Instituto Cultural Minerva

Institute of Brazilian Issues

The George Washington University

International Reserves

- the Brazilian Experience

Flávio Pinheiro de Melo

Washington,DC

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Introduction

Central Banks in most countries try to hold stocks of international reserves, basically in the form of liquid instruments in convertible currencies. These stocks are kept to guarantee a smooth path for imbalances between foreign payments and receipts. Futhermore, an adequate stock of reserves can permit central banks to maintain a stable exchange rate even though the country is running an external deficit or a surplus. Fundamentally, international reserves can give the power to central banks to stabilize the domestic economy when it suffers exogenous shocks in its balance or payments.

This work will try to identify the main reasons for a country to hold stocks of international reserves, beginning by a simple definition of them, and discussing some issues that can influence for better or for worse the necessity for foreign assets. One special kind of international reserve, the IMF's special drawing rights mechanism, will be described as well as the possible impacts in reserve needs due to the country's choice of exchange rate system.

In the last section and the conclusion, we will address the Brazilian reserves accumulation process that started in 1992, since the rescheduling of Brazil's external debt. We will try to show some peculiar characteristics of this process and seek to identify positive aspects of holding international reserves vis a vis a rough estimate of explicit costs of holding reserves.

International Reserves as shock absorbers

A standard definition for international reserves can be stated as a country's assets that are able to be used - even indirectly through assured convertibility into other assets - to support the exchange rate when the balance of payments is running a deficit. Of course, given that the U.S. dollar is the main currency used for market interventions, the major part of most countries' international reserves are in the form of liquid holdings of dollar denominated assets. These assets may be very liquid demand deposits or time deposits with a term measured in days, held with the Federal Reserve or at commercial banks. In the latter case, deposits are held generally in New York or in the Eurodollar market. Nowadays, besides U.S Dollars, foreign exchange reserves are held in currencies of other industrial countries, mainly in Deutsche marks, Japanese yen, Swiss francs, French francs, Dutch guilders, and the pound sterling. As an example, table 1 shows the allocation of assets used by Brazil's Central bank. Given the characteristics of liquidity exposed before, spot assets and short-term assets represent the great majority of Brazilian international reserves (86% of total assets in 1997).

There is another category of assets that can be fitted in the international reserves definition, the so-called special drawing rights (SDRs) - claims created by the International Monetary Fund - and reserve positions in the Fund held by the several countries. The SDRs were created in 1969 as a synthetic asset to substitute gold, which had been the basic reserve asset until that time. The IMF allocates the SDRs, from time to time, to its members in proportion to their quotas in the Fund. Countries can negotiate their SDRs to acquire a currency, either from countries that agree to accept the SDRs from them, or from a surplus country designated by the IMF. Thus, deficit countries tend to run down their stocks of SDRs while surplus countries tend to accumulate them. It can be seen though, that the SDR mechanism provides a way of financing balance of payments imbalances.

The value of the SDR is determined daily on the basis of a basket of five currencies: the U.S. dollar, the Deutsche mark, the French franc, the Japanese yen, and the pound sterling. The value of the SDR tends to be more stable than that of any single currency in the basket; movement in the exchange rate of any one component currency will tend to be partly or fully offset by movements in the exchange rates of the other currencies.

One of the IMF's principal goals is to facilitate the expansion and balanced growth of international trade, which requires adequate levels of reserves. If the IMF identifies a long-term global need for reserves, it can supplement existing assets through an allocation of SDRs. The IMF has the authority to create unconditional liquidity by allocating SDRs to all member countries in proportion to their quotas. It cannot allocate SDRs to itself or to prescribed holders. The most recent allocation was on January 1, 1981, when SDR 4.1 billion was allocated to the IMF's then 141 member countries.

It is good to mention that because of its unconditional liquidity, SDR can be indeed stated as a country international reserve. This means that the IMF cannot refuse the use of them by a member because it does not approve the country's current macroeconomic policy. As long as a country holds a stock of SDRs and wishes to use it to finance a balance of payments deficit, the IMF unconditionally has either to designate another member to receive the SDRs or accept them itself in exchange for currency held in its portfolio.

Holding SDRs generates two obligations. The first one is that the countries have to pay interest on the SDR they receive by allocation. The interest rate is based on a weighted-average interest rate on the five major currencies whose values determine the value of the SDR. The second one is to accept SDRs in exchange for currency when designated by the Fund. It is worthy to note that countries are called to receive SDRs only when they have a strong external position, either in terms of balance of payments and gross reserves. Furthermore, a country cannot be designated to receive additional SDRs if its current holdings surpass 300 percent of their net cumulative allocations. Most countries respond to a request to accept SDRs by transferring dollar from their own reserves to the country that is "selling" its SDRs. This means that the transaction solely changes the composition of their reserves, giving them more SDRs and fewer dollars.

Another reserve asset, reserve positions at the fund, is very similar to SDRs. When the IMF lends to a country A, it does so by providing it with another country's currency, let's say country B's. Generally speaking, unless country B happens to be the U.S., the borrowing country A will ask for receiving dollars. This means that the lender country B ends up exchanging part of its dollar holdings for a claim on the IMF. At other hand, the borrowing country A obtains dollars against a liability to the IMF, instead of running down its assets as in the SDRs case. Country B's claim on the IMF can unconditionally be used - as SDRs acquired from other members - to finance external deficits. A country that wishes to use its reserves position needs only to call the Fund for currency, which is provided by the IMF by means of supplying another country's currency, what ends up enhancing the latter's reserves position. Finally, a last source of reserves from the IMF is the "reserve tranche". This is a claim on the Fund that its members acquire by paying 25 percent of their quota subscription in the form of reserve assets (SDRs or Dollars) instead of their own currency. As long as countries can withdraw this reserve tranche to finance external imbalances it has to be considered as part of the reserve position in the Fund. Table 2 shows figures of international reserves for different countries for the period from 1987 to 1997, which include holding of SDRs and other assets, including gold.

An important issue to be considered is the degree of exchange rate flexibility that a country has. Exchange rate regime brings in itself many relevant arguments for the need of international reserves, depending on whether a fixed or flexible exchange rate system is chosen. A fixed exchange rate regime permits no deviations from an official currency value. In a pure flexible system, on the other side, exchange rate is completely free to change. Of course, since countries still intervene to influence exchange rates, a genuine free exchange-rate regime is hard to be observed. However, these two polar cases are useful to understand and to give us some insights about reserves role.

Some analysts consider that a fixed exchange rate can provide the necessary discipline in economic policy to preclude a never ending inflation process. In such a system, there should be no trend for a greater inflation to occur in a specific country than in the rest of the world. A nation with a balance of payments deficit, because of a higher inflation than its trade partners for example, would have to pursue an anti-inflationary policy, since the failure to do this could lead to an eventual depletion of the country's international reserves. If the case were for a balance of payments surplus, things would work in the opposite direction: accumulation of international reserves leading to a expansion in money supply, reducing interest rate, increasing aggregate demand and prices, which would contribute to reduce the surplus. The result is a tendency for deflation in a deficit country and inflation in the surplus country.

Furthermore, flexible exchange rates could worsen inflationary tendencies. This argument considers that a flexible rate can turn inflation in a self-perpetuating process. This argument, known as the vicious cycle hypothesis, can be understood supposing a country undergoing a rapid inflation because an excess suply of money and an excess demand in the economy. The inflation will cause the country currency to depreciate in the exchange markets, which will add to aggregate demand in the economy and generate further inflationary

pressure. The rise in prices will lead to higher wages, which also induces more inflation. Thus, inflation will lead to depreciation, but depreciation can cause more inflation.

Flexible-rate advocates think that the depreciation that was a response to the inflation and that is alleged to cause further inflation can be a clear signal to the authorities that monetary restraint is needed. This signal, if correctly interpreted, can therefore lead to the quick proposition of anti-inflationary policies. Thus, in this view, the danger of inflation is no greater under a flexible than under a fixed rate regime. Furthermore, in response to the alleged discipline provided by the fixed-rate system, it can be questioned whether such discipline is necessarily always desirable. Countries also have other domestic goals besides maintenance of the fixed exchange rate and price stability, such as the generation of high levels of employment and of reasonably rapid economic growth. A balance of payments deficit implies that, whether the adjustment is accomplished through automatic reduction of the money supply or through contractionary discretionary macroeconomic policies, the attainment of these other domestic goals may have to be sacrificed or at least pursued in a less determined fashion. If the deficit country is already running a high unemployment rate and a slow economic growth, the contractionary tendencies will serve to worsen the internal situation.

On the other hand, if a country has a balance of payments surplus, there is an upward pressure on the price level because of the expanding money supply. While this could potentially be helpful from the standpoint of employment and growth, it will aggravate internal performance with respect to the goal of price stability. Thus, whether a country is in balance of payments deficit or surplus, the attainment of some internal goal will be frustrated because a fixed exchange rate system. Furthermore, proponents of a flexible rate regime note that governments under fixed rates have often been unwilling to undergo the internal macroeconomic adjustments necessary for dealing with balance of payments deficits. The deficit situation eventually requires contraction of national income, yet a country with unemployment and slow economic growth may seek to postpone such income adjustment by using expansionary policies to isolate the impact of the balance of payments deficit on the domestic money supply. However, as international reserves continue to decline, this situation is ususstainable on the long run.

Another argument for fixed exchange rates would be that the wasteful resource movements associated with flexible exchange rates are avoided. In a system were exchange rates can vary substantially, there can be constantly changing incentives for tradeables goods sectors. If the country's currency depreciates, factors of production will be induced to move into the tradeable goods sectors and out of the nontradeable goods sectors because the production of exports and imports substitutes is now more profitable. However, if the currency appreciates, the incentives are reversed and resources tend to do the inverse path, out of the tradeables and into the nontradeables. Thus, fluctuations in the exchange rate can lead to constant movements of factors between the sectors and this movements could be costful, because factors of production are temporarily displaced, workers may need to be retrained, and so on.

However, again, proponents of flexible rates attack a fixed-rate regime because it fixes maybe the most important price in any economy, the exchange rate. The absence of a flexible price for foreign exchange can lead to widespread price distortions and inhibits efficient resource allocation. The loss of efficiency can be seen when a country's currency is overvalued but the fixed exchange rate does not permit a devaluation. In this situation, export industries are penalized because of the arbitrary level of the exchange rate. Besides, the export sector contains the relatively most efficient industries in the economy and this is not a static process, it changes over time as new resources, skills and technology emerge. The problem is that those changes are caused and lead to variations in relative prices. If the exchange rate is fixed, then the resource-allocationg role of changing relative prices is constrained and can not generate maximum benefits.

Another characteristic of a fixed-rate system is that resources need to be tied up in the form of international reserves. The successful operation of a fixed exchange rate system requires that countries maintain working balances of reserves in order to finance deficits in the balance of payments. Even if a deficit is temporary and will reverse itself, reserve assets are needed to meet the temporary excess demand for foreign exchange so as to maintain the pegged exchange rate. In addition to these working balances, which reflect the transactions demand for international reserves, countries may also wish to hold extra reserves in order to guard against any unexpected negative developments in the balance of payments. Hence, there is also a precautionary demand for

international reserves, even though it may be difficult to determine where the transactions demand ends and where the precautionary demand begins.

In this context, economic behavior by governments dictates that calculations be made of the costs versus the benefits of holding reserves (the benefits being that macroeconomic adjustments such as reduction in national income do not have to take place because temporary sterilization can be accomplished). The costs are the opportunity costs of holding part of the country's wealth in the form of international reserves rather than in the form of productive capital stock. The forgone capital stock would have earned the marginal cost of holding international reserves to defend a pegged exchange rate. The argument in favor of flexible rates is that such a system flexibilizes the need for central banks to hold international reserves. If the exchange rate clears the market, resources are therefore freed to be used more productively elsewhere in the economy. An important argument against fixed exchange rate system is that, in such a system, business cycles will be transmitted from one country to other countries, meaning that no country is able to insulate itself from external real shocks. If a foreign country goes into a recession, it will buy less of the home country's exports. As a result, nartional income will fall in the home country. If foreign repercussions are regarded as important, the fall in income in the home country will then reduce the home country's purchases from the foreign country, which will in turn worsen the recession overseas and eventually feed back again upon the home country. The same scenario in an upward direction also occurs, resulting in the transmission of inflation from one country to another.

After this brief definition of international reserves, possible acting like instruments, and two polar cases of exchange rate regimes, the first question one could make is what are the principles that determine a country choice among different levels and distinct reserve assets holdings. Although the answer can be subjective, and certainly depends on many issues, a first principle is that countries should maintain a regular volume of reserves able to meet needs for intervention. Furthermore, these reserves must be in a form in which they can be rapidly mobilized, which means in highly liquid assets. Once this basic characteristic has been achieved, the remaining assets - if there is one - can be invested according to standard principles of portfolio management, seeking the highest rate of return to a given degree of risk exposure.

A more contemporary view of international reserves considers that central banks accumulate them to absorb external shocks and to make interventions in the exchange market. Thus, during periods when the receipts of foreign currency are bigger than the payments there is an increase in exchange reserves, the reverse occurring when the central bank has to draw down its stocks to try to stabilize the domestic economy. At least at first sight though, a fluctuation in reserve holdings can generate at least a partial insulation of the domestic economy from balance of payments shocks. Interesting to note that this view of reserves as shock absorbers contrasts with an older one that arose during the gold standard years, with fixed exchange rates.

Accordingly to this view, the main purpose of holding reserves was to provide a backing for the domestic currency and to prevent over issue and consequently inflation. Thus, the reserves would generate an overall confidence in the integrity of the monetary unit. Britain established currency boards in many of its colonies, in which the issue of local money could only be made against the receipt of sterling, this occurring when the colony had a surplus in its balance of payments. Still today, Hong Kong has a currency board regime in which the local money is pegged to the U.S. Dollar. Argentina is an example in Latin America where this situation is also true, where the issue of new money has to be totally backed by an increase in international reserves. Currently, thanks to the economic and financial turmoil in Asia, Indonesia was expecting to establish a currency board regime seeking to stabilize its currency.

A currency board system is a fixed exchange rate system brought to its last consequences. Again, it brings advantages and disadvantages when compared to a traditional central bank. One advantage is that it really assures automatic adjustments and precludes balance of payments crises, because any deficit leads to a fall in the money supply that reduces the import demand and tends to close the deficit. Another advantage is that sustained domestic generated inflation cannot occur. Although, a currency board system makes it necessary to tie up foreign exchange reserves in the sterile task of backing the money supply. Maybe the main disadvantage of a currency board system is the fact that if it indeed generates automatic adjustments, it precludes also any attempt to stabilize the economy in the face of exogenous shocks. For example, capital outflows can generate a big reduction in the money supply that will lead to a more severe recession than it would have been necessary.

Maybe in part because of these issues, most independent countries pursue a monetary sovereignty by establishing central banks. If this really helps to stabilize rather than destabilize the economy is not a question to be answered here, but for this to work government authorities must have a realistic view of the sustainable path of the economy. This being understood, there are two potential roles for international reserves to play as shock absorbers. The first one appears in an economy where the balance of payments is in equilibrium and suddenly is hit by an exogenous shock. A good example could be an increase in the price of a major commodity import, let's say oil, for example. It is clear that under a currency board regime, the resulted balance of payments deficit would generate a reduction in the money supply that would reinforce the country's loss of income and would magnify domestic recession. A central bank provides the opportunity (and only the opportunity) to stabilize the country's income. The increase in the import payments could be offset by a temporary fiscal deficit, with the central bank replacing its holdings of foreign assets by government debt. This action could potentially mitigate the recessionary effect of the temporary increase in import price.

When the import price return to its original level the operation can be reversed, with the government running a fiscal surplus and the central bank recovering its international reserves and reducing the proportion of government paper in its portfolio. If this policy happens to be successful, the level of domestic income will be reasonable more stable than otherwise it could be, thus being the costs of the initial recession and the inflationary pressures of the recovery period significantly reduced.

A second important role of international reserves is to permit a gradual adjustment from external shocks. Let's imagine a country that faces a permanent shock in its balance of payments, either because a once and for all reduction in its export prices or due to a permanent increase in import prices. It is clear that the country is not in a sustainable position anymore and will have to undertake an adjustment program. Being able to use its international reserves to temporarily finance current account deficits can permit the central bank to choose a smoother path of adjustment than otherwise would be observed. Thus, devaluation and reduction in internal demand by no more than needed to generate an additional production of exports could lead to a minimized recession. Again, this would depend upon an adequate initial level of international reserves and the use of them to help to stabilize the national income.

This takes us to another question: what is the adequate level of international reserves for a given country? Clearly this will depend on many factors such as the country's balance of payments vulnerability to external shocks, the consequences of running out of reserves, the opportunity costs of holding international reserves, and how fast the country can adjust to exogenous shocks. Thus, balance of payments vulnerabilities and bad outcomes from reserve depletion will induce higher necessities of reserves. On the other hand, the greater are the opportunity costs of holding reserves, and the faster a country can adjust for shocks, the lower the level of reserves will tend to be. An optimum target for the reserves stock will have to balance these factors.

When a country's central bank holds not sufficient liquid assets that can be used to pay for imports or to service its external debt is a case of reserve depletion. The costs of such a situation tend to be extremely high as long as trade credit disappears, so that imports have to be bought on a cash basis at much higher prices than creditworthy countries. Although a country that completely runs out of reserves does not find itself ruined in a bankruptcy court and threatened with liquidation, like a private firm would be, the adverse consequences of reserve depletion are generally enormous, and most countries are prepared to take fairly severe measures to avoid this. Before running out reserves, though, it may be possible to permit the exchange rate to float. This will lead to domestic currency depreciation, probably an overshoot, causing inflationary pressures, reduced living standards and probably a recession. Although these costs are high and direct, the indirect costs of total reserves depletion can be even higher.

The cost of holding reserves is generally an opportunity cost, and could be stated in terms of what could be done with the cash involved if were not held as reserves. Thus, the opportunity cost of holding reserves could be stated as the rate of return on investment minus the rate of return earned by international reserves. For countries with access to the international capital markets, an alternative use of reserves is to run down foreign borrowing. The cost of reserve holdings is then the difference between what the country has to pay when it borrows and what it receives when it places those funds back in the international markets. This difference is typically quite substantial because reserves are placed at the short term - they have to be very liquid - and borrowed at longer

term, as long as short term borrowed reserves tend to be much more volatile and to disappear just when needed. Of course, a country that could perfectly rely on an instantaneous access to international capital markets would not need to hold reserves. A country with a perfect but non instantaneous access to capital markets would need to hold reserves only to face a deficit that might arise until it could recover its reserves by borrowing abroad. In the real world, however, countries do not have this ability to borrow and, on the contrary, it is generally more difficult to borrow precisely when reserves are more needed.

Normally, the only source from which developing countries can borrow reserves when they are very needed is the International Monetary Fund. The amount they can borrow with low conditionality is generally small, the requirements being only that the country "demonstrate reasonable efforts to overcome its difficulties". Substantially larger sums - those generally needed when a country asks for IMF's help - are available under the Fund's high-conditionality loans. These kinds of loans require explicit commitments of the country to attend an adjustment program approved and supervised by the Fund.

The Fund requires that the measures approved under the high-conditionality rules generate a recovery in the balance of payments within the program period. The adjustment programs normally comprise some mix of austerity policies, involving the reduction of fiscal deficits and constraints on monetary expansion, and expenditure switching policies, generally devaluation, as well as prohibition of the intensification of import restrictions. Depending on the circumstances, programs may also include price and exchange control liberalization, limits on short-term foreign borrowing, income policies and wage controls, and increases in interest rates.

Unfortunately, IMF's conditionality requirements have been controversial in many countries. National sovereignty issues are frequently involved, especially when country's authorities do not share the Fund's economic views. Furthermore, as long as adjustments necessary to eliminate balance of payments deficits are not painless, countries generally blame the Fund for imposing austerity - which is really inevitable if budget constraints are to be followed.

As long as balance of payments shocks can have both internal and external sources, the appropriate policies responses will require an answer to a key question to be found: is the shock creating a permanent deviation from the long run equilibrium? Even though this is a hard question to be answered, it is crucial in determining an adequate macroeconomic policy to cope with the problem. Let's suppose, for example, an internal economic boom that boosts the imports, generates inflationary pressures, and causes a balance of payments deficit. Unless there is a formal commitment from government to a fixed nominal exchange rate, so that inflation could seriously undermine the country's competitiveness, there is no reason to believe that the long run external balance is threatened. The orthodox answer to this would be a tight monetary or fiscal policy that would cool the domestic economy, restore internal balance, close the external gap and stop the loss in reserves. Maybe even a nominal devaluation would be necessary to restore competitiveness.

Unfortunately, there is not such a thing as a regular taxonomy for external shocks. In a recent past, they used to be terms of trade shocks, caused by changes in prices of imports and/or of primary product exports. In the eighties, a great majority of developing countries had external debts contracted in floating interest rates and any substantial change in world interest rates could have a huge impact in external balances. This indeed happened, with a cutoff in the availability of external loans that followed the Mexican moratorium in August 1982, after a major increase in interest rates in the world economy, and had a tremendous impact mainly in Latin America countries. Brazil was not an exception, and was forced into strict economic adjustments. The "debt crisis" and the "lost decade" are words commonly used to describe the economic conditions of many developing countries in Latin America and the problems with external debt were only solved in the late eighties/early nineties.

Nowadays, with an even more globalized financial market than in last decade, the main concerns are linked to the huge amounts of capital flows that are able to move promptly from place to place. Although these movements can sometimes have a truly speculative nature, and indeed cause major impacts in any country's economy, they do not tend to be so threatening if important issues are strictly observed. Among these issues are domestic financial system's health, valuation of domestic currency, fiscal equilibrium and, again, an adequate international reserves level, capable to absorb pressures. As long as these important macroeconomic indicators

are kept in a reasonable path, a rapid and massive capital outflow is not a likely thing to occur. The reverse though is true too: if those indicators are not good, there is really a good chance that an speculative attack can happen, and this may worsen even more a country's economic conditions. Experience can be a good guide - although not a complete one - in determining an adequate level of reserves, but the risk that the past can be a poor guide to future is real.

The Brazilian Experience

In the early 1980's, a substantial increase in interest rates in the world economy precipitated Latin America's debt crisis and, as one of the results, Brazil was forced into strict economic adjustments, which brought negative growth rates. The virtual suspension of capital inflows reduced the country's capacity to invest and the burden of its debt affected public finances and contributed to an acceleration of inflation. In the second half of the 1980's, successive economic plans and a series of stringent measures were adopted aimed at monetary stabilization. These included ending indexation, a policy of adjusting wages and contracts according to past inflation, and the freezing of all prices.

In 1987, after virtually running out of foreign reserves, the government suspended interest payments on foreign commercial debt until a debt rescheduling agreement with creditors could be reached. Although such measures failed to bring about the desired results, Brazil's overall economic output by the end of the 1980's continued to grow, providing enough surpluses in the trade balance to cover servicing of the debt.

For many analysts, the 1980's crisis signaled the exhaustion of Brazil's import substitution model - a policy that protected Brazilian industry from foreign competition by prohibiting the purchase of certain manufactures abroad - and contributed to the opening up of the country's economy. From the late eighties, a new development strategy started to emerge. The main idea was that, in order to achieve a new period of economic development, Brazil would have to open its economy, integrate its markets and try to participate in the globalization process. In practice, this meant a movement towards trade liberalization, economic deregulation, and decreasing state intervention in the economy.

The year of 1990 represents a turning point in the adoption of this so-called competitive integration policy. Since then, trade liberalization has been pursued, privatization carried out and free-market mechanisms enforced, exposing the local industry to international competition. However, stability and economic growth were only partially conquered with the Real Plan of 1994. In the end of the nineties, Brazil is still engaged in a series of far-reaching economic reforms. They encompass a strict fiscal policy, tax reform, trade liberalization, deregulation, privatization, and the establishment of a legal and structural framework to attract and increase foreign investment. A whole new economic agenda is leading governmental action. Privatization has been accelerated and the country is receiving lots of foreign capital.

This process can be noted in Brazil's balance of payments (table 3), with the increase in the current transactions account deficit since 1993. Economically, to allow for foreign savings absorption, it makes sense for a developing country like Brazil to have deficits in its current account. The profile of the balance of payments in the late eighties/early nineties, when the country was suffering the consequences of the debt crisis cannot be considered reasonable in the long run. Furthermore, a current account deficit that has been increasingly financed by foreign direct investment, although deserves a closer look, should not be a cause for big concern.

The year of 1991 was the last year that the capital account was negative. Since then, the inflow of foreign capital in Brazil has been massive, and this starts in 1992, after the renegotiating process of Brazil's foreign debt is finally accomplished. The capital account jumps from a US$ 4 billion deficit in 1991 to a US$ 25 billion surplus in 1992, although this late number is biased by the refinancing of the debt. However, since 1993, the inflow of foreign capital in Brazil has been very high, and the accumulation of international reserves is the direct consequence of these new capital inversions and the consequent balance of payments surpluses verified from 1992 to 1996.

Brazil's international reserves accumulation process started firmly at the beginning of 1992. In the period from 1990 to 1991 total foreign reserves drifted around US$ 10 billion. Since January 1992 there has been a clear tendency in reserves to grow, although there were two occasions when the level of reserves went down. These periods are strictly linked to turmoil in external capital markets, the first one corresponding to the Mexican crisis at the end of 1994, when Mexico almost ran out of reserves after unsuccessfully trying not to devaluate its currency, and had to call for a massive support from IMF. The second moment happened after the deepening of East Asian crisis, which really started in the second quarter of last year but had its peak in late October, when it hit South Korea's front door.

The observed increase in international reserves is tied to different but linked occurrences. The first and more important one was foreign debt renegotiation, which again brought Brazil to the international capital map. Without that, no one could expect Brazil to be able to attract foreign capital. Furthermore, a provisory agreement with IMF, some liberalization in Brazilian exchange market, and a huge increase in domestic interest rates played important roles too. It is not wrong to say that solving the debt problem generated the credibility that was still lacking to the country, and the upward movement in interest rates generated the stimulus for foreign capital to enter Brazil. The increase in domestic interest rates really started at the end of 1991: until October of this year, the average real interest was -0.51% per month, i.e., less then a national general price index. In November, the real rate was pushed to 6.85% per month and in December the value was still very high, 5.38%, driving the average in the year to 0.59% per month, or an accumulated real interest rate of 6.74% in 1991.

The increase in the domestic interest rate had two different possible measures for a "real interest rate" are plotted. The series generated were the composition of twelve months - month t to month t-11 - of the short-term reference interest rate in Brazil (effective Over-Selic interest rate) comparatively to the inflation and to the exchange rate devaluation, both composed in the same way. The results are reasonably similar in shape, but different in level. It can be seen that since January 1992 the difference between interest rates and inflation or currency devaluation have been quite significant.

This possibility of major gains has certainly been one of the driving forces behind foreign capital inflows in Brazil, and ultimately for accumulation of international reserves. Of course, when one says that short-term interest rate is attracting foreign capital he or she is not talking about foreign direct investment, but about short-run capital. This is exactly what happened when Brazil's authorities decided to raise the interest rates at the end of 1991. Table 4 shows the main sources of external capital interned in Brazil since 1990.

As can be noted, although the country re-started to receive foreign capital as long as the external debt problem was solved in early 1992, foreign direct investment really began to grow only in 1994. This can be easily attributed by the fact that it was only in 1994, with the Real Plan, that Brazil apparently was finally leaving its super inflationary past. No surprise that only then foreign direct investment started to grow, since a stable macroeconomic environment is absolutely fundamental for attracting long-term capital. Chart 3 shows the ratio between portfolio investment and foreign direct investment. As can be noted, this relation reached 17 times in 1993 and since then, after the inflation process was brought under control, has been going down. In 1997, foreign direct investment was almost half of portfolio investment.table 4 This indicator can be used to address the improvement in quality of Brazilian international reserves. By quality one means that the composition of these reserves is turning from a short-term, inherently volatile capital, towards a more medium or long-term capital. This can be regarded as a natural development of facts: first Brazil reschedules its debts and in order to fight inflation increases very much the domestic interest rates; this first movement attracts short-term foreign capital that wants to make easy profit thanks to interest rates differentials. In a second moment Brazil apparently solves its inflation problem and, given the country's huge economic potentials, this starts to attract great amounts of foreign direct investment.

Another important issue is the increase observed in currency loans. This can be regarded too as a direct effect of the big gap between domestic and international interest rates. Given that international liquidity has been extremely favorable during the nineties and given that interest rates in Brazil are probably one of the highest in the world, it makes sense to borrow abroad, since the costs are much lower given the present pattern of currency devaluation. However, this kind of external resource too is moving from a less to a more favorable way, with the overall conditions being improved, which contributes to reserves quality.

The average terms and costs of Brazilian bonds placed in the international market. Is na another question. Since 1995, the average term has grown from less than five years to almost ten years in 1997, the value has more than doubled in the same period, from US$ 14 billion to US$ 26 billion, and the average cost has dropped 88 base points. The 1997 results could have been even better if one remembers that since October, due to the East Asian financial crisis, there were serious worsening for development countries to place securities.

Although the exchange rate regime in Brazil is not a fixed rate one, it cannot be classified as a flexible-rate regime either, given that the Central Bank closely follows (and influences) the movements in exchange rate. The problem is that it is impossible to control both the interest rate and the exchange rate in the economy, and interest rates differentials keep on attracting foreign capital inflows. If the Central Bank just let the exchange rate to float, probably the exchange rate would appreciate, but this would deteriorate even more the trade deficit and consequently the current account deficit, very sensible variables. From the other side, to practice a more accommodative monetary policy could not only reduce the external inflow of capital but indirectly affect the current account deficit, given that the demand for imports certainly would rise, and in an even worse scenario brings back inflationary pressures.

Given this situation, where the Central Bank cannot either permit the currency to value and neither let the interest rates fall beyond a minimum point, it continues to accumulate international reserves. This apparent trap can only be disarmed after the country solves its public deficit issue, since the current account deficit only mirrors the lack of balance in overall government (federal level, states and municipalities) sector accounts.

This brings us to the main side effect of accumulating international reserves in Brazil. In order not to let interest and exchange rates to vary, the Central Bank has to sterilize all the foreign inflows of capital. So, after changing Dollars for Reais that could force the interest down, the Central Bank is forced to sell securities in order to sterilize this domestic currency issue. The main factors affecting the monetary base in Brazil for the period 1995-1997 are reproduced in table 6.

The external sector account reflects closely the variation in foreign reserves, and this positive impact in monetary base have to be matched by operations with federal securities. In 1995 and 1996, when the variation in reserves was positive, the operations with federal securities show a negative number.

In last year Brazil lost foreign reserves in the end of the year due to worsening of East Asian crisis and the external sector impact was negative.

The dramatic increase in domestic public debt since 1992, period in which international reserves started to grow is well suited to show this link. Although this is a negative side effect of accumulating reserves and having to sterilize them all, there is also a positive effect: the net external debt falls since the country is holding more foreign denominated assets. This reduction on net foreign debt can be seen in table 7, where the public sector goes from a debt of US$ 93 billion in 1992 to US$ 84 billion in 1996. Considering that in the same period the international reserves grow from US$ 24 billion to US$ 60 billion, the net public external debt falls from US$ 69 billion in 1992 to US$ 24 billion in 1996. Therefore, there is a clear trade-off between domestic public debt versus external public debt.

It is clear that this change from external for domestic debt is not a one by one change, since the domestic interest rates are much higher. In fact, the Central Bank is changing from a cheap debt to a much higher costly one. However, the apparently unsustainable grow in the domestic public debt is showed from another perspective in following chart 5.

As can be noted, even though there is a growing trend since 1994, the net debt of Brazilian public sector, calculated as a percentage of GDP is still smaller than in the beginning of nineties. Besides, this percentage is relatively small when compared to international standards. In fact, the size of public debt in Brazil is a minor problem when compared to the real problem: it is still mainly a short-term debt.

However, even though it looks like that the quality of capital inflow in Brazil - and ultimately the quality of foreign reserves - is improving, and even though the net debt of the public sector, internal and external, is still

under control, there is an explicit cost of holding foreign reserves. This cost is directly linked to the interest rates differentials. Table 8 shows a rough estimate for these costs for the last three years. For each year it was calculated the net value for reserves holdings, the average annual external interest rate (Libor), and the average annual internal interest rate in Dollars, i.e., the internal rate adjusted for currency devaluation.

Making the assumption that all volume of international reserves has to be backed by public securities that pay the internal Dollar rate, we can roughly calculate the net costs of holding reserves as the difference between the internal and external interest rate multiplied by the volume of reserves. However, it is more interesting to express these cost in a percentage of GDP basis. As can be observed, although the costs of holding reserves are real and cannot be ignored they look to be following a downward trend, falling from 1.5% of GDP in 1995 to 0.7% of GDP in last year.

Although these costs can be directly derived, the benefits of holding international reserves are not so straightforward. However, one can say at least that a reasonable stock of international reserves can generate a positive feedback. As long as the country has a comfortable level of reserves it can be easier to attract more foreign capital, which rises the level of reserves and so on. Of course, building up higher and higher stocks of international reserves is not an objective per se, and this can be indeed very expensive.

Looking at the Brazilian case, however, the costs of holding reserves do not look so high. Even if there is no one direct benefit for holding reserves, one could regard the costs of those as an insurance cost. Besides, the profile of reserves has been enhanced and its costs have been reduced, which means that the country is not only able to find a cheaper insurance policy (low cost of reserves), but can buy it from a sound company (enhanced profile of reserves). Anyway, nobody buys an insurance policy to use it.

Conclusion

As seen in a very brief way, international reserves, provided they are large enough and can vary appropriately, can play a major role in helping to insulate a country's balance of payments from either internal or external shocks. To fulfill this function well, a country needs to hold an adequate volume of transactions balances in its intervention currency. In addition to the choice of reserve composition, reserve policy involves the choice of a target for the reserve stock given the typical speed of a country's adjustment to shocks. A number of factors that influence the reserve target were mentioned - size of payments shocks, costs of reserve depletion, opportunity costs of holding reserves, and speed of adjustment to shocks. A country with large reserve holdings will be able to adjust more slowly, whereas a country that do not have many opportunities to rapid adjustments will need larger stocks. Thus, countries must decide simultaneously on the adequate level of reserves to aim for and the normal speed of adjustment.

The economic literature does not provide absolute guides to one translate the qualitative considerations into concrete numbers. Furthermore, there are real concerns if thumb rules relating international reserves to imports are still valid in a world of increasing capital integration and mobility.

In the Brazilian case, the reserve accumulation process is tied to some rigidities in the exchange rate and in the domestic interest rates, since the country has to attract foreign capital to finance its current account deficit. It looks like that this situation will only be modified after the country can achieve a sound fiscal adjustment. This will permit a less tight monetary policy which can bring domestic interest rates to levels not that different from world levels. Until there, it looks that the accumulation process tend to continue a little further.

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Banco Central do Brasil homepage: http//:www.bcb.gov.br

IMF homepage: http//:www.imf.org

Notes

Primarily, the most of international reserves today are in the form of liquid holdings of U.S. dollars, although many central banks are pursuing a better composition in its portfolio of liquid assets, and yet many still hold gold as an international asset.

Mainly U. S. Treasury Bills and low risk bank deposits. The IMF has allocated a total of SDR 21.4 billion in two series of allocations since 1970. As of April 30, 1997, holdings of SDRs by member countries amounted to 1.7 percent of their total nongold reserves.

The SDR valuation basket is revised every five years, most recently on January 1, 1996. The currencies included in the current basket, which are those of the five member countries with the largest exports of goods and services during 1990-94, remain unchanged from the previous basket. However, the initial weights of these currencies were modified to reflect changes in their relative importance in international trade and reserves. The current basket will be in effect until December 31, 2000.

At present, more than one-fifth of IMF member countries have never received an SDR allocation, because these countries joined the IMF after the last SDR allocation. In addition, other members have not participated in every allocation.

There is still another duty: the country's obligation to repay the Fund in the event of the mechanism be terminated or a decision to cancel the SDRs.

The SDR interest rate, which is adjusted weekly, is a weighted average of the yields on specified short-term instruments in the domestic money markets of the five countries whose currencies are included in the SDR basket. The financial instruments used in this calculation were reviewed in 1995 and remain unchanged. These instruments are the market yield on three-month U.S. treasury bills, the three-month German interbank deposit rate, the three-month rate on Japanese certificates of deposit, the three-month rate on French treasury bills, and the market yield on three-month U.K. treasury bills.

Although the IMF and the member may agree on a higher limit.

If the country whose currency is used is a net borrower this will reduce its net debtor position. Although gold is still added as part of a country's international reserves, some believe that it no longer satisfies the accepted definitions. This is because it cannot be either used directly to support exchanges rates or converted in an asset that can be used for that purpose at an assured rate. Another problem is that the accounting price used to value gold varies a lot leading to fluctuations in the statistical value placed on gold reserves.

This was seen in Europe after West Germany absorbed East Germany. Bundesbank controlled inflationary pressures with a contractionary monetary policy. Other countries in Europe, like France and England, even facing high unemployment and slow growth, had to follow the same pattern due to a quasi-pegged exchange rate to the Deutsche mark. In 1992, the Bank of England had to give up and let the sterling pound to devaluate, only after spending lots of reserves.

In a total flexible system, there is no need for international reserves. This will clearly be a function of many factors like the exchange rate regime, vulnerability of balance of payments, and opportunity costs of holding reserves, among others. This was against IMF's will, which considered the moment not appropriate for such a radical attempt. Maybe this is the strongest appeal for the currency board regime. The success of Argentina in controlling a historical hyperinflationary process is remarkable. Although, some side effects need to be well considered.

Of course this strategy requires the government to have a great amount of skills and flexibility in the implementation of fiscal policy. Besides it requires the central bank to have an "adequate" level of international reserves before the crisis. In the real world is indeed very difficult to separate a temporary shock from a permanent one. Economic prudence demands a certain degree of adjustment measures, even knowing that a certain shock is temporary.

Countries wait the most for asking an IMF loan, and this usually only happens when the sources of finance are virtually closed and a crisis in payments is inevitable. Although, the IMF's intervention bring credibility and can facilitate usual credit sources to be opened. We are going to use the liquidity concept that comprises immediately available assets and other medium and long-term assets.

The inflation index used to adjust the nominal rate was the Índice Geral de Preços - Disponibilidade Interna, from Fundação Getúlio Vargas, a general price index.

Portfolio investment can be divided in fixed income and variable income. Much of this capital has being interned in stock exchange markets, which are only indirectly affected by interest rates. Both of them, though, are mainly short-term investments. Much of this FDI is attracted by the privatization process. However, it is hard to think that without a stable macroeconomic environment the privatization program would be as successful as it has been.

In fact, IMF classifies the exchange rate system in Brazil as managed floating.A positive (negative) impact meaning that it increases (reduces) the monetary base. At the end of June 1998, unofficial numbers were reporting Brazilian international reserves as high as US$ 70 billion.

International Reserves

- the Brazilian Experience

Flávio Pinheiro de Melo

Graduado em Engenharia Elétrica e Mestre em Economia pela Universidade de Brasília, o bolsista é funcionário do Banco Central do Brasil desde 1992. Atualmente faz parte da equipe do Departamento de Câmbio, sendo um dos responsáveis pela elaboração da publicação trimestral ***Analise do Mercado de Câmbio***, da Consultoria de Análise de Acompanhamento do Mercado. Destacam-se ainda atividades de acompanhamento diário dos fluxos cambiais no Brasil e do comportamento do mercado financeiro como um todo, relatórios gerenciais e trabalho especiais. O bolsista concluiu cursos de especialização na área de política monetária e de derivativos financeiros.

Rua da Ajuda, n° 35 - 20° Andar - Rio de Janeiro, RJ, Brasil,

20040-000 - Tel.: (021) 211-8060 - FAX (021) 211-8078