Financial market innovation in Australia: implications for the conduct of monetary policy

John Broadbent

Introduction

Financial innovation can be broadly thought of as the introduction of new financial instruments or services, or the discovery of new ways to deliver those services to the community. Innovations can benefit users in two ways: first, by increasing competition among providers; and second, by broadening the range and convenience of financial products. Innovations affect microeconomic behaviour and, where their use becomes widespread, may have quite wide-ranging macro implications as well. There is some recent evidence, for instance, suggesting that financial innovations have been associated with more stable real economic growth while also supporting the longer-term growth prospects of the economy.[1]

Whether financial innovations have facilitated the conduct of monetary policy, however, is less clear cut. Some innovations may have supported or encouraged households and businesses to increase the amount of debt owing – this increase in the share of income going to interest payments would tend to make these sectors relatively more sensitive to changes in monetary policy. At the same time, the compression in margins between borrowing and lending rates may have changed how any particular level of the policy interest rate could be associated with a particular stance of monetary policy. In other words, it may affect our views about what is the appropriate level of the policy rate.

Moreover, where links between markets have been strengthened by financial innovation, a shock in one market may be more easily transmitted to other markets. This increasing interdependence poses new challenges for policy makers.[2] Problems in the US sub-prime loan market are now reverberating through many countries. In Australia's case, for instance, this has temporarily choked off investors' demand for new issues of Australian residential mortgage-backed securities (RMBS), and short-term asset-backed commercial paper (ABCP). For those institutions reliant upon such wholesale markets for the bulk of their funds, this may represent a serious risk to their long-term survival. More generally, it has triggered a sharp repricing of risk which, if sustained, will eventually flow through into higher rates for both households and businesses.

This paper is in two parts. The first looks at several recent financial innovations that have had a significant impact upon the Australian financial system. We provide some background to their origin and then look at their impact upon the conduct of monetary policy. We examine the impacts of securitisation, the rise of mortgage brokers and the development of swap markets, particularly cross currency swaps. The latter part of the paper takes a somewhat longer-term perspective and looks at how secular changes in financial markets have affected the Reserve Bank's monetary policy operations. In particular, it examines how the Bank has needed to reshape its monetary operations in the face of a declining supply of Commonwealth Government Securities (CGS), which traditionally had been its domestic risk-free asset of choice.

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1 Cecchetti, S, A Flores-Lagunes and S Krause, "Assessing the Sources of Change in the Volatility of Real Growth", *NBER Working Paper Series*, 11946, January 2006.

2 Noyer, C, "Financial Innovation, Monetary Policy and Financial Stability", *Spring Conference of the Bank of France/Deutsche Bundesbank*, Eltville, Germany, April 2007.

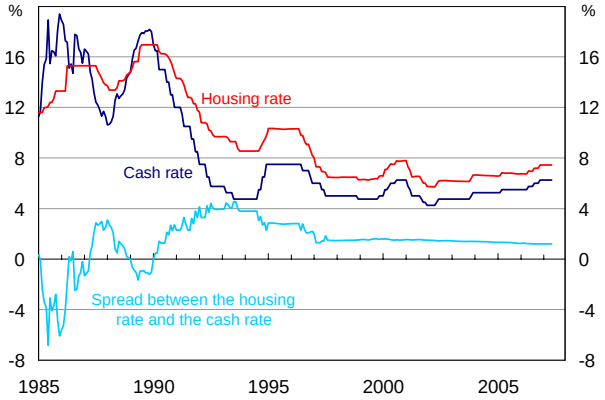
Securitisation and mortgage brokers

While securitisation of residential mortgages has been a feature of the US market since the early 1970s, it did not take off until the early 1990s in Australia, when specialist mortgage originators entered the housing market.

We can point to several factors that allowed mortgage originators to enter the Australian mortgage market at that time:

- First, banks' interest margins on housing loans were at very high levels, at around 4¼ percentage points. The reason was partly cyclical. Banks had not pushed up mortgage rates as high as their funding costs around the peak of the interest rate cycle in the early 1990s, and as market rates fell, they sought to restore their profitability by leaving rates higher relative to money market rates. High interest margins and very low default rates (measured in terms of just a few basis points) meant that housing loans were very profitable.

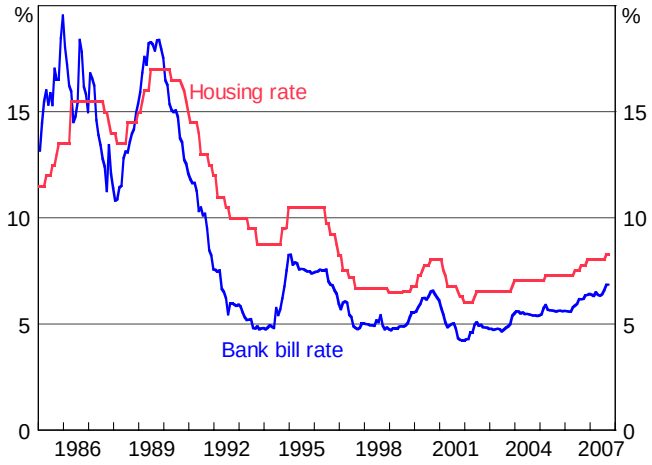
Banks' housing interest rates



Source: RBA.

- Second, the bank bill rate, which is the benchmark interest rate for most floating rate bonds in Australia, stabilised at an interest rate that was well below the housing rate. This decrease in the bank bill rate was largely due to the sharp fall in the inflation rate in Australia, and provided specialist mortgage lenders with stable and predictable funding costs.

Bank bill rate and housing interest rates



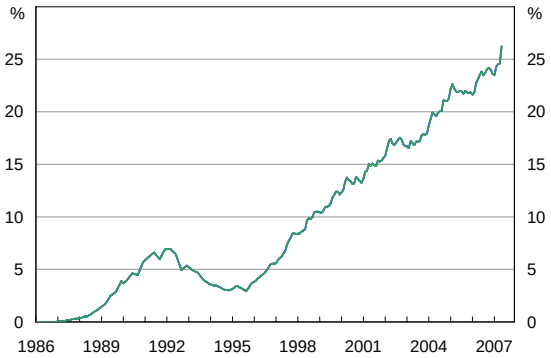
Source: RBA.

- Third, Australian and overseas banks that did not have large mortgage lending operations in Australia were willing to provide specialist mortgage lenders with wholesale lending facilities and help them develop their securitisation procedures. This provided an avenue for those banks to attack a key pillar of the established banks' profitability without needing to build their own costly infrastructure.
- Fourth, Australia's managed funds industry was growing rapidly, mainly due to the introduction of compulsory superannuation (pension funds) for all employees. These institutional investors had a healthy appetite for highly rated debt, including residential and other asset-backed securities.

When mortgage originators first started offering housing loans, their interest rates were about 300 basis points above the cash rate. This was roughly 100 basis points lower than the banks' standard mortgage rates.[3] Established lenders initially responded to this competition by offering 'honeymoon loans', which had a low introductory interest rate for the first year, but then reverted to the standard variable rate. But this did not stem the growth in mortgage originators' market share, and eventually the banks were forced to cut their margins on standard housing loans. By late 1996, mortgage originators accounted for almost 15 per cent of housing loan approvals, and the spread between housing loan rates and the funding rate had fallen to about 180 basis points.

The development of the RMBS market has clearly enabled mortgage originators to flourish. But it has also provided an alternative source of funding (other than deposits, bank bills and bonds) for banks, particularly regional banks which would otherwise have struggled to maintain their growth rates. The Australian RMBS market has grown from less than AUD 5 billion in the mid 1990s to around AUD 165 billion in mid 2007. During that period, the proportion of housing loans that are being securitised has increased from less than 5 per cent to around 25 per cent. Mortgage originators and regional banks are the main securitisers, accounting for 25 per cent and 50 per cent of outstandings respectively. Roughly 60 per cent of these RMBS are issued offshore. These securities are mainly denominated in US dollars and euros, with the proceeds from these issues being swapped back into Australian dollars (we will return to the swap market later).

Proportion of Australian home loans securitised

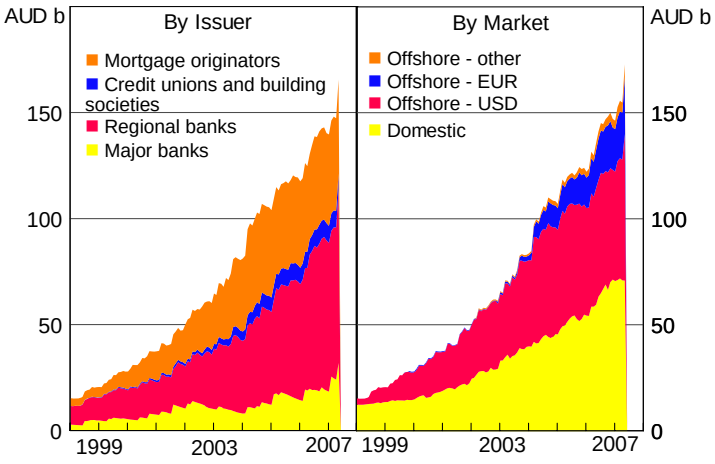


Source: RBA.

[3] Rough estimates suggested that the mortgage originators' costs for providing a housing loan were around 150 to 200 basis points above the cash rate (see Edey, M and B Gray, "The Evolving Structure of the Australian Financial System", *Reserve Bank of Australia Research Discussion Paper* No 9605, October 1996).

RMBS outstandings

Monthly



Sources: RBA; Standard and Poors.

Over the past few years, mortgage brokers have also gained a significant presence in the Australian mortgage market, further adding to the competitive environment. Mortgage brokers make it much easier for households to compare prices and products across a large number of lenders. They are heavily used by those lenders which have limited branch networks, such as the smaller regional banks or other smaller deposit-taking institutions. The major banks also find them a useful means to distribute mortgages to a wider customer base.

Broker-originated loans are estimated currently to account for about one-third of new housing loans. The rise of mortgage brokers has contributed to the decrease in the spread between housing loan rates and the cash rate from 180 basis points to around 120 basis points. Moreover, the use of brokers among the small business sector has also become more widespread in recent years. It is estimated that up to a quarter of loans to small and medium-sized businesses are broker-originated.

Swap markets and bond markets

I noted earlier that over half of the RMBS issues by Australian entities have been into offshore markets. A deep and liquid swap market has been a key element underpinning the evolution of securitisation in Australia. But Australian institutions have been active in the swap market for several decades. In the mid 1980s, the development of the euro-Australian dollar market opened up an important new source of Australian dollar (AUD) funding to the Australian corporate sector. Larger corporates were able to access this market directly, while smaller firms issued bonds in US dollars – where name recognition was not a significant factor – and then swapped the proceeds with the foreign entity. That entity was most commonly a European bank that had issued the AUD securities and distributed them to a predominantly European retail base.

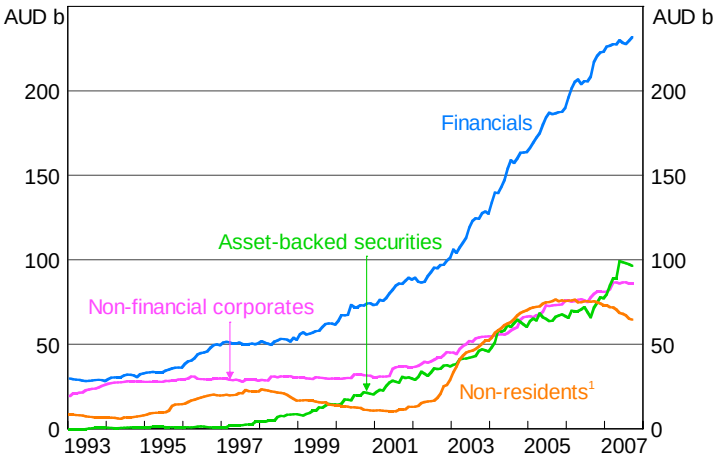
The growth in offshore bond issuance has been broad-based, with outstandings of non-financial corporates, financials and asset-backed vehicles all increasing. This increase has been driven by a range of factors including strong demand for credit from both the household and business sectors, as well as a change in the savings behaviour of Australian households. Savings have moved increasingly towards managed funds, particularly superannuation, and away from bank deposits, requiring banks to seek recourse to wholesale markets to fund credit growth.

Australian entities' offshore bond outstandings have grown rapidly, and at around AUD 400 billion, are appreciably larger than domestic outstandings. As noted, the vast

majority of these outstandings – estimated to be around 90 per cent – are swapped back into Australian dollars.

Non-government bonds on issue offshore

All currency denominations, monthly



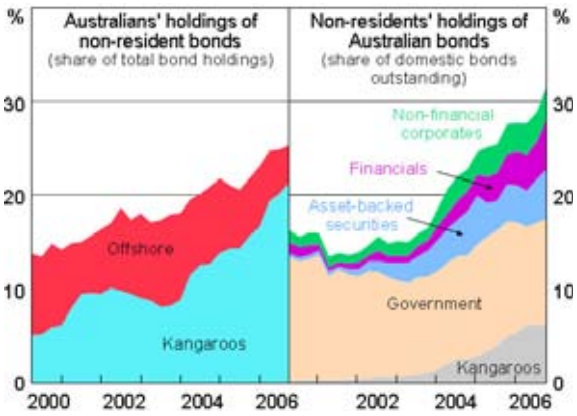
[1] Australian dollar-denominated issuance only.

Sources: ABS; RBA.

Typically, these swap transactions require an entity that has issued AUD, and has an underlying appetite for foreign currency. Some institutions on the other side of these swaps have been issuers in the kangaroo market – the market for AUD securities issued in Australia. These issues are invariably swapped out of AUD. The growth of kangaroo issuance has been particularly rapid since the late 1990s, and especially from late 2003. A number of factors likely explain its growth.

First, the volume of very highly rated securities has been declining since the late 1990s. This has been due to the decline in CGS: the Australian Government has been running a fiscal surplus and there has been little new issuance of state government paper (we will return to this issue later). Second, local investors have wanted to diversify their exposures, while still staying with relatively high-yielding AUD assets. At the same time, non-resident investors have also wanted to diversify their exposures and to acquire relatively high-yielding assets. But they have wanted to combine exchange rate risk with minimal credit risk – close to 50 per cent of all kangaroo issues are rated AAA, with the remainder just a notch or two below.

Diversification and cross-border investment



Sources: ABS; Insto; RBA.

Based on the traditional comparative advantage principles, these swaps have been mutually beneficial for both local and overseas counterparties.[4] For kangaroo issuers the cost of issuing in Australia and swapping the proceeds into US dollars is very similar to the cost of issuing directly in US dollars. This suggests that the kangaroo market has been very competitive with other bond markets.

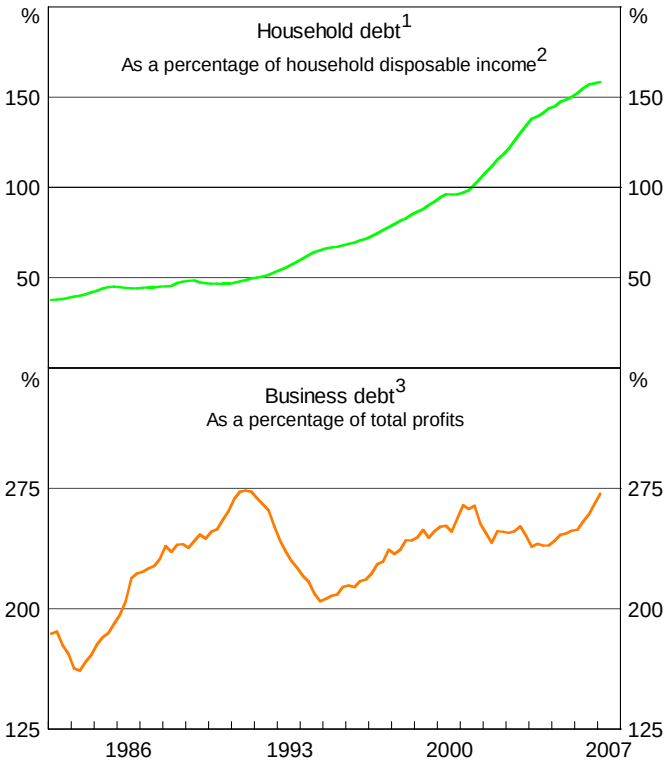
Impact on monetary policy operations

These financial innovations are relevant for the conduct of monetary policy in two ways. First, they affect borrowers' sensitivity to monetary policy. Second, they influence how we implement monetary policy on a day-to-day basis.

Sensitivity of borrowers to changes in monetary policy

Over the past two decades, household sector debt levels have risen from around 40 per cent to 160 per cent of disposable income. Businesses' debt levels have nearly doubled to 275 per cent of income. Both sectors have thus become more sensitive to changes in interest rates.

Household and business debt



[1] Household sector excludes unincorporated enterprises. [2] Disposable income is after tax and before the deduction of interest payments. [3] Business includes both the non-financial corporate and unincorporated sectors.

Sources: ABS; RBA.

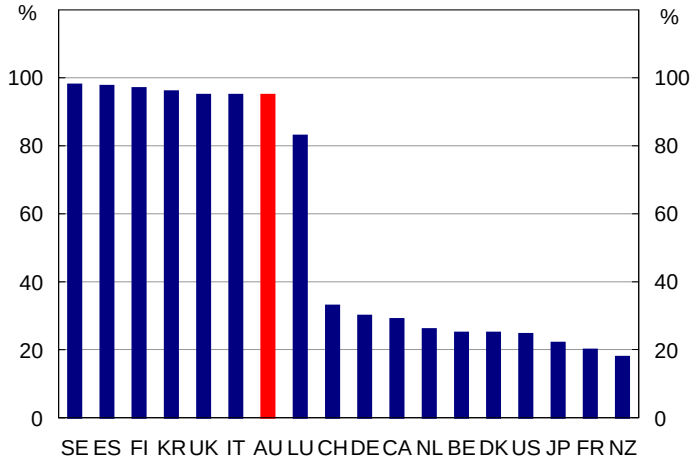
[4] Ryan, C, "Some General Observations on the Kangaroo Bond Market", *Reserve Bank of Australia Bulletin*, April 2007.

This sensitivity to monetary policy changes is also affected by the proportion of loans that are taken at variable rates. In 2005, roughly 90 per cent of Australian housing loans were at variable rates. The rates charged on those loans generally move only when there is a change in monetary policy.

According to the BIS, this is a feature shared with several European countries, though it is by no means predominant in most countries around the world.[5] In the US, Japan and New Zealand, for instance, variable rate loans make up less than 25 per cent of housing loans. Where variable rates dominate, changes in monetary policy tend to flow directly through to mortgage rates, but where fixed rates are more common, the impact of changes in the policy interest rate on mortgage rates is less clear. This can make monetary policy more difficult to implement given that interest rates affecting most borrowers or lenders may only be tied fairly loosely to the policy rate.

Housing loans

Percentage of variable rate loans

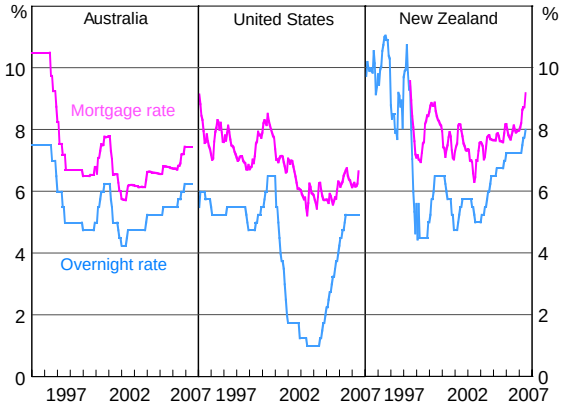


Sources: ECB; European Mortgage Federation; Eurostat; national data; RBNZ.

In the case of Australia, movements in the cash rate typically are quickly passed through into changes in mortgage rates. Indeed, the speed of pass-through has increased over recent years with the result that changes in the policy rate generally feed directly into variable rates charged by financial institutions within a week or so of a policy announcement. Policy changes feed directly into rate changes for both new and existing loans. In contrast, in countries where mortgages are priced off long-term bond rates, it becomes more difficult to anticipate how mortgage rates may change when policy is adjusted. This is because monetary policy is only one of a multitude of factors affecting long-term bond rates. In the US, for example, the series of monetary policy easings that began in 2001 and took the Federal funds rate from 6½ per cent to 1 per cent had only a modest impact on longer-term yields, and hence most mortgage rates. In New Zealand, mortgage rates were relatively sticky in the late 1990s given the fall in the cash rate from over 10 per cent to 4½ per cent. The tightening in monetary policy over the past three years also took a while to flow through into mortgage rates.

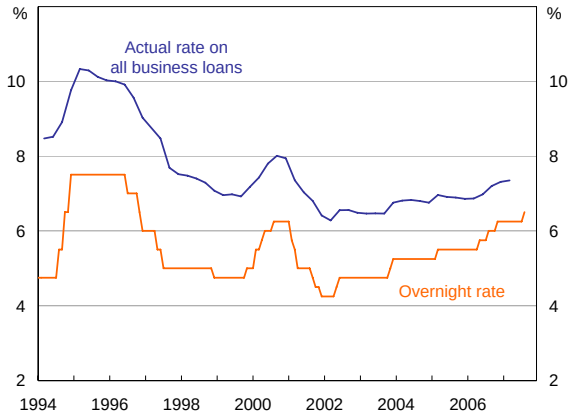
[5] Bank for International Settlements, "Housing Finance in the Global Financial Market", *CGFS Publications*, No 26, January 2006.

Overnight rates and mortgage rates



Moreover, most business loans in Australia are also floating rate. In early 2007, around 80 per cent of loans were priced off either the cash rate or the bank bill rate, up from 60 per cent a decade earlier. As a result, movements in the policy rate are also quickly passed through to business loan rates, making the business sector fairly sensitive to changes in monetary policy.

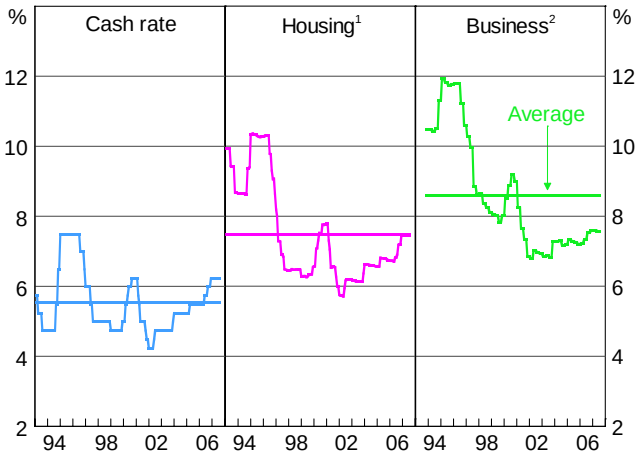
Overnight rates and business rates in Australia



Sources: APRA; RBA.

But the large reductions in interest margins on household and business debt have meant that the stance of monetary policy may not be as tight as historical experience would suggest. At present, the cash rate is 75 basis points above its decade average, but variable rates on housing loans are around their decade average, and variable rates on business loans are around 100 basis points below their decade average.

Variable lending rates



[1] Weighted average rate on new variable rate housing loans; based on securitised loans. [2] Weighted average rate on banks' outstanding variable rate business loans.

Sources: ABS; APRA; RBA.

Role in monetary policy implementation

Financial innovation has also influenced day-to-day implementation of monetary policy. In particular, it has allowed us to broaden the range of securities that the Reserve Bank can use in its market operations.

This wider range of securities includes a subset of kangaroo issues. Broadly speaking, the Bank will accept kangaroos that are issued by a foreign government, or have a government guarantee, and those that are issued by a supranational institution. Both the issuer and the issue must have a AAA credit rating. Approximately 30 per cent of current outstandings of kangaroos are eligible. Currently there are 13 issuers with securities that meet the Bank's repo eligibility criteria.

The inclusion of this subset of kangaroo issues has led to a noticeable expansion of the pool of high-quality securities that can be accepted by the Bank. We have been a little surprised that they are not offered to the Bank as often as would be expected given the size of outstandings, though market liaison suggests that institutions highly value their implicit liquidity characteristics. Currently, kangaroo bonds held under repo by the Bank amount to around AUD 2 billion, or about 7 per cent of the domestic portfolio.

FX swaps and bank bill repos

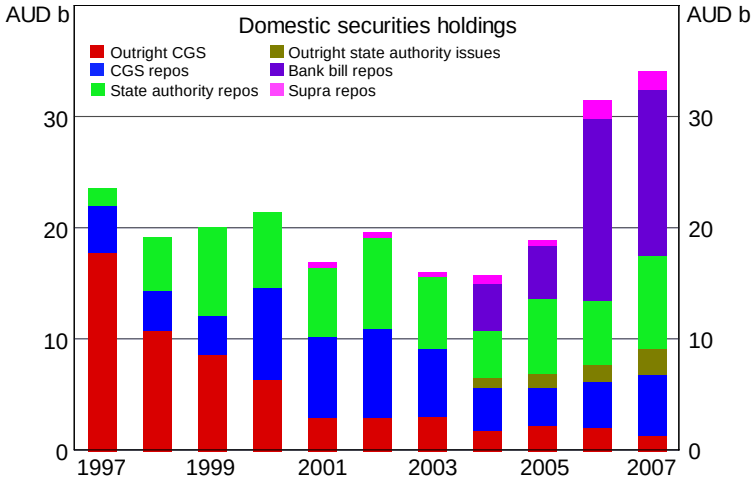
Accepting supranational paper as collateral for the Reserve Bank's domestic dealing operations has been just one initiative we have taken as financial markets have developed and we have needed to refine our dealing operations. For a long period of time, CGS were the only securities that the Bank was willing to hold on its balance sheet, either on an outright basis or as repo collateral. But this changed when the supply of CGS began to decline in the latter part of the 1990s. As a result, we have needed to expand the range of assets we were willing to accept. The expansion of the supply of eligible securities ensures that the Bank does not place any additional pressures upon the CGS market, as well as ensuring an ample supply of securities with which to conduct its daily monetary policy operations. We have gradually expanded the range of eligible assets to include state government paper,

supranational, foreign government and their agencies' securities, bank bills and certificates of deposit issued in the domestic market.[6]

If we take an annual snapshot of the Bank's balance sheet over the past decade or so, changes to how we conduct our monetary policy operations became readily apparent. We have significantly reduced our holdings of CGS, particularly on an outright basis, but also those held under repo (the type of securities given to the Bank as repo collateral is at the discretion of the counterparty – it may be either CGS, state government paper or eligible kangaroo securities). By June 2007, CGS held by the Bank amounted to just AUD 7 billion compared with over AUD 20 billion a decade earlier.

Offsetting the fall in CGS, we have increased our holdings of state government paper (most of which is held under repo) and repos collateralised by bank bills (short-term paper issued by highly rated commercial banks). These comprise the majority of our domestic portfolio, representing about 30 per cent and just over 40 per cent, respectively, of domestic securities holdings.

RBA domestic portfolio



Source: RBA.

Securities often experience a large increase in turnover when the Bank is willing to hold them as collateral for repos. The latest figures available are for the financial year 2005/06, but they do show a few interesting features:

- Total repo borrowing has continued to expand rapidly over the past few years;
- The CGS remains the most actively traded instrument, though the latest figures suggest that its share of the repo market has declined significantly;
- The number of repos collateralised by state government paper has shown a steady increase over the past few years. They account for about 40 per cent of total repo borrowings, up by 10 percentage points since 2002/03; and
- The number of repos collateralised by bank paper has seen a two-fold increase over the past three years.

[6] Subsequently, on 6 September 2007 the Bank announced that it would be willing to accept bills and CDs from a wider range of financial institutions, longer-dated bank paper, highly rated RMBS and highly rated ABCP.

Table 1

Annual repo turnover by instrument

AUD billion

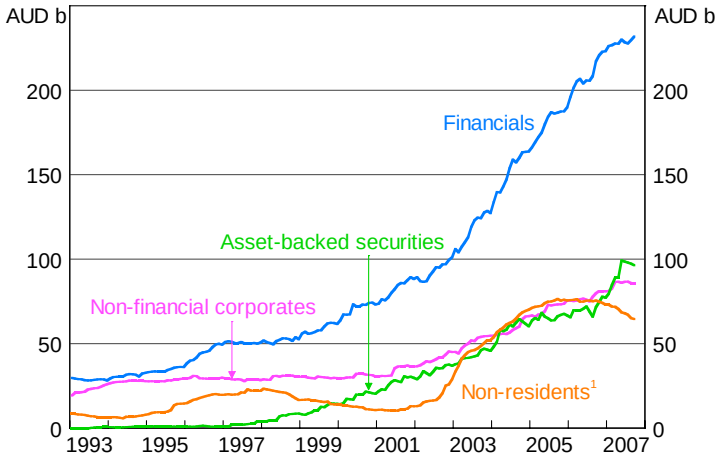
Year	CGS	State Government	Bank Paper	Other	Total
2001/02	4359	1920	169	263	6711
2002/03	3038	1698	350	304	5390
2003/04	3659	2604	968	289	7520
2004/05	7712	3902	635	569	12818
2005/06	5947	5280	1123	1089	13439

Source: AFMA.

The other major change in the Reserve Bank's monetary operations over the past few years has been the increase in the use of FX swaps. If the domestic banking system is short of funds, the Bank will undertake a swap in which it lends Australian dollars to the market in exchange for foreign currency for a specific period and at an agreed exchange rate for the reversal of the transaction.[7] This transaction has the same effect on domestic liquidity as using open market operations to buy securities under repurchase agreement. Like domestic repos, these provide the flexibility to undertake market operations and importantly, as the FX swap market is deep and liquid, transactions of some size can be readily undertaken to offset large shifts in system cash. Reflecting the greater usage of FX swaps for liquidity purposes, turnover in these instruments has doubled in the past couple of years to over AUD 210 billion in 2006/07.

RBA asset composition

Excluding net FX reserves



Source: RBA.

[7] The exchange rate for the reversal of the swap is determined by adjusting the current exchange rate for the interest rate differential between the two relevant countries for the time to maturity of the swap.

Table 2

Open market operations

AUD billion

	2002/03	2003/04	2004/05	2005/06	2006/07
Repurchase agreements[1]					
Purchases	304	272	391	409	459
Sales	17	11	10	6	2
Outright purchases[2]	3	5	5	4	3
Total operations in domestic securities	324	287	405	419	464
Foreign exchange swaps[1]	90	139	106	157	211
Total	414	426	511	576	675

[1] First leg of transaction. [2] CGS only until 2002/03. Thereafter includes State and Territory government securities.

Source: RBA.

Conclusion

The growing use of securitisation together with the development of the swap market and the non-government bond markets have lowered the price of credit and expanded the range of households and corporates to whom credit is readily available.

Increased debt levels, in conjunction with Australian borrowers' preference for variable rate loans, suggest that borrower sensitivity to monetary policy changes has tended to increase. At the same time, the associated reduction in interest margins implies that policy, at any given level of interest rates, may not be as tight as historical experience would suggest. But these developments are relatively easy to incorporate into what the Reserve Bank considers to be the appropriate setting of monetary policy.

The development of swap markets and non-government bond markets – including the kangaroo market – has enabled the Bank to broaden the range of securities that it uses in its market operations. This has been very useful as the supply of CGS – for many years the Bank's preferred security – has been declining.

In summary, the Reserve Bank has needed to alter the way it has conducted its monetary policy operations as financial markets have developed. Innovations in these markets have made the financial system more efficient, but they have not hindered the Bank in the implementation of its monetary policy.