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Choosing instruments in managing dollar foreign exchange reserves[1]

Two years ago, managers of official foreign exchange reserves were pondering the uncertain but serious prospect of a shrinking stock of outstanding US Treasury securities. This concern reflected the fact that some three quarters of global foreign exchange reserves were held in US dollars, and their management traditionally favoured US Treasury securities. Today, with the US economy growing slowly after a shallow recession, and the effects of discretionary tax cuts being felt, the outstanding stock of Treasury securities is once again expanding. Moreover, while the risk of a war of unknown duration and expense attaches more than usual uncertainty to any forecast of future US deficits, there is little doubt that this expansion will continue for some time. The challenge posed by the gradual disappearance of the outstanding stock of the traditional investment vehicle no longer seems so pressing as it was two years ago. Managers of official foreign exchange reserves no longer face the gradual disappearance of the outstanding stock of their traditional investment vehicle as a given.

The pressure to achieve returns in an environment of lower interest rates may nevertheless pose other challenges to reserve managers. It puts the spotlight on reserve managers' choice of instrument. This note analyses the instruments in which central banks have invested their dollar reserves in recent years and poses three questions: How is the official dollar portfolio invested? How has the choice of instrument evolved over time? And how have recent events, including the return of recession and US fiscal deficits, lower Treasury yields and corporate defaults, altered its evolution?

How is the official dollar portfolio invested?

A top-down view …

The analysis in this feature is based, not on a bottom-up aggregation of central bank portfolios, but rather a top-down approach using just two sources: US Treasury data augmented by information collected by the BIS. The US authorities have recently published the results of one of their periodic surveys of foreign holdings of US securities. As a result, we have for end-March 2000

… based on US Treasury …

[1] The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

an unusually well grounded set of information on the instruments in which a significant proportion of official holdings of dollars are invested. Since not all officially held dollars are invested in US securities, we must add in officially held bank deposits and money market instruments, such as commercial paper, held in the United States. In addition, dollar reserves are also invested in dollar bank deposits outside the United States, as reported in data collected by the BIS. Finally, investments that cannot be readily captured are officially held dollar debt securities that were originally marketed outside the United States and remain in depositories offshore. Outstanding international debt securities denominated in dollars amounted to $4.1 trillion at end-2002,[2] of which $346 billion were issued by the sovereign and other government borrowers whose obligations are favoured by reserve managers.

… and BIS data …

The top-down view of *identified* official holdings of dollars based on US Treasury and BIS data suggests that US Treasury securities represented more than half (58%) of holdings in March 2000 (Table 1). As noted, however, this top-down view is not exhaustive: a bottom-up aggregation of dollar reserves shows a larger total. In particular, (top-down) identified holdings of dollars aggregate to a sum about 17% short of (bottom-up) estimated global dollar reserves ($1,130 billion versus $1,359 billion).[3] On the hypothesis of the accuracy of the US survey of foreign holders of US securities, then the Treasury share is lower. It would be in the neighbourhood of 48% of total official holdings of dollars, if unidentified dollar reserves are invested in eurodollar securities.[4]

… taking account of gaps in the data …

… suggests that US Treasury securities amount to about half of US dollar reserve holdings

Investments in US Treasuries bulk larger in holdings of long-term securities than in holdings of short-term instruments. Given the limitations of the data, the share of Treasury coupon securities in (top-down) identified long-

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[2] Summing straight bonds, floating rate notes and short-term issues from Tables 13A and 13B. The BIS formerly reported the obligations of state agencies, but, starting with this *Review*, has reclassified these as the debt of financial institutions or corporations (see p A79). The last reported amount of dollar-denominated debt securities outstanding issued by state agencies was $827 billion at end-September 2002. Agency debt is also an important investment habitat for central banks.

[3] $1,359 billion is the estimate of total dollar reserves for end-1999, while the $1,130 billion represents total identified dollar reserves three months later. IMF data show that total reserves grew by $27 billion or 1.5% in the first quarter of 2000.

[4] Note that this estimate is higher than the 43% estimated on the same basis by Fung and McCauley (2000), which was for end-1999, just three months earlier. This is because the new benchmark survey reported in US Treasury et al (2002) identified $492 billion in official holdings of US Treasury coupon securities for March 2000 rather than $422 billion for end-1999, which we had estimated based on the previous survey and subsequent flows. Given an $8 billion reported official inflow into US Treasury coupon securities in the first quarter of 2000, the implication is that our previous estimate for Treasury coupon securities in official hands at end-1999 was understated by $62 billion. The benchmark survey uncovered proportionally larger official holdings of long-term agency securities, $91 billion instead of our estimate of $32 billion plus a first quarter 2000 inflow of $8 billion. The survey also identified $12 billion in corporate bond holdings, compared to our estimate of $8 billion plus the first quarter 2000 inflow of $0.4 billion. Less surprising was the finding of $96 billion in equity holdings, rather than our estimate of $79 billion plus the first quarter inflow of $0.5 billion. In contrast to the upward revision of official holdings, the new benchmark survey reported in US Treasury et al (2002) indicated a half trillion dollar overstatement in overall foreign holdings of long-term US securities. See Nguyen (2002).

Instrument composition of US dollar reserves at end-March 2000

In billions of US dollars

	Short-term	Long-term	Total
Treasury securities	165	492	657 (58%)
Other assets	262	211	473 (42%)
Deposits in the United States	32	·	32 (3%)
Money market paper in the United States	104	·	104 (9%)
Offshore deposits	126	12	138 (12%)
Agency securities	·	91	91 (8%)
Corporate bonds	·	12	12 (1%)
Equities	·	96	96 (8%)
Total	427	703	1,130 (100%)
Memo:			
Share of Treasury securities in assets of the given maturity	*39*	*70*	·
Total estimated US dollar reserves at end-1999	·	·	*1,359*

Sources: Figures for US Treasury securities, agency securities, corporate bonds and equities are from US Treasury et al (2002), p 11. Figures for deposits and money market paper in the United States are from the US *Treasury Bulletin*, Tables CM-I-2 and IFS-2. Figures for offshore US dollar deposits are from the BIS international banking statistics, Table 5C. The figure for official dollar foreign exchange holdings for end-1999 is from BIS (2000), p 86. Table 1

term securities almost surely substantially overstates the actual share. Nevertheless, it seems safe to say that most holdings of long-term securities take the form of US Treasuries. In contrast, less than half of investments in short-term instruments are held in Treasury bills.

How has the choice of instrument evolved over time?

Three big shifts in the last 40 years, two of which involve more credit risk:

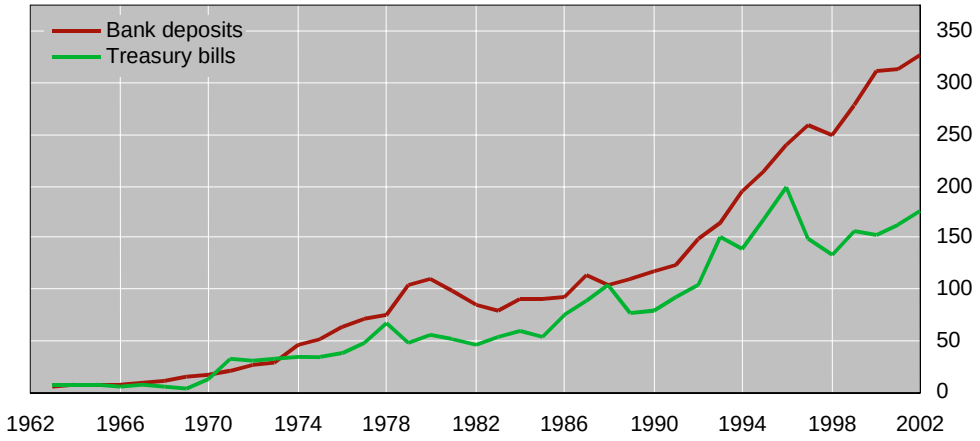
The evolution of reserve managers' choice of instrument over the last 40 years broadly shows three successive trends. First, they began to diversify their short-term holdings away from Treasury bills in the mid-1970s. Then they extended maturities during the 1980s and into the 1990s. Most recently, they have diversified their longer-term holdings away from Treasury notes. The first and third of these trends involved an acceptance of greater credit risk, while the second involved an acceptance of greater market risk. In all cases, the evolution of benchmarks has tended to remove the risk-taking from the immediate reserve managers.

... from Treasury bills to bank deposits and other money market instruments ...

Reserve managers shifted most of their short-term holdings out of Treasury securities and into bank deposits and private money market instruments in the 1970s, and further decreased the weight of Treasury bills in their portfolio in the late 1990s (Graph 1). Reserve managers presumably found that they could obtain better yields by investing in bank deposits, especially in the euromarket, rather than in US Treasury bills. Moreover, for a

Official holdings of Treasury bills and bank deposits

In billions of US dollars



Note: Bank deposits include money market paper held in the United States.

Sources: US Treasury; BIS. Graph 1

time holding bank deposits offered a way to beat the returns on (possibly informal) Treasury bill benchmarks, although with time these benchmarks tended to become more inclusive. Changes in the allocation between Treasury bills and other short-term instruments also reflected, at times, the changing composition of reserve holders as well as occasional flights to quality back into Treasury bills.

... from short-term to longer-term ...

The second trend emerged as the bond market entered a long bull period in the 1980s. Reserve managers found that they could enhance returns by extending maturities and continued to do so into the 1990s (Table 2). Among identified dollar reserves, long-term instruments rose from an estimated 54% to 62% of total holdings.

... and from US Treasury notes to more risky medium-term instruments

The last trend became evident in the 1990s, especially in the last few years of the decade, when reserve managers decided to enhance returns on their longer-term holdings by accepting more credit risk. Among identified long-term holdings, the share of Treasury securities dropped from 83% to 70% between 1989 and March 2000. As with the Treasury share of short-term instruments, the decline was most evident after 1997, implying a significant recent acceptance of credit exposure.[5] Holdings of debt securities issued by government-sponsored enterprises like Fannie Mae and Freddie Mac rose sharply, with their share roughly tripling from 2–3% to 8%. Corporate bond holdings also rose sharply but still amounted to no more than about 1% of total holdings in March 2000. Thus, the process of diversifying away from Treasuries, earlier well established at the short end of the yield curve, proceeded apace at longer maturities.

Perhaps surprisingly, equities held by official institutions remained the largest single class of reserve assets among identified holdings of long-term

[5] Truman (2001) infers: "Foreign official holders are adjusting to the reduced supply of Treasuries and substituting into other dollar-denominated assets."

non-US Treasury securities. Notwithstanding net sales during most of the 1990s, estimated capital gains lifted overall holdings. In the past, such equity holdings have figured in the core portfolios of relatively few official investors, but their numbers may grow despite recent equity price declines. It may be that these recorded investments also include equities bought by central banks to provide for their employees' pensions. Such funds are often managed on the central banks' own balance sheets, so that it is not possible to disentangle investments on the national account from investments intended to provide retirement security for central bank staff.

It needs to be emphasised as well that the extent of maturity extension and credit diversification captured in the top-down view may understate actual portfolio shifts, owing to the limitations of the data used. As mentioned earlier, the investment allocation of 17% of estimated dollar reserves at end-March 2000 was not identified. This was not the case for 1989, when only a negligible amount of dollar reserves was unidentified. If we had been able to identify the composition of all the official holdings of international dollar securities, they would almost surely show that an even greater extension of maturities and diversification away from long-term Treasury securities had occurred in the 1990s.

Instrument composition of US dollar reserves in 1989 and 2000

In percentages

	End-1989[1]			End-March 2000[2]		
	Short-term	Long-term	Total	Short-term	Long-term	Total
Treasury securities	19	45	64	15	44	58
Other assets	27	9	36	23	18	42
Deposits in the United States	3	.	3	3	.	3
Money market paper in the United States	6	.	6	9	.	9
Offshore deposits	18	.	18	11	1	12
Agency securities	.	2	2	.	8	8
Corporate bonds	.	0	0	.	1	1
Equities	.	7	7	.	8	8
Total	46	54	100	38	62	100
Memo:						
Share of Treasuries in assets of given maturity	*41*	*83*	.	*39*	*70*	.
Identified US dollar reserves (in billions of US dollars)	.	.	*403*	.	.	*1,130*

[1] Figures for US Treasury securities, deposits and money market paper are from the US *Treasury Bulletin*, Tables CM-I-2 and IFS-2. Figures for offshore US dollar deposits are from the BIS international banking statistics. Figures for corporate bonds, agency securities and equities are from the US Treasury Department, *Report on foreign portfolio investment in the United States as of December 1992*. [2] See Table 1. Table 2

How have recent events altered the choice of instrument?

Since March 2000, reserve managers have had to contend with the after-effects of the global decline of equity prices, a sharp deceleration of economic growth, falling interest rates, and increased political risks. How have they changed their allocation of dollar reserves among instruments?

Investments in short-term instruments hold steady as yields fall

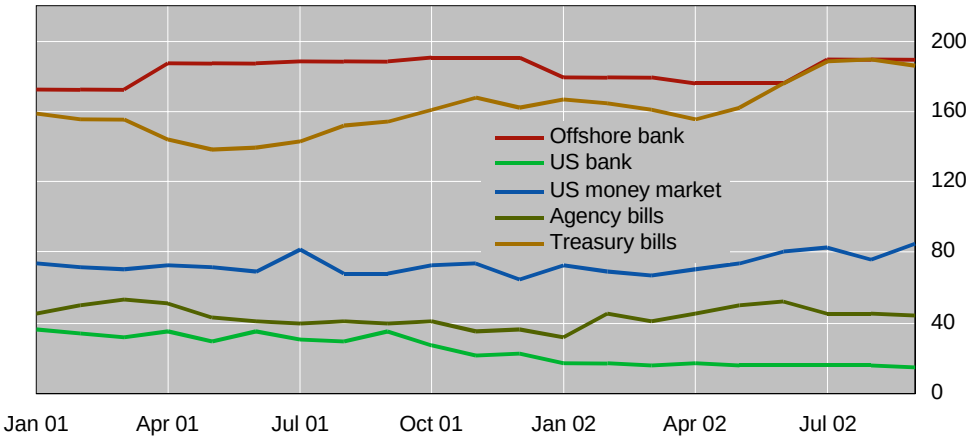
Overall holdings of short-term assets did not increase much in 2001–02, which is not surprising in view of the low yields on such dollar instruments (Graph 2).[6] However, despite the overall weak growth of official holdings of short-term instruments, interesting shifts occurred across the various categories. In particular, it appears that the earlier willingness to accept greater credit risk was reversed by recession and the events of September 2001. Going into the summer of 2001, official reserve managers were reducing their holdings of Treasury bills while increasing their holdings of offshore bank deposits. Subsequently, holdings of offshore bank deposits levelled off, while foreign official portfolio managers returned to the quality and liquidity of US Treasury bills. The decline over the same period of official bank deposits in the United States is particularly noteworthy, although its interpretation is not obvious. Official holdings of money market paper held up well in view of the contraction of commercial paper outstanding in this period. This probably reflects the fact that the contraction of outstandings was concentrated in lower-tier paper, while official holdings are concentrated in higher-tier paper.

Shift towards safer instruments after the events of September 2001 …

As with the management of their money market instruments, official reserve managers seemed in the third quarter of 2001 to become more risk-averse in managing their long-term fixed income portfolio (Graph 3). From April 2000 to August 2001, official reserve managers had reduced their holdings of

Official holdings of short-term US dollar instruments

In billions of US dollars

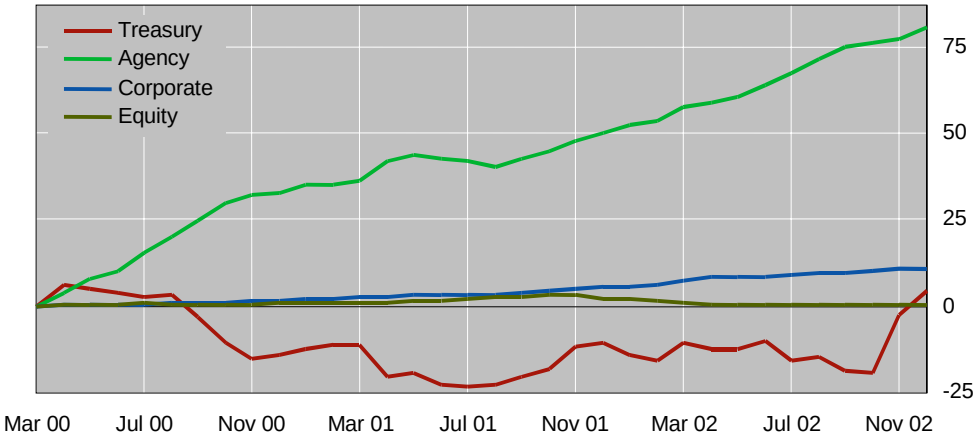


Sources: US Treasury; BIS. Graph 2

[6] The US Treasury's decomposition of agency paper from other money market paper begins in March 2001.

Official purchases of long-term US dollar instruments[1]

In billions of US dollars



[1] Cumulative figures since March 2000.

Source: US Treasury. Graph 3

Treasury coupon securities by $23 billion (neglecting capital gains) while adding $40 billion in agency coupon securities. With net purchases in late 2001 and late 2002, however, they bought back the Treasury coupon securities that they had sold in the earlier period. Meanwhile, they continued to buy agency securities. The lack of any reported gain in the liquidity of the Treasury market relative to that of agencies argues for the interpretation of greater risk aversion rather than a more passive response to liquidity developments.

… but investment in US corporate bonds continues

On balance, corporate accounting scandals and record corporate defaults led official reserve managers to slow but not to reverse their acquisition of corporate bonds. Indeed, heavy monthly purchases occurred in March and April 2002. The months since then, during which the loss of confidence spread from the stock market to the corporate bond market (Barth and Remolona (2002)), saw at most reduced purchases but no sales by official reserve managers.

Conclusions

In the 1990s, official reserve managers continued to extend the maturity of their dollar portfolio as they had in the 1980s. Among their long-term holdings, however, they doubled the weight on instruments other than Treasury notes. Overall, by early 2000, reserve managers appeared to have only about half of their official dollar reserve portfolio invested in US Treasury securities. More recently, their preference for agency and US corporate debt has further diversified the official portfolio away from US Treasury securities. The uncertainties of recession, corporate defaults and world politics appear to have slowed but not reversed this process.

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They also agreed that further reforms in the financial sector should be pursued vigorously.

... and exchanges views on weaknesses in market foundations

Meeting participants also exchanged views about policy responses that are necessary to address weaknesses in market foundations. Opaqueness of corporate governance practices in the region was cited as one of the factors that had led to the Asian crisis. Although progress has been made since then, it was felt that further reforms were necessary and their urgency had increased following recent corporate failures in major markets. All agreed that enhancement of corporate governance practices and strengthening of accounting and auditing practices were of critical importance. In this context, they expressed hope that an improved and coherent set of international principles and standards in these areas could be agreed upon as soon as possible so that all countries could begin to implement them.

Interest is also expressed in the New Basel Accord

Participants expressed continued interest in the ongoing work to finalise the New Basel Capital Accord. Some concerns were expressed about the ability of regional banks to adopt the IRB version of the New Accord given that some of them are comparatively less sophisticated. It was explained that ample time would be available for banks outside the G10 countries to make the transition to the new regime. Participants also reviewed the progress of discussions at the FSF on a number of other issues of concern to them, including highly leveraged institutions.