



Speech to the South African Reserve Bank on 18 February 2005 by Robert D Sleeper, Head of Banking Department

How central banks manage their finances

The views expressed are those of the author and do not necessarily reflect the views of the BIS.

It is a great pleasure to visit the South African Reserve Bank again and to have the opportunity to speak to you on how central banks manage their financing. As someone who worked in asset/liability management for 17 years in the private sector and more recently at the BIS, this is a subject that has fascinated me for quite some time. For some, the subject is seen as somewhat arcane - not that relevant to the “real” business of central banking, and even less relevant to the outside world. Although I agree that the real business of central banking should not be driven by financial considerations, financial considerations can become an important constraint.

At first blush the funding of a central bank as compared to a commercial bank seems relatively easy. On the asset side, central banks are usually heavily restricted in the instruments they can hold. The type and the amount of lending a central bank can do is limited either by its internal statutes or by law or both. In general, one can identify two types of central banks, reflecting two views on what it is proper for the central bank to invest in. Type 1 reflects the idea that central banks should not be involved in commercial lending because of likely conflicts of interest with their policy and regulatory functions and the risk of non-neutrality. If commercial lending is undertaken for policy reasons, it must be undertaken in strictly neutral ways, and collateralised with high quality paper. Only occasionally would a central bank be asked to do uncollateralised lending and quite often in such cases the central bank will insist on a guarantee from its government. As a result, for Type 1 central banks, most of the assets on a central bank’s balance sheet are government securities. The remaining items might be gold and foreign exchange reserves, but in some countries these are held by the finance ministry, ie the government instead.

Type 2 central banks restrict not only the amount and type of commercial lending but also lending to the government. These central banks - the majority - additionally reflect the idea that they should not be a source of financing for the government. As a result, for Type 2 central banks the proportion of government securities on the balance sheet - if any at all - is restricted, and instead the bulk of assets is in the form of foreign exchange reserves and gold. I will discuss the implications of holding gold and foreign exchange reserves a little later on in this speech.

Let us focus for the moment now on Type 1 central banks, ie those central banks whose dominant asset is government securities. It would appear to me, wearing my commercial banker hat, that the financing of a Type 1 central bank is pretty easy - especially when compared with financing a commercial bank, where the assets are much wider in scope and more variable in quality. Not only is the asset structure more straightforward, but mismatches between the maturity characteristics of those assets and the liabilities that fund them is of fundamentally less importance for a central bank than a commercial bank - an issue that I will return to later. Central bank liabilities consist of banknotes and the deposits commercial banks may be required to hold with them. The former is a non-interest bearing liability whose maturity lasts as long as there is a need for banknotes, while the latter (commercial bank



deposits) have maturities as long as reserve requirements remain in place and, moreover, are either non-interest bearing or bear rates of interest significantly below market rates.

So looking at things from an asset/liability standpoint, the central bank with zero gold and foreign exchange reserves earns a profit equal to the interest income on the government securities it holds plus whatever interest it earns on collateralised loans made through its discount and Lombard facilities. This appears to be such an easy way to make money that it only becomes politically and socially acceptable as long as the central bank acts as a public institution; ie remits most of its profits to the government, even if it is privately owned, as is the case in South Africa. We need to be very clear on this point, namely that because its profits stem essentially from its role as issuer of the currency and maintainer of obligatory reserve requirements and because such revenues escalate as inflation increases central banks must be guided by clear policy and not financial objectives. And it is because the financial gains from inflation accrue to the government that central banks are granted the day-to-day independence from government to pursue policy objectives rather than financial ones.

So a central bank with little foreign exchange reserves or gold earns “easy” profits so long as government securities pay interest. In the baseline case, the problems to solve are the one just mentioned - preventing policy decisions from being diverted by financial considerations - and preventing easy income from engendering slack attitudes on the part of central bankers towards the use of public money. What departures from this baseline should we be concerned about? Before we get to foreign exchange reserves and gold, there are several domestic concerns that should be mentioned.

First, the presumption that central bank claims on government bear interest is not trivial. In several countries fiscal dominance has at times included the obligation of the central bank to finance government at such low interest rates that profitability has been compromised. For this reason loans to government should typically be in the form of marketable securities bearing market rates of interest. This should include interest stemming from claims arising from losses on foreign exchange market intervention. As I understand it, the claim that the South African Reserve Bank had on the government was not interest bearing, but the claim is being paid off without so far compromising the financial position of the Bank.

My second point is about profitability. Normally monetary policy operations should be profitable. Whether implementing monetary policy through open market operations or standing facilities, the central bank purchases or borrows securities (repos), ie lends money, when money market interest rates are high and it wants to add liquidity to bring them down. Conversely, it sells or lends securities, ie borrows money, when money market interest rates are low and it wants to withdraw liquidity in order to raise rates. These activities are obviously profitable for the central bank. Furthermore, in a growing economy the central bank’s balance sheet must grow, because it is at the base of the credit structure and money supply. Therefore, over the course of a year the central bank must buy more securities than it sells, thereby expanding its balance sheet. Since the extra assets it acquires are financed by an increase in commercial bank deposits, central bank profits will rise as the money supply grows.

There can, however, be limits to the volume of market operations that a central bank can engage in before distortions arise in markets. On occasion, central banks can find themselves being forced to conduct such large volumes of market operations that collateral availability and other considerations force the central bank to provide liquidity at progressively lower rates. Examples include the mountain of commercial and trade bills that ended up on the central bank’s balance sheet following attempts to control credit creation by government over-funding in the UK in the 1980s, and the persistent government over-funding in New Zealand in recent years. In both cases this excessive government bond issuance required the central bank to make up large and persistent liquidity shortfalls on a daily basis in an environment where collateral acceptable to the central bank became scarce.



South Africa faced a similar problem not so long ago in the context of operations to stabilise domestic liquidity in the face of large-scale foreign currency intervention. The consequence of these activities is that the central bank is forced to carry progressively lower-yielding assets or raise funds at progressively higher costs, thereby reducing its profitability for the duration of these operations. This duration may last for a considerable period of time.

A third potential concern is associated with the low level of inflation that central banks have managed to achieve. Consistently low inflation leads to lower interest rates and a lower positive interest spread between the central bank's assets and liabilities. Indeed in a deflation environment with rates at zero there is no spread left at all. Moreover, in such circumstances monetary policy operations can involve central banks taking on large volumes of high-priced assets with significant revaluation risk attached. Some central banks have found themselves in this position in recent years - most notably the Bank of Japan which has accumulated large amounts of Japanese Government Bonds at very low yields.

Finally, in recent years a new concern over the outlook for central bank profitability has emerged. This is the growth in credit and debit cards and the potential growth in e-money which collectively reduce the need for people to hold currency. Looking ahead I suppose we could envisage the day when we reach the cashless society. When this happens, central banks will lose an important source of income. This can of course be compensated by the receiving of non-interest bearing demand deposits from mandatory reserve requirements, but these are also declining as the authorities rely less on lower reserve requirements to manage monetary conditions and payments systems. This decline in the profitability of central banks might lead some to consider charging directly for the services they provide, such as providing intraday overdrafts as a means of keeping the payments system functioning. But there are clearly limits to how far this can go before legitimate cost recovery becomes a disguised tax mechanism.

Despite these concerns, maintaining the profitability of a central bank which is focused purely on domestic monetary policy is still relatively easy compared to one which also has to worry about its exchange rate. Let us consider a situation where the central bank carries not just government bonds and a few domestic loans on its balance sheet but in addition gold and foreign exchange reserves. Traditionally gold was a zero interest asset and, although it is true that nowadays some central banks can and do lend their gold, the facts are that (a) the return is very low and (b) many central banks are unwilling to take the risk and do not lend their gold at all. So holding gold drags down the spread between return on assets and cost of liabilities and from a net interest income standpoint reduces central bank profitability. However, from a portfolio diversification standpoint, holding gold has proven to be an excellent investment. We at the BIS hold a considerable amount of gold and in recent years have benefited considerably on a valuation base from the rise in the price of gold.

I shall discuss the issue of whether or not central banks should mark their reserves to market a little later on.

But now let us turn to foreign exchange reserves which for the most part I have left out of the picture thus far. This is where the problem can become more serious. The critical issues in determining the profitability of holding foreign exchange reserves are (1) the relationship between domestic interest rates and the interest rates on the foreign exchange reserves and (2) the impact of the evolution of the exchange rate on the domestic currency value of the reserves.

Looking at the interest rate spread question first, if domestic rates are high and the rates on the reserves are low, potentially the central bank has a problem. For example, when the South African Reserve Bank buys dollars and sells rand, to avoid causing inflation, large-sized purchases of foreign exchange must be financed, not by balance sheet expansion, but by asset substitution. The Reserve Bank must sell or lend some of its domestic securities (higher-yielding securities) to make room for the lower-yielding dollar securities. By doing so,



the Reserve Bank drains the liquidity generated by its intervention, ie sterilises the impact of its intervention. But it also reduces its profitability, because it substitutes lower-yielding assets for high-yielding assets. Another alternative for sterilising intervention, as you have discovered, is for the central bank to fund itself like a commercial bank, ie by issuing short-term liability instruments at market rates of interest to finance its dollar investments. At times when collateral becomes scarce, this can become a cheaper source of funding for the central bank, but this still does not compensate for the interest differential between rand and dollars. In this situation the central bank faces a negative spread: borrowing in domestic currency at a higher rate than the return on its foreign currency investments. This produces a running loss.

However, for countries with very low interest rates, perhaps associated with deflation pressures, sterilisation of dollar intervention can yield a running profit. In fact, sterilised intervention for such countries is equivalent to what is commonly called a carry trade in the foreign exchange market, ie borrowing a low interest rate currency, such as the Japanese yen, to fund the acquisition of a high interest rate currency.

Let us return now to the issue of marking to market. The running loss or profit is not the end of the story. Whenever the exchange rate changes, so does the market value of the reserves in terms of the value of the liabilities used to fund those reserves. Traditionally central banks have not marked to market their reserves, thereby not making obvious these changes in market value. There is a school of thought that would argue that, because central banks are required to act in the public interest and not seek to maximise profits, they should not be required to mark to market. The problem with this argument is that, in seeking to act in the public interest, central banks can end up in situations where they lose a lot of money. Whether one likes it or not, foreign exchange intervention is risky. Whenever you sell the rand and buy the dollar - unless you have a need for dollars to buy something - you are taking a risk. This holds whether you are in the private sector or whether you are a central bank. If a central bank intervenes heavily to keep its currency down, it builds up a big foreign exchange position. And if its currency ultimately goes up anyway, not only might it have a negative carry on its foreign exchange reserves, it will also have a revaluation loss.

Now of course the idea of building up reserves is to have them available when your currency goes down. When this happens, you can sell your reserves back into the market, stabilise your currency and - oh, by the way - make a profit. Hopefully this profit will be large enough to cover any negative carry entailed by holding the reserves in the first place. Central banks that succeed in this endeavour are acting as stabilising speculators. If and when they succeed, they are acting both in their own interests and in that of the community.

Unfortunately, central banks have often found that things do not work out so well. Sometimes the central bank intervenes heavily to keep its own currency from either appreciating or depreciating, builds up a big position, but, then for reasons beyond its control (macro-policy shifts, political events or what have you), is forced to give up and pull out of the market. The resulting move in the exchange rate may be so great that it takes years to return to its average rate of purchase or sale. Meanwhile the cost of funding the position becomes so great and the likelihood of the exchange rate falling to its old level so small that a decision is made to liquidate gradually at a loss.

Mark to market accounting has the advantage of bringing this issue to the surface sooner rather than later. I note that the Reserve Bank has recently adopted fair value accounting in terms of IAS39 - with the only exception I understand being the treatment of gold reserves. I would be interested to know to what extent the considerations I just outlined were relevant to that decision. I also note that many of the largest reserve holders have not yet gone down this track for various reasons including, in some cases, because they may not hold enough capital to withstand the short-term volatility.



In other cases, foreign exchange reserves are held in the finance ministry, thereby relieving the valuation pressures on central banks and passing them on to the government. Your arrangement whereby revaluation risks are due to the government - if I understand the situation correctly - might provide a useful model for others in this regard.

Globally, foreign exchange reserves have nearly tripled over the past decade, rising to more than US\$3 trillion in 2004. Initially countries built reserves as insurance against a rainy day but in some cases it would appear that they also have in mind protecting their exporters against a falling dollar. But the potential financial cost of holding such rainy-day insurance and attempting to protect exporters can be substantial. For the average emerging market economy, in 1990 around a third of foreign exchange reserve holdings were effectively funded by currency on issue, reducing the interest margin. Subsequently, the proportion of foreign exchange reserves that is funded by currency has fallen to around one fifth, making for a larger financing gap to be filled by interest-bearing liabilities.

At the same time, because most of these reserves are invested in US\$ assets, the large fall in the dollar has significantly reduced the value of that investment when measured in local currency terms. Starting from the dollar peak at the end of 2001 back of the envelope calculations suggest the total loss in value could add up to as much as US\$ 100 billion, of which between 20 to 30% could have come from the US\$ 1.3 trillion worth of new investments in US\$ assets since the end of 2001. Even if we allow that one half of that loss offsets earlier revaluation gains from the dollar's exceptional appreciation, we still come up with a very high number with the potential for much greater losses should the dollar fall a lot further. Of course, a recovery in the dollar would immediately reduce these losses. Furthermore, I should add that those central banks holding gold will enjoy its mark to market benefits at times when the dollar goes down. As I mentioned earlier, these are the benefits gold has to offer as an instrument of diversification.

These mark to market risks together with the deterioration in the running interest rate margin associated with the holding of FX reserves have led central banks to search intensively for ways to improve the yield on them. A generation ago central banks were content to place their dollar holdings short term with commercial banks or in short-term government securities. The amounts they held were limited and only by keeping their placings short term could they be assured of having the liquidity in case they needed it.

Things have changed since then. Nowadays central banks move way out on the yield curve, looking for ways to improve return. Moreover, some are moving down the credit spectrum in a further attempt to reduce the cost of holding reserves. A few have even moved into equity investments.

In this area of intensive search for improved yield on reserve assets, the central banks are actually acting in the same manner as private sector investors. Usually this activity is restricted to investments outside the country itself. Nevertheless, risk management decisions must be free from actual, and perceived, conflict of interest. If, for example, a central bank were seen to be using "inside" information about policy to increase its own return on capital, trust - not only in the central bank but also in monetary policy - could be jeopardised.

The fact that central banks are increasingly taking risks in an attempt to improve the return on their reserves raises the question of whether or not they should be expected to hold capital against these risks, as would be expected of any firm in the private sector. Looking across the spectrum of central banks in different countries, there is in fact a wide variation in the extent to which central banks actually do hold capital. Most of these differences are historic and reflect earlier decisions about what arrangements are most suitable for providing it with adequate financial resources.

In the private sector, a key consideration in determining capital requirements is risk-taking, because capital serves as a buffer for financial risks. Now this is not to say that central bank performance should be measured, as in the private sector, by the return earned on its



capital. To say this would be to create a conflict of interest situation in a public institution between the pursuit of return on capital and the maintenance of its overriding public service objective - which is the implementation of monetary and exchange rate policies. Nevertheless, as will be clear from the issues we have covered today, central banks are exposed to financial risks. To some extent those risks depend upon basic decisions about the monetary and exchange rate system and the role of the central bank, and to some extent they are discretionary choices of the central bank. Especially in the latter case there is an argument that capital ought to play a buffer role in a similar manner to the role in the private sector. Of course the issue is vastly more complicated when both policy and non-policy considerations, and involuntary and voluntary risk-taking, are mixed in the same institution.

Let me finish by saying that, from a visitor's perspective, South Africa's recent history would seem to provide a fascinating example of these issues at work. Here, on the face of it, the apparently arcane subject of how central banks manage their finances has at times been of strategic importance, bearing directly on the Bank's ability to discharge policy obligations in a manner that preserves both policy independence and accountability for the use of the taxpayer's resources. I look forward to hearing your reactions to my rough sketch of the territory, and learning more about how these issues can have real world impact.