

The Foreign Exchange Reserves Buildup: Business as Usual?

Charles Wyplosz

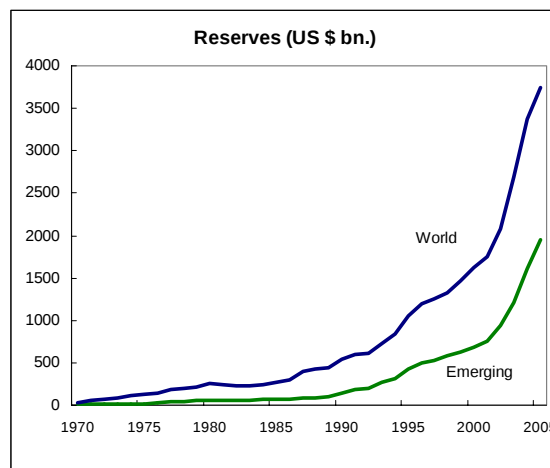
Graduate Institute of International Studies and CEPR

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1. Introduction

The massive accumulation of foreign exchange reserves started in the mid-1990s and has accelerated in recent years (Figure 1). It has been driven by the emerging market countries but it is not limited to these countries. Indeed, with the exception of the developed world and of the Latin American countries, the phenomenon is very general, including Africa and the oil exporters. It has been most spectacular in South East Asia and in particular in China. Indeed, at the end of 2006, the seven East Asian countries – ASEAN plus China and Korea – held a total of more than \$ 1500 billion, of which \$ 1000 billions alone are owned by China.

Figure 1. Foreign Exchange Reserves (US \$ bn.)



Source: IFS and Lane and Milesi-Ferretti (2006)

The phenomenon has been widely discussed. It is argued that this is a wasteful use of precious resources, which could be better used to raise private and public productive capital and therefore accelerate growth. It is further argued that the accumulation of reserves is the other side of the coin of aggressive export-led development strategies based on the systematic undervaluation of exchange rates. In particular, there have been efforts to denounce China for violating the IMF rule of avoiding exchange rate manipulation. It has also been asserted that the reserves have been accumulated to serve as collateral to encourage FDI (Dooley, Folkerts-Landau and Garber 2005).

On the other hand, the countries that have accumulated foreign exchange reserves tend to disagree with many of the previous arguments. They see their stockpiles as a way to self-ensure themselves against foreign exchange market turbulence. The Asian countries observe that the 1997-8 crisis, which has been devastating in many ways, was generally not foreseen and had many self-fulfilling features, which is supported by several authors.¹ They further observe that the conditions imposed by the IMF have been rather intrusive

¹ For a general discussion and references, see Wyplosz (2002). See also Aizenman and Lee (2006).

and had often to be promptly adjusted when they appeared to be ill-adapted (Feldstein, 1998; Wyplosz, 2006).

What do the facts tell us? Figure 1 seems to unambiguously suggest that something new and massive has been under way. Section 2 argues that this evidence is at best incomplete and needs to be carefully revisited. Accumulation appears remarkably rapid when the size of reserves is normalized by GDP or exports. When it is normalized by financial variables (credit, money supply) instead, the situation is entirely different. This simple observation suggests that interpretations that focus on undervaluation policies – e.g. the famed Asian export-led growth strategy – may fail to take fully account of financial integration. Section 3 looks at the situation in different groups of countries. It argues that most of the reserve accumulation is tightly associated with the financial globalization process. The following section starts by asking why countries accumulate reserves, both in theory and in practice. It goes on to offer an evaluation of the adequacy of existing reserves. Its main conclusion is that mercantilist motives seem to play a small role, which is in line with the near-impossibility of a policy of systematic exchange rate undervaluation. The last section concludes by asserting that, maybe with a few exceptions, it is all business as usual. Reserves are mostly used for self-insurance; as financial risks have grown, so have reserve stocks.

2. Are international reserves excessive?

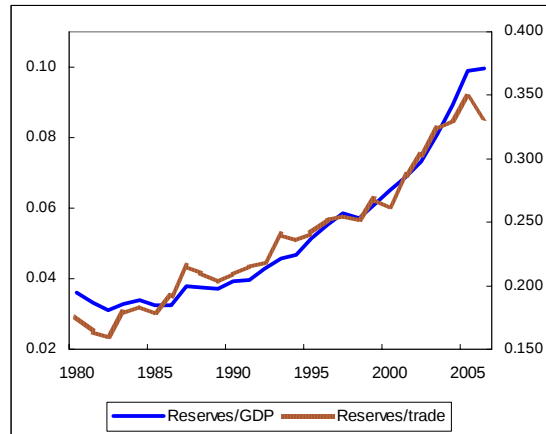
Have reserve holdings become excessive? Answering this question requires dealing with two preliminary and related questions. We need to agree on how to measure reserves and we need criteria to determine what an adequate level is. The latter issue is taken up in Section 4. Here we start by noting that the evidence provided by Figure 1 is not satisfactory for the purpose at hand. The figures are not adjusted for inflation and they are unrelated to the reasons why countries may wish to hold reserves. The first criticism is of little import; dollar inflation has been subdued since the reserve buildup process got under way. The second one raises many serious issues.

The motivation for holding reserves determines which variable should be used to scale the reserves. The usual procedure is to use measures such as GDP, exports or imports, which is done in Figure 2. The figure does not dispel the impression that reserves have been accumulating fast since the early 1980s but there is none of the sense of abrupt acceleration since the mid-1990s visible in Figure 1. The obvious reconciliation of the two figures is that both world GDP and trade have increased faster over the last decade. Still, Figure 2 shows that reserves have not just kept up with GDP and trade growth, they have grown much faster, at about twice the pace. Thus the charge that this accumulation is excessive stands.

It is unclear what lies behind the view that GDP or trade are appropriate scaling variables. No reasoning has been offered for the use of GDP. For trade, the usual justification is that countries need to have enough reserves to meet unexpected external disturbances with sufficient means to avoid a sudden stop in essential imports. Indeed, it used to be that international institutions recommended that reserves represent at least three month worth

of imports. Such a recommendation suggests that reserves constitute a form of insurance against unexpected trade disruption. It also implicitly argues that either the trade balance is where balance-of-payment disturbances mostly occur, or that the main risk to be insured by holding reserves concerns the financing of recurrent trade deficits.

Figure 2. World Foreign Exchange Reserves
(% of GDP and trade)

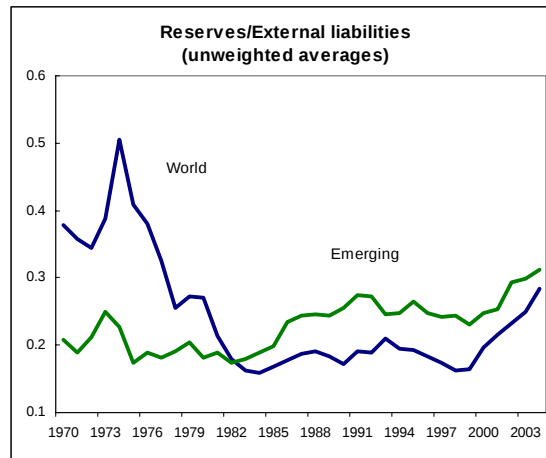


Source: IFS and Lane and Milesi-Ferretti (2006)

Section 4 looks at the self-insurance motive in great detail. At this stage, we note that the prevalence of the trade balance as the main source of unexpected disturbances may be an acceptable assumption for low-income developing countries that are characterized by export specialization in a narrow range of staple goods, often raw materials. This characterization does not apply to emerging market countries which are usually well-diversified in terms of exports. As a consequence, they are unlikely to face a situation where export earnings may decline abruptly to the point where they can no longer pay for imports, essential or not.

The main source of uncertainty for emerging market countries now lies with the capital account, not the trade balance. The 1997-8 Asian crisis is a clear case in point, confirmed by the crises that next hit Argentina and Brazil. For these countries, therefore, the proper scale variable is neither GDP nor exports but some measure of exposure to sudden capital outflows. Which measure? One possible measure, directly inspired by the Asian crisis is external debt. For example, the Greenspan-Guidotti-Fischer rule recommends that reserves be at least equal to short-term debt. Figure 3 shows that things look quite different when external liabilities – irrespective of maturity – are used to deflate reserves. Although reserves as a ratio to external liabilities have grown in recent years, there is hardly any historical standard to brand them as excessive.

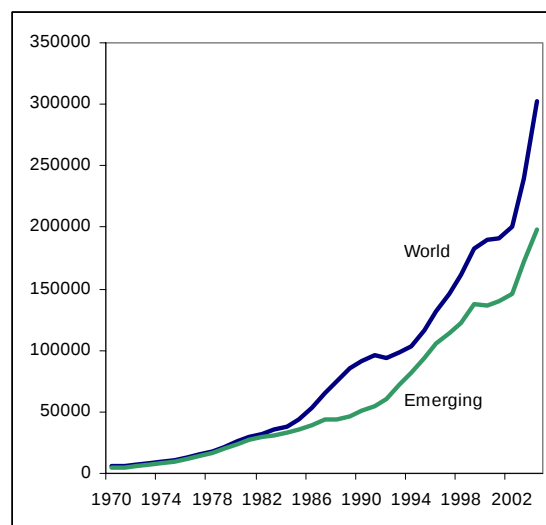
Figure 3. International reserves



Source: IFS and Lane and Milesi-Ferretti (2006)

The contrast between Figure 1 and Figure 3 cannot be overemphasized. It strongly suggests that an important change has occurred since the mid-1990s. This change is not about reserve accumulation, but about financial globalization. This phenomenon, which is documented in Figure 4, is well known, of course, and has been amply documented, see for example Lane and Milesi-Ferretti (2006). Most likely, countries that become financially integrated face radically changed reserve needs. The Greenspan-Guidotti-Fischer rule takes this conclusion on board but, surprisingly, much of the debate on reserve accumulation is based on reserves data deflated by GDP or trade, not an adequate measure of financial integration.

Figure 4. External liabilities
(US \$ mn., unweighted averages)



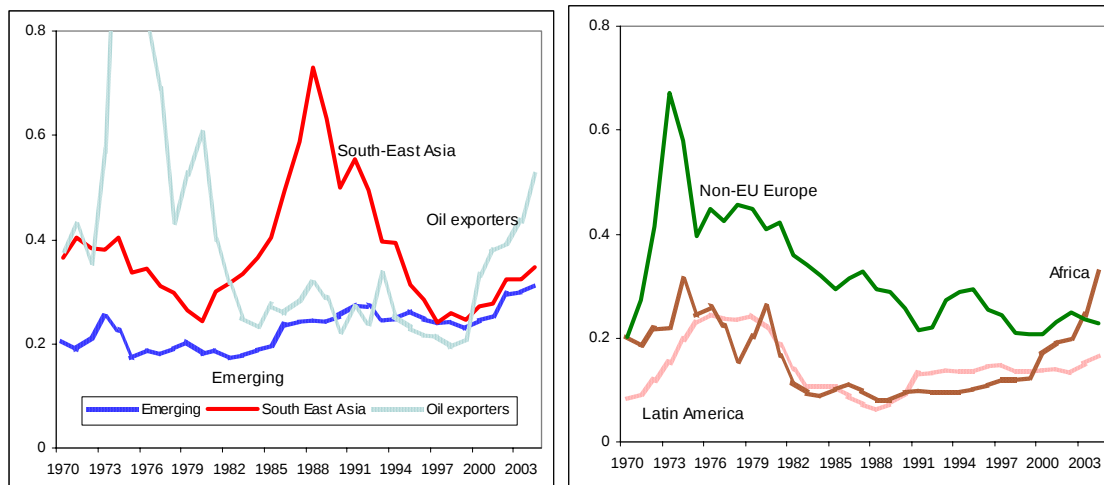
Source: Lane and Milesi-Ferretti (2006)

The remainder of the present paper will only consider reserves scaled by gross external liabilities. Is this the right measure? It is better than gross flows for two reasons. First, flows are rather volatile. Second, it is logical to compare stocks. Yet, it could be argued that we should only look at short-term liabilities, which is indeed what the Greenspan-Guidotti-Fischer rule does. One reason for not doing so is simply data availability. A better reason is that the distinction between short and long-term liabilities can be deceptive. Not only is the border inevitably arbitrary, but the logic implicitly behind this view is flawed. The usual presumption is that long-term liabilities are more stable than short-term ones. On the face of it, this seems uncontroversial. Yet, it ignores two features of currency speculation. The first one is that speculation mostly takes the form of open short positions. These are short-term liabilities, of course but they may be collateralized by long term ones. Second, and more importantly, long-term liability holders rarely remain inert when a crisis looms. They then quickly build up hedges. While these hedges typically take the form of short-term liabilities, the potential for such a buildup is captured by looking at the overall liability position.

3. Who Accumulates Reserves?

The phenomenon of reserves buildup is driven by emerging market countries, but not only. Two groups of countries have not raised their reserves as a share of their external liabilities: Latin America and Non-EU Europe, which mostly includes Central and Eastern Europe.² The recent increase has been steep in Africa and especially among the oil-exporting countries. South-East Asia stands in the middle, very close to the average for all emerging market countries.

Figure 5. International reserves
(% of external liabilities, unweighted averages)

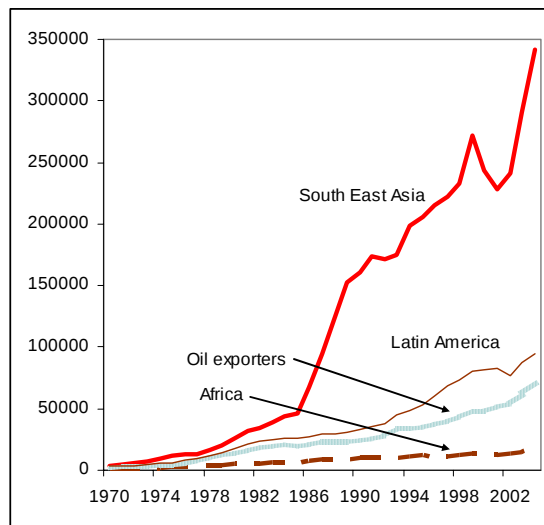


Source: IFS and Lane and Milesi-Ferretti (2006)

² The detailed country groupings are indicated in the Appendix.

What hides behind these differences? Many Latin American countries have been part of the financial globalization process and, indeed, Figure 6 shows that average external liabilities have quite strongly increased.³ On average, therefore, the Latin American countries have simply accumulated reserves at the about same speed as they have accumulated external liabilities. The average increase of external liabilities in “Non-EU Europe” – not shown, but see Table 1 – has been rapid but starting from a low base; like in Latin America, reserves have been added about proportionately to external liabilities. The case of Africa has gone little noticed. Financial globalization has been slower there; still, between 2000 and 2004, African external liabilities have increased by 51%. During the same period, their reserves rose by 94%. The oil exporting countries too have become financially integrated but their reserves have rapidly increased. This reflects the rise in oil prices. If past experience is any guide, we can expect that they will decumulate their reserves as they gradually invest in other assets, often acquiring significant shares of foreign corporations.

Figure 6. External liabilities
(US \$ mn., unweighted averages)



Source: Lane and Milesi-Ferretti (2006)

South-East Asia stands out on all dimensions. This region has become the epitome of financial globalization, as Figure 6 illustrates. It has added reserves even faster than it has accumulated external liabilities. It is no surprise that much of the debate has focused on this region, in particular on China. Yet, Figure 6 does not bear out the view that the Asian countries are unambiguously accumulating excess reserves. Focusing on two prominent

³ These are unweighted country averages.

cases, Figure 7 shows that China's reserve/external liability ratio exceeds the world average after a very fast buildup and that the case of Korea is similar. The figure also shows that, in 2004, China's position was below the Greenspan-Guidotti-Fischer recommended level, which it has probably reached at the present time.

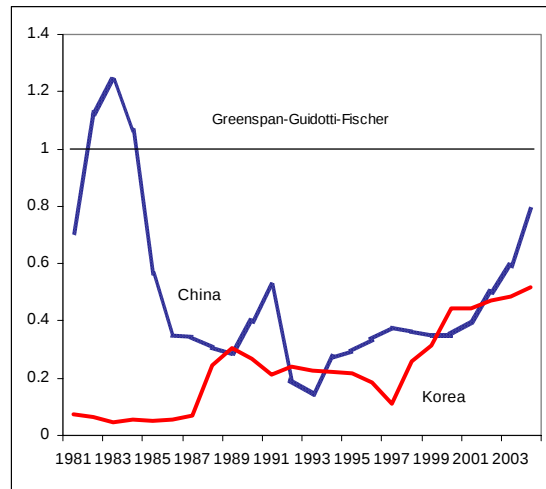
Table 1. Changes 2000-2004

	World	Emerging	South East Asia	Latin America	Africa	Non-EU Europe	Oil exporters
Liabilities	60%	45%	40%	17%	51%	107%	50%
Ratio	45%	26%	28%	21%	94%	10%	57%

Source: IFS and Lane and Milesi-Ferretti (2006)

Note: Ratio is reserves/liabilities.

**Figure 7. Foreign Exchange Reserves : China and Korea
(Ratio to external liabilities)**



Source: IFS and Lane and Milesi-Ferretti (2006)

4. Adequacy of Foreign Exchange Reserves

4.1. A Good and a Bad Reason to Accumulate Reserves

The question of which is the proper variable to be used to scale down the stock of reserves cannot be answered without taking a view of why reserves are being held. The shift from the three-month worth of imports rule to the Greenspan-Guidotti-Fischer rule indicates that views have been changing in this respect. Financial globalization has moved the concern from maintaining the flow of imports during periods of turmoil to

stabilizing the capital account. Taking both concerns into account, we may conclude that one good reason for a country to hold reserves is to self-insure itself against sharp and sudden reversals in the balance of payments.

A second, more dubious reason is what Aisenman and Lee (2006a, 2006b) call mercantilism. They distinguish financial from monetary mercantilism. Financial mercantilism is a modern form of mercantilism, which is often labelled the export-led strategy. A common representation of this strategy is that it seeks to boost growth by maintaining the exchange rate undervalued. The excessive accumulation of foreign exchange reserves is then seen as a byproduct of the strategy. A related description of the strategy is that it seeks to keep savings at home to finance productive investments. Obviously, the latter description does not imply reserve accumulation, quite to the contrary. Monetary mercantilism is a less elaborate version according to which some countries accumulate foreign exchange reserves just for the sake of it. It is often attributed to India and its quest for gold reserves. A more elaborate version of monetary mercantilism is that the monetary authorities wish to acquire assets that allow them to expand the money supply in order to target lending toward favored sectors or firms. In that sense monetary mercantilism is meant to serve the same growth purpose as financial mercantilism.

A priori, self-insurance is a good reason to hold reserves, although there can be too much of a good thing. Mercantilism is looked upon with suspicion, because it aims at preventing the normal market mechanism; in the presence of market failures – to be precisely pinpointed – mercantilism could be justified, however. Thus we face three questions: 1) Is the recent buildup of foreign exchange reserves driven by self-insurance or by mercantilist objectives? 2) Can a case be made that reserves are excessive relatively to the self-insurance motive? 3) Can the export-led strategy justify otherwise excessive reserves?

4.2. Evaluating Motives

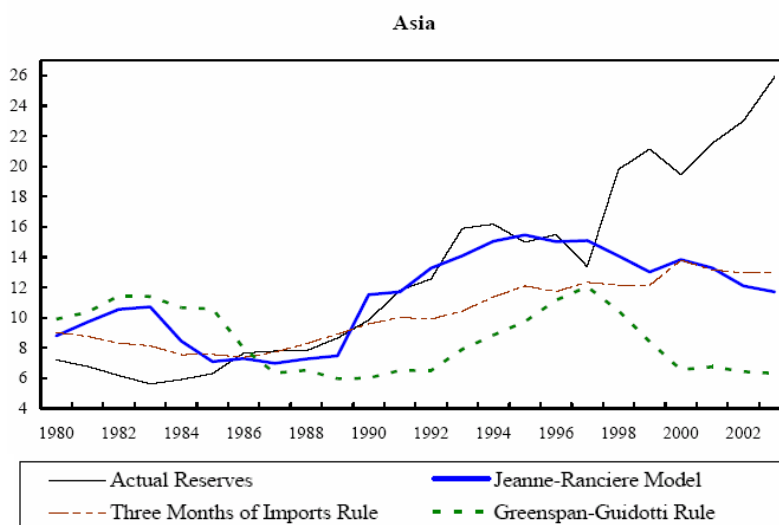
It might seem impossible to determine why countries accumulate reserves. All that we can do is observing their evolution, but the policymakers' motivation is not visible. While the answer will always be at best plausible, recent research has started to shed some light on the question.

Lee (2004) and Aisenman and Lee (2006a) estimate existing reserve levels (deflated by the GDP) using two different sets of explanatory variables. The first set attempts to capture the self-insurance motive. It includes a measure of capital account liberalization, crisis dummies, exchange rate volatility, the terms of trade, and openness. The second set concerns the mercantilist motive. It includes export growth and a measure of exchange rate undervaluation. They find that the self-insurance motive variables are highly significant and in accordance with the theoretical prediction. In particular, capital liberalization emerges as a consistently solid explanatory variable. This confirms the analysis of data presented in Section 2. The variables meant to capture the mercantilist motive are also statistically significant but their effects are small in comparison with those of the self-insurance variables. Overall, they conclude that their "results provide

only a limited support for the mercantilist approach.”⁴ This also confirms the view, presented above, that the recent accumulation of reserves has largely been driven by the recognition that financial globalization calls for a new attitude to deciding on reserve adequacy.

A very different approach is adopted by Jeanne and Rancière (2006). They develop a model of self-insurance and ask how much reserves are optimally needed to face down a sudden reversal of capital inflows that exceeds 5% of GDP.⁵ They find that most existing reserve stocks correspond to their estimated optimal levels. The exceptions are the Asian countries, which, they find, hold more reserves than is justified by their representation of self-insurance. This is illustrated in Figure 8, which displays the evolution of actual reserve holdings alongside the traditional three-months of imports rule, the Greenspan-Guidotti-Fischer rule and the optimal Jeanne-Rancière level.

Figure 8. Optimal reserves for self-insurance
(% of GDP)



Source: Jeanne and Rancière (2006)

Motives can also be evaluated on the basis of official statements. In fact, many Asian countries do not conceal that they take a rather stringent view of self-insurance. For instance, one can find in the Chinese official newspaper *People's Daily* the following statement:

“If Thailand had had sufficient foreign exchange reserves, the 1997 financial crisis would not have worsened or extended to other areas. If South Korea had a large

⁴ Similar results are presented by Cifarelli and Paladino (2006).

⁵ “Optimality” refers to the trade-off between abundant reserves and the fact that reserve accumulation reduces consumption because reserves yield lower returns than other assets.

stockpile of foreign exchange reserves, the government would not have to resort to drawing funds from the people to get through difficult periods. Hong Kong survived the 1997 crisis because it held large foreign exchange reserves.”

Xie Taifeng, “Large Forex Reserves Do More Good than Harm”, People’s Daily Online, November 14, 2006 (<http://english.people.com.cn>)

The intention is clearly to rule out the need to apply to the IMF for emergency loans as happened during the 1997-8 Asian crisis. Many Asian countries consider that the conditionality associated with these loans was ill-designed and even violated their sovereignty. The rejection by Malaysia of these conditions, and the controversial evidence by Kaplan and Rodrik (2001) that Malaysia fared at least as well as the other countries, is seen as an example to be followed should a new crisis erupt. Fear of IMF instilled by the recent crisis, therefore, may explain why the Asian countries are “buying” more self-insurance than other countries.

The alternative to self-insurance is mercantilism, which lies behind the charge of exchange rate manipulation. The prime suspect in this game is China which, as noted above, stands apart for its rapid reserve build-up. Is there a plausible alternative explanation? One possibility is the state of its banking sector. China may well have larger than usual needs for reserves to face a potential banking crisis. It is not known how large the net foreign currency liabilities of Chinese banks are. If they are large, the authorities may have to promptly intervene in case of stress. If this intervention triggers a currency crisis, the authorities need to have yet more reserves to stabilize the exchange rate.

Finally, one can appeal to Ricardian equivalence to explain higher-than-optimal reserves holdings. The Ricardian equivalence principle holds that government borrowing or lending is systematically offset by private sector saving or dissaving, respectively. When the private sector faces limits to borrowing – because of credit ceilings, for instance – it is rational for the government to borrow on their behalf. This logic can be applied to reserves holdings in developing countries where the private sector has limited access to foreign assets and liabilities. In that case, their need for currency diversification in assets can be met by central bank holdings of foreign exchange reserves. Put differently, by accumulating reserves, central banks act on behalf of their citizens who wish to diversify their assets but have no, or limited access to international financial markets. The argument may be far-fetched, but it cannot be ruled out as a matter of logic.

4.3. When Is It Too Much?

The evaluation of the adequacy of reserves stocks has so far been conducted by looking at trends. A different approach consists in looking at the costs and benefits of foreign exchange reserves. Although quantitative estimates do not exist – and are probably out of reach given current knowledge – some important conclusions can be drawn from this exercise.

4.3.1. Costs of Large Reserves

Reserve stocks are costly to hold because they are typically invested in high-grade fairly liquid assets, with low returns. Rodrik (2006) provides a careful evaluation of the cost of

holding reserves. Defining the cost as the difference between the cost of borrowing abroad and the return on reserves, he provides an estimate of 1% of GDP when reserves amount to 30% of GDP. This procedure has the merit of circumscribing the evaluation to a question of assets and liabilities management. It has the drawback of not taking into account the *opportunity* cost of other possible uses of the foreign currency held as reserves.

Instead of safe and liquid investments, the monetary authorities could hold assets with superior returns, which a number of central banks have started to do.⁶ An even more stringent evaluation of the opportunity cost would compare the returns on reserves with the returns from investing national savings into domestic projects, public or private. Estimating opportunity – not just assets and liabilities management – costs raises a number of difficult questions. Some are technical – for example estimating the returns from public investment is more art than science – but others are more fundamental.

A good example is China. To avoid reserve accumulation, China would need to either eliminate its current account surplus or to exhibit a matching capital account deficit. Consider first the current account, the difference between savings and investment. With a savings rate close to 50% of GDP, China faces a serious capital absorption capacity hurdle. It is reasonable to assume that there exist physical limits to how much new investment, public and private, can be carried out in any given year. Thus, its high savings rate translates into a current account surplus, which cannot be eliminated by an exchange rate appreciation. One solution would be to finance public investment through large budget deficits, hardly a commendable solution.

Consider next the capital account. China currently invests some of its savings abroad in the form of low-yield bonds. It could instead acquire stocks but, as has happened recently, foreign willingness to allow for a build up of Chinese ownership of private stocks is not unbounded. In the end, China, and many East Asian countries, have no choice but to acquire high grade-low return foreign assets. In this sense, the opportunity cost is large, but imposed from abroad.

In addition, the assumption that domestic investment provides a higher social return than liquid foreign asset holdings is questionable. The Lucas paradox – the fact that capital tends to flow from developing to developed countries – strongly suggests that return from investment in many developing countries may be very low, if not negative. Holding foreign reserves may represent a very decent use of emerging market country savings. Indeed, it has been reported that the People's Bank of China is making net profits from its reserves holdings.

⁶ In many respects, the model is the Government of Singapore Investment Corporation Private Limited (GIC), which has a wider mandate than just managing reserves but is being increasingly emulated, for example in Korea.

4.3.2. Export-led growth strategy

The potential opportunity cost of asset stocks must be related to potential benefits. If the main purpose is export-led growth, the potential benefits can be large. Of course, currency undervaluation impose an additional cost to trading partners, but the cost-benefit balance may be favorable for the country in question in the presence of fixed costs, market distortions or increasing returns in production. There seems to be no study that attempts to measure the existence and extent of such benefits but the presumption must be that that these benefits are real and sizeable. A *prime facie* indication is that most of the successful emerging market countries of yesterday (Japan and Korea) and of today (Argentina, China) have adopted this strategy. Chile is an important counter-example.

It remains to determine how this strategy can work. In principle, simply attempting to keep the exchange rate undervalued cannot work if markets operate reasonably freely. Indeed, keeping a high level of external demand for domestically produced good must inevitably lead to inflationary pressure. This, in turn, means an appreciating real exchange rate. In order to maintain prevent the real exchange rate undervalued, the central bank must them keep depreciating its nominal exchange rate, which requires further reserve accumulation in an unending process. Furthermore, to prevent inflation from catching up, the central bank must sterilize its foreign exchange market interventions, which then becomes increasingly costly.

This shows that the export-led strategy goes much beyond exchange rate undervaluation. It may involve price controls, but this is a recipe to kill growth because it can leads to a large misallocation of resources. A better solution is to compress domestic demand, i.e. to allow for a high saving rate. Whether the high saving rate of Asian countries is spontaneous or the result of active policies remains a controversial issue. More generally, our understanding of differences in saving rates across countries is limited.⁷ The link between savings and the export-led strategy has been underlined recently under the codename “saving glut” by Bernanke (2005). The implication, that saving rates can be changed by policy actions, remains an open question.

This is not to deny that saving rates can be influenced by policy actions. For instance, Singapore has explicitly adopted a policy of forced savings. Similarly, it can also be argued that saving is high in countries that, like China, have a very under-developed welfare system. Should China establish better welfare protection, it is indeed likely that savings would decline and that the real exchange rate would appreciate. The point remains that the real appreciation would be an equilibrium process, independent of foreign exchange interventions. Efforts to keep the real exchange rate undervalued through foreign exchange market interventions, and therefore through reserve accumulation, would be undermined by inflation.

In conclusion, the assertion that exchange rates can be kept undervalued over an extended period of time is unconvincing. The exchange rate regime may affect the real exchange

⁷ In particular, it is not clear high saving rates cause rapid growth or whether expected rapid growth cause high savings. For a recent discussion about the case of Asia, see .e.g. Adams and Prazmowski (2003).

rate over the short to the medium run, but cannot be in and by itself a policy tool. This conclusion is in line with the empirical results reported earlier in Section 4.2, which tend to reject mercantilism as a driving force behind reserve accumulation.

4.3.3. Self-Insurance

The second motivation for reserve accumulation is self-insurance against the risk of currency crises. This would justify bearing the cost of holding reserves, which amount to a risk premium. But what exactly is the risk that is insured and how is it covered? Currency crises can be very expensive, especially when they are accompanied by banking crises, as is often the case. Estimates of these costs range from 10% to 25% of GDP, sometimes even more. In addition, these estimates overlook the social and political costs of severe crises. Assuming that reserves of, say, 100% of GDP are apt to provide the sought-after protection – an assertion that is challenged below – the Rodrik estimate implies an annual cost of about 3% of GDP. Further assuming that crises could cost 25% of GDP may arise once in a decade, even ignoring discounting, the insured expected risk is of the order of 2.5% of GDP. This would suggest that self-insurance via foreign exchange reserves is not particularly attractive. Of course, we would need to add the non-economic costs of financial crises – social pain and instability, political turmoil, wealth redistribution and more.

The matter becomes even more complicated once we allow for moral hazard. There are many ways for a country to reduce the odds of a crisis and to make its consequences less dramatic. The experience of the developed countries suggests that both the odds and the consequences can be considerably reduced by adopting adequate structural and macroeconomic policies. Self-insurance can become very expensive if a large stock of reserves acts as a disincentive to adopt these policies, especially since most of them carry additional favorable supply-side benefits.

The second issue concerns what does self-insurance really achieves. Foreign exchange reserves are not really an insurance mechanism: they do not pay back a fraction of the costs, they are only meant to reduce the odds of a crisis. The deep question, then, is whether they offer an iron-clad protection. There is no consensus on this question, for lack of empirical investigation. In theory, there is little doubt that large reserves may deter crises, but there is no guarantee that the deterrent is always effective. Even if reserves meet the Greenspan-Guidotti-Fischer rule and are equal to short-term debt, which may not be enough once we allow for short positions. Jeanne and Wyplosz (2003) show that determined markets can quickly build up virtually unlimited speculative positions. Reserve stocks, on the other hand, are finite.

The main role of reserves is therefore to prevent reaching a situation where the markets are sufficiently determined to challenge the authorities' willingness to commit their reserves. In doing so, the authorities must be willing to take on serious losses. More importantly, perhaps, they must be able to sterilize massive interventions, which means seriously reshaping the balance sheets of domestic commercial banks and corporations. Indeed, consider commercial banks that sell foreign currency forward to domestic and international speculators. The central bank must stand ready to provide these institutions

with the foreign currency that they will have to deliver and, at the same time, extend domestic currency credit to keep the money supply unchanged. When the banking sector is relatively fragile, large-scale sterilization may become a hazardous undertaking. Replacing a currency crisis with a domestic financial crisis is not a particularly appealing.⁸

Finally, reserves can also be used in the case of a purely domestic financial crisis. Facing the threat of a banking crisis, central banks have the duty to intervene as lender of last resort. If the banks hold substantial open positions in foreign currency, lending in last resort must then be carried out in foreign currency as well. As already noted, such a concern may be relevant for countries such as China where the health of the banking system is in doubt.

The conclusion is far from clear-cut. On the one hand, the costs of large foreign exchange reserves may be significantly less than is commonly assumed. On the other hand, the self-insurance value of large reserve stockpiles may be exaggerated. Herein lays a serious source of concern, that the authorities come to believe that a large stockpile of reserves is an absolute protection against currency crises. This could slow down reforms, especially in the financial markets, or encourage unwise macroeconomic policies.

5. Conclusions

Reserves can be accumulated for two main reasons, mercantilism and self-insurance. Negative views on the recent widespread reserve build-up are justified by the view that mercantilism is the driving force. This view is informed by the evidence that the stock of reserves has considerably risen whether measured in nominal terms or as a ratio to GDP or exports. This evidence can be deceptive, however. When the stock of reserve is related to foreign liabilities, with few notable exceptions, there is just no evidence of a reserve buildup.

Which is the correct measure depends in fact on the motive for holding reserves. Looking at the ratio to GDP is justified if mercantilism is the driving motivation. Looking at trade and external liabilities is preferable if reserves are held for self-insurance. In addition, as countries become financially integrated, the correct ratio is to external liabilities since the main risk of currency crisis increasingly arises from the capital account.

There are two good reasons to discount the mercantilist motive. First is the evidence from recent empirical studies that find that most, if not all, of the recent build-up is explained by the self-insurance motive. Second is the fact that the mercantilist motive relies on the dubious assumption that a country can maintain its exchange rate undervalue for a substantial period of time. This view assumes that domestic prices and wages can be prevented from adjusting upward, which is very unlikely in the absence of effective controls. Not only are price controls self-defeating, they are also a source of major distortions that are bound to undermine growth, the very objective that export-led growth

⁸ Capital controls may reduce the size of the undertaking.

strategy is meant to serve. The alternative interpretation of the export-led growth strategy is that relies on high saving rates, which are largely immune from policy actions.

Another way to think about reserve accumulation is in terms of costs and benefits. Reserves are typically held in the form of low-yield, high-grade and liquid assets. There follows the presumption of a sizeable opportunity cost, for two main reasons. To start with, taking the balance of payment as given, additional reserves are added as a consequence of external borrowing. The difference between the borrowing rate and the return from reserves is a first measure of the cost of holding reserves. Another way to look at the question is to identify reserve accumulation with a balance of payments surplus. In that case the returns from reserves must be compared to the productivity of domestic investments, private or public. Either way, with few exceptions, it is likely that reserve holding is expensive.

The benefits are related to the motive. If we dismiss mercantilism, the main benefit from reserve holding is to provide self-insurance against the risk of a currency crisis. “Self-insurance” is a misnomer since insurance normally entails the payment of some compensation when the insured risk occurs. Reserves are only meant to lower the odds of a currency crisis. Currency crises are typically very costly, so holding large reserve could be a good deal if, indeed, it eliminates the risk of crisis. While there is little doubt that a high reserve stock can deter many speculative attacks, it could be dangerous to assume that it can completely eliminate the risk. It is always possible to imagine situations where the markets are sufficiently determined to overwhelm the reserve defense, no matter how large it is. All in all, the benefits are substantial, but maybe less of a protection than the authorities seem to believe.

In the end, the hype about reserves accumulation is largely unjustified. As financial globalization proceeds, central banks around the world have simply carried out their normal business of keeping their reserves in line with growing risks. The phenomenon is broad, affecting nearly every country. There are a few cases, mainly in Asia, where reserve accumulation seem to stretch beyond business as usual, but it may well be that these countries face particularly large domestic financial threats, especially in their banking systems.

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Appendix: Country groupings used in Error! Reference source not found.

Emerging market countries (25)

Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

Non-EU Europe (17)

Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Moldova, Poland, Romania, Slovak Republic, Slovenia, Turkey.

South-East Asia (14)

Brunei, Cambodia, China (Mainland), Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

Oil Exporters (28)

Algeria, Angola, Azerbaijan, Equatorial Guinea, Gabon, Islamic Republic of Iran, Iraq, Kazakhstan, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Sudan, Syrian Arab Republic, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Venezuela, and Yemen.