Searching for financial stability: the Mexican experience since the 1994-95 currency crisis.

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Abstract

International reserves accumulation has been the policy adopted by emerging economies to achieve financial stability. In this paper we estimate the cost of this strategy implemented in Mexico since the 1994-95 peso crisis. To this end we propose an alternative criterion called the *maximum sustainable external threshold* which considers the vulnerability of the balance-of-payments that emanates from both the capital and the current account. The results suggest that, in average, during the period 1996-2003, the cost of reserve accumulation has been of 0.11 per cent of GDP. We also suggest a series of alternative strategies aimed at reaching financial stability, but also aimed at contributing in development orientated goals.

Key words: international reserves, financial stability, balance-of-payments, Mexico.

1. Introduction

In essence, the triggering factor of recent financial crises all over the developing world was one of liquidity. While speculative attacks occurred, international reserves were inexorably exhausting, leading the economy under concern to freely float its foreign exchange and to increase the domestic interest rate. As a consequence, the economic policy adopted for both crisis-affected emerging economies and other non-affected ones to prevent the vicious circle of speculative attacks-capital flight-financial crisis has been underpinned on a simple logic: to increase the liquidity through the accumulation of international reserves. In 2001, the Report of the High-Level Panel on Financing for Development to the United Nations stressed that since the Asian crisis international reserves in emerging economies increased around 60 per cent. Mexico being the host the so-called first financial crisis of the 21st

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century was the first one in adopting as a strategy to prevent similar events the accumulation of international reserves, following once more the orthodox advice.

This strategy has been applied, however, at no free cost. Some studies have shown that the excess of international reserves has a cost of around 1 per cent of GDP. Others studies have also suggested that this strategy can have negative effects on the financial sector through the creation of the moral hazard problems. Finally, and perhaps more important, even though this strategy offers (a fragile) financial stability, it has not contribution in terms of development goals.

The aims of this paper are twofold. The first one is to estimate the cost that the strategy of reserve accumulation has had in Mexico during the period 1996-2003. To this end we propose a new criterion, which differs from the ones proposed in recent studies, based on the total vulnerability of the balance-of-payments, that is that that emanates from the current account and the capital account.

The second aim is to suggest alternative policy strategies that also aim at financial stability. In particular, we propose those policies that have proved to be effective during periods of financial instability and that have contributed substantially in the process of development.

This paper is set out as follows. Section 2 presents, firstly, a brief review about the criteria to determine international reserves adequacy and consequently the estimation of its excess and its cost. This section also explains the criterion denominated the *maximum sustainable external threshold* that we propose to determine reserve adequacy. Based on this criterion the section concludes by estimating the cost that this strategy has had in Mexico during during the period 1996-2003. Section 3 describes the alternative policies proposed for financial stability. Finally section 4 presents the conclusions.

2. Why accumulate international reserves?

The criteria to determine international reserves adequacy has been a research topic since the second half of the XX century. In the begging, during the 60s, as a consequence of the plans to provide with higher liquidity the international financial system, the debate focused on defining the optimal level of international reserves to protect the value of the domestic currency. A decade later, with the global adoption of a freely floating foreign exchange rate regime, reserves adequacy was no longer a topic of interest, however it remained as an important matter for emerging economies due to their vulnerability to changes in hard-currencies and the fact that these economies maintained semi-flexible foreign exchange rate regimes (see, Edwards, 1983). Since the mid 90s, the topic of international reserves gained again relevance and interest as a consequence of the emergence, the boom, of financial crises in the developing world, particularly in Mexico, Thailand, Korea, Malaysia, Philippines, Indonesia, Brazil, Turkey, Russia and Argentina. As a consequence, in a context of rapid capital mobility, international reserves adequacy started to be seen as the central variable that an economy has to avoid a financial crisis and its high economic costs (Bird & Rajan, 2003). Summarizing, the accumulation of international reserves has been seen as a source of protection, an insurance, and more recently as a permanent buffer stock, against the global vulnerability of the balance-of-payments, and the question has remained the same: what is the optimal level of international reserves to reduce this vulnerability?

The vulnerability of the balance-of-payments has not emanated always from both accounts. During the 60s, the vulnerability of the balance-of-payments was partial, emanating exclusively from the current account. For this reason, the logic to determine the optimal level of international reserves was based on the value of imports. And this criterion gained relevance as the economy became more open because its vulnerability to domestic

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or external shocks increased accordingly. Thus, and for operational reasons, the ratio of international reserves to imports (R/M) became the standard measure to define reserve adequacy. In essence, the ratio R/M indicates the number of months that the imports can be financed with the reserves. In this sense, the criterion to establish the optimum level of reserves suggests that they are inadequate if not cover at least three or four months of imports. It is important to notice that this criterion lacked of a theoretical underpinning, it was rather based on a discretional view, a rule of thumb about what was considered adequate (see, Bird & Rajan, 2003). Moreover, the criterion suggested by the ratio R/M became inadequate when most of the economies adopted freely floating exchange rate regimes and/or when they could borrow foreign currency in the international markets. As a consequence, the need to keep reserves reduced considerably (even for economies fully open) because, in theory at least, the external unbalances would be corrected through adjustments of the exchange rate or, in the last resort, the economy will always have the possibility to borrow from the international markets. Importantly, protecting the current account through the accumulation of international reserves, even when optimally managed, is a mechanism expensive and incomplete (Caballero & Panageas, 2005).

Incomplete because, as we highlighted, the boom of financial crises all over the developing world disclose a source more of vulnerability of the balance-of-payments, a source until then unknown and ignored in the context of absence of capital controls: that emanated from the capital account. In other words, the financial integration strategy applied for most of the emerging economies, that is the free mobility of capital reflected in the capital account, added to the vulnerability of the balance-of-payments. As a consequence, "rather than being a buffer to absorb current account transitory shock –as it was emphasized in the literature on reserves adequacy of the 50s and 60s– reserves are perceived as a tool to

reduce the incidence of international crisis" (García & Soto, 2004: 4). Thus, and perhaps more than ever, the ratio R/M exhibited its inability as an indicator of reserve adequacy. For this reason, a search began for an alternative measure capable to indicate how much more reserves were needed in order to cover the vulnerability emanated from the capital account.

The answer came in 1999 with the so-called Guidotti-Greespan rule. This rule suggests as a reserves adequacy "the maintenance of reserves equivalent to 12 months of a country's total foreign obligation, which includes but is not limited to imports" (Mendoza, 2004: 76). It is important to point out that this rule had its origin on the relevance that the external debt, especially the short-term debt, had on the boom of crises and that similarly to the ratio R/M presents only operational benefits and lacks of a theoretical base regarding the criterion suggested for reserve adequacy.[1]

Cost of the self-insurance strategy against financial crises

The strategy applied for emerging economies to reduce the total vulnerability of their balance-of-payments and thus achieve financial stability has consisted in increase their liquidity through the accumulation of international reserves or what could be define as the adoption of Mrs. Machlup´s wardrobe theory. According to Bird & Rajan (2003: 877), this theory suggests that the "acquisitive characteristics of monetary authorities in terms of adding to their reserves resembled those of Mr. Machlup's wife in terms of clothes. According to this idea no level of reserves was never enough". Empirical evidence supports

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[1] Nevertheless the lack of theory for reserve adequacy, there are studies that applying econometric techniques have tried to determine it. Among others, there are Ben-Bassat & Gottlieb (1992) for a selected group of 13 economies, Ramachandran (2004) for the case of India y García & Soto (2004) for Chile and other Asian economies.

this trend: according to the World Development Indicators of the World Bank 2004, in 2003 China, Taiwan, Korea, Hong Kong, India, Singapore and Russia were just behind Japan as the highest holders of international reserves. These seven emerging economies hold a total amount of around US$1200 billons. In other words, these economies hold more than a third of international total reserves. Furthermore, the total amount of foreign currency hold by five Latin American economies (Argentina, Brazil, Chile, Colombia and Mexico) increased around 21 per cent in just seven years, from US$103 to $US125 billons during the perido 1995 to 2002. Finally, Mendoza (2004) results, for a sample of 65 developing economies, are consistent with the hypothesis that since the boom of financial crises, the strategy of reserve accumulation has been linked to the idea of financial stability.

There are costs, nevertheless, related to the adoption of Mrs. Machlup theory. First of all, reserves holding incurs in an opportunity cost, which is the difference between what the reserve could have earned and what actually earns (Ramachandran, 2004: 365). This opportunity cost has been estimated for the Report of the High-Level Panel on Financing for Development to the United Nations in 2001 to be of the order of 8 per cent, which represents the differential between the yielding of the reserves and the marginal cost of borrowing.

In this sense, one of the tasks that diverse researches have recently carried out has been precisely to determine the cost of the adoption of Mrs. Machlup theory. For example, Rodrik (2000) and Bird & Rajan (2003), have estimated that the excess of reserves holdings defined by the criterion of the ratio R/M, has an associated cost of around of 1 per cent of GDP. Mendoza (2004), on the other hand, estimates that the quarterly cost of reserves

accumulation for a sample of 65 developing economies during the 1998-2001 period was approximately US$450 million.[2]

What is striking in these studies is that they have showed a little concern with respect to the cost that the adoption of Mrs. Machlup theory has in terms of development. Even when is true that this strategy provides a certain degree of financial stability, it is not an strategy designed to support the process of development in which emerging economies are involve. In this context the question raises straightforward, what is the logic in accumulating large amounts of resources when the country is most in the need of them for alternative productive projects?[3] Finally, it is important to note that reserve accumulation can be actually counterproductive. "Large reserves stocks may create moral hazard problems that could weaken the financial system of a country. This, in turn, could make crises to be deeper…" (García & Soto, 2004: 17-18).

Returning to some of the studies above highlighted, it is important to stress that their cost estimations have been based on the ratio R/M. In other words, these studies only presented the cost of the insurance of the current account. But, as we have previously pointed out, this ratio became useless in the context of free access to international capital markets and dominating free floating exchange regimes. On the other hand, the studies that have considered the total vulnerability of the balance-of-payments have only focused on estimating reserve adequacy, neglecting the cost of reserve accumulation. For example, the study of Wijnholds & Kapteyn (2001) estimates optimal reserve adequacy for a group of emerging economies including in its estimations the vulnerability emanated from the

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[2] A cost that, as Mendoza himself stresses (p. 73), needs to be taken in the proper context. For example, for a large country like Brazil or Malaysia may be infinitesimal, but large for a small country like Uganda.

[3] At this respect, the Bank of England highlights (p. 10) that "even a positive return may not be optimal; the key question is whether higher returns, after allowance for risk, could be made elsewhere (eg through investment in the country's domestic infrastructure)". See *Handbooks in Central Banking* No. 19 of the Bank of England. Available at: http://www.bankofengland.co.uk/education/ccbs/handbooks/ccbshb19.htm#top.

capital account, including potential capital outflow stemming from domestic and external residents, but without stressing the cost of reserve accumulation. Their conclusion in this respect is "... that it is not accurate generalize, as some authors do, that borrowing to strengthen reserves is quite costly for emerging market countries, assuming that such borrowing is all done in long-term bond markets" (p. 25).

In this sense, to determine reserves adequacy as well as the accumulation cost requires to consider the total vulnerability of the balance-of-payments. During the boom of financial crises two of the indicators that determined investors' confidence and thus their decision to leave the country, leading to the vicious cycle of speculative attacks-capital flight-financial crisis were the current account deficit and the short-term external debt, both as a fraction of GDP. In effect, historically, the current account deficit to GDP beyond which international financial markets start to get nervous for understandable reasons seems to be of the order of 2-3 per cent (depending on circumstances) (see Thirlwall, 2003).[4] On the other hand, it was precisely the ratio of the short-term external debt to GDP during the boom of crises the triggering factor in the beginning of the vicious cycle. The size of this ratio varied widely among crisis-affected economies and this does not allow to infer beyond which range the international marked started to get nervous.[5] But with a doubt the short-term external debt to GDP ratio played a decisive role in investors' decision to leave the country.

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[4] The external current account deficit to GDP was 6.9 per cent for Mexico in 1994; 34.3 per cent as an average for Asian crisis-affected economies in 1997; 42.9 per cent for Brazil in 1998; 14.8 per cent for Argentina in 2001 and even though Turkey did not undergo a deficit the year of the crisis, it did it the previous year, in 2000, registering a deficit of around 50 per cent.
[5] The short-term external debt to GDP was 9.2 and 13.3 per cent for Mexico in 1994 and 1995, respectively; 15.1 per cent as a average for Asia in 1997 (excluding Korea); around 3.7 per cent for Brazil in 1998 and in 2001 in Argentina and Turkey the short-term external debt to GDP was 7.6 and 10.9 per cent, respectively.

Based on this empirical evidence, we propose a more *ad hoc* criterion to determine the adequacy of international reserves and estimate its excess. The criterion dubbed here the *maximum sustainable external threshold* is expressed as a fraction of GDP. If the amount of reserves to GDP exceeds the suggested threshold then it would be possible to argue that there is an excess of reserves and its cost could be estimated straightforward. In this sense our proposed threshold maintains the operatively of the R/M and Greespan-Guidetti ratios.

The level of threshold that we propose to insurance the current account can be based on empirical evidence. As we noticed above, an external current account deficit to GDP in which international markets remain in calm can be claimed to be within the range of 2-3 per cent. Unfortunately, the same cannot be deduced in the case of the capital account because, as we stressed earlier, during the recent boom of crises, there was not a real concern for domestic authorities about what level of short-term external debt to GDP could be adequate for investors. As a result, there is not strong historical record to propose at least roughly within which range the short-term external debt to GDP must varies in order to keep calm international financial markets.

However, some inference can be obtained from the evolution of this indicator since the aftermath of the boom of crises. As it can be seen in Figure 1, the short term external debt to GDP ratio for some crises-affected economies shows, in general, a decreasing trend, reaching the one digit level for all cases, except for Indonesia in 2002; being indeed at low levels (less than 5 per cent) for some economies like Mexico and Brazil. According to this evidence, we can suggest that the short-term external debt to GDP ratio that would not cause panic in the international markets could be within a range similar to the one of current account deficit to GDP, that is of 2-3 per cent. In sum, then, the criterion that we propose as a *maximum sustainable external threshold* to insurance the global vulnerability

of the balance-of-payments could be the order of 5-6 per cent of GDP. Importantly, this
threshold might vary depending on the particular circumstances of each economy.

Figure 1. Annual evolution of the ratio of short term external debt to GDP in selected crisis-
affected economies, 1990-2002.
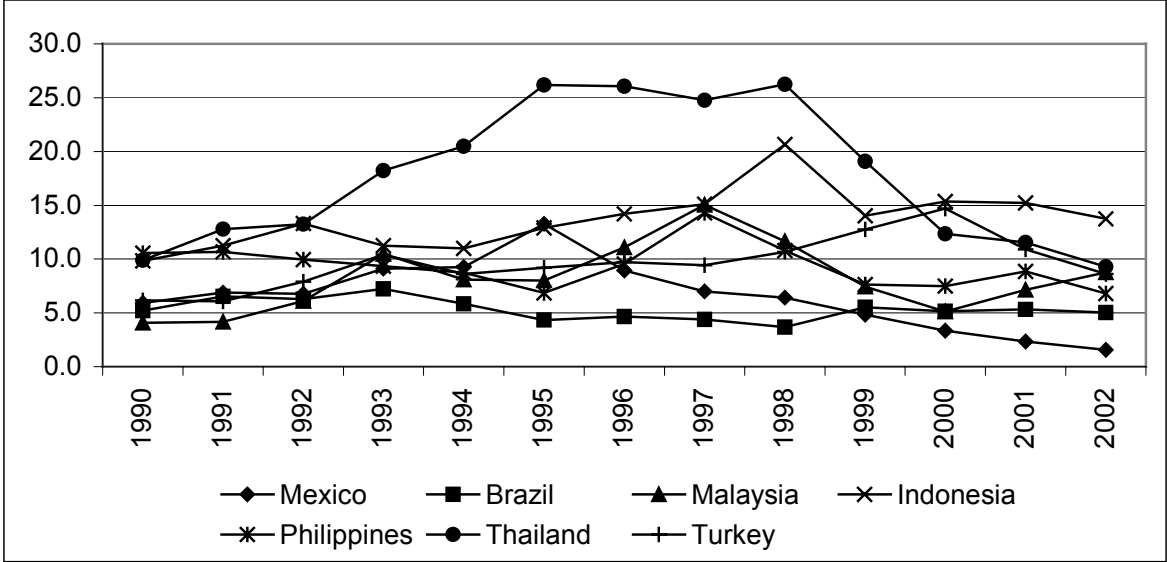
It is important to stress that "while is easy to say that the adequacy of reserves
depends on investors confidence, it is difficult to say with precision what determines this…
it will almost certainly be influenced by the package of economic policies that a
government is pursuing and the commitment with which they are being pursued, as well as
by economic performance, but it is likely to be affected by the perceived degree of financial
stability and indeed by the level of reserves as well" (Bird & Rajan, 2003: 879-80). In this
sense, due to the impossibility to define what determines investors confidence and their
behaviour, it is important to have in mind that any criterion (rule of thumb) to determine
reserves adequacy it is likely to be exposure to investors behaviour (see below Section 3).

Reserves accumulation: the Mexican experience

During the period in which the macro-imbalances were created for the Mexican crisis, 1990-94 (see Cruz, Amann & Walters, forthcoming), the massive inflow of external capital, particularly portfolio, contributed considerably to reserves accumulation. Since 1990, Mexico was the major recipient of foreign investment in Latin America. During the period 1990-93, for example, Mexico received more than 50 per cent (US$22.4 billons) of total foreign portfolio investment to the region. This put the country as the second largest emerging market in the world (Ros, 2001). This caused, as logic consequence, the level of reserves varied according to inflows and outflows of capital.[6] This relationship can be seen in Figure 2, which shows the quarterly evolution of international reserves (IR) and foreign portfolio investment (PI) during the period 1988-1993. This relationship is assessed through a typical regression among these variables (both in levels). On the one hand, the figure clearly illustrates that both variables exhibited the same evolution, particularly since 1990, when the financial liberalisation strategy was fully adopted.[7] Importantly, the inflows were attracted through the emission of governmental bonds with a very attractive interest rate (Mántey, 1998).

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[6] It is important to recall that capital account liberalisation has an immediate effect on the level of reserves. For example, since the 1997 Asian crisis, and as a result of the current account opening, Korea increase substantially its international reserves (from US$9 billons in 1997 to US$155 billons in 2003). Importantly, in this cases, the constant trade surplus has been a crucial factor for reserves accumulation (see Aizenman, Lee & Rhee, 2004).

[7] In 1989 and 1990 restrictions to foreign investment in domestic bonds (largely government bonds) and in the stock market were eliminated. Also, in 1990, in order to give security to investors, the Financial Group Law was passed. The Law allowed private-sector majority ownership of Mexican banks up to 30 per cent (see Ros, 2001 and Mántey, 1998).

Figure 2. Quarterly evolution of international reserves (IR) and foreign portfolio investment, (PI), 1988.q1-1993.q3, US$ millons
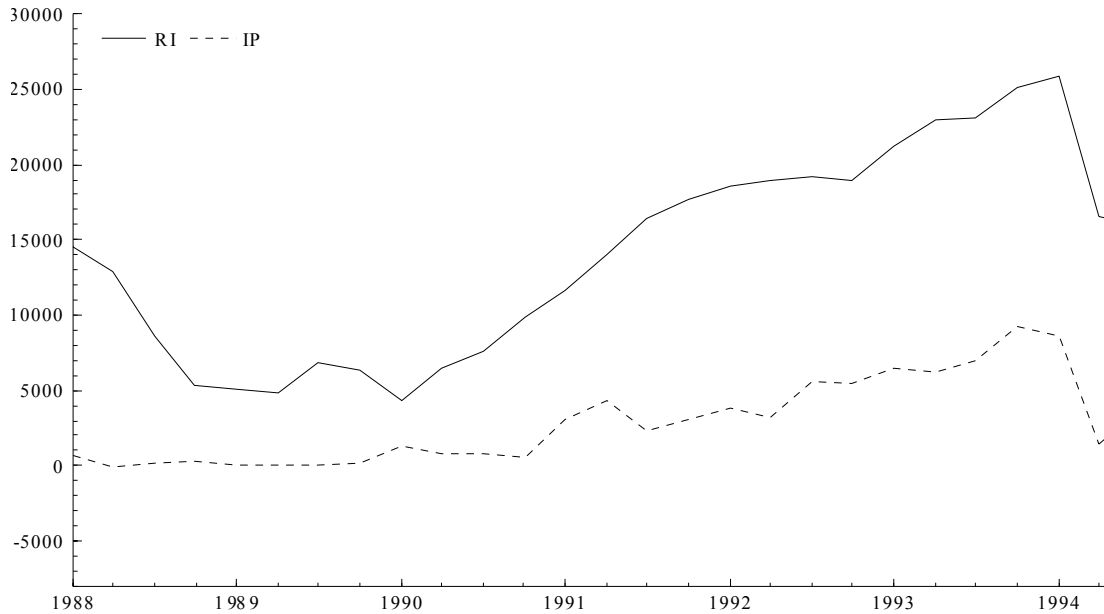
Source: own elaboration with data of the Instituto Nacional de Geografía, Estadística e Informática, available at: www.inegi.gob.mx.

On the other hand, regarding the regression results, first of all, the coefficient of determination is quite high, suggesting, as was expected, that the behaviour of international reserves is mainly explained (in almost 80 per cent) by the behaviour of portfolio investment. Secondly, the estimated coefficient suggests that an increment of one million of portfolio inflows increased approximately twice international reserves.

$$IR = 7894.6 + 2.12 \ PI$$
$$\quad (8.9) \quad (9.7) \ ^{8} \quad R^2 = 0.79$$

Summarising, the increasing levels of international reserves during the period 1990-93 were the result of the financial liberalisation strategy adopted and the desire of investors

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[8] Both coefficients are significant at the 5 per cent level. The *t*-statistics are in parenthesis. Normality test, Jarque-Bera is 0.88, ARCH test for conditional heteroskedasticity is 0.63 and RESET test for correct functional form is 0.49.

to capitalise short-term profits, but not the result of a specific strategy to accumulate reserves.

The financial crisis of 1994-95, however, led policymakers to put financial stability dominant in the agenda, causing a structural change in the way reserves were accumulated. The strategy was define in 1996 when the Central Bank through the Exchange Commission decided that "for precuatory motives it would be convenient to increased the level of reserves of the Central Bank" (Werner & Milo, 1998: 4). And in its 1998 Annual Report (p. 10) the Central Bank highlights that "The motivation for such a accumulation is that a higher amount of international assets contributes to increase the financial stability of the economy, making possible to obtain better borrowing conditions particularly regarding its cost and maturity". In sum, the precuatory strategy, the self-insurance to reduce the possibility of incurring in a financial crisis again was set up (at least explicitly for the period 1996-2001) in terms of Mrs. Machlup theory: to increase, as much as possible, liquidity through reserves accumulation. [9]

The strategy that Mexico's Central Bank set up since the mid-90s consisted essentially in a mechanism of options that gave the right to financial institutions to sell dollars to the Central Bank if some conditions were accomplished; this was coupled with

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[9] To this strategy, we should add the management of the external debt, particularly regarding short-term external debt, that the authorities adopted. For example, in 1994, short-term external debt was around 9 per cent of GDP and in 2002 it was less than 2 per cent of GDP. Also, since 1996 the government adopted a freely float exchange rate regime. At this respect, Aizenman, Lee & Rhee (2004: 2) stress that greater flexibility of the exchange rate may provide a line of defense against sudden stops of capital flows. However, the results of García & Soto (2004) suggest that flexible exchange rate regimes are not less prone to crisis, as it would be expected, tough hard peg and fixed regimes are prone to crisis. This evidence allows one to infer that the benefits of a flexible regime are not are solid as their advocators believe.

external borrowing and the external net income coming from extraordinary increases in the oil price[10] (see Resumen del Informe Anual del Banco de México, 1996).

In May 2001, however, the Central Bank decided to suspend the mechanism of reserve accumulation, specifically the sell of options. The reason for this decision it was based on the fact that according to the Central Bank the level of reserves reached at the time (US40 billions at the end of the second quarter of 2001) did not justify to continue with reserves accumulation any longer (see Resumen Anual del Banco de México, 2001) and, in fact, in March 2003, the central institute announced the beginning of a mechanism to reduce the speed of reserve accumulation due to the fact that the benefits of reserve accumulation were very expensive.[11] Nevertheless this fact, reserves accumulation during the period 2001-2004 did not loss dynamics (16.3 per cent average annual rate of growth)[12] and, in fact, it maintained a similar growth rate that during the period 1996-2000 (17.1 per cent annual average). Summarising, in the aftermath of the crisis, end of 1995, international reserves were US$16 billons, but by 2003 they soared to US$59 billons, which represented an increase of 269 per cent. In terms of GDP, they passed from 7 to almost 10 per cent in the same period.

Does this massive increase in reserves accumulation has had any cost? If we were to apply the methodology of recent studies to estimate the cost of excess of reserves, that is,

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[10] Other variables that, according to some econometric studies, also determine the level of international reserves are the income per capita, the size of the population, trade liberalisation, financial deepening, the exchange rate and external volatility (see Lane & Burke, 2001, and Aizenman & Marion, 2002).

[11] The reason for this decision seems to be underpinned on that fact that the initial aims were reached. That is financial stability was robust and the conditions for external borrowing improved. In other words, the monetary authorities felt that the level of reserves was enough to send to the market a positive sign concerning financial robustness, and whose reward would be larger and more stable flows of capital. In this line is Korea (see Mendoza, 2003).

[12] Without a doubt, the increasing and stable tendency of private remittances (they grew 81 per cent during the period 2001-2004) as well as extraordinary increases in oil prices contributed significantly in reserves accumulation.

applying the R/M ratio, we would find that the cost for the Mexican economy would be minimum or even negligible. This is shown in Table 1. As it can be seen, from 1996 to 2004 reserves in months of imports have been well below the rule of thumb suggested by the R/M ratio.[13] This evidence would suggest that there has not been cost for reserves accumulation.

Table 1. Reserves I months of imports, 1996-2004

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Reserves (US$ millions)	19432.7	28797.5	31799	31782.2	35508.8	44740.7	50594	58956	64141
Reserves in months of imports	1.8	2.2	2.1	1.9	1.7	2.2	2.5	2.9	2.7

Source: Own elaboration with data of the International Monetary Found (2005) *International Financial Statistics*.

However, according to the criterion suggested above, that is, assuming a *maximum sustainable external threshold* of 6 per cent of GDP, the results would be completely different and they would allow to argue that there has been an excess of reserve accumulation that represents 1.4 per cent of GDP and that the cost of this excess of reserves has been of 0.11 per cent of GDP during the period 1996-2003 (see Table 2). This is the cost of the adoption of Mrs. Machlup theory.

In particular, the years 2002 and 2003, are the most expensive ones. Some of the reasons for this could be the high ratio of reserves to GDP, the downward trend of both the current account deficit and the short-term external debt, and also due to the external stability that prevailed during these years, reflected for the absence of financial crises and their concomitants contagion effects. On the contrary, with exception of 1996, 1999 and

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[13] This evidence should not be surprising if we consider the severe dependency of the economy of imports, which is reflected the high ratio of imports to GDP (since 1996 it has been about 30 per cent). Consequently, the need for reserve accumulation to protect current account vulnerability grows as much as the economy grows.

2000, were the cheapest years. This could be associated to the high trade deficit and the negatives contagion effects caused by different financial crises in these years, particularly the Brazilian.

Table 2. Social cost of excess of reserves, 1996-2003.

	1996	1997	1998	1999	2000	2001	2002	2003
Current account deficit	0.7	1.9	3.8	2.9	3.1	2.9	2.1	1.3
Reserves	6.04	7.33	8.16	6.58	6.19	7.04	8.33	9.61
Excess of reserves[a]	0.04	1.33	2.16	0.58	0.19	1.04	2.33	3.61
Annual cost of excess of reserves[b]	**0.003**	**0.106**	**0.173**	**0.046**	**0.015**	**0.083**	**0.186**	**0.289**

Notes: figures are expressed in terms of GDP.
[a] Assuming a maximum external sustainable threshold of 6 per cent of GDP.
[b] Assuming a 8 per cent spread between the yield of foreign reserves and the marginal cost of borrowing.
Source: own elaboration with data of INEGI and the World Bank, 2004, *World Development Indicators*, CD-Rom.

The estimated cost, which at the first glance might look low, must be evaluated in the context in which the Mexican economy evolves. This is, a context in which one of the first restrictions to growth comes precisely from the constant external deficits and the need for high public investment in infrastructure.[14] In this sense, it might be worthy to consider if the excess of foreign reserves could allow the government to increase its expenditure, particularly in infrastructure projects, which, on the one hand, may increase national competitiveness and on the other hand has a multiplier effect, thus increasing output and employment. In the particular case of Mexico, the idea is basically to allocate these resources in the oil industry which is one of industries that not only urgently requires investment but is an industry that is key in the process of development and offers very high rates of return. Additionally, if there is a restraint to increase public expenditure for

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[14] According to official statistics, public expenditure on gross capital formation has been low and constant during the period 1996-2003. In 2003, expenditure on gross capital formation reached its highest, being of 3.3 per cent of GDP.

whatsoever reasons, there is the alternative to use the excess of reserves as collateral to guarantee international borrowing and use it in investment projects in the same sector or others. Either idea entails an additional issue: the fact that the Mexican Central Bank must be entitled to pursue not only inflation goals, but also employment and growth targets.

Finally, it is important to note that nevertheless Mrs. Machlup theory can indeed prevent, to certain extent, the risk of incurring in the negative cycle of capital flight-currency crisis, its role as a supporter for growth and development is inexistent. Thus the questions that raises is whether this policy is worthy of applying for a developing country like Mexico, specially when there are alternative policies that not only offer financial stability but also contribute in the achievement of development-orientated goals. This is the topic of the next section.

3. Financial stability: the alternative strategies

One of the major lessons left after the boom of financial crises over the last decade refers to the vulnerability of emerging economies to suffer speculative attacks once their financial sector has been deregulated. This vulnerability, according to the orthodoxy, can be reduced through an adequate management of the foreign reserves and an improvement of the external debt. In other words, the task in terms of economic policy could be translated into reducing the external debt and accumulating international reserves. Many studies, however, have shown that financial crises did not originate from the good or bad management of international reserves but from the degree of freedom with which foreign capital flows could leave the country given any economic or political change (see Cruz, Amann & Walters, forthcoming and the reference therein contained). In this sense, any strategy that aims at reducing financial vulnerability without trying to control agents behaviours is likely

to fail. This is further supported by D'Arista (2000: 3) when she points out that "...even an emerging-market economy with an idealized external position would remain highly exposed to the punishing vicissitudes of liberalised financial flows". From here, it is clear that only financial stability strategies aimed at controlling the flow of capital and thus the behaviour of agents are an option that might offer better results. Furthermore, historically this sort of strategies have contributed in the process of development. For this reason, here we focus on presenting and analysing the proposals summarised by Grabel (2003). They include the management of capital flows (à la Chile), restrictions in currency convertibility and the trip wires and speed bump approach.[15]

i) Management of capital flows (*the Chilean model*).

The so-called management of capital flows, particularly the management of inflows, is one of the strategies that have shown to be effective in reducing speculative attacks and capital flight.[16] This strategy applied successfully in countries like Chile and Colombia during the 90s (see Agosin & Ffrench-Davis, 1996, De Gregorio et al, 2000 y Edwards, 1999, 2003), India, China and, during the East Asian crisis, though for a short period, in Malaysia (see,

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[15] It is important to mention that there are other type of strategies, both conventional and heterodox, aimed at reducing financial vulnerability. Among the more recognized conventional strategies are the early warning system (see Kamensky, Lizondo & Reinhart, 1998) and the predictor approach which includes the probit or regression approach (see Frankel & Rose, 1996, and Goldstein et al, 2000). Their empirical performance, however, has been at the best mixed (see Chui et al, 2004), suggesting that investors will not necessarily practice market stabilising decisions even if they are able to access more accurate and timely information (Grabel, 2003, 2004). There are, on the other hand, alternative proposals that suggest a change in the international financial architecture (see Eichengreen, 1999) and strategies that involve measures to redefine and readjust international financial instruments (like the SDRs) to the needs of emerging economies (see Mendoza, 2004, Bird & Rajan, 2003).

[16] In this setting Thirlwall (2003, p. 95) points out that "capital controls, in whatever form... allow countries to manage their exchange rate effectively and provide a greater degree of monetary independency". In this regard, he highlights that for a country with a liberalised capital account, it will be difficult, if not impossible, to pursue an exchange rate target and operate an independent monetary policy at the same time. He further adds that the only way to reconcile internal and external equilibrium is either to control capital movements or to allow the exchange rate to float.

Doraisami, 2004, and Athukorala, 2003), allowed these economies passed through the era of sparking financial crises with low levels of financial and macro instability (see Ocampo, 2002).

Their policy regime, though with some national differences in design, essentially sought to "lengthen the maturity structure and stabilise capital inflows, mitigate the effect of large volumes of inflows on the exchange rate and exports, and protect the economy from the instability associated with speculative excess and the sudden withdrawal of external finance" (Grabel, 2003: 326). Edwards, (1999) provides evidence that these goals were achieved in the case of Chile and Ocampo (2002) illustrates its successful application in Colombia and other emerging economies. Importantly, Feldstein (1999), highlights this policy as a mean to increase liquidity.

The inflows controls programme included in the Chilean case, *inter alia*, levying a 1.2% tax per year on foreign loans, compelling foreign direct investment to stay for one year and imposing a non-interest-bearing reserve requirement of 30% on all types of external credits and all foreign financial investments in the country. Additionally, the government adopted a crawling band exchange rate regime[17] and the effects of the accumulation of international reserves were neutralised (Grabel, 2003). In other words, the risk of collapsing the currency was reduced through the adoption of a crawling band exchange rate regime coupled with capital inflows control and the probability of a sudden exit of investors was reduced by allocating investment towards longer term activities.

In sum, the management of capital flows has proved to be a highly effective strategy for mitigate speculative attacks and capital flight. There must be, therefore, room for its

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[17] According to Thirlwall (2003, p. 79), the historical experience of the last 30 years or so points to an important exchange rate regime policy conclusion: "intermediate positions between rigidly fixed rates (or hard pegs) and floating (what might be called 'soft' pegs) are not sustainable without capital controls"

adoption in the Mexican economy, specially given the policy's feasibility and flexibility and its additional benefit to the financial system, allowing its maturity.

The critics of capital controls might argue that its adoption could inhibited financial resources as well as investment. However, it must be stressed that, first of all, there is not evidence that supports that portfolio investment encourages investment (through financing productive projects) and growth (there is also empirical evidence that shows that foreign direct investment does necessarily promote growth; it is not, as Chang & Grabel, 2004, points out the *Mother Theresa* of capital flows).[18] And secondly, there are evidence that shows that, in the context of capital controls, the volume of external flows does not decrease and the only change, a positive one, is regarding the structure with a larger share of capital going to long term activities (see Chang & Grabel, 2004, and Edwards, 1999, for empirical evidence in the case of Chile). Finally, recently other emerging economies seem to have ascertained about the benefits of this strategy and have adopted it. This is the case of Argentina, who in June 2005 decided to apply measures to maintain 30 per cent of portfolio capital that arrives to the economy with the specific aim of stabilise the exchange rate.

ii) Restrictions on currency convertibility

Another feasible policy measure to reduce capital flight and speculative attacks refers to the capacity of the government to manage foreign exchange currency transactions.[19] With free currency convertibility, that is with investor ability to move their money freely from one

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[18] See Singh (2003) for a comprehensive exposition about the disadvantages of foreign direct investment and why it should be regulated.
[19] Multiple exchange rate systems, of whom the dual is a special case, imply different exchange rate for different transactions either current or financial account (see Thirlwall, 2003 and Mikesell, 2001).

financial centre to another by converting capital from one currency into another regardless of the purpose of the conversion or the identity of the holder it is likely that investors can easily put the domestic currency under pressure, a further decrease in the value of assets and cause a financial crisis. However, currencies that are not susceptible to be exchanged freely for other currencies or assets denominated on it cannot be put under pressure because there are restrictions to acquire it the first place (Chang & Grabel, 2004).

In this sense, the higher the restrictions to exchange the currency, for both national and foreign residents, the lower is the possibility to put this currency under pressure, reducing the risk of suffering a speculative attack. Furthermore, capital flight is also reduced because currency convertibility can effectively discourage investors from acquiring the kind of domestic assets that are more prone to flight, because they cannot be converted to their own currency (particularly portfolio assets).

It is worthwhile to note that, similar to the management of capital flows, there are enough evidence that shows, on the one hand, that restrictions on currency convertibility is capable to provide financial stability. The recent experiences of Taiwan, China and India support this. On the other hand, and equally important, is the fact that many of today's industrialised economies, such as United States, Canada, Germany and Switzerland removed restrictions on capital movements very recently, in 1973, while Britain and Japan did so in 1979 and 1980 respectively, and France and Italy made the transition as late as 1990 (Nayyar, 2003, p. 66). Importantly, these economies did this transition when they considered that their currencies (and their economies) were strong enough to resist foreign exchange pressures, but also when this strategy fulfilled its function within the development process (see Chang, 2002).

Within the mechanisms that a government can apply are restrictions on capital account transactions, in particular the restriction of both domestic residents and foreigners of national assets in the form of foreign direct or portfolio investment. This measure can decrease abrupt capital flight.[20] Also, the authorities can authorize currency convertibility for trade transactions, repayment of loans or profits repatriation previously authorized.[21] Moreover, the government would like to manage convertibility by requiring that investors apply for a licence that entitles them to exchange currency for a particular reason. This mechanism, will allow the government to influence the pace of currency exchanges, and distinguish between transactions associated with a high degree of currency risk (Grabel, 2003).

Despite the likely effectiveness of this policy measure, it is importance to notice that the Achilles heel of restrictions on currency convertibility has been leakages between the commercial and the financial rate (see Eichengreen & Wyplosz 1996: 25). These authors argue that experience suggest that dual exchange rates work well when the gap between the commercial and financial rates is small— meaning that they work least well during crises. Furthermore, the IMF has traditionally been hostile to these sorts of exchange rate practices, seeing them as an interference with the free market in goods and capital. In this sense, there are studies that suggest that low levels of restriction on currency convertibility (and capital controls) are associated with higher levels of economic development,

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[20] Alternatively, charging a higher domestic price for foreign currencies than the official rate for investing abroad in capital assets such as shares and properties might inhibited flight risk (see Thirlwall, 2003).
[21] This mechanism is similar to the adoption of a dual exchange rate system, where a specific exchange rate is set up for capital account transactions and another exchange rate, cheaper, is set up for current account. Importantly, according to the IFM Articles of Agreement (specifically Article 8) this kind of exchange rate selective convertibility are allowed (Chang & Grabel, 2004). For a more complete discussion about the benefits of the dual exchange rate system see Mikesell (2001).

efficiency and integration of the financial sector (see Johnston, 1999).[22] Edwards (1999: 69), points out these types of outflows controls have been largely ineffective, particularly because the market finds ways of evading them; he also stresses that evidence shows that in almost 70 percent of the cases where controls on outflows have been used as a preventive measure, there has been detected a significant *increase* in 'capital flight' after the controls had been put in place. Finally Eichengreen (2000, p. 1110) has also stressed that "not to much should be expected of outflows controls in times of crisis, given the strong incentives that then exist for avoidance".

However, Chang & Grabel (2004: 173) stress that critics of this type of policy generally focus on the high costs. "But they overlook the fact that the resources devoted to these wasteful activities are generally dwarfed by the resources wasted in the currency speculation that frequently occurs in liberal financial environments. Moreover, the economic and social costs of financial instability and crisis tend to be much greater than the economic costs of convertibility restrictions".

iii) Trip wires and speed bumps approach.

Finally, policymakers (and investors) will need measurable variables that can indicate if the country is approaching levels of trouble regarding the risk of suffering a capital flight or a speculative attack and tools to reduce them. Grabel (2003, 2004) [23] proposes the trip wires and speed bumps approach to this end. This approach gathers in some way the ideas described in the previous policies. The central idea is that if trip wires indicate (through the establishment of specific thresholds) that the economy is reaching high levels of flight

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[22] However, these studies do not show causality.
[23] According to Grabel (2004) the precedent for the trip wires-speed bumps approach is in US stock markets and futures exchanges.

and/or speculative risks "policy-makers could immediately take steps to prevent crisis by activating what we might think of as speed bumps. Speed bumps would target the type of risk that is emerging with a graduated series of mitigation measures" (Grabel, 2003: 323) through any mechanism related to the management of capital flows or currency convertibility previously stated. It is important to note that the threshold risk should be define on the basis of the particular characteristics of the economy. Moreover, the thresholds must be very sensitive to changes in the environment and adjustable.

Grabel (2003) proposes some possible trip wires to constantly reflect the levels of those risks. The ratio of foreign international reserves to private and public foreign-currency denominated debt (with short-term obligations receiving a greater weight in the calculation) could be an indicator of (lender) flight risk. As an indicator of currency risk she proposes the ratio of official reserves to the current account deficit.[24, 25] In the event that trip wires indicate approaching trouble the speed bumps will include *inter alia* measures to decrease the pace of imports or foreign borrowing, limit the convertibility of the currency and control the exit and entrance of portfolio investment (Grabel, 2003).

As can be deduced, applying these regulatory policy measures may result in a slowdown of economic activity. It seems, nevertheless, more adequate to provide financial stability by acting accordingly than face the costs of leaving the market itself to solve imbalances with the likely havoc in terms of growth and other welfare indicators (as the number of financial crises in emerging economies has shown).

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[24] In addition to monitoring the evolution of the ratio, an attempt should be made to monitor the change of the variables under concerned as well as their rate of change. This may allow having more accurate indicative signals.
[25] See Cruz, Amann & Walters (forthcoming) where some trip wires are built and analyzed for the Mexican economy for the period 1988-94.

Initially, then, the trip wires-speed bumps approach is a feasible policy as it depends essentially on policymakers' will, and its administrative cots and technical requirements seem not to be excessive. In fact, Grabel (2004) has evaluated its feasibility positively by anticipating and responding to a number of likely concerns raised by sceptics of this approach. Particularly, she argues that the trip wires-speed bumps approach will not trigger the risks is trying to avoid (she rejects the Lucas critique) as this approach "entails moderate and graduate responses to small changes and conditions. The activation of speed bumps is therefore not apt to trigger market anxiety…" (Grabel, 2004: 20). However, it is dangerous to predict that agents will react passively to a major policy change.

In sum, this policy measure is a mix of the policies previously stated with the added tool of the trip wires. It represents, therefore, a good alternative to prevent financial instability and in this sense to help in the process of development.

4. Conclusions

In this paper, we showed that for the particular case of Mexico since the aftermath of its 1994-95 financial crisis, international reserve accumulation (Mrs. Machlup theory) as a mean to achieve financial stability has came at a significant cost. According to the proposed *maximum sustainable external threshold* to determine excess of reserves, Mexico's cost of international reserves accumulation during the period 1996-2003 has been 0.11 of GDP. This cost, which at the first glance might look low, is significantly high given the context of scarcity in which the economy evolves. These resources might be more beneficial for the economy if, for example, they are used in a different productive manner. They may be used, for example, to expand public expenditure and improve public infrastructure, leading to a higher competitiveness; furthermore they might finance the necessary imports to

continue the process of industrialization. Also, they can be used as a collateral for international borrowing to finance investment projects in high returns industries, such as the oil industry.

We also demonstrated that the current strategy for financial stability comes at very significant cost when it is evaluated in terms of its contribution to the process of development. It is clear that this policy is mainly aimed at reducing the desire of international markets for attacking the domestic currency, by sending signals of financial robustness which in turn depends on the level of international reserves. There are, however, policy alternatives to achieve financial stability and support development-orientated goals. The management of capital controls à la Chile, according to empirical evidence in developing countries, showed to be the most effective alternative to prevent the vicious cycle of speculative attacks-capital flight-crisis and in the context of a industrial policy it has been a very helpful tool for development. In fact, some countries like Argentina have adopted it recently in order to maintain foreign exchange rate stability.

Restrictions on currency convertibility is perhaps the policy alternative that according to the evidence has been less successful in developing countries for both financial stability and development goals, particularly because the market has always found ways to evade the restrictions. However, some of today's developed countries have applied this strategy successfully due to the appropriate mechanisms to do so. Moreover, it might be on the national interest of the economy to spend some resources creating the mechanisms to guarantee that this strategy works effectively than leaving the market incurs in speculative activities, leading the economy to undergo a financial crisis.

Finally, the trip wires and speeds bumps approach is a novel policy proposal that gathers the instruments of the previous policies with the added that it includes some

indicators capable to detect when a country is approaching risky levels of capital flight or currency pressure. Given that its technical and administrative requirements seem not to be very excessive it results in a feasible policy.

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