained by his successor, is typical of those of the advanced countries. The anchor is provided by an inflation-targeting regime (with a target inflation rate somewhat greater than in most advanced countries, of 4½ percent a year, with a band around it of +/-2 percent). The exchange rate floats. The float is often described as free, but given the extent of recent reserve accumulation it would not qualify as a free float as understood by most economists. Fiscal policy was for a time more ambitious under the Lula regime, resulting in a primary surplus of at least 4¼ percent of GDP (subsequently reduced to allow for a higher rate of public investment, and also reduced further to help combat the crisis, though whether this is as temporary as initially promised remains to be seen). Monetary policy has then been directed at achieving the inflation target given fiscal policy, which—given history—has implied maintaining high interest rates. (The SELIC rate, the central bank's discount rate, averaged 15.4 percent per year during the first seven years of the Lula government.)

The question to be examined in this paper is the wisdom of the exchange-rate part of this strategy (it being taken for granted that an inflation-targeting monetary policy will be maintained). It is not argued that a revolutionary change in the exchange-rate strategy would be warranted, but it will be argued that a better regime can be conceived. This is usually described as a reference rate regime, and differs from current practice in announcing an exchange-rate target. The only undertaking given by the authorities is not to intervene or otherwise to act to deliberately push the exchange rate away from the target. Acts to push the exchange rate towards its target are permitted, and the paper includes a survey of what actions are potentially available.

Impractical Exchange-Rate Regimes

¹ A paper presented at the Casa das Garças in Rio de Janeiro on 13 August 2010 and to be published in a volume in honor of the memory of Dionisio Carneiro. The author is indebted to Edmar Bacha and several other participants in that seminar, as well as Ilan Goldfajn, for comments on a previous draft. Copyright Peterson Institute for International Economics: All rights reserved.

All the three exchange-rate regimes commonly discussed in the textbooks are impractical: completely fixed rates, “stable but adjustable” exchange rates (the adjustable peg of Bretton Woods fame), and freely floating rates. A brief account will describe my reasons for rejecting each.

Fixed rates have been tried by a number of countries, including in the years 1991-2001 your neighbor Argentina. There are circumstances under which fixing the exchange rate can be a sensible policy. For it to make sense for a country to fix its exchange rate permanently against another currency, and therefore to abandon any attempt to run an independent monetary policy (as opposed to merging its monetary sovereignty as has happened in the EMU), four conditions seem to me to be necessary (as first argued in Williamson 1991):

1. The economy is small and open, so that it satisfies the conditions for being absorbed in a larger currency area according to the traditional literature on optimum currency areas.
2. The bulk of its trade is undertaken with the trading partner(s) to whose currency it plans to peg, so that the effective exchange rate will not be greatly distorted by movements between third currencies.
3. The country wishes to pursue a macroeconomic policy that will result in an inflation rate consistent with that in the country to whose currency it plans to peg.
4. The country is prepared to adopt institutional arrangements that will assure continued credibility of the fixed rate commitment. This may best be established by replacement of a central bank with a currency board.

It is clear that on these criteria Argentina erred in adopting a fixed exchange rate against the dollar. It is not a small, open economy; rather little of its trade was conducted with the United States, even including its monetary satellites; Argentina has historically had a higher inflation rate than the United States; and (as the currency board enthusiasts insisted) the fixed exchange rate was not backed up by a true currency board.

The second false approach is that which was called the “adjustable peg” under Bretton Woods and “fixed but adjustable exchange rates” by the Committee of Twenty. It is a system that has been historically condemned by the speculative crises that it inevitably spawns. When at the turn of the century there developed a whole literature purporting to show the infeasibility of intermediate solutions, it was based on the false proposition that the only conceivable intermediate solution involved some variant of the adjustable peg. The literature is false because there are alternative possibilities (as will be discussed shortly), but the proposition that the adjustable peg deserves to be disregarded because of the speculative factor is right.

The third approach that deserves summary dismissal is that of freely floating exchange rates. The reason for this is that large currency misalignments are virtually guaranteed if no attempt is made to limit their size. One can think of the variations in the dollar/euro rate in the past decade, which have been well over 50 percent despite the absence of any shocks that could conceivably have justified a change 10 percent of that

size. Equally grave misalignments have been visible in the rates of other floating currencies, like the pound, yen, and even the Brazilian real. If one thinks it important to limit the size of misalignments, this has to be a conscious aim of policy.

Alternative I: the BBC Regime

Any government, like that of Brazil, which engages in unfree floating must have in mind some concepts of when an exchange-rate is “too strong” or “too weak”. The most straightforward way of formalizing this, to which I have long been attracted, is by instituting what is now referred to as a “BBC regime”. In this context BBC stands for “band, basket, and crawl”, rather than for British Broadcasting Corporation.²

The purposes of the band part of an arrangement of limited flexibility of this sort are several. In the first place, there is no point in devoting resources to limiting exchange rate movements more closely than it is possible to calculate an equilibrium rate, and exact calculations of an equilibrium rate are not possible. I used to argue that the degree of flexibility indicated by this criterion is of the order of plus or minus 10 percent, although even wider bands—such as the +/- 15 percent chosen in 1993 by the Europeans—have been used in practice. A second purpose of operating with a wide band is to give a degree of freedom to anticyclical monetary policy (McKinnon 1971). If a country has a 10 percent band, and it faces a recession that the rest of the world doesn't, it can lower its interest rates to 5 percent below the international norm for 2 years without threatening to create an incentive to arbitrage, since the exchange rate can initially rise 10 percent above³ its permanent value. A third purpose of operating with a wide band is to allow a non-infinitesimal crawl to be operated⁴. The final purpose is not to oblige the authorities to react to every movement of funds in or out of the currency by buying or selling reserves, but to allow the strain of changes in capital movements to be taken at least in part by movements of the exchange rate.

The purpose of the basket composition of the peg is to avoid sharp movements in the effective exchange rate—which is what matters from the standpoint of macroeconomic policy—from occurring as a result of what are essentially exogenous changes in the exchange rates of third currencies.

The most common use of the crawl has been to offset differential inflation. Changes in the exchange rate are also a potent instrument for facilitating the adjustment process. One may also wish to engineer a secular appreciation of the domestic currency in order to offset a Balassa/Samuelson tendency for productivity to rise more rapidly in the tradable-goods sector in a rapidly-growing country.

² It was first named a BBC regime by Rudy Dornbusch.

³ I use the Latin American convention that a rise in the exchange rate signifies a weaker value of the domestic currency.

⁴ See Johnson in Bergsten et al (1970) for the original discussion of the conditions under which foreseeable changes in parity can be instituted without provoking destabilizing speculation.

In other words, all the reasons for desiring exchange-rate flexibility that are described in the textbooks are provided for by limited flexibility of the exchange rate. What would be precluded are the large swings that occur in floating exchange rates for no good reason. Doubtless there are still economists who deny that such swings occur, but their number has surely been reduced by the recent crisis.

For a long time I regarded these as decisive arguments favoring a system of limited flexibility. In particular, I was not impressed with the idea that speculators would attack such an arrangement, because I could not see how they could make money out of any such attack at the expense of the authorities rather than out of even more misguided speculators. (If the equilibrium rate indeed lies within the band, then in the long run the authorities will take in money if the rate hits the top of the band and will pay out money at the bottom of the band. Assuming away interest differentials, the authorities necessarily profit from such a strategy, for Friedmanesque reasons. It follows that private speculators would collectively lose money, i.e. that any speculative profits could come only at the expense of other speculators.)

Think now of Indonesia in 1997. At the start of the East Asian crisis it looked secure enough. It still had a reasonable growth rate (of 7.9 percent in 1996), a manageable balance-of-payments deficit, a moderate ratio of external debt/GDP, an inflation rate that was under control (about 9 percent per year) and whose external impact was neutralized by its crawling depreciation, and growing exports (by almost 10 percent in 1996). Indonesia was employing a BBC regime, albeit with a narrower band (increased to +/- 6 percent before the crisis really hit Indonesia) than I would have preferred. Yet despite its good macroeconomic situation⁵ it suffered contagion from Thailand. The problem was that the crisis initiated in Thailand moved the equilibrium exchange rate outside of the previous band. This meant that the situation held up as normal by Obstfeld (1995), in which a country with a band suffers the problems typical of a country on an adjustable peg because the rate gets pinned at the edge of the band, actually materialized. Although the BBC regime minimized the chances of this type of situation materializing as a result of national shocks, it was powerless to react within the rules of the system to an external shock. In the (regrettable) lack of support for the status quo by the IMF, Indonesia saw no choice but to adopt a floating rate. It was this unexpected deviation from the rules of the system which prompted the first capital flight as Indonesian corporations that had borrowed in dollars rushed to cover their debts, which then ignited the larger capital flight as ethnic-Chinese holders of Indonesian assets sought to get out. Even if this type of situation is uncommon, there is no guarantee that it will not recur. One needs a system that is resilient in such situations also.

Alternative II: Managed Floating

The trouble in Indonesia arose because an exogenous change (from the national standpoint) placed the equilibrium exchange rate outside the band that the authorities

⁵ We all now know that corruption left a lot to be desired, but this was not greatly relevant as a similar situation had long prevailed.

were guaranteeing to support. A solution to this problem is to remove the obligation of the authorities to intervene to support a specific rate, in other words to let the exchange rate float. This need not be the same as the present system if the authorities accept a target for the exchange rate and specific obligations as to how they will pursue this target.

Two general principles of management have been promulgated in the literature. The first, both in the sense that it was first to be promulgated (Wonnacott 1958) and in the sense that it is still the most widely known, asserts that governments should have a duty of leaning against the wind in their intervention policy. They should buy reserves if the national currency is appreciating (in the Latin American sense, if the exchange rate is declining), and sell reserves in the converse case. It has been concluded that this rule has some desirable features: e.g., De Grauwe and Grimaldi (2006) have shown that in a behavioral model of the exchange rate (which I will discuss subsequently) it tends to have stabilizing properties (by strengthening the relative weight of fundamentalist traders in the foreign exchange market).

Nevertheless, the rule seems to me fundamentally misconceived. If one believes that there is such a thing as an equilibrium exchange rate, then the rule at times commits the government to intervening to push the rate away from equilibrium. If the rate is above equilibrium, then presumably one would wish the government to be buying reserves so as to push it down (and vice versa), whereas the proposed rule commits the government to push it down only when the rate is also rising. This cannot be right. If the market is tending to correct a disequilibrium, one would wish to accelerate, not retard, the process.

The alternative rule⁶ suggests that the appropriate principle is to commit the authorities to intervene to push the rate toward a published reference rate which would be an estimate of the equilibrium rate. The only obligation that they would undertake is a negative one: not to intervene (or otherwise act to influence the exchange rate) with the object of pushing the rate away from equilibrium. But they would be allowed (as opposed to compelled) to intervene (or otherwise seek to influence the rate) in a positive sense as well, so as to push the rate toward the estimated equilibrium.

The same problem obviously arises as with any attempt to select a parity for the exchange rate: the need to estimate an equilibrium level of the exchange rate. No one imagines that this can be done with exactness, but the gyrations in floating exchange rates have been so large that even an approximate estimate of equilibrium could offer large gains. There is now an abundant literature which seeks to estimate equilibrium exchange rates (see, for example, IMF 2006, Cline and Williamson 2010). By far the most difficult problem has been found to be pinning down the capital flow that is regarded as compatible with equilibrium. My own approach (in association with William R. Cline) has been to resort to the rules of thumb (which have some empirical support) which assert that debtors are ill-advised to run long-run current account deficits (= capital inflows) in excess of about 3 percent of GDP, and then impose a similar limit on surplus countries in the interests of maintaining symmetrical adjustment pressures. One then imposes a notional discipline on countries that threaten to run greater imbalances, while allowing

⁶ See Ethier and Bloomfield (1975) for the first suggestion to this effect.

any country within those fairly broad limits to pursue its policies without an international discipline. This has the disadvantage of allowing large changes in the “equilibrium exchange rate” when a country or monetary region (this first became conspicuous in the recent work of Cline and I in connection with the euro area) has a large but-still-below-3-percent-of-GDP change in its forecast current account balance. Matters would be simpler for a single country or region if one can assume that this has a well-defined current account target.

A Float with a Reference Rate

The essence of the reference rate proposal is that countries agree to adopt a reference rate as some sort of target and to forego acts that threaten to push the exchange rate away from that reference rate. In addition, they would be empowered to push rates toward their announced reference rate, but there would be no compulsion on them to do that. A reference rate system could be introduced unilaterally by one country announcing a target and abiding by the rules governing a reference rate, or it could be introduced multilaterally by international agreement (presumably in the IMF) on a set of reference rates and all countries agreeing to respect the rules of the system. The latter would clearly be ideal, in part because it would require that the IMF (or whatever body was responsible for determining reference rates) secured mutual consistency. Since we are discussing how Brazil should change its policy unilaterally, however, we will focus on such a unilateral change, but one should recognize that a multilateral change would be even better.

A first advantage of a reference rate approach to managing the exchange rate is that it is consistent with the most convincing theory of the foreign exchange market. To my mind this is not the standard model embraced by the profession, the REEM (rational expectations and efficient markets) model, which would make a reference rate pointless, but the behavioral model of De Grauwe and Grimaldi (2006). They hypothesize that agents who are active in the foreign exchange market may forecast an exchange rate at a particular time in one of two ways: by using a fundamentalist model (which takes account of the factors that most economists deem important in determining equilibrium in the long run, and then discounts back from the long-run solution by expected interest rates—etc—between now and the long run) or a chartist model. The latter is modeled simply by extrapolating the recent past: in practice there are many chartist models and some are more complex than this, but the modeling captures the essence. Agents change the type of model they use stochastically, but in making their choice they are influenced by the recent profitability of the two rules. This model is too complex for an analytical solution, but after repeated simulations of it they reached the following conclusions:

1. That exchange rate changes are usually disconnected from changes in the fundamentals, although the exchange rate *is* cointegrated with its fundamental value.
2. That if one sticks to one rule at all times, then a chartist rule tends to be more profitable than a fundamentalist rule. (It is often better still to switch between these rules.)

3. That exchange rate changes have fat tails (meaning that low-probability events happen much more frequently than they would if outcomes were distributed according to a normal distribution).
4. That the exchange rate is sometimes, but unpredictably, disconnected from its fundamental value and instead involved in bubble-and-crash dynamics.

In other words, the model is consistent with the main facts about exchange rate markets, including those that should cause acute embarrassment to those who still adhere to the profession's mainstream model.

De Grauwe and Grimaldi also concluded that intervention, even guided by the first of the principles for managed floating discussed above (“leaning against the wind”), was far from the exercise in futility suggested by the standard model, but would be stabilizing. In the main this effect would not result from the weight of the authorities' purchases and sales, but by their increasing the weight of the fundamentalists in the model. Clearly one would expect intervention guided by the distance from the fundamental value to be even more stabilizing.

In fact, a reference rate system is essentially similar to a band system in which there is not a hard obligation to defend the edge of the band. This has the disadvantage of not giving actors in the foreign exchange market an assurance of unlimited intervention at a firm rate, which is essential to creation of Krugman's famous “bias in the band”. But it has the countervailing advantage of not requiring what under some circumstances could only be provided at excessive cost, with loss of the authorities' credibility if/when they fail to provide it and defend the band.

From a global standpoint, perhaps the major advantage of the reference rate system is that it would prevent countries acting anti-socially. But from a national standpoint, the great advantage would be that it might help countries to prevent harmful currency swings. Not only might it help them avoid the periodic weaknesses to which most currencies have been subject (an aim that would probably be furthered better by a multilateral agreement, insofar as their agreed reference rate might then gain the sort of international legitimacy currently bestowed when two currencies agree to mutually intervene), but it would legitimize combating Dutch disease.

It is widely agreed that overvaluation is bad for growth.⁷ There is therefore a perfectly valid case for seeking to combat Dutch disease. A series of weapons may be able to help:

1. The classic instrument for combating an unwanted appreciation is sterilized intervention. (If intervention occurs and it is not sterilized, it is more usual to describe this as a change in monetary policy.) However, it can be an expensive instrument, since sterilization involves issuing domestic securities with a domestic

⁷ There is still an active discussion as to whether undervaluation is good for growth. My own view is that this may easily do more harm than good by depriving a country of the savings needed to finance growth.

- interest rate and buying foreign securities carrying a foreign interest rate, and this usually involves the authorities taking a loss.
2. Obviously monetary expansion, or unsterilized intervention, will hold down the exchange rate, but there may be a contradiction to macroeconomic discipline.
 3. It may be possible to use ersatz monetary instruments like increases in reserve requirements or instructing publicly-owned savings institutions to switch their deposits from commercial banks to the central bank, but eventually such instruments tend to decrease the efficiency of the monetary system.
 4. It may make sense to require the banks to hold higher reserve requirement against loans denominated in foreign currency, or in extremis to forbid such loans. Insofar as foreigners prefer to avoid the domestic currency, this will slow the inflow of foreign loans, as well as reducing financial risks.
 5. If foreigners (or for that matter domestic holders) are holding foreign-exchange denominated assets, it would be possible to tax their interest earnings differentially (as Switzerland did in the dying days of Bretton Woods).
 6. If permitted internationally and feasible politically, it would be possible to tax traditional exports.
 7. The solution of every good economist, and that advocated by the IMF, is to tighten fiscal policy. This is good economics and I always advocate it myself. But we should spare a thought for the Finance Ministers who have to advocate raising taxes and cutting expenditures because the foreigners have so much confidence in the country.
 8. It will often be possible to relax controls on outward capital movements. The problem that may arise is that a relaxation of controls on outward flows may provoke a net inward flow as it may be taken to signal ease of exit if things start to go wrong (Labán and Larraín 1997).
 9. The classic remedy is controls on the inward flow of capital. I have no doctrinal objection to this, but one does need to ask questions about administrative capacity. Probably the biggest mistake countries make in introducing capital controls is to over-estimate their impact. It is often said that capital controls are no substitute for good policies, and this is correct, if somewhat platitudinous. But it would be wrong to deny their ability to play a constructive role as a part of a package.
 10. An instrument about which there is even more disagreement is what is now often referred to as “oral intervention”, aka jawboning. It seems to be argued by some that any mention of what the authorities are planning to do in the foreign exchange market provides a “target to attack”. There are of course occasions when the authorities have provided targets to attack, which arises whenever they commit themselves to defending a disequilibrium exchange rate. This used to happen under the adjustable peg because countries made the mistake of continuing to defend rates that had ceased to be consistent with a reasonable equilibrium, often because of differential inflation. But there is no money to be

made, except perhaps at the expense of other speculators, from attacking a rate on the right side of equilibrium,⁸ as already explained.

It is evident that there are multiple instruments with which one can seek to defend the exchange rate, including (but not limited to) intervention, monetary and fiscal policy, and capital controls. Each has a problem, and none of them can be relied on, or pushed indefinitely far, without endangering other goals. It follows that it is unwise to give an unconditional guarantee that any particular rate will be maintained, but this is no excuse for refusing to provide any information about the authorities' intentions to the market.

Concluding Remarks

It has been argued in this paper that the main shortcoming in Brazilian policy toward the exchange rate is that it lacks any obligation of the authorities to indicate what they see as the desirable rate. If they were to name such a rate, they would of course have to commit themselves to certain actions. However, the attraction of naming a reference rate rather than committing to defend a particular rate or band is that the actions to which they would need to commit themselves would be purely negative ones, of not pushing the rate away from whatever they had chosen to name as the target. They would have the right but not the obligation to intervene more actively, attempting to push the rate toward the target, but since this would be a right and not an obligation it could never prevent a central bank from hitting some other target (such as an inflation target).

One could also envisage a concerted international move to exchange-rate targeting. This would have one advantage and one disadvantage in comparison to a purely national move such as that discussed in this paper. The advantage is that international endorsement of a target for the Brazilian exchange rate would signify international approval of that target, which should be expected to have the same psychological impact on the market as a joint agreement to intervene by both the strong- and weak-currency countries. This would make it easier for the Brazilian authorities to fight off market attempts to push the real to an inappropriately strong or weak level. The disadvantage is that it would require that some international body, presumably the IMF, would have the responsibility of drawing up and gaining approval of the set of targets, rather than that this be a purely national decision. Because Brazil would be a party to that decision (e.g., by virtue of the existence of a Brazilian member of the Fund's Executive Board), it would have an important protection against an inappropriate target being set. But in the last analysis the Fund would have to be sure of being able to reach a decision, and it would therefore have to be granted the power to over-ride national concerns if this were necessary. As so often, any move toward more cooperative international arrangements would require a certain sacrifice of national sovereignty.

⁸ By "the right side of equilibrium" I mean a rate that undervalues a currency when the intervention rate is higher than the equilibrium rate and overvalues the currency when the intervention rate is lower than the equilibrium.

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