

STYLES OF RISK MANAGEMENT IN CENTRAL BANK RESERVES MANAGEMENT *

Modern markets place great emphasis on risk control as the key to successful asset management, and central banks are no exception to this. Risk has always been an important part of investment analysis, and it is particularly appropriate for central banks to focus on this because they are considered as trustees of public assets. This paper discusses the evolution of central bank reserves management and the merits of a balance sheet approach, i.e. managing the foreign currency liabilities and assets together.

The Management of National Foreign Currency Reserves

All countries without exception have foreign exchange reserves, and, whether they are large or small, the management of these national foreign currency reserves is a key duty of the central authorities. Indeed, this is true for all countries with perhaps the single exception of the United States, where, as the country with the world's reserve currency, it may be less important. However even for the United States the reserves are a non-negligible policy item.

The administrative arrangements for the ownership of reserves are not identical across all countries. In some countries they are formally on the balance sheet of the central bank, while in others they remain with the central government more directly. However the duty of managing the reserves is nearly everywhere entrusted to the central bank. Central banks in various countries face very varying situations, both economic, in terms of their country and their country's economy, and structural, in the way the central bank fits into the government framework and the way it responds and reports to the central government.

Some of the challenges facing those central banks are also very different. For example, the United Kingdom (UK) has oscillated between being in a fixed exchange rate system and a floating exchange rate system. In Japan's case, the problem is that of a currency which has at various times in their history been sent far too high by the international markets for the authorities' comfort. Other countries have non-convertible currencies, multiple exchange rates, and so on.

Given these very different circumstances facing central banks, one might expect that this would lead to very different responses, and great variances not just in the way reserves are managed, but in the fundamental objectives which the reserves managers wish to pursue. In fact we observe that this is not generally the case. There are very strong common features and common factors between the reserves management operations of nearly all central banks, and a high degree of agreement about the proper objectives for official reserves management. This paper is being presented to a number of central banks and a number of reserves management operations. We do all face different circumstances, but the response which central bank reserves management managers will formulate to those challenges will tend to be very similar.

There are three main reasons why official reserves management operations share a relatively common structure. The first common feature is that the assets under management are public assets. Central bank reserves managers are trustees for the public, and will therefore have a fiduciary responsibility to the ultimate owners to preserve those assets. This leads to a high premium being placed on security. Security is very important for central bank reserves managers, and this is true whether or not the assets are actually on the central bank's own balance sheet. It does not make any difference whether they are on the central bank's balance sheet or on the Finance Ministry's balance sheet. Wherever they are, they are public assets and this imposes a fiduciary duty on the central bank.

The second common feature is that, in most cases, the assets are there to be used. Very few

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central banks hold assets for their own sake, i.e. as some form of investment portfolio; instead, the reserves are a tool with which to further government policy (usually exchange rate policy or monetary policy). This means that the assets in the reserves must always be available. Not only are they there to be used, they are there to be used in their entirety if the person controlling them, usually the Finance Minister, wishes them to be, and they are there to be used whenever he says. A central bank has to be able to supply cash, up to the full amount of the reserves they hold, whenever policy dictates that the reserves need to be used. And since central banks do not know when they are going to be asked to call upon the reserves, and they do not know how much of those reserves is going to be called upon, they will always value liquidity extremely highly. If a central bank holds reserves but cannot liquefy them in a crisis, it negates the rationale for holding those reserves.

The third common feature is that the reserves are often relatively large. This has been particularly the case in recent years and it is particularly the case in Asia. Some of the Asian central banks have created very large portfolios indeed; so large that, despite the comments above, they must really now be considered as containing elements of “store of wealth” functions, as well as being tools of monetary policy and the other usual uses of the reserves. But even for countries where this is not the case, the reserves are often a substantial sum compared to the rest of the government’s finances. Therefore, returns on the reserves are not unimportant, and it is legitimate for the managers of the reserves to try to maximise that return. In some countries there is some discussion as to whether a profit-maximising motive is entirely appropriate for the public sector - many public sectors have a slightly puritanical view of profit, as if it was something only the private sector was either suited to or even able to pursue. Increasingly, however, such sentiments are losing favour and the pursuit of returns is seen as a legitimate and central element of official reserves management. This is not just true where, as in Asia, the reserves are very large relative to the national economies. It is now widely accepted as valid for all central banks.

It is not, therefore, very surprising that most central banks now agree on the classic trilogy of

objectives of official reserves management of security, liquidity and profit. And, furthermore, most agree that security and liquidity are dominant, with the pursuit of extra returns being conducted subject to adequate security and liquidity being maintained.

The Evolution of Official Reserves Management Since the 1960s

In order to understand the current state of play in official reserves management, it is useful to consider a very brief and simplified history of the subject. During the heyday of the Bretton Woods era, foreign currency reserves were almost entirely a tool for exchange rate control. They were not, by today’s standards, very large but this was not a significant issue because neither the foreign exchange markets, nor indeed the central banks, were particularly sophisticated or aggressive, at least initially. (It is interesting to consider the scale of intervention in earlier days: if we go back before the Bretton Woods era to the Gold Standard between the wars, the intervention carried out by the UK in defence of sterling in the 1930s was some £10 million on one day followed by some £18 million on the next – these figures were considered huge, and indeed unsustainable, and the UK elected to leave the Gold Standard rather than continue with such intervention.)

Towards the end of the 1960s, pressures built up on the Bretton Woods system and eventually caused it to break up. Markets became more aware of their power to move exchange rates, and less willing to accept the word of central banks as absolute. The newly floating exchange rates moved around with considerable volatility, and there were some notable early successes for “market forces” over the authorities. For example, the pound sterling, which went into the European Economic Community’s “Snake” in mid 1972, was forced to leave it six weeks later. However, central banks were quite slow to respond to the markets. Reserves management remained very little more than liquidity management, with a very high emphasis on security. Moreover, profit, the third of the three objectives of modern reserves management, remained almost totally ignored. Indeed, the common analysis was that reserves were necessary for policy reasons, and there was an inevitable cost in holding them which was to be seen as a cost of

policy. In many central banks it was not even measured, and as a result was not a subject of any analysis or discussion either within the authorities themselves or in a wider public forum.

This could not continue forever, however, and as the 1970s progressed, and the currency volatility did not decrease, central banks began increasingly to measure these costs. This inevitably and swiftly led to consideration of how the costs could be minimised. This was a common learning process for most central banks, and most central banks have now gone through it sometime in the past.

The 1970s was a very volatile time, not just for currencies but also for interest rates. The energy crisis in the real world led to financial markets, particularly interest rate markets, becoming much more volatile. This encouraged central banks to reconsider their very passive attitude to their reserves management, particularly central banks who had the reserves on their own balance sheet and were therefore themselves directly affected by changes in the valuations of their foreign currency holdings. A general awareness among central banks of the currency and interest rate mismatches that they were running in their holding of the reserves became much more common, and with it a desire to minimise the risks attached to them.

At the same time as markets were becoming more volatile, two other developments were taking place. Markets were becoming much more accessible to international investors in general and central banks in particular, and spurred by this, tools for managing the risks were being developed, enabling investors to amend their portfolios to fine-tune their positions and control their risks. All of this led to both a growing desire and a growing ability to manage foreign currency reserves more actively. There was both the need, because the risks in the balance sheet had been displayed very graphically by the volatility in the markets, and there was the ability to do so, created by the new instruments which were then gaining ground and acceptance. Furthermore, once central banks began to manage their reserves more actively, they quickly became aware that the costs connected with holding reserves were not inevitable and could be reduced by active management. Indeed, central banks increasingly began to focus on the

opportunities for profit and for making genuine returns on the reserves.

The very high interest rates of the early 1980s, largely a consequence of Paul Volcker's policy at the Federal Reserve, enabled those who held long-term fixed income assets to make large gains as the decade unwound. Long-term interest rates have generally fallen overall throughout the last 15 years, but this was particularly pronounced in the five years from December 1981, the period when many central banks were for the first time moving to much more active reserves management. Although bonds did not produce positive returns every year, it became clear to central banks that there was money to be made in longer term securities and that they could therefore go beyond their original home of the money markets to their advantage.

Equally, the development of a Eurodollar market (indeed, euromarkets in general, but predominantly Eurodollars) seemed to offer central banks almost risk-free anomaly arbitrage. It was very attractive for a central bank to buy bonds when they were at good spreads to the underlying government market, and then hold them until they had tightened in, perhaps as the primary supply was absorbed. This "warehousing" of bonds was profitable and almost risk-free provided that the central bank was not forced to sell the bonds before they had appreciated: since in general central banks were not publishing their investment results very frequently (not even to internal management), they were able to hold onto positions for longer than most investors and such strategies were therefore ideal. Even after the then rather wide bid-offer spreads in the euromarkets, it paid handsomely for central bank reserves managers. This, again, therefore rewarded a more active and profit-oriented style.

As a result of these developments, profits became, not just an acceptable motive, but in some cases very large. These were a very welcome addition to national Treasuries, particularly those which were beginning to feel in the late 1980s the pressure to rectify fiscal excesses of the early 1980s and late 1970s. Treasuries have found profits on reserve management or profits on central banks as a whole a useful source of funds to help them rectify this position, and for this reason too active reserve management for profit was encouraged.

There were obviously some interested bystanders to this development, in particular the securities houses. They were quick to welcome this major new class of investor, who represented very high quality customers for them. Many securities houses set up training courses and seminars for central bankers, and this was yet another boost to the by now widespread acceptance that it was appropriate for central banks to run their reserves management operations as a profit centre.

The 1990s have however on balance been less encouraging for central bank reserves managers. The markets have become increasingly liquid and sophisticated, which has greatly reduced profit opportunities from anomaly trading. In particular, the actions of the central banks themselves in the euromarkets mean that the easy, almost risk-free anomaly arbitrage plays have now very largely disappeared. Unfortunately national Treasuries are still under pressure and central banks and their governments have been reluctant to forego the profits that they are now used to. As a result, many central banks have had to reconsider their strategy if they wish to continue to generate the level of profits from their reserves that they have become used to. Clearly, one way to do this has been to move out along the risk curve and take on more risky strategies. Some central banks have done this knowingly and perhaps rather more central banks have done so unwittingly, without fully realising that that is what they were doing.

This change of style has greatly increased the requirements for computer support, risk control systems and the like. Many central banks base much of their information technology (IT) support for reserves management on systems built largely in-house, and these are seldom at the leading edge of the market. Keeping abreast of developments in IT support for complex market operations is expensive, as the securities houses themselves have shown with their commitments in this sphere, and few central banks have the budget to keep their systems as far advanced as they would ideally like.

Moreover, the greater complexity of the markets in which central banks invest, and of their own operations, has also placed great demands on their investment staff. These staff are increasingly asked to operate much more like their private

sector counterparts in the fund management industry and yet, whereas national debt offices are sometimes able to escape the civil service pay scale, central banks find it very much more difficult to match market rates of pay for their reserves management staff, who typically represent only a very small proportion of their overall establishment. This similarity of the work with the private sector, coupled with the difference in salary scales, has meant that many central banks operate under the expectation of losing experienced staff after a few years in the reserves management area.

These factors have led to central bank reserves management operations often being slightly understaffed and slightly under-resourced, with experience at a premium. It is difficult to keep staff and, therefore, keep experience. And the IT systems are often not quite as good as they should be, given the size and the nature of the public assets that are under management. The volatile markets of the last few years, particularly 1993/94, have further stretched central banks.

To summarise, the passive in-house management style adopted in the 1970s has been replaced by a much more active style, profit-seeking approach. Profit is now widely seen as a legitimate objective, albeit still as the third of the three in the reserves managers' trilogy. This has posed new challenges as market complexity and volatility increases. In retrospect, the 1980s saw central banks catching up and narrowing the gap on the market in terms of their level of sophistication but, more recently, they have been falling behind again. The market, as it were, has taken another leap forward, particularly in IT, and central banks are faced with the challenge of maintaining staffing and systems at the necessary level. And as a corollary the possibility of outright losses from central banks' reserves management operations has therefore grown.

The Focus on Risk Control, and the Use of Balance Sheets

Partly with the increased possibility of losses, the attention to risk has also grown. Investors generally are increasingly focusing on risk as well as return, and central banks are not immune from this. Risk has always been an important part of investment analysis, but it is particularly appropriate for central banks to focus on this because it is at

the core of their position as trustees of public assets. It could be said, indeed, that the avoidance of unacceptable losses is the essence of managing public funds.

One very important decision is whether the assets are managed on their own as an asset portfolio, or in conjunction with a set of liabilities. Let us first consider the position where foreign currency reserves are managed in isolation to foreign currency liabilities. This is much the more common approach, and the usual arrangement in such a situation is that the foreign currency reserves are held on the central bank's own balance sheet. This is particularly common in Europe: most central banks in Europe hold their country's reserves on their own balance sheet but do not hold their country's liabilities. It may be that the country has no public sector foreign exchange liabilities. This is the case in the Netherlands or in Germany, for example. Or else they may be held at the Ministry of Finance or National Debt Office.

The central bank's balance sheet, therefore, looks similar to that shown below. On the liability side, there are capital and reserves, the note issue, and banks' balances and possibly some other accounts. On the asset side, there will be fixed assets, the foreign currency reserves, some domestic securities and perhaps other assets.

LIABILITIES	ASSETS
Banks' balances and other accounts	Fixed assets
Note issue	Domestic securities
Reserves and accumulated profits	Other domestic assets/accounts
Shareholders' capital	Foreign currency reserves

From a risk control viewpoint, the most obvious feature of such a balance sheet is that it carries unavoidable *currency* risks, because the liabilities are all in domestic currency whereas not all the assets are, and largely unavoidable *interest rate* risks, because while most of the liabilities are at floating rate (or indeed free, like the note issue), this will not necessarily be the case for the assets. Moreover, because management of the central bank's balance sheet is likely to be undertaken by a different area of the bank from the reserves managers, the focus on these risks may not be a priority. Also, there may be difficulties in managing the balance sheet too actively because of

interference with the operation of monetary policy. A central bank's balance sheet can of course be managed but, in many senses, it is a fairly reactive balance sheet.

Even where the central bank does wish to set a benchmark for the foreign currency reserves, such a balance sheet offers no very clear guide as to what this benchmark should be. There are no particular liabilities specified as the counterpart to the reserves, and no obvious reason to choose one neutral currency mix or interest rate profile as opposed to any other. One possible solution is to discuss benchmarks with the country's debt office or the Ministry of Finance, or whoever is responsible for the foreign currency liabilities. But there are potential conflicts here, because what is ideal for the debt office, in terms of what is the best profile for the debt, may not be the best profile for the reserves in the context of this balance sheet. In the context of this balance sheet, the central bank may well wish to minimise the interest rate risk, which would imply holding either short duration or floating rate assets as a majority of their assets. This is not a policy likely to be optimal for the debt office.

The alternative approach, and the one used by the Bank of England, is to manage the foreign currency liabilities and assets together. There are several options for the balance sheet under such a regime, depending on the ownership of the assets and liabilities. There is a difference here between "manage" and "own": in the UK's case the Bank does not own either the assets or the liabilities; both remain in the name of Her Majesty's Treasury and the Bank acts as manager for both the assets and the liabilities. But the analysis is very similar in the case where the central bank has both assets and liabilities on its own balance sheet, or even where the central bank and the rest of government enter into some formal agreement to transfer the liabilities from one to the other (for example an off-market exchange of obligations between the central bank and the government).

There are several options for the balance sheet under such a regime and the UK's is shown below. On the liabilities side are foreign currency liabilities and what is described as owner's capital. On the assets side, there are assets hedging the liabilities and net assets. Since the UK's foreign

currency reserves exceed the foreign borrowing, net foreign currency assets are positive and on the assets side.

LIABILITIES	ASSETS
Foreign currency liabilities (i.e. foreign currency borrowings)	Foreign currency reserves hedging liabilities
Owner's Capital	Net foreign currency reserves

The “Owner’s Capital” is an essential part of this balance sheet. It is the counterpart to the net foreign currency assets and is the equivalent of the shareholders’ capital and reserves on the previous balance sheet. One of the advantages of this approach is that it enables the managers of the balance sheet to focus on this element and therefore on the net foreign currency reserves. This focus can help the central bank assess its response to two questions which are traditionally very difficult for reserves managers to answer, viz when should the country borrow to finance the reserves and when should it run down the reserves to pay back the borrowing. For the UK, these questions are at the forefront of the discussion of the optimum size of the reserves, because the UK only borrows in foreign currency to provide reserves. Any foreign currency borrowing is added to the reserves, ie to the balance sheet, rather than sold for domestic currency to fund the government’s borrowing requirement.

In the UK the owner’s capital entry is assumed to be a sterling liability. This is because, if the Chancellor of the Exchequer wished, he could ask the Bank to sell the net reserves for sterling, thereby cutting the government’s borrowing requirement in the domestic market. Further questions then arise as to the interest rate to put on these theoretical liabilities, and their term: these are non-trivial questions and the Bank finds the balance sheet approach useful in making the relevant decisions.

It used to be considered that the owner’s capital, i.e. the sterling liabilities on the foreign currency balance sheet, should be considered as being at the same maturity as the UK’s domestic borrowing in the gilt market. At the time the average maturity of UK domestic borrowing was about five years. Therefore, the hypothetical maturity of the owner’s capital was also put at five

years, and this led to the Bank holding foreign currency assets with a maturity of around four to five years as well. More recently the correctness of this has been reconsidered, and there is more of a tendency now to consider that the sterling liabilities on the balance sheet are held at floating rate, and therefore the net foreign currency assets that the Bank manages on behalf of the Treasury also tend to be floating rate money market instruments.

Benefits of the Balance Sheet Approach

The balance sheet approach has several consequential advantages. Firstly, for much of the foreign currency assets there is a natural benchmark, the liabilities. The currency and interest rate risks on the assets held to hedge the liabilities can be eliminated almost completely by holding the assets to match exactly (or as near exactly as the managers wish) the cash flow obligations of the borrowings.

Secondly, discussion is directed to the size and composition of the net reserves. The construction of the balance sheet highlights that this is the part which carries excess risk. It remains the part of the balance sheet where market movements can affect the overall position. By focusing directly on the net reserves, attention is directed to the part of the balance sheet at risk, and questions such as the size, maturity and composition of those net reserves can be assessed. This is valuable, because these are areas that central banks typically do not spend a great deal of time on.

For the UK and other European Union central banks, these questions are becoming very timely as European Monetary Union approaches, both because the European Central Bank will be creating its balance sheet afresh with no constraints from existing obligations and accounting principles, and because member central banks will wish to consider what the optimum size of their foreign currency reserves are when they no longer have direct responsibility themselves for their currency. The Bank of England does find that the balance sheet approach sheds a new perspective on the debate, and in discussion with central bank colleagues from elsewhere in the European Union, some of the ideas that we bring to the table are rather different because of our different approach.

Another major advantage of this approach is that attention is focused on the need to make a realistic assessment of the cost of holding reserves, particularly the net reserves. This is very important, because unless the cost of holding reserves is known, one cannot answer questions such as the optimum size of the net or gross reserves.

Finally, the balance sheet approach also raises the possibility of using manipulation of the liabilities side of the balance sheet to achieve a desired overall risk position or a desired position in the markets. Such operations are less easy for central bank reserves managers who have responsibility only for the assets and who may have no relationship with the owner of the liabilities.

Conclusion

This paper has considered the evolution of central bank reserves management and has argued that a balance sheet approach has many merits in assisting the authorities on some of the more difficult policy decisions connected with reserves management. Three main conclusions can be drawn.

Firstly, modern markets place great emphasis on risk control as the key to successful asset management, and this is as true for a central bank managing a country's reserves as for those managing a mutual fund, a pension scheme or whatever.

Secondly, from a national perspective, risks inherent in holding foreign currency reserves are

best managed at as high and as aggregate a level as possible. The Bank of England's experience is that if risks are disaggregated excessively, then control is sacrificed and the accumulation of a large number of small risks can become an unacceptably large risk, whereas if a country's foreign exchange position can be aggregated at a high level, the overall risk can be assessed and therefore minimised.

And thirdly, where the institutional framework permits, there is much merit in taking assets and liabilities together. This is not always possible, and for countries where it is not possible to do this, or where there are independent agencies managing the two halves of the balance sheet, the challenge becomes one of communications and identifying a common objective which does not interfere with their separate objectives. But, where the institutional framework permits (as it does in the UK), there is much merit in the balance sheet approach. Furthermore, even where the government does not have any foreign liabilities, there are nevertheless notional liabilities against which the foreign currency assets are being held, because there is always the possibility that they can be sold for domestic currency, and there is always something, therefore, on the other side from the assets, even if it is only an opportunity cost. So, even where there are no foreign liabilities, the balance sheet approach does highlight the opportunity costs and risks of holding net foreign currency reserves. ☉