

Australia's experience in the sub-prime crisis

Address to Flinders University International Expert Symposium on 'The Sub-Prime Mortgage Meltdown: Origins, Trajectories and Regional Implications', Adelaide, 16 May 2008¹

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1 The charts in this article are selected updated versions of those presented at the Symposium.

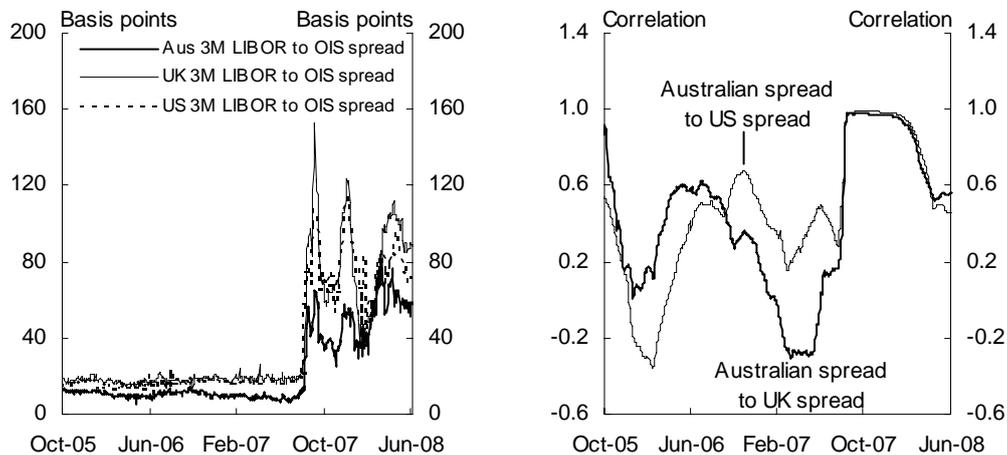
2 Thanks to Treasury colleagues Blake Ford for statistical work and preparing the charts for this paper, and Dong Zhang for preparing the chronology which lies behind it.

The manifestation of the crisis in Australia

Sydney is about as far from New York as it is possible to be on the surface of this planet, and while there are many similarities between the Australian economy and financial systems and those of the UK and the US, there are also important differences. The distance, the dissimilarities, however, did not prevent the manifestation in Australia of some aspects of what we have come to call the sub-prime financial crisis soon after its eruption in the United States towards the end of July last year.

The spread between three month bank bill swap rates and cash, for example, increased almost immediately, revealing that Australian banks had become as eager to increase their liquidity and as reluctant to part with it as banks in the US, Europe and the UK.

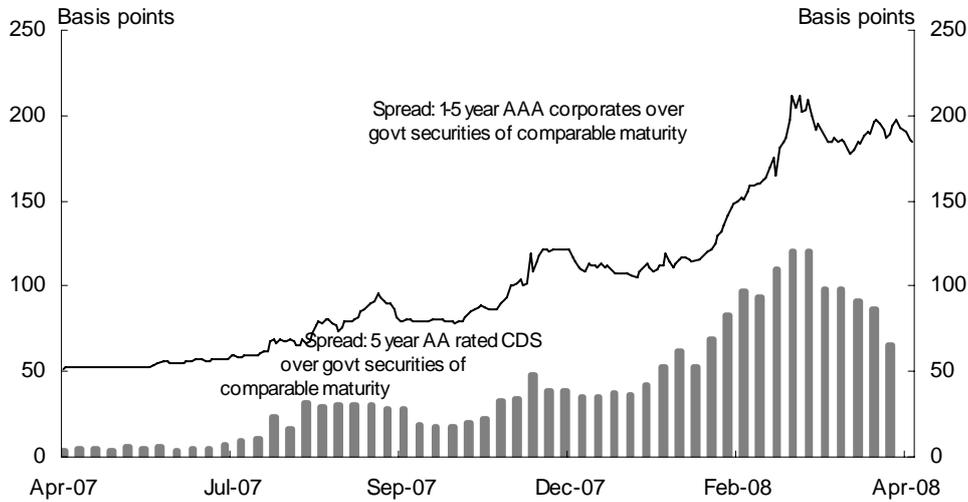
Charts 1 and 2: International credit spreads and correlations



Note: Correlations refer to 180-day rolling correlations.
Source: Reuters and Treasury.

The spread did not increase as much as elsewhere, an early sign that Australia's experience would be relatively mild, but it was enough to signal that the Australian financial system would not be immune. Spreads on Australian AAA corporate paper blew out as high quality paper spreads blew out elsewhere, and the market in corporate bonds faltered in Australia as it did in other advanced economies.

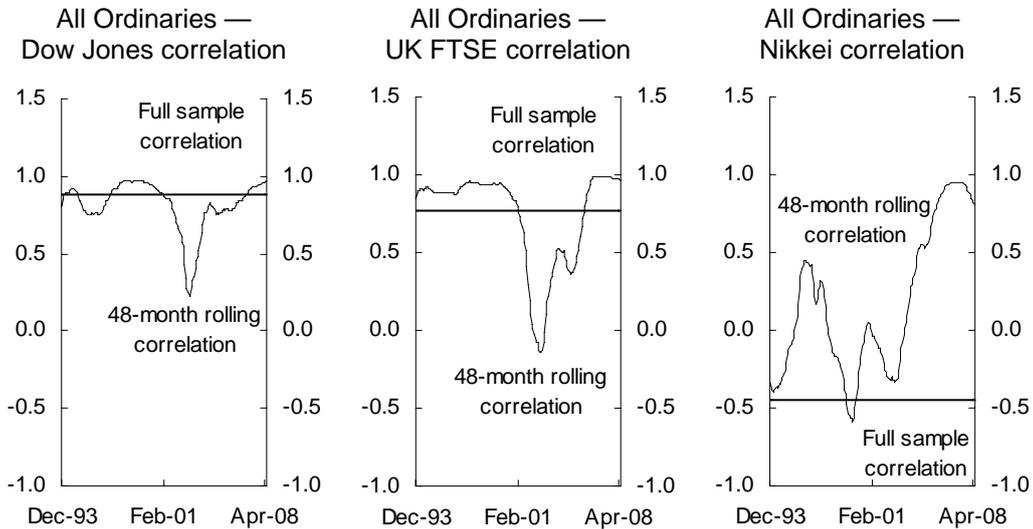
Chart 3: Australian corporate credit spreads



Source: Reserve Bank of Australia.

The market for Australian residential mortgage backed securities is largely offshore. By November, it had folded. After a prolonged period in which the connexion between the performance of the Australian equity market and equity markets abroad had become quite tenuous, the Australian equity market began to be more influenced by movements in the US and Europe.

Chart 4: International stock indices – correlations



Source: Reuters and Treasury.

Nor was the manifestation in Australia limited to a similarity of movements in yields and some financial asset prices. Within weeks of the onset of the crisis in late July last

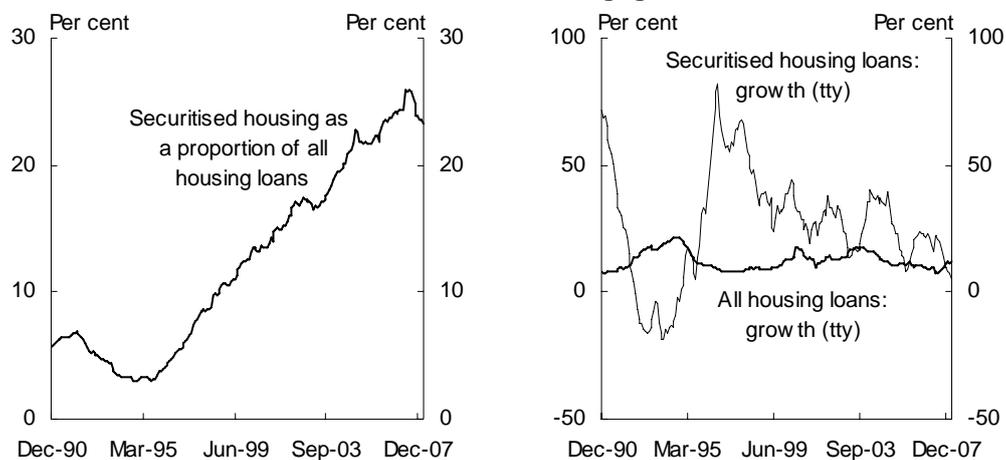
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year, Australian banks were faced with some of the same pressures on liability side of their balance sheets which bothered their offshore counterparts.

The attenuation of the corporate bond market encouraged many business borrowers to look to banks as an alternative source of funding. This was good business for banks, but it happened to coincide with a period in which their funding requirement had anyway increased.

Australia's major banks were not as dependent on the Residential Mortgage Backed Securities (RMBS) market as many offshore institutions, but securitisation had become very much more important in recent years.

Charts 5 and 6: Securitised mortgages in Australia



Source: Reserve Bank of Australia.

While the majors used the RMBS market opportunistically to secure term funding, the smaller players in the home mortgage market depended on securitisation as a relatively cheap source of funds in the absence of a retail deposit base. When that market closed, as it did in November, it left a considerable hole in the funding of Australian household demand for mortgages. The mortgage providers dependent on that market had no alternative but to batten down, or in the case of RAMS, to sell their physical assets and brand. The major banks picked up home mortgage business, while the regional banks held market share.

Though to a much lesser extent than in the US and the UK, some Australian banks had taken some home mortgage assets off their balance sheets, and placed them in vehicles financed with short term paper. As was the case with banks in the US Europe and the UK, there was suddenly no market for the paper backed by mortgages – or at least not at yields which made these vehicles smart business. The mortgage securities in

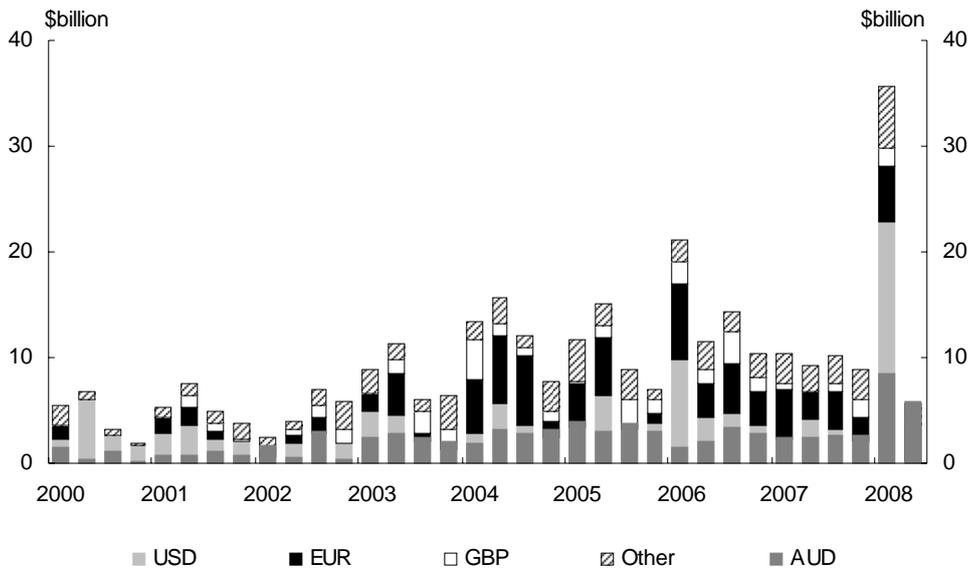
these vehicles were then in some instances brought back onto the sponsoring bank's balance sheet, obliging them to pay out the corresponding debt.

By late last year there were thus three additional sources of demand for bank lending – households which might have formerly have used smaller lenders which funded their lending by securitisation, bigger businesses denied access to the bond market, and (to a much more limited extent than in the US and the UK) the banks own assumption of assets formerly held in conduits.

These sources of additional demand for bank lending coincided with stress in funding.

Australian banks raise most of their liabilities onshore, but there is an important role for offshore borrowing as well. In recent years Australian banks have become accustomed to rely upon the deep capital markets of Europe, the United States and Japan to supply most of their term funding.

Chart 7: Australian banks' offshore bond issuance



Note: Data as at 6 May 2008.
Source: Reserve Bank of Australia.

In the second half of last year, and particularly severely in the early months of the crisis, the global market for bank paper suddenly became extremely expensive and difficult to access. This was of course because lenders were uncertain about the extent of losses in all banks, and were meanwhile seeing the value of their existing portfolios of term bank paper decline. While Australian banks would willingly pay a higher spread for short term funding, they were reluctant to pay what to them were

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unusually high spreads to borrow term until they were convinced the higher term spreads were enduring.

With the RMBS and other asset backed paper markets closed or trading only thinly, the offshore market for Australian bank term paper suddenly difficult to access, the onshore market for short term funding became unusually expensive. All this was occurring at a time when the Australian banks demand for liabilities was rising, to match the increased supply of assets being offered to the banking system.

It is important to note at this point that these sudden pressures on the both the asset and liability sides of banks' balance sheets could and did occur without any change in the default rate in Australian bank assets or those in the financial system more widely, without any needed increase in the provision for bad and doubtful debts, without blemish in Australian financial institutions. It could and did occur despite the fact that Australian financial institutions owned only insignificant amounts of US sub-prime mortgage paper, and had relatively little exposure to any of the major classes of financial assets where default occurred.

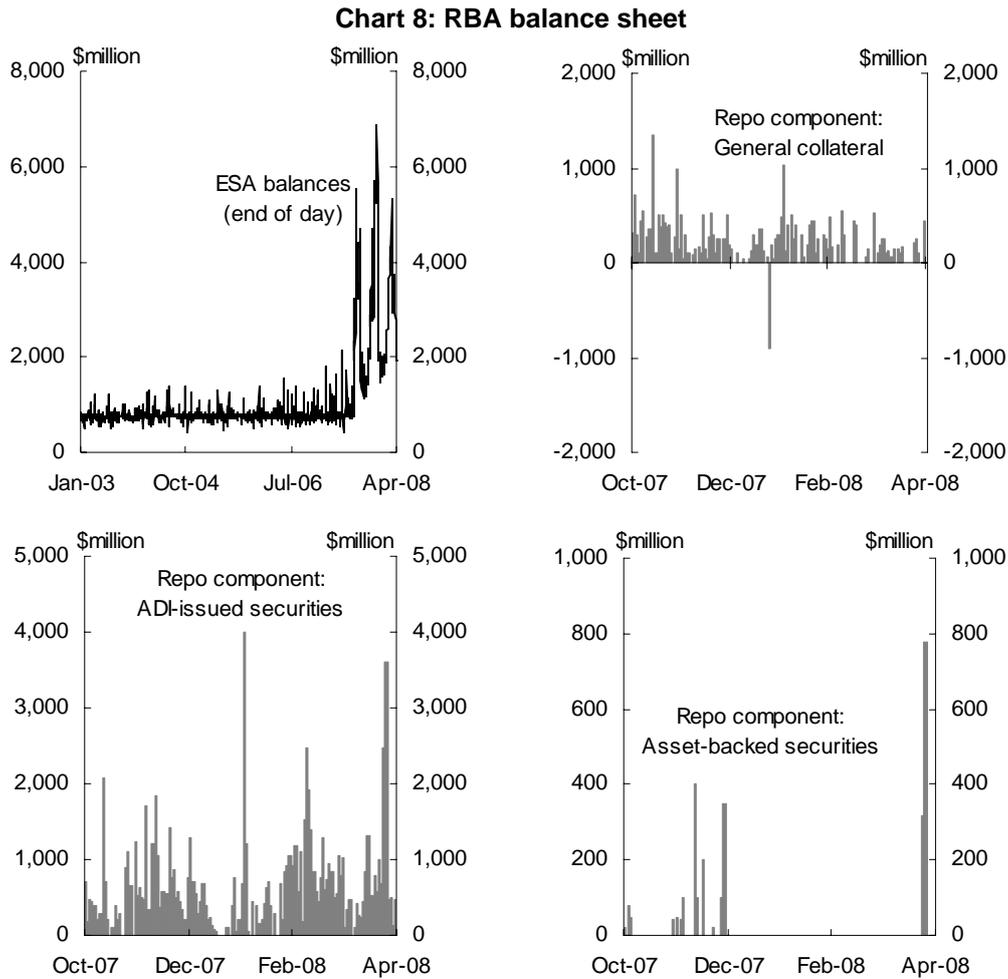
The response of the RBA and financial institutions

The manifestation of the global sub-prime crisis in Australia was thus first and foremost a liquidity issue, and then over ensuing months a funding issue. It was not an issue of the credit soundness of Australian banks or other major financial institutions, though of course it could have become so if the liquidity issue had not been addressed. Because losses arising from credit default remained relatively minor and major financial institutions did not hold large trading books of financial assets with diminished credit quality, Australian financial institutions capital positions did not significantly deteriorate – unlike the circumstances of some financial institutions banks in the US, the UK and Europe. The need for additional capital as opposed to additional liabilities to lend was relatively minor. The only strain on capital arose from the increase in assets and could be met mainly by enhanced dividend reinvestment programs.

The manifestation of the sub-prime crisis in Australia thus required from the central bank, from the regulator and from the Australian government a set of responses that would sustain confidence in the Australian financial system, meet its immediate liquidity needs, and support an expansion in liabilities. It did not require a large new infusion of capital.

The Reserve Bank of Australia (RBA) met the liquidity needs promptly with a large expansion of the cash, apparent in the increase in exchange settlement account balances. Beginning in early August the average daily balance in the Exchange

Settlement Account (ESA) system rose from the customary \$750 million to a peak of \$6.5 billion in March. This provision of short term liquidity was not an unusual response to a crisis of confidence affecting financial markets. It matched the operations during the Asia financial crisis in 1997 and the terrorist attack on the US in September 2001.



Source: Reserve Bank of Australia.

Immediate liquidity was not the only issue in this episode, however. There was also the need to assure funding. The European Central Bank (ECB) already accepted broader collateral but in early September the RBA moved before the US Federal Reserve and the Bank of England to widen the set of financial assets it would accept in repurchase agreements to include bills and certificates of deposit issued by depository institutions with exchange settlement accounts. Later the RBA extended the repo

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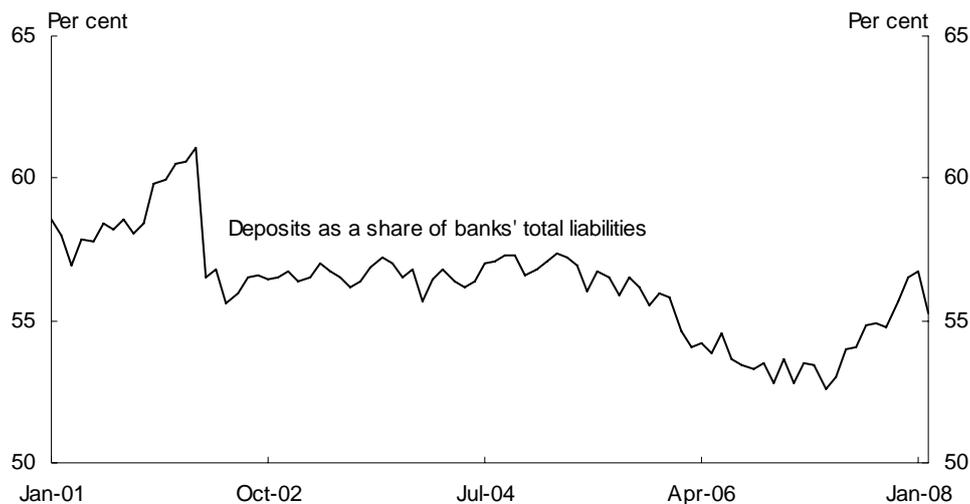
facility to include high quality RMBS. There was no need to extend the terms of the facilities, which had long been at the discretion of the central bank.

Though Australian banks have large offshore liabilities, they routinely swap their foreign exchange exposure into Australian dollars. Through the second half of last year the banks were able to close out existing foreign exchange swaps with the RBA and other counterparties to meet foreign currency obligations at a time offshore borrowing was temporarily difficult.

While the RBA was very active in supporting bank funding in the early months of the crisis, the banks themselves also responded quickly to the change in the funding pattern.

This was most immediately evidently in the increased competition for new retail deposits, which have usually contributed about half of bank funding in Australia. After declining for some time as a share of bank liabilities, deposits bounced back towards the end of last year.

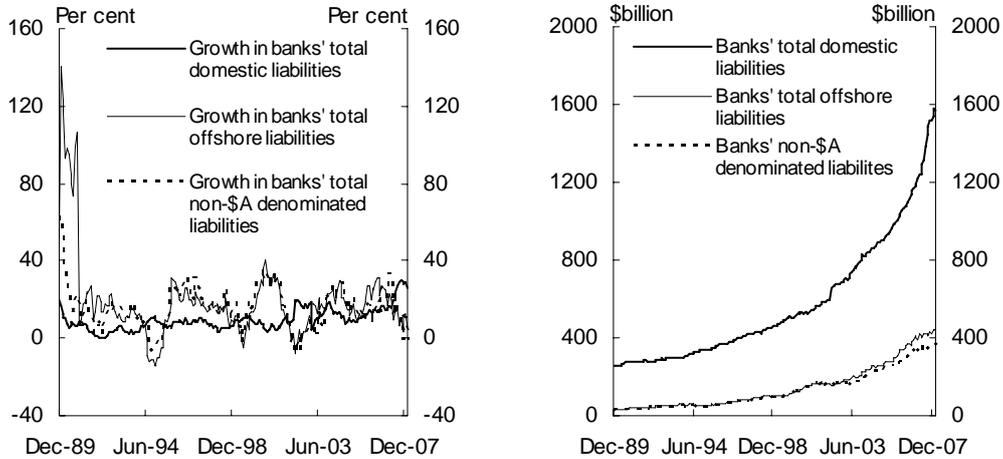
Chart 9: Deposits as a share of banks' liabilities



Source: Reserve Bank of Australia.

By the end of 2007 and the beginning of this year the banks had evidently decided that higher rates would prevail for some time to come. They were also finding new pockets of term funding offshore. Because major global banks were winding back asset growth and were more interested in supporting their capital base than their lending, demand in offshore funding markets had retreated. By the end of last year it had also become more evident to offshore funding markets that the Australian banks had very little exposure to distressed assets. In the first quarter of this year the Australian banks borrowed more offshore than in any quarter on record.

Charts 10 and 11: Australian banks' offshore borrowing



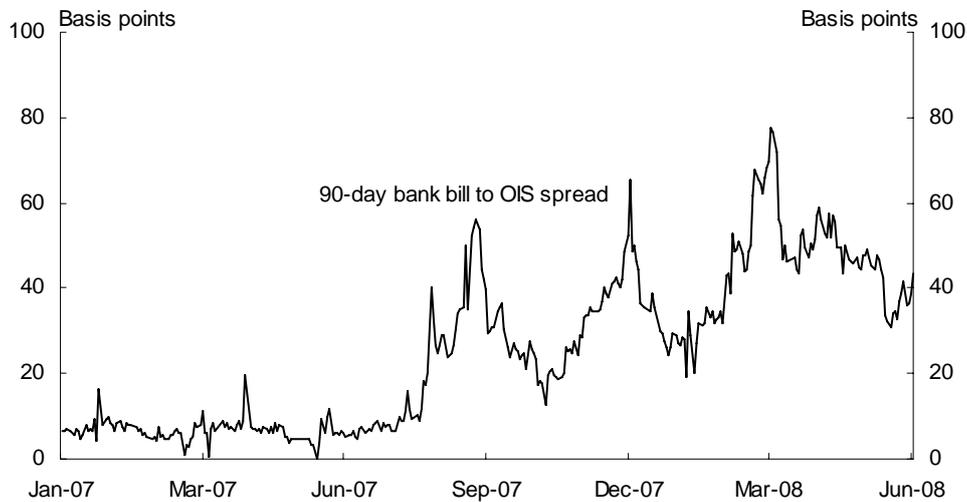
Source: Reserve Bank of Australia.

Through a combination of prompt RBA support and the banks own programs to increase their retail deposits and seize opportunities to borrow offshore, the immediate pressure on bank funding began to fade towards the end of the first quarter of this year.

Stabilisation

Credit spreads are still elevated, the RMBS market remains difficult, the growth of bank assets has slowed and there has been a corresponding slowdown in the growth of liabilities, the capital to assets ratio has come down a touch, but there is no doubt that the immediate difficulties the global sub-prime crisis posed for the Australian financial system have begun to fade. While still wide, for example, credit spreads are markedly narrower than they were at the end of last year and have been stable over the last two months.

Chart 12: Domestic credit spread — 90 day bank bills to OIS



Source: Reuters.

As mentioned above, Australian banks have been able to access offshore funding markets, though at higher spreads and on average shorter maturities than formerly. Global financial institutions are now again borrowing in global markets, which reduces the visibility of Australian borrowing. Limited high grade corporate paper issuance has resumed and Australian corporate spreads have begun to contract. The market for Australian RMBS remains very thin, though there have been stirrings. Credit growth has slowed, but not at this point more than is anyway consistent with the slowdown in nominal domestic demand growth explicitly sought by the RBA. Most of the majors have updated their financial results, and the reported losses on their portfolios of financial instruments have not been large relative to the losses reported elsewhere.

To some extent the stabilisation of the financial pattern in Australia is a reflection of its stabilisation elsewhere. Since the US Federal reserve intervened to help Bear Stearns' incorporation into J P Morgan Chase, global markets have become more confident that while plenty of problems remain the global financial system is not hurtling towards destruction.

Explaining Australia's experience — Australia's points of vulnerability

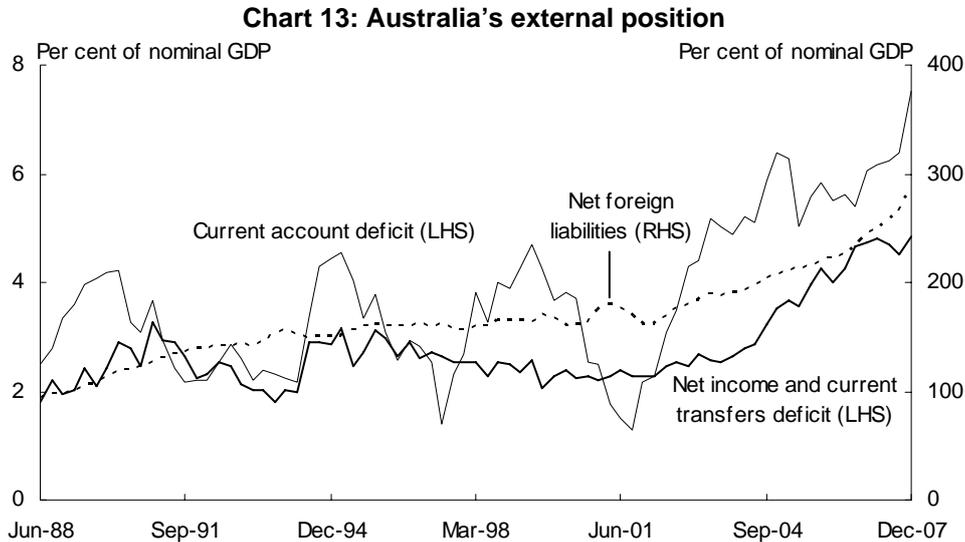
There may well be a deeper than expected economic slowdown in the US and the UK because of the sub-prime crisis, which may then produce further losses in already weakened financial institutions. It is certainly too early to say that the global crisis is over. But there is no doubt Australian financial markets are less stressed than they

were at the beginning of the year, that major Australian financial institutions have got through without significant damage, and that the prospective impact of the financial crisis on output growth has not been sufficient, in the judgement of the RBA, to discourage it from tightening four times since the crisis became apparent at the beginning of August.

The question then is why the Australian financial system was so little affected by a financial crisis which has had considerable impact elsewhere, and which manifested in Australia in some of the same ways it manifested elsewhere.

Australia's mild experience is certainly not explained by domestic barriers against the transmission of financial shocks. On the contrary, the Australian financial system is quite open. There are no foreign exchange controls, no controls over the cross border transfer of funds, and no controls over financial market prices other than the cash rate. Cross border financial flows have substantially increased over the last decade.

Australia does not run a large current account surplus or accumulate substantial foreign exchange reserves. On the contrary, it runs a larger and more persistent current account deficit than the United States, its net foreign liabilities as a share of GDP are three times those of the United States, and the net income deficit is a larger share of the current account deficit than it is in the United States.



Source: Reserve Bank of Australia.

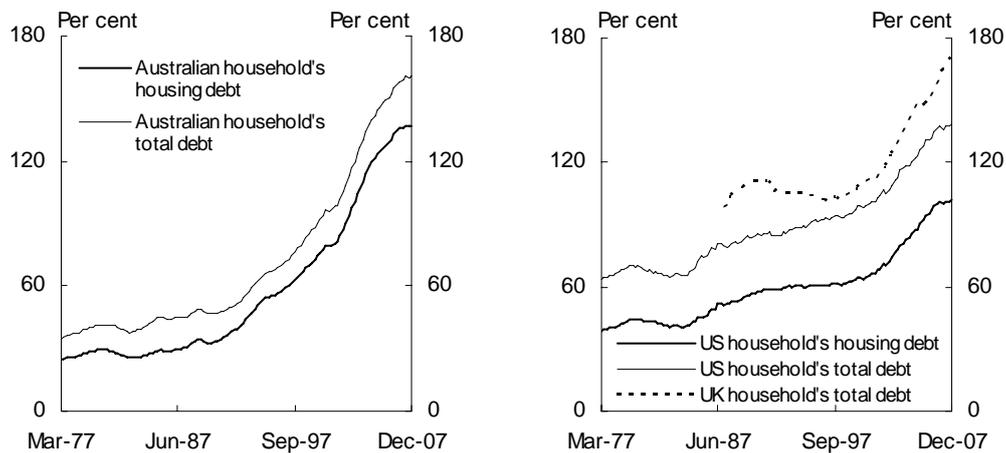
Furthermore, the capital account surplus which matches the current account deficit is usually roughly equal to the increase in the stock of the offshore indebtedness of Australia banks. Were Australian banks to cease borrowing abroad to the extent they do, Australia would have to run a substantially smaller current account deficit or find

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some other source of capital inflow. Prior to August 2007 a rising share of that stock of offshore liabilities took the form of borrowing against asset backed securities, mainly domestic mortgages – a form of financing only sporadically available after August last year.

Nor can it be said that the structure of household balance sheets is markedly different in Australia from the households balance sheets of the US and the UK, the two economies so far hit hardest by the financial crisis. On the contrary, from holding substantially less debt than UK and US households a decade ago, Australian households have increased their borrowing (though not as fast as the growth in their assets) to the point where the ratio of household debt to household disposable income is comparable to those in the US or the UK.

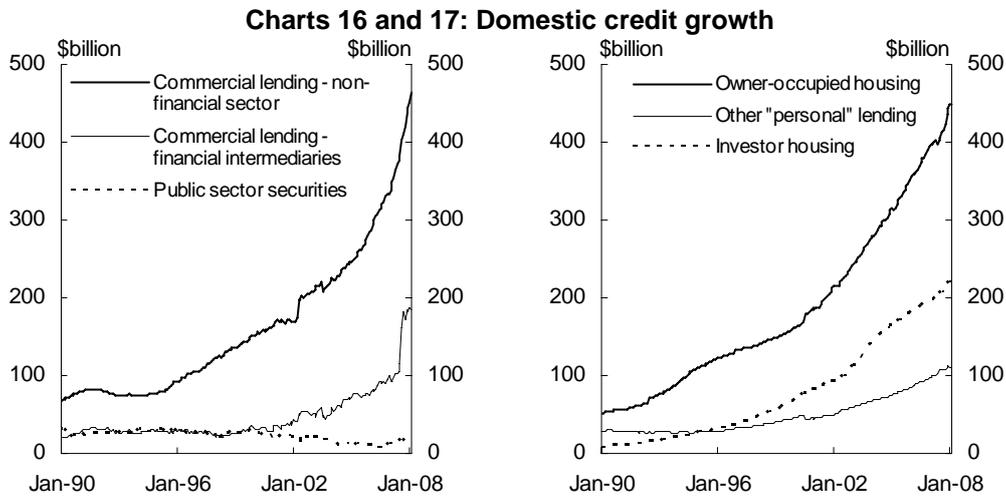
Charts 14 and 15: Household debt to disposable income — an international comparison



Source: Reserve Bank of Australia and Bloomberg.

Share prices measured by the ASX 200 index have doubled in the last three years, even taking recent falls into account. House prices have increased 30 per cent over the last three years, and roughly doubled since the beginning of the decade.

In constructing measures of vulnerability to financial crisis researchers often cite a current account deficit, a rapid increase in credit growth, extensive offshore borrowing, high household debt, a period of rapidly rising asset prices, and rising inflation as indicators of risk. Any measure constructed using those indicators for Australia in August 2007 would have predicted an entirely different outcome to the actual – reminding us once again the difficulty of selecting any plausible set of leading indicators of financial crisis.



Source: Reserve Bank of Australia.

Explaining Australia's experience — the strengths of the regulatory arrangements, the financial system and the economy

It is evident that despite the apparent vulnerability of the Australian financial system to precisely the kind of crisis which began in August, and despite the fact that many of its manifestations were apparent in Australian markets as soon as they became apparent in the US, there must have been powerful offsetting forces which protected the Australian financial system from serious injury.

There is little doubt that the readiness of the RBA to support liquidity in the early days of the crisis and to assist funding by accepting repos on a wider range of assets over the ensuing months was critical to maintaining confidence in the financial system. So too the diligence and care with which APRA had been scrutinising institutions in the years prior to the crisis.

But there were also other factors at work.

There were major cyclical differences between Australia and other comparable economies. The big Australian boom in house prices and sales of established houses, which was quite as formidable as the boom in the US and the UK, ended in 2003. Mortgage loan growth through 2006 and into 2007 was not much less than half the rate evident during the boom. House price growth had only just resumed, after several years of sluggish movement in median house prices. After a period of sharp decline associated with the housing boom, household savings as a share of GDP were rising through 2006 and into 2007. The credit crisis hit Australia after a period of household

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balance sheet consolidation. Much the same is true of the home construction industry. House construction was also quite weak through 2006 and into 2007, with the beginnings of a recovery only becoming evident after a sharp downturn in 2004 and 2005. By the middle of 2007 there was no Australian housing boom to puncture.

One of the causes of the housing slowdown was the gradual tightening of the Australian cash rate since 2002. By the middle of 2007 the variable mortgage lending rate was 200 basis points higher than it has been in 2002. Unlike the US market (and for reasons not entirely clear), Australian mortgages are typically variable rate. The Australian market does feature introductory rates, not unlike the US pattern of an introductory rate with a reset period – but the gap between the introductory rate and the standard rate is much narrower than was usual in the US. The predominance of variable rates and the persistent upward trend in the cash rate, together with the evident slow growth in national median house prices, meant that by 2007 borrowers had already been discouraged from taking on loans they would not over time be able to service.

By the middle of 2007, when the crisis struck, Australia had been experiencing for several years a boom in business investment. Some of this upswing was related to markedly higher prices for energy, metals and minerals, but much arose from the fact that by the middle of 2007 Australia was close the beginning the seventeenth year of an uninterrupted economic expansion which had seen profits persistently increase as a share of income, and had fully stretched the existing capital stock. On average in the six financial years through to and including 2006/07 business investment accounted for just under half of GDP growth. It was one of the components of growth least likely to be discouraged by even a quite substantial increase in borrowing costs.

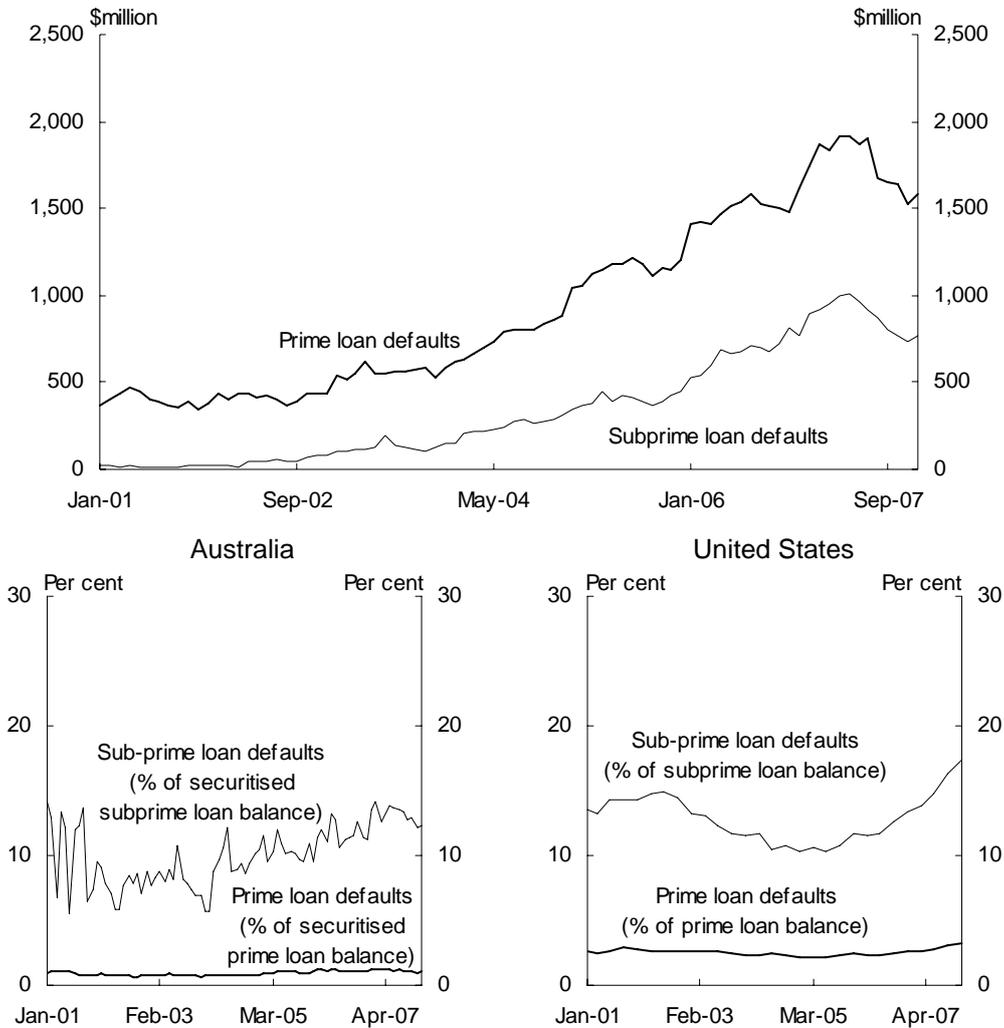
The durability of the investment upswing was underpinned by the unusual incidence of the credit crisis. It began in the US rather than in a less developed economy, and had little impact in North Asia or India, the two biggest sources of additional commodity demand. Driven by its own industrialisation, a capital exporter rather than importer, and with a sheltered financial system, China's growth was unaffected. So too, therefore, were the prospects for higher prices for Australian metals minerals and energy exports.

Because of strength and durability of output growth, employment growth was quite strong and the unemployment rate had reached and then fallen under a 30 year low. Household incomes were rising quite firmly.

The risk management practices and prudential soundness of the Australian financial system were clearly helpful in minimising the Australian impact of the global credit crisis. Lending to valuation ratios has increased over time, but not wildly. Sub-prime lending as a proportion of all lending had increased, but not to the extent it had in the

US market. Sub-prime defaults had increased, but not remarkably — suggesting that lending standards remained fairly rigorous.

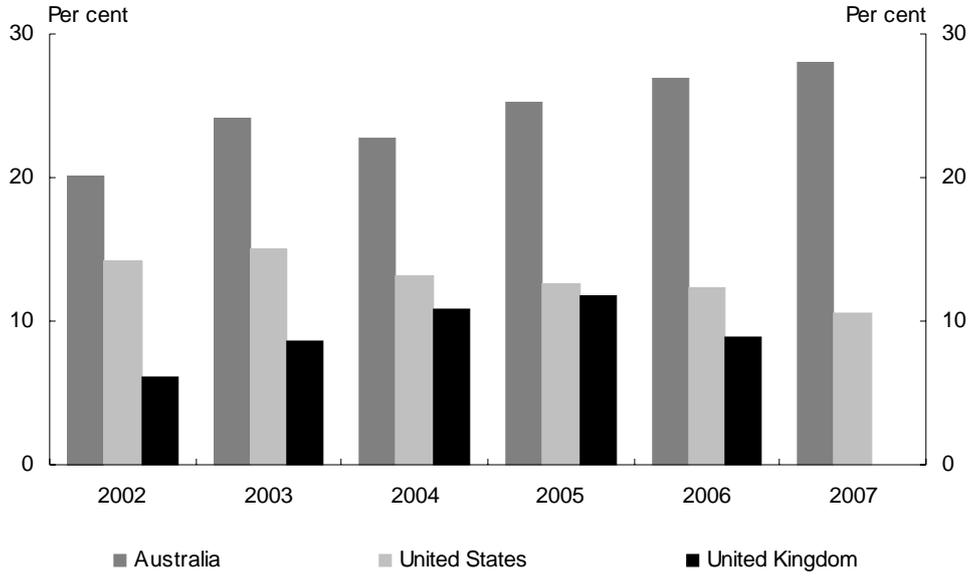
Charts 18 and 19: Residential loans defaults — Australia and the United States



Source: Standard and Poor's and Mortgage Bankers Association.

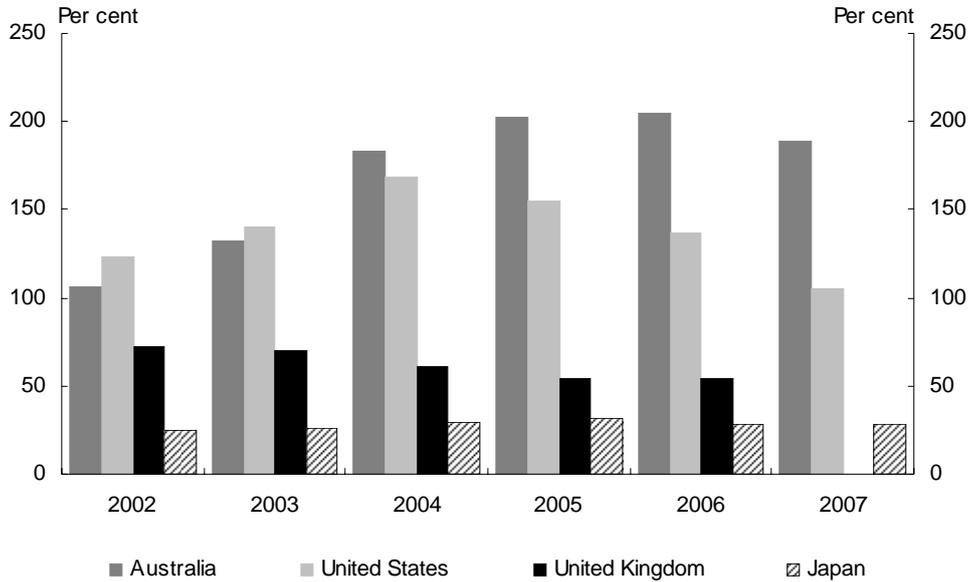
Throughout the crisis the resilience of Australia's financial system has been underpinned by the balance sheet strength of Australian banks. As the data in the IMF's recent Financial Stability Report demonstrate, the Australian banks persistently have one of the highest returns on equity in the developed world, and have very low bad debt and relatively high provisioning.

Chart 20: International banks' return on equity

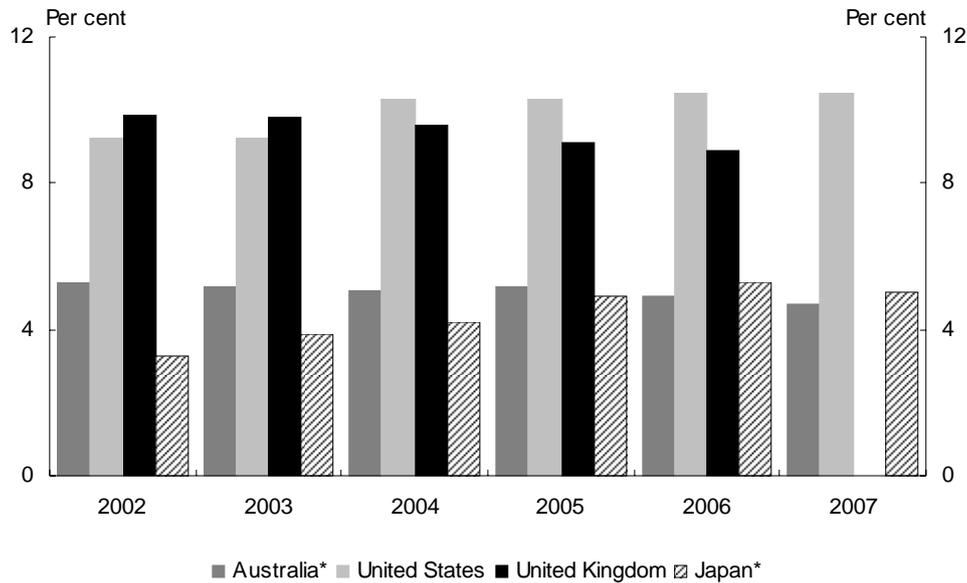


Source: International Monetary Fund.

Chart 21: International banks' provisions to non-performing loans



Source: International Monetary Fund.

Chart 22: International banks' capital to assets

Note: *Tier 1 capital.
Source: International Monetary Fund.

As evident in the decline over time in risk weighted assets to total assets, Australian banks do not engage in trading activities to the same extent as the major global banks. They are closer to the model of the traditional balance sheet bank than the combined commercial and investment banking model which has sustained the biggest losses in the sub-prime crisis.

Australia's wealth and income distribution is different from the US. Partly because of minimum wage laws, targeted welfare benefits, a quite progressive income tax system, skills based immigration and a tenacious egalitarian culture, Australia does not have a very large class of working poor families. The demographic basis for a rapid and vast expansion into mortgage lending to families with low incomes and poor credit records is much narrower in Australia than the US.

At a deeper level the resilience of the Australian financial system and economy in the face of a shock which was communicated to it so quickly and pervasively is also a reflection of decades of economic reform which have made more the economy more flexible at the same time as it has made it more open.

The transition to a different framework for the Australian economy was not been without pain. At the end of the nineteen eighties and the beginning of the nineteen nineties Australia had its own credit crisis, particularly in the corporate sector and specifically in property development. Australian banks took large losses. Australian businesses rebuilt their balance sheets, and even now remain on average

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conservatively geared. Banks changed management and became more conscious of risk management. Sixteen years later, the salutary lessons of Australia's last deep recession still influenced the conduct of major banks, corporations, and to a lesser extent households, and protected the financial system from some of the problems elsewhere.

Assessing the economic impact

It is too early to assess the final impact of the financial shock on the real economy, but some features are already apparent.

The primary channel of influence of a financial shock on the real economy is often the exchange rate, but in this instance the exchange rate against the US dollar has continued the upward trend apparent well before July of last year. There were a couple of episodes of weakness, usually arising in periods of high volatility when the risks yen carry trade and long positions in high yield currencies were particularly acute, but the clear trend has been appreciation against the US dollar. Much of this Australian dollar strength has reflected US dollar weakness, but even against Euro the Australian dollar remained fairly stable around EUR0.60, in the range between an end month low of EUR0.58 and a high of EUR0.63. That range of values is not unusual over 10 months in the calmest markets. Evidently, the impact of the credit crisis in Australia was not big enough to dramatically alter the exchange rate or exert influence through that channel.

The credit crisis has certainly exerted influence through the interest rate channel, though it needs to be borne in mind that the RBA has been increasing the cash rate through the episode, now by a total of 100 basis points. Since the most recent RBA increase was at the beginning of March this year, we must assume that it did not assess the impact of the credit crisis on market interest rates to that point as sufficient to achieve the slowdown it sought. The increase in market rates are significant, but not nearly as significant as the increase in the policy rate controlled by the RBA. From the beginning of the episode to now the yield on AAA 1 to 5 year notes has increased by around 120 basis points and the spread over government bonds by a similar amount. The standard variable home loan rate has increased 150 basis points, so two thirds of the increase was anyway explicitly sought by policy – and the RBA would no doubt have taken the 'independent' increases into account in determining the tightening necessary for its objectives.

There may well be some channel of influence through business and consumer confidence, both of which have fallen since July last year. Declining consumer confidence corresponds to the weakness of retail spending volumes in the first quarter of this year, and perhaps the decline in demand for housing lending and the

slowdown in established house price growth in the March quarter. Employment growth has held up, however, suggesting that the impact on business confidence is only moderate. Again, however, it is impossible to separate out the influence of the credit turmoil from the impact of central bank tightening.

The sharpest financial market impact has turned out to be in the equity market, which in the first few months of this year fell more sharply than the US equity market. This is partly explained by the fact that the Australian market had increased markedly faster than the US market in recent years. Financial, mining and property stocks are relatively more important in the Australian market than the US market, and all three sectors were hit by concerns arising from the credit crisis. Highly leveraged businesses with solid but illiquid assets were also hit hard, particularly where dividend growth depended on borrowing against revalued assets.

In their 1995 paper on the Credit Channel of Monetary Policy Transmission, Bernanke and Gertler suggest that financial shocks may be communicated to the real economy through the impact of declining collateral values on the balance sheets of borrowers, and through a reduction in the supply of bank credit in relation to other forms of credit. These channels may well be important in the US and the UK, but are unlikely to have had much influence in the Australian experience of the sub-prime episode so far. Bank credit growth has slowed, but not more than one would expect given the increase in market interest rates. Bank capital positions are not stressed, as they have been for some institutions elsewhere. The market value of listed Australian corporations as measured by equity values has declined, but since corporations overall gearing is not high there is unlikely to be a collateral constraint on borrowing overall.

Remaining concerns, including domestic and international regulatory issues

While the immediate crisis is fading, there are a number of continuing issues which warrant interest.

Borrowing spreads remain elevated, and the whole of the impact from the additional 'independent' increases in household mortgage rates is yet to be felt. Since Australians customarily borrow using variable rate mortgages, most households with a mortgage are affected by higher mortgage interest rates – not just new borrowers.

Though there have been some recent signs of revival, by and large the RMBS market remains dormant. The major banks are not much affected by this but it has made it much tougher for smaller mortgage originators to compete. Since there has been no increase in the default rate in the Australian AAA mortgages which constitute most of the securitisation stock, the market is likely to revive over time.

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The overall maturity of offshore bank liabilities have shortened somewhat, marginally increasing Australia's vulnerability to further global or local shocks. The recent experience demonstrates, however, that the pattern of Australian offshore financing is not fragile.

There has been some discussion over whether the slowdown in bank lending is in response to higher interest rates, or whether there is also some credit rationing. If in response to higher interest rates alone, we can conceptualise it as a straightforward leftward shift in the banks' credit supply curve in response to higher spreads. The policy decision is then one of whether the new level of interest rates is appropriate for the current monetary policy objectives.

Given the market dominance of banks, however, and the at least temporary attenuation of other forms of financing, the slowdown in credit growth might reflect a quantity constraint. There is no doubt that banks are becoming a little more rigorous in their lending decisions, which is unsurprising given the losses sustained by some highly leveraged businesses and in share trading portfolios. This is part of the general reassessment of risk that usually follows a prolonged period of dwindling returns, relatively low global interest rates and easy credit. There is no compelling evidence at this point that the credit slowdown reflects more than this normal reassessment together with the effect of higher market rates, though the trajectory of credit growth certainly bears watching.

There are some useful enhancements possible, but the experience of the credit crisis episode in Australia so far suggests that the regulatory framework for banks and major financial institutions works fairly well. Any potential difficulty arising from the institutional separateness of the Reserve Bank and APRA has evidently been minimised by the strength of their working relationship. Unexpectedly, to the extent holes in the regulatory framework became apparent during the episode they were in equity markets rather than debt or foreign exchange markets or major financial institutions. The episode disclosed holes in respect of market knowledge of short selling of securities, particularly using derivatives. It disclosed that some investors were apparently unaware that the form of margin loan over securities they held transferred the ownership of their securities to the lender. These issues are now being addressed.

This account began by remarking that some manifestations of the US sub-prime credit crisis were immediately apparent in Australia, though the Australian financial system had very little exposure to the instruments and none of the problems which were at the origin of the crisis in the United States. No surprise there of course — this was true also of the initial impact of the Asian financial crisis in 1997, the Russia and Long-Term Capital Management (LTCM) crises of 1998, and so on. What it does underline, however, is that it is not enough for Australia to regulate its own financial system well.

It is also in Australia's interests to work towards forms of global coordination, global monitoring and global crisis response which lessen the frequency and duration of these financial shocks. Most of the obvious necessary measures, including more searching IMF oversight, changes to ratings agencies practices, enhancements in balance sheet transparency, stronger national oversight, greater cross border co-ordination among central banks and regulatory agencies and so forth, have already been recommended in recent months either by international agencies or national governments. It remains to be seen whether the shock the sub-prime crisis has been enough to encourage international agreement.

