

On the Changing Nature of Currency Crises¹

by

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Abstract

In the crises of 1980s, ever-increasing current account deficits, fueled by unsustainable economic expansions, were invariably the main cause of rising devaluation risk that eventually led to the reversal of capital flows. By contrast, in the 1990s, speculative expectations about changes in asset prices and sovereign risk have instead become the main determinants of capital flow reversals. The paper examines the nature of this transformation and tries to give a stylized account of these new 'capital account driven' crises. It is argued that although a country might seem to benefit for a time from capital inflows when asset prices are generally expected to rise, this can only be temporary since asset prices cannot keep increasing indefinitely and an abrupt reversal of capital flows ensues once it is taught that asset prices have peaked.

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In the 1990s, currency crises have increasingly become a common occurrence around the world. Speculative attacks on currency wrecked havoc in the European Monetary System in 1992, in Mexico and Latin America in 1994-5, in East Asia in 1997-98, in Russia in 1998, in Brazil in 1999, and in Argentina and Turkey in 2000-1. Many of these episodes of financial turmoil came as a surprise at the time and had the effect of transforming the thinking about currency crises. Now, it has become commonplace to talk about different generations of currency crisis models.

In the 1980s, currency crises were thought to be predictable. According to the traditional view, which was shaped by the experiences of some Latin American countries in that decade, countries ran into crisis when the monetization of rising fiscal deficits caused a steady erosion in their foreign exchange reserves. Once reserves fell below some critical threshold, a speculative attack ensued on the fixed exchange rate (Krugman 1979).² Real exchange rate appreciation and an increasing current account deficit were considered clear signs of a coming crisis, since neither trend could be sustained indefinitely with a foreign exchange constraint. Thus, it was generally agreed that speculators attacked currencies when they recognized that the economic policies that were being implemented could not be sustained for long.

However, the currency crises of the 1990s seemed different in many respects. Speculative attacks were now supposedly triggered by just the *probability*, rather than the *existence*, of internal inconsistencies in economic policies. Provided that it was held by a sufficient number of people, just the expectation of a currency crisis was thought to be sufficient to bring about one. For instance, in the European crisis of 1991-2, the conflict

² See also Flood and Garber (1984).

speculators perceived between the fixed parity and the change of direction in macroeconomic policy, which appeared likely in the light of unexpected economic developments, was thought to have triggered the crisis (Obstfeld 1994, Eichengreen et al 1997). Speculators attacked currencies when they perceived that countries had more to gain from abandoning the fixed parity than defending them. Governments ended up *ratifying* these speculative attacks by changing course, even though their original policies would have been perfectly viable had it not been for the attack on their currencies. Likewise, many argued that the East Asian crisis (1997-8) and also possibly the “tequila” crisis in Latin America (1994-5) were different than the crises of the 1980s. Both were seen to have resulted from self-fulfilling expectations that gave rise to abrupt and unpredictable reversals in capital flows, rather than inconsistent economic policies that were unsustainable.

In short, in the crises of 1980s, an unsustainable economic expansion that gave rise to an ever-increasing current account deficit was invariably the main issue. In one episode after another, a *boom* and *bust* cycle that eventually culminated in crisis was the common pattern one observed all around the globe. In the 1990s, as crises became more and more unpredictable, much of the discussion has shifted from current account deficits and over appreciation of currencies to financial ratios of various kind. Crises have become capital account driven, where expectations about asset price changes and speculative gain rather than devaluation risk driven by current account deficits exerted the decisive influence on international capital flows.

The objective of this paper is to examine the nature of this transformation. Under conditions of capital account liberalization, the exchange rate becomes indeed just

another asset price that can be subject to speculation. Thus, just like any other forward looking asset price, rumors, noise and investor sentiment, at least in the short run, are likely to be more important than what happens in the real economy.³ So, the question is whether the dynamics of speculative finance can be pinned down in any systematic way other than to simply observe that abrupt shifts in investor sentiment create havoc in financial markets and that contagion effects exist. In other words, is there any internal logic to what appears to be market madness? Too big a question, no doubt. What follows, informed as it is by the growing backlash against the ‘efficient market hypothesis,’ is an attempt to nibble away on its edges.⁴

The rest of the paper is organized into three sections. First, I begin with a discussion of the causes of boom and bust cycles that were thought to give rise to currency crises in the 1980s. In the following section, I go on to discuss how currency crises have become capital account driven, explaining the shift in the context of the uncovered interest parity condition. The last section concludes with a few remarks on what might be some new themes for the policy discussion.

Boom and Bust Cycles and the Crises of the 1980s

Despite their differences - and these are no doubt substantial - all the different arguments summarized below are in agreement on the basic premise that currency crises are mainly caused by the depletion of foreign exchange reserves that ultimately result from an unsustainable output expansion. As remarked above, the traditional view blames

³ In the empirical literature it is by now well established that exchange rate fluctuations at least in the short run are completely unrelated to variations in macroeconomic ‘fundamentals’ (Flood & Rose 1999).

⁴ See, among others, Shleifer & Summers (1990), Shleifer & Vishny (1997), Shleifer (2000), Lo & MacKinlay (2002), Bossaerts (2002) and Schiller (2000).

the rising fiscal deficits that are monetized in countries that face a foreign exchange constraint. The argument is thought to capture the experiences of Southern Cone countries in the late 1970s and early 1980s. While it is true that an unsustainable increase in aggregate demand and output was the ultimate cause of the crisis in these episodes, the emphasis on excessive government spending and ever-rising budget deficits appear misplaced.

The experience of Southern Cone countries is discussed in extensive detail in the literature on disinflation programs, as these countries were at the time trying to bring down inflation. In two respects, the stabilization programs that were implemented in these countries in the late 1970s were the first of their kind. First, disinflation was being attempted for the first time in context of a liberalized capital account. Second, in these programs the nominal exchange rate functioned as an anchor. This was based on the notion that belt tightening was not enough in itself in bringing down the inertial part of inflation. That required the use of a nominal anchor in the design of the stabilization program. In later years, many other countries in different parts of the world repeatedly chose to use their exchange rate as the nominal anchor in their disinflation programs, in part because the two other alternatives, tight monetary or incomes policy, are much harder to implement politically.

The main objective of these programs has been to reduce domestic inflation by decreasing incrementally the rate of devaluation, but many countries experienced real currency appreciation as inflation failed to fall in tandem with the exchange rate. Though this was expected to have a contractionary effect since it reduced net exports, the result was almost invariably a consumption led boom that eventually went bust in a few years.

For instance, in Chile and Argentina, where these type of programs were first implemented, the real appreciation of currency went hand in hand with a 14% increase in private consumption within a year the program had been implemented, while the GDP rose by 8 and 10 percent in these two countries, respectively, during the same period. With such rapid output expansion, it was not long before the current account deficits began to soar, reaching for instance as high a ratio as 14 percent of GDP in Chile within two years (Calvo & Vegh 1999).⁵

Interestingly, in this literature excessive government spending does not figure prominently as an explanation of the economic boom that had preceded the crisis. Likewise, individual case studies of these countries for this period share the same conclusion with respect to the importance, or rather the lack thereof, of lax public finance (Taylor 1999, 2001). Instead, in these works and in the disinflation literature, boom and bust cycles are attributed to other causes.

In these other explanations, the starting point of all main arguments is the discrepancy in the speeds with which rate of devaluation and inflation declined. One view holds that the very credibility of the disinflation program brings down the expected rate of devaluation, and that in turn leads to a fall in the domestic nominal interest rate in line with the uncovered interest rate parity condition. The real rate of interest falls more than the decrease in the nominal interest rate because the decline in the rate of inflation lags behind (Rodriguez 1982). Moreover, the real wages might also be rising, since the decline in inflation, though not as fast as the decrease in the rate of devaluation, might be

⁵ In the 1990s, the same pattern has repeated itself in other countries. Many disinflation programs around the world, where the exchange rate was the nominal anchor, (e.g., Mexico 1994, Russia 1998, Brazil 1999 and Turkey 2001) also ended in crisis (Mussa et al 2000). In all these episodes, the main common trait was a private consumption led boom that went bust.

faster than the decrease in the rate by which nominal wages continue to rise. Thus, falling real interest rates, coupled possibly with rising real wages are thought to give rise to a consumption led boom in output that results in real currency appreciation. Over time, the contractionary effect of a rising current account deficit turns this boom into a bust. In the meantime, depending on the level of foreign exchange reserves an attack on the exchange rate can ensue and the currency can collapse.

Another view argues that the rapid increase in private consumption is caused by the disinflation program's lack of credibility in the eyes of consumers. Because people do not think that the fall in inflation will be permanent they increase their expenditures especially on big ticket consumption items and expensive imports with the idea of buying what they can before inflation begins to go back up (Kiguel & Liviatan 1992; Calvo & Vegh 1999).

A third argument, most commonly associated with Lance Taylor (1998), is similar to the first one except here the dynamics of capital flows play a more central role. Depending on the degree of emphasis one places on the moral hazard problem, it can be said to come in two versions. According to Taylor, the adoption of a credible disinflation program reduces the expected rate of devaluation just as Rodriguez (1982) had argued. But, in Taylor's account, the fall in the nominal rate of interest is usually less than the decrease in the expected rate of devaluation, giving rise to an interest rate spread which fuels a steady capital inflow. This, in turn, causes either the domestic money supply to increase right away, or, if the central bank sterilizes, a further increase in the domestic interest rate and thus an even higher interest rate spread which only stimulates more capital inflow. Thus, sooner or later, the capital inflow leads to a rising domestic money

supply, which causes asset and commodity prices to rise and the real exchange rate to appreciate. The current account deficit begins to increase, and, past a certain threshold, that pushes up the devaluation risk. Maintaining a positive interest rate spread, and thus the capital inflow, now requires an increase in the domestic nominal interest. That in turn slows down, and eventually reverses, the economic expansion. In the meantime, the rising current account deficit at some point exceeds the capital inflow, causing a decline in foreign exchange reserves, raising the devaluation risk anew.

The second version of this argument adds on a dimension of moral hazard. Barring a monetarist approach, the link between the rising money supply and the increase in prices and output in the above scenario is usually explained by recourse to bank credit. Capital inflow induces domestic banks to raise the domestic volume of credit they supply, which in turn raises both the money supply on the one hand and prices and output on the other. As long as the real exchange rate continues to rise, banks can indeed make easy profits by lending inside the country what they borrow from outside. This however implies that banks simply ignore the devaluation risk and the possibility that the trend of appreciation of currency can abruptly reverse itself. Indeed, the proponents of the moral hazard argument have argued that the *open* positions banks took in many of the East Asian countries have created a financially fragile environment and thereby set the stage for the crisis, if not actually caused it.⁶

⁶ However, though moral hazard is some part of the story, as Taylor remarks, it would be highly misleading to conclude that it is the main explanation of the crisis. In fact, it is possible to explain banks' destabilizing credit behavior without recourse to the moral hazard argument at all, but that is a separate matter for yet another paper.

Leaving aside the link between the money supply and aggregate demand, Taylor's analysis breaks new ground as it takes into consideration how the foreign exchange constraint is partially relaxed over the expansion phase of the cycle. But, at the end, rising current account deficits re-constrain the inflow of foreign exchange by increasing the devaluation risk, and we end up in the same familiar situation where output expansion results in the depletion of foreign exchange reserves, which eventually triggers the speculative attack. Thus, despite their differences, a unifying theme can be said to exist among the different arguments discussed above. However, that theme is not lax public finance, but rather reserve depletion caused by an unsustainable expansion.

What is Different About the Crisis of the 1990s?

Though it is generally accepted that currency crises have been transformed in the 1990s, what that has exactly entailed is not very clear. For instance, Radalet & Sachs (1998) outline five different types of crises, and Krugman (2000), in his influential classification, defines three different generations of models. In his view, reserve depletion caused by monetized budget deficits is the main theme of the first, governments' willingness to devalue to avoid reserve depletion is that of the second, and various financial problems that cause output contraction are those of the third generation models. However, as Williamson (2001) remarks, Krugman also offers the alternative distinction between *fundamentals* driven first-generation models and *expectations* driven second-generation models that is perhaps more in line with the discussion here.

To be more precise, the latter distinction basically implies a transformation in how investor expectations that govern international capital flows are formed. In the 1980s, or

the first generation crises, the devaluation risk stemming from current account deficits or ‘fundamentals’ plays the decisive role in expectation formation, whereas in the 1990s speculation on variable price assets and considerations of sovereign risk take the center stage. This change, in part, reflects the institutional transformation of the world economy and the explosive expansion of secondary asset markets in developing countries within the last decade. Whereas fixed price assets in the form bank loans were still the main conduit of financial capital flows into developing economies in the 1980s, variable price assets such as bonds and stocks appear to have taken their place in the following decade.⁷ Thus, *current account driven* might be the better label for the former and *capital account driven* for the latter type of crises.

No doubt, each crisis in the 1990s appears to have had its own specific circumstances that should not be overlooked. But, nonetheless, there might be a general enough pattern that can justify an attempt, such as the following, to give it a stylized account. A useful starting point might be the uncovered interest rate parity condition, which, as written below, simply states that the difference between the domestic nominal interest rate and the international interest rate must be equal to the sum of the devaluation risk (*DR*) and the country (or sovereign) risk (*SR*).⁸

$$i - i^* = DR + SR \quad (1)$$

⁷ I have benefited from conversations with Nazim Ekinici on this point.

⁸ The devaluation risk in turn can be decomposed into two components: a major devaluation risk (MD) and exchange rate drift (ERD), which entails relatively predictable incremental changes in the peg. In a fixed exchange rate regime ERD is insignificant or zero while MD is positive; and in the case of floating regime it is exactly the opposite: ERD is significant while MD is zero or negligible.

where i is the domestic nominal interest rate and i^* the international interest rate. The change in foreign exchange reserves is in turn the sum of the current and capital accounts;

$$\Delta F = T(Y, E) + C(i, i^*) \quad (2)$$

where T is trade balance, Y is output, E the real exchange rate (where an increase means a fall in the value of the domestic currency). As it is commonly assumed, $T_Y < 0$, $T_E > 0$ and $C_i > 0$, holding i^* , DR and SR constant.

In Taylor's argument discussed above, the first equality turns into an inequality once a credible stabilization program is adopted in a developing country. The interest rate differential on the left hand side exceeds the sum of SR and DR , and the greater the interest rate spread the higher is the magnitude of capital inflow. Over time, output expansion and real exchange rate appreciation cause the trade deficit to rise and that eventually pushes up the DR . Under these circumstances, a positive interest rate spread can only be maintained with a higher domestic interest rate. At some point, reserves of foreign exchange also begin to fall as the capital inflow falls short of the rising current account deficit, causing a further increase in the DR . Because the domestic interest rate cannot be increased indefinitely, it becomes harder to check the decrease in the foreign exchange reserves by raising the interest rate past a threshold. This is the beginning of the end, and once reserves begin to fall steadily the actual mechanism of the speculative attack need not be different from Krugman's (1979) account.

To see how the process seems to have worked differently in the 1990s in contrast, it is helpful to introduce asset price expectations into the interest parity condition in equation (1), which in its present form implicitly assumes that arbitrage works only through fixed price assets. One simple way in which this can be done is by defining – for want of a better term - the real exchange rate risk (ER) as the difference between the devaluation risk (DR) and the expected increase in asset prices (ΔAP^e),

$$ER = DR - \Delta AP^e, \quad (3)$$

and rewriting equation (1) as,

$$i - i^* = ER + SR. \quad (4)$$

Now, if we revisit the above discussion, starting with the adoption of a credible stabilization program, what again follows next is a decrease in the real exchange rate risk, giving rise to a positive spread. In this instance, not only does the expected devaluation rate decrease, but also the expected change in domestic asset prices becomes positive as it is now expected that the implementation of the stabilization program will push down the nominal interest rate in the near future and thus raise the value of old issue bonds. With a positive spread capital flows in, and, again, output might begin to expand. But, now, the ER begins to rise as soon as the expected increase in asset prices peters out - which might say result from the leveling off of the fall in the interest rate after its initial rapid decline following the first implementation of the disinflation program.

To the extent that foreign hedge fund managers begin to believe that domestic asset prices have peaked, they might simply close their positions in that country and move elsewhere. If the *SR* is still low, an increasing number of “local” speculators who might also think that asset prices have peaked would swell the *bear* position - in the sense of Keynes’ *Treatise on Money* – within the country in question. Under conditions of capital account liberalization, in many developing countries the bear position normally takes the form of foreign exchange deposits in local banks. Thus, in either case, whether foreign hedge funds leave the country or bank deposits shift to foreign exchange denominated accounts in domestic banks, there is an unexpected weakness in the value of the home currency, i.e., a slowdown at the rate at which the devaluation rate is decreasing (crawling peg), or a fall in reserves. This is likely to falter the market confidence in the stabilization program, causing the *DR* to rise abruptly.

At this point, the current account deficit that might until then seen as a *normal* corollary of the capital account surplus might all of a sudden be deemed unsustainable and thus a problem. In other words, rather than being the cause of the slowdown in the capital inflow, here, current account deficits are discovered as a problem only after the inflow falters first because the expected asset price increases peter out. The resultant rise in liquidity preference, which is intertwined with currency substitution, and possibly an outright outflow of capital lead to exchange rate pressure on the currency and thus raise the *DR*.⁹ At the end, the *ER* ends up rising on account of both the initial fall in the expected asset price increases and the eventual rise in the devaluation risk.

⁹ In fact, any increase in the liquidity preference for any other reason can also possibly have the same effect.

With the *ER* rising, the country in question has no choice but to raise its nominal interest rate as before, and, again, the high interest rate policy cannot for long keep the interest rate spread positive in (4). Except now, the policy is likely to backfire much faster.¹⁰ First, to the extent that rising interest rates signal financial investors that negative asset price changes are ahead, they can cause a net outflow rather than an inflow of capital. In other words, in the stylized world of the Mundell-Flemming model, the flow of capital is more a function of the *rate of change* of the interest rate rather than its level as in equation (2). At least within a certain range, the increase in the difference between the domestic and foreign rates of interest, $i - i^*$, is more than balanced by a rise in the *ER*.

The capital outflow can possibly be checked temporarily by interest rates that rise to astronomically high levels. But, down the line, that is likely to cause the sovereign risk (*SR*) to unravel by instigating either bank failures or a domestic debt crisis or both. Domestic banks can fail in a variety of ways. If they are heavily invested in government bonds, the astronomical increase in interest rates spells disaster as it causes a meltdown in the value of these assets, or if they are caught off guard with open positions when the trend of real currency appreciation abruptly reverses itself, they might be forced to default on foreign debts, pulling down along with them the public sector finances as well (Corbett & Vines 1999). Public finances are likely to run into trouble in any event, since with exorbitantly high interest rates it does not take very long before the domestic public debt begins to look out of control. Thus, the *SR* unravels one way or another, and once it does, a point is soon reached where no interest rate increase, no matter how big, can stem

¹⁰ On how high interest rate policies backfire in dealing with balance of payments difficulties, see Lane et al (1999), and Bensaïd & Jeanne (1997).

the outflow of capital and a severe meltdown in the value of the domestic currency becomes inevitable.

To recap, the greater the credibility of the initial set of policies that reduces the devaluation risk the more predictable the asset prices become. Capital flows in and an asset price bubble ensues. Capital withdraws once speculators begin to think that asset prices have peaked, leaving behind an exposed banking system. Government guarantees that were meant to reduce the devaluation risk for the foreign investor, whether explicit - as the dollar indexed bonds (*tesobonos*) in Mexico - or implicit, come back to haunt public finances, causing the *SR* to soar as well. In fact, the link between the initial fall in the *DR* and the eventual increase in the *SR* might be more immediate. A strict anti-inflationary policy stance - as was the case, say, in Cavallo's plan in Argentina - that is designed to reduce effectively the *DR*, at the same time thwarts the ability of the country in question to inflate its domestic debt if need be, which in turn has the effect of raising the default risk on its stock of outstanding debt and thus the *SR*.¹¹

Conclusion

The objective of this paper has been to contribute to our understanding of currency crises in order to identify the main policy issues. Much of the earlier policy discussion has concentrated on the prevention of boom and bust cycles, which were seen as the main destabilizing dynamic behind the abrupt reversals of capital flows giving rise to currency crises. Imposing one or another form of capital control has been the main policy prescription offered to deal with this problem, especially, by those who share the

¹¹ McKinnon (1994) explains in a similar vein why the risk premium on Italian and Spanish debt had increased after the Maastricht Treaty as the member countries in the Europe Union have effectively gave up their ability to inflate their debt. See also Vives (2002).

critical stance of this paper towards the mainstream view which has instead single mindedly emphasized moral hazard problems along with structural weaknesses.¹²

The present discussion points at two different sets of problems. One of these is the difficulty of taking a definite exchange rate policy stance that gives rise to predictable asset price expectations since this tends to provide speculators with safe one-sided bets. Although a country might seem to benefit for a time from capital inflows when asset prices are generally expected to rise, this can only be temporary since asset prices cannot keep increasing indefinitely and an abrupt reversal of capital flows ensues once it is taught that asset prices have peaked. The current shift away from the bi-polarization thesis within the mainstream literature in favor of a policy of completely flexible exchange rates in part reflects this very difficulty, though it is never explained in this way.¹³ All this means that rendering one's exchange rate completely unpredictable might be the indispensable part of an effective defense against currency crises. This of course puts developing countries in a difficult predicament, since – as argued all along by many of the critics of flexible exchange rates – the real economy can hardly prosper in a macroeconomic environment that is characterized by unmitigated exchange rate risk. Thus, Calvo and Reinhart's (2000) finding that the countries that are thought to be full floaters are actually 'dirty floats' at best is hardly surprising.

¹² Before, the emphasis used to be on fiscal discipline, which is now considered necessary but insufficient to fend off crises.

¹³ The IMF prescription for avoiding a currency crisis in the midst of a disinflation program with the exchange rate as its nominal anchor has until recently been the prevention of a boom gathering speed by a bit of contractionary fiscal policy and a timely exit from the crawling peg arrangement into either a hard peg or a fully floating exchange rate arrangement. The Turkish crisis of 2001, at the time, was seen as an evidence of the validity of the bipolarization thesis that nothing in between a hard peg and full float worked (Fisher 2001). However, as the crisis in Argentina swerved out of control the bipolar view has been quietly dropped in favor of full float.

The other difficulty, which needs further development as it is mentioned only in passing in the discussion above, refers to the complications caused by liquidity preference and currency substitution becoming intertwined. In developing countries the exchange rate becomes the decisive asset price that influences all others under conditions of financial liberalization, while the *bear* position predominantly takes the form of foreign exchange deposits in domestic banks. Any change in liquidity preference then causes bank deposits to shift back and forth between active and inactive circulation, where the former usually takes the form of bank accounts denominated in the local currency while the latter comprises foreign exchange denominated accounts in the same set of banks. This means that any significant increase in liquidity preference has the potential to automatically increase the banking sectors' claims on for foreign exchange reserves and thereby give rise to exchange rate pressure, possibly causing the devaluation risk to shoot up with all the dire complications discussed above. Moreover, because the reserve requirements are invariably much higher for the foreign exchange denominated accounts than for those denominated in local currency, any change in liquidity preference acts as a built-in destabilizer for the real economy. If the liquidity preference tends to rise during a slowdown, as one would expect, that reduces banks' liquidity as it redistributes deposits within the banking system from low-reserve to high-reserve accounts. Likewise, a fall in liquidity preference raises banks' liquidity for the same reason, as now deposits are redistributed from high-reserve to low-reserve accounts. In other words, in addition to the contractionary (expansionary) effect of a rise (fall) in liquidity preference itself, the resultant change in the liquidity situation of banks becomes yet another force that propels the economy in the same direction.

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