The role of the RBA in Australia's crisis response

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1 Introduction

Unlike the major economies at the centre of the GFC, Australia weathered the main crisis period in relatively good shape. At a time when the major advanced economies experienced their deepest recessions since the 1930s as well as widespread financial failures, the Australian economy avoided a recession and did not experience a crisis of solvency in its financial system.

In an earlier discussion of these issues I attributed this result to a combination of good luck and good management.[2] On the good luck side of the ledger, Australia undoubtedly benefited from its close trading relationship with the fastest growing parts of the world economy and particularly from the rapid early recovery in China. At the same time, it seems reasonable to acknowledge a significant role for good management by Australia's policy institutions. A lengthy period of budget surpluses meant that the Australian government entered the crisis period with considerable room for fiscal response. Similarly, Australia's flexible inflation target allowed plenty of scope for timely use of the interest rate lever when the RBA Board judged that to be needed. Further, Australia's prudential oversight framework had been significantly toughened some years prior to the crisis and successfully discouraged banks from emulating various risky practices that were occurring overseas, such as sub-prime lending.[3] This meant that Australian banking institutions entered the crisis period with relatively strong balance sheets, at least on the assets side, compared to many of their international counterparts.

2 The Nature of the Crisis in Australia

At a global level the GFC was at its heart a crisis in banking. While there are many specific problems that can get a bank into trouble, the major causes of a bank failure can broadly be put into two categories, namely *asset quality* and *liquidity*. If a bank's assets decline in value by a large enough amount, then that bank will be rendered insolvent unless it can be recapitalised. Broadly speaking, that is what happened in significant parts of the US banking system in the early stages of the GFC; institutions with large direct or indirect exposures to subprime lending experienced asset write-downs that threatened their solvency. On the other side of the balance sheet, it has long been recognised that banks can be subject to destabilising runs and panics. In that situation, a bank with insufficient access to liquidity may become unable to meet its obligations even if its net asset position is otherwise sound.

The literature on financial crises recognises that these two sources of bank stress can be interdependent and mutually reinforcing.[4] A loss of asset quality may trigger a bank run but, equally, a bank run may trigger or amplify a loss of net value if it forces the bank into a fire sale of its assets. During the GFC this two-way dynamic quickly emerged across the global financial system as the crisis spread.

The distinction between these two sources of banking stress is important in understanding the nature of the crisis in Australia and the required response.

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[2] Edey (2014).
[3] Ellis and Littrell (2017)
[4] See for example Reinhart and Rogoff (2009).

The stresses faced by Australian banking institutions were not primarily to do with asset quality. Australian banks did have some exposure to poor quality offshore assets, and they experienced increased losses on their domestic loan portfolios following the onset of the crisis, particularly in the commercial property sector. But these were never of sufficient scale to have a systemic impact on bank solvency.

The reasons for this state of affairs were, as noted, partly to do with APRA's risk management regime and, more broadly, reflected a banking system with better risk management practices than some of its counterparts abroad. But it is probably also fair to say that there was a fortuitous element to it. Australia's major banks (unlike, for example, many European banks) have typically been net borrowers rather than net lenders abroad, and this meant that when the crisis came, their main international exposures were on the liabilities side of the balance sheet rather than the assets side. Hence, the stress on Australia's banking system was primarily driven by liquidity rather than asset quality.

These features had important implications for the required policy response. In contrast to the United States and a number of European countries, there was no need in Australia for public injections of capital to keep key financial institutions open. The initial impact of the crisis in Australia was transmitted via dysfunction in global markets which affected the cost and availability of funding to banks and which also impaired market-based sources of funding to other sectors. This meant that alleviating liquidity stress was a central initial part of the response. As conditions worsened it became apparent that a severe global downturn was unfolding and hence countercyclical fiscal and monetary actions came into play, as well as a range of regulatory and prudential policy measures. These actions involved multiple agencies of government in ways that are covered in the other papers in this series.

This paper reviews the role of the RBA in the Australian policy response. It looks at the key actions of the Bank over the period 2007 – 2009 as the crisis unfolded, with a particular focus on the Bank's liquidity management role and interest rate decisions, and on the analysis that supported those decisions. I then attempt to draw some general conclusions about future crisis vulnerability and the broader legacy of the GFC for monetary policy.[5]

3 RBA RISK ASSESSMENTS IN THE LEAD-UP TO THE CRISIS

The financial stability role of the RBA was significantly redefined by the Wallis reforms of the late 1990s, which transferred the bank supervisory function to the newly established

[5] *Note on scope and sources*: In order to compile this review, I have been given access to RBA Board Memoranda during the crisis years and the years immediately before and after the crisis, as well as papers prepared by the RBA for meetings of the Council of Financial Regulators. In addition, I have consulted the Bank's published monetary policy and financial stability reports and statements, as well as statements to Parliament, speeches by senior officers and other published analysis. Outside those sources I have not sought access to any records of advice given by officers of the Bank to other parts of government, or to information pertaining to the effect of the crisis on individual financial institutions. These are not included in the scope of the paper.

APRA. As discussed by Ellis and Littrell (2017) the RBA chose not to attempt to replicate or shadow APRA's oversight of individual institutions, but rather set about building a capacity for system-wide risk analysis while retaining close liaison with APRA in its supervisory work. Under the new arrangements, systemic risk assessments produced by RBA staff have been regularly reported to the Board (normally twice yearly) and, since March 2004, regular reports along similar lines have been published in the Financial Stability Review (FSR, also twice yearly following the relevant Board meeting).

In its early FSRs in the period leading up to the crisis, the Bank focused on risks associated with the global low interest rate environment. Among the recurring themes at a global level were concerns about excessive leverage, compressed risk spreads in financial markets, rapid growth of housing credit, rising house price to income ratios, and rapid inflows into hedge funds. On a number of occasions the Bank warned of the possibility of a sudden reassessment of risk pricing.[6] However, the consequences if this materialised were seen largely in terms of business cycle impact rather than any form of system-wide financial impairment.

While recognising these risks, the FSRs in this period also noted that banks around the world were highly profitable and were therefore well placed to absorb any losses that might flow from a general repricing of risk. The Bank also allowed some credence to the view that the compressed risk pricing observed at the time might be justified by an apparently more stable macroeconomic environment.[7] The specific market sectors that eventually triggered the crisis, namely subprime mortgage lending in the United States and the associated structured securities (collateralised debt obligations, or CDOs) did not feature prominently in the analysis at this stage. The March 2006 FSR did discuss CDOs and noted the risks associated with their complexity, but argued that 'these developments do not pose particularly large risks on their own'.

At a domestic level, the Bank's analysis focused particularly on developments in housing-related lending and commercial property. The main source of potential vulnerability was seen as arising from the extended run-up in house prices and housing debt, over approximately the preceding decade. However, the Bank recognised that at least part of this outcome could be viewed as a one-time adjustment stemming from the transition to a low inflation and low interest rate environment.[8] Even if real borrowing rates were unaffected by this transition, the resultant lowering of nominal rates was seen as having the effect of easing borrowing constraints on households and therefore validating higher equilibrium prices for the existing housing stock.

Given the degree of uncertainty about the size of this effect, the Bank generally remained agnostic about whether house prices and household debt ratios had overshot sustainable levels. Nevertheless, this was seen as a significant source of *potential* vulnerability, particularly in periods when house prices and credit seemed to be gaining upward momentum.

Risks in the commercial property sector were also flagged during this period but were generally given less prominence than those in the housing sector. Successive FSRs noted

[6] The September 2005 FSR is a good example: "Such a reassessment of risk could turn out to be relatively benign, but … the preconditions are in place for quite abrupt swings in sentiment and a disruptive snap-back in pricing".
[7] See, for example, the opening discussion in the March 2007 FSR.
[8] See for example, RBA (2003)

that standard metrics such as rental yields, property-related debt and construction activity were pointing to growing risks in the sector, but on the eve of the crisis these were still seen as being well short of the scale observed in the previous instance of major stress in the late 1980s.

Overall then, the Bank's analysis identified a number of sources of systemic risk both domestically and abroad, while remaining generally optimistic in tone. The September 2006 FSR was fairly representative. It described recent financial system developments as 'broadly reassuring', and prevailing macroeconomic conditions as 'broadly supportive of financial stability'.

The Australian and global economies were in an extended period of expansion. IMF forecasts released in November 2006 predicted a continuation of above-trend growth of the global economy in both 2007 and 2008. Staff forecasts presented to the RBA Board in early 2007 predicted an acceleration in GDP growth to well over 3 per over the subsequent two years, with inflation somewhat higher than desired though expected to moderate.[9] The Bank had increased its policy rate on three occasions during 2006, and the prevailing question on the eve of the crisis was whether this would be sufficient to bring inflation satisfactorily under control.

4 CONTOURS OF THE CRISIS

Given the scale of the events that unfolded over the subsequent two years (approximately between early 2007 and early-to-mid 2009) an obvious question in hindsight is, why wasn't the crisis foreseen.

The historical and theoretical literature on financial crises suggests that, in many instances, this question is essentially unanswerable. In their comprehensive overview of the subject, Reinhart and Rogoff (2009) describe a spectrum of crisis vulnerability and emphasise the role of confidence (and its opposite, panic) in influencing the timing and severity of various kinds of crisis.

At one end of the spectrum, it is true that certain kinds of irresponsible behaviour by governments, banking institutions and others, can be sufficiently dangerous as to bring on a crisis with some degree of predictability. Historical hyperinflations and some Latin American debt defaults probably come into that category.

At the other end of the spectrum, there can be situations where public and private sector finances are ultra-safe, crisis risk is negligible and there is little likelihood of any form of panic ever taking hold. Goodhart (2010) for example describes the roughly thirty-year period to around the mid 1970s worldwide as one in which banks were so highly regulated that they were largely prevented from engaging in activities that could generate material system-wide risk. Banking was 'safe but boring', and banking crises around the world were extremely rare.

Between these extremes, according to Reinhart and Rogoff, there is a significant intermediate zone characterized by varying degrees of vulnerability and by complex interactions between those vulnerabilities and the dynamics of confidence and panic.

[9] Board Memorandum, The Economic Outlook, February 2007 meeting. The forecasts are described in detail in section 6 below.

While risk factors can to some extent be observed and quantified, the available metrics are imperfect guides to the probability of a crisis occurring, and the ephemeral nature of confidence makes the onset, timing and severity of crises highly unpredictable. In similar vein, Bernanke et al (2019) use the extended analogy of a fire disaster and describe the various vulnerabilities in the US financial system as the 'dry tinder' that eventually, with unpredictable timing, caught fire and spread.

In an early retrospective on these events, the IMF (2009) analysed the nature and causes of the GFC in terms of four elements: *vulnerability*, *trigger*, *contagion* and *feedback*.

The *vulnerabilities* that led to the crisis have been widely discussed. They included, in the United States, excessive leverage, poor lending practices, conflicts of interest associated with the originate-to-distribute business model, inflated house prices, and complex and opaque securitisation practices. Many of these conditions also existed in other financial systems, particularly in Europe.

The initial *trigger* for the crisis was the emergence of increased loan delinquency rates in the US sub-prime mortgage sector, associated with a softening in US house prices. As noted below, however, there were a series of further triggering events which contributed to the amplification of the crisis over time.

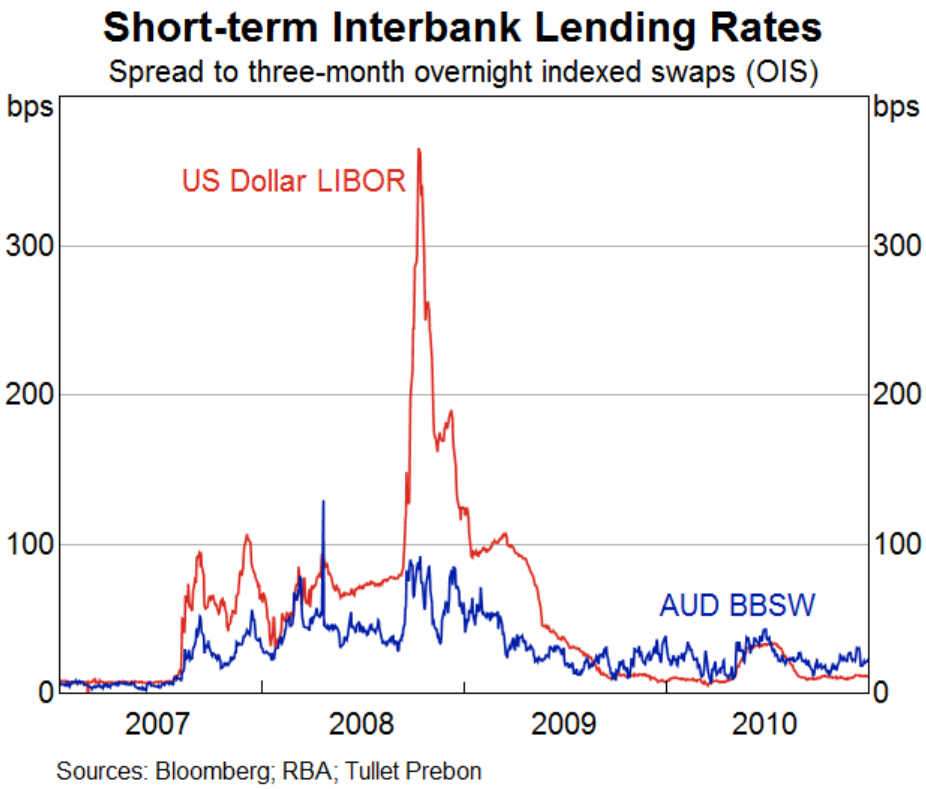
Contagion occurred partly through direct exposures across troubled institutions and assets, for example banking institutions that held significant portfolios of mortgage-related securities. But there was also significant contagion through repricing of risk, loss of confidence and widespread market dysfunction. In other words, the confidence and panic dynamic played a major role.

Finally, there was the element of *feedback* between the financial sector and the real economy. The BIS (2009) describes this as being particularly important over the six-month post-Lehman period (that is, roughly the six months to March 2009) when deteriorating conditions in the financial and real economies were mutually reinforcing.

Against this background it will be useful to summarise key aspects of the timing and intensity of the crisis from an Australian perspective.

From this distance, it is perhaps natural to think of the GFC as a single event, but the role played by international panic and market dysfunction was such that it unfolded in a series of waves, each associated with a particular triggering event. As noted above, the primary way in which these global stresses were transmitted to the Australian financial system was through their impact on bank funding markets and on securities markets. Debelle (2018) notes that the spread between interbank borrowing rates and the expected overnight policy rate provides a useful summary metric of the extent to which these international financial strains were affecting the Australian and global banking systems (Graph 1).

Graph 1



It can be seen that while there is a certain amount of volatility in this indicator, the most intense periods of market stress were clustered around a small number of key dates and events. The main ones can be summarised as follows.[10]

Precursor events: December 2006 to June 2007

It was during this period that significant early signs of stress were emerging in the US sub-prime mortgage sector. In its March 2007 FSR, the RBA noted the rapid growth of this sector over the preceding few years, the increased rates of loan delinquencies that were being reported, large increases in credit spreads on the associated securitised loans, and the risk of contagion to US investment banks that were significant holders of these securities. At this stage, there was no general spill-over into interbank and other markets (including markets in Australia) and most assessments were that the problem would remain contained. However, in an early sign of wider flow-on, in June the investment bank Bear Stearns announced significant losses incurred by two of its hedge funds that were investing in sub-prime securities.

August 2007

The key event at this time, and the one that many regard as the true start of the crisis, was the suspension by French bank BNP Paribas of withdrawals from funds that it sponsored which were investing in US mortgage securities. This event triggered a significant widening in risk spreads across the global banking system. It was followed

[10] This summary is drawn mainly from RBA FSRs during the relevant period and from the chronology presented in the BIS 2009 Annual Report.

shortly afterwards by the run on UK bank Northern Rock which eventually led to its nationalisation.

The RBA described the market response as a 'generalised retreat from risk taking', while noting that the Australian banking system was less affected than others.[11] These developments were seen as raising a number of wider issues in financial risk-management practices. There was a clearer appreciation of the dangers associated with complex, non-transparent securities, flaws in the originate-to-distribute model were being exposed, and markets assessed that banks had not truly offloaded risks by transferring them to related parties such as structured investment vehicles.

March 2008

The rescue of Bear Stearns, arranged by US authorities in March 2008, marked the start of the next phase of the crisis.[12] This near-failure of a significant banking institution triggered a further loss of confidence in financial markets. Meanwhile, housing and equity prices continued to fall in the United States and elsewhere, further weakening credit quality and adding to dysfunction in world financial markets. Credit rating downgrades to a number of significant US financial institutions during this period reinforced the general loss of confidence.

September/October 2008

The epicentre of the crisis was the failure of investment bank Lehman Brothers on 15 September and its immediate aftermath. The Lehman collapse was followed in quick succession by a string of failures or emergency rescues of major financial institutions in the United States and Europe. These included the government sponsored mortgage enterprises Fannie Mae and Freddie Mac, insurer AIG, US banks such as Washington Mutual and Wachovia, European bank Dexia and several of the major UK and Irish banks. Tensions were compounded by uncertainties about the official policy response, with the emergency TARP package passing the US Congress on the second attempt in early October.

These events amounted to a major escalation of the intensity of the crisis. Credit spreads in a range of markets spiked higher, and in many cases credit markets were closed to business at any price. Debelle (2018) notes that at one point, the US Treasury market – the 'most liquid market in the world' – was effectively closed. Global equity price falls accelerated and the major equity markets eventually experienced peak-to-trough declines of the order of 60 per cent.

March 2009 onwards: early signs of recovery

With hindsight it can be seen that the period of maximum stress in the global financial system, and maximum weakness in world economic activity, was the six months to March 2009. After that time there emerged some early signs that policy measures in the major economies had begun to turn things around. Expansionary fiscal measures were enacted in a number of economies, asset purchase programs by the major central banks were assisting in restoring a degree of confidence in credit markets, and US Treasury actions to stress-test and recapitalise the major banks using TARP funds were getting

[11] September 2007 FSR.
[12] For a detailed account of the Bear Stearns rescue, see Bernanke et al (2019).

under way. Global equity markets reached a trough in March, and from then on, most economic and financial indicators were beginning to improve, though only gradually. The BIS 2009 annual report, published in June of that year, concluded that a gradual recovery was underway, a view that was validated by subsequent events.

While the global recovery has since continued, it is notable that the GFC exposed significant structural weaknesses in the euro area and was followed by a series of European aftershocks (beyond the scope of this paper). It is also important to note that the world economy is still being affected by the legacy of the GFC, most notably in the form of persistent ultra-low interest rates. This continues to pose significant policy challenges which are discussed in Section 10 below.

A final point that emerges from this chronology concerns the nature of the uncertainties that were being faced. Not only was the GFC largely unpredictable (or unpredicted) as an event *in toto*, but it was also unclear at each of the key phases described above whether there would be any further intensification of the crisis, or whether the worst had passed. This uncertainty generated some awkward challenges for policymakers and official agencies on a number of fronts. One obvious challenge was in the ongoing communication of risks. Like other central banks, the RBA sought to use its communications in a way that would provide realistic risk assessments while also trying to foster some recovery in confidence.[13]

These uncertainties also posed significant challenges for both monetary and fiscal policies in calibrating the scale of the response. Bernanke et al (2019) make a relevant point about calibration in the US context. Using their continued analogy of a fire emergency, they argue that the first task in this situation was to be sure the fire was extinguished or, in financial terms, to ensure that enough was done to quell the panic. In a situation of major uncertainty with serious downside potential, they posit this as a reason for erring on the side of over- rather than under-reaction in calibrating the policy response.

5 Impact on the Australian Financial System

The global market dislocations affected the Australian financial system in a number of ways which can be briefly summarised as follows.

Cost and availability of funding to banks

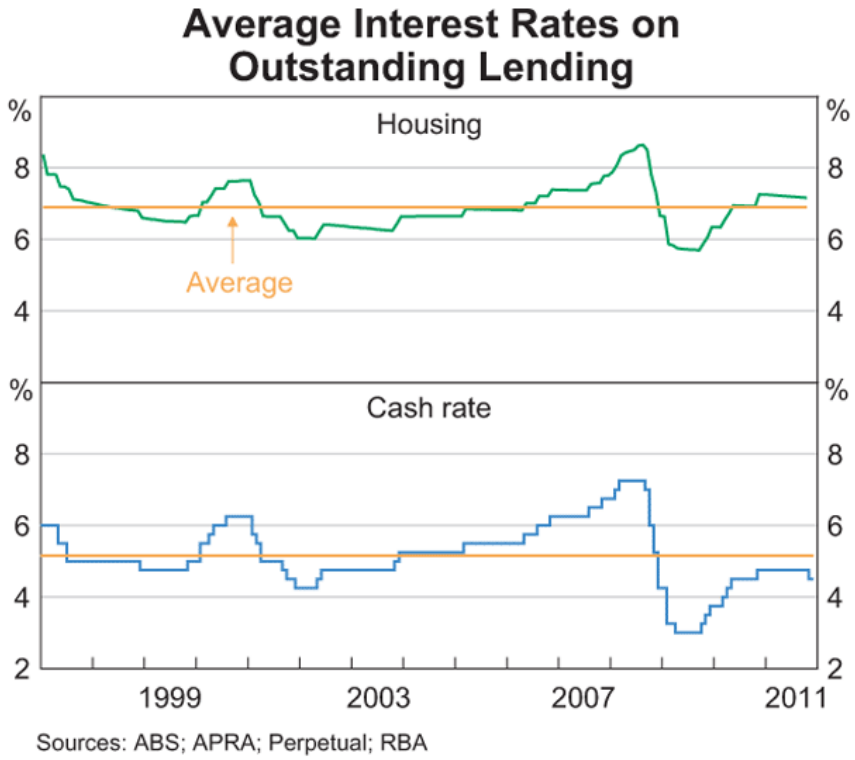
As already noted, the general repricing of risk meant that banks faced higher credit spreads in their funding markets across the maturity spectrum. These effects were generally less pronounced than in the most severely affected banking systems abroad; the spikes in interbank credit spreads were less extreme than elsewhere and, in contrast to overseas experience, interbank markets in Australia remained open throughout the crisis period.[14] Banks retained access to offshore bond market funding, albeit at higher cost, during the first phase of the crisis (pre-Lehman) and in fact were able to accelerate their offshore funding during that period on a precautionary basis. In the extreme global

[13] A good example is the speech by Stevens (2009).
[14] Debelle (2008)

panic that followed the Lehman collapse, the government's wholesale guarantee arrangements ensured that orderly access to funding markets remained in place.[15]

Hence, although there was a certain amount of 'funding pessimism' during and after the crisis, the policy responses of the government and the RBA ensured that the strains in funding markets did not pose a serious threat to the Australian banking system.[16] Their main impact was in raising bank's weighted-average cost of funds. As these costs were passed on to borrowers, this had the effect of pushing up average interest rates both paid and received by banks relative to the cash rate (for an example on the lending side, see Graph 2).

Graph 2[17]



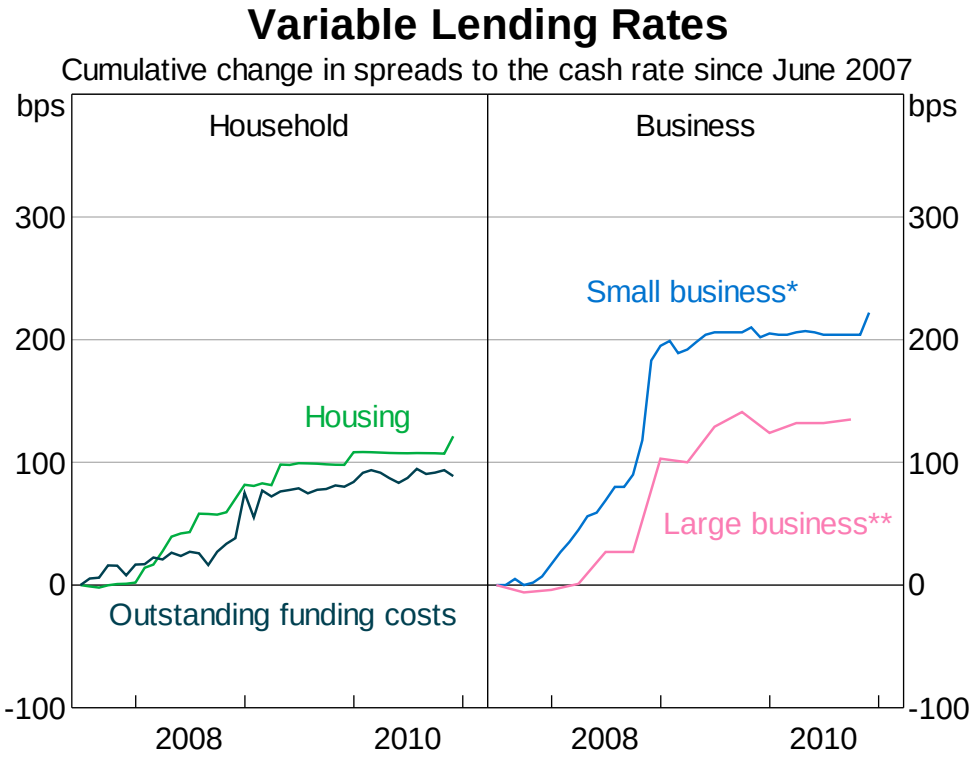
These developments raised two further issues that were the subject of much debate. The first was the question of monetary policy *effectiveness*. Upward shifts in bank lending rates relative to the cash rate mainly took place when banks passed on less than the full amount of a given reduction in the cash rate to their indicator rates. This prompted the question of whether monetary policy was becoming less effective. The RBA's consistent response was that it took this effect into account in the calibration of its policy decisions, by cutting more than would otherwise be needed to achieve the desired reductions in borrowing rates. Since the cash rate at that time remained well

[15] Refer Ken's paper, and section 9 below.
[16] RBA analysis of the funding pessimism hypothesis is discussed in section 9 below.
[17] Data as presented in November 2011 SMP

above levels where the effective lower bound might come into play, the effectiveness of rate cuts as a policy tool was thus unimpaired.

A second issue concerned questions of competition and loan pricing by banks. There was much criticism of banks for failing to pass on RBA rate cuts in full. The pre-crisis years had established a pattern where banks' key indicator rates (especially their variable housing loan rates) typically moved in lockstep with the cash rate. When this pattern broke down during the GFC some observers saw this as *prima facie* evidence of uncompetitive behaviour or profiteering. The counterargument was that the credit spreads which formed a significant component of banks' funding costs were no longer low and stable as they had been in the pre-crisis years. Without weighing in with pronouncements about what banks 'should' charge their customers, the RBA on a number of occasions provided detailed calculations of banks' average cost of funds so as to give factual context for this debate.[18] These calculations showed that most bank lending rates had moved in a way that was broadly commensurate with changes in their cost of funds. Margins on small business loans did increase significantly at this time (Graph 3). However, the average margin across all loans increased only modestly after 2008, particularly when viewed in comparison to its earlier downward trend (Graph 4).

Graph 3



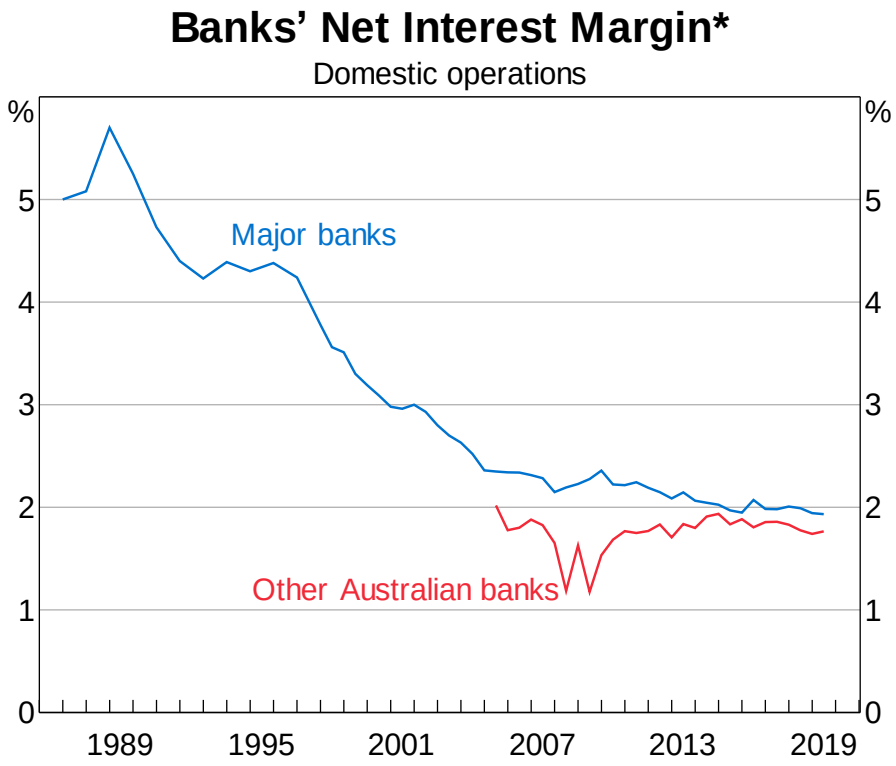
* Indicator rate on residentially-secured term loans

** Average rate on credit outstanding; includes bill lending

Sources: ABS; APRA; RBA

[18] For example, the Submission to the Senate Inquiry on Banking Competition, RBA (2010).

Graph 4



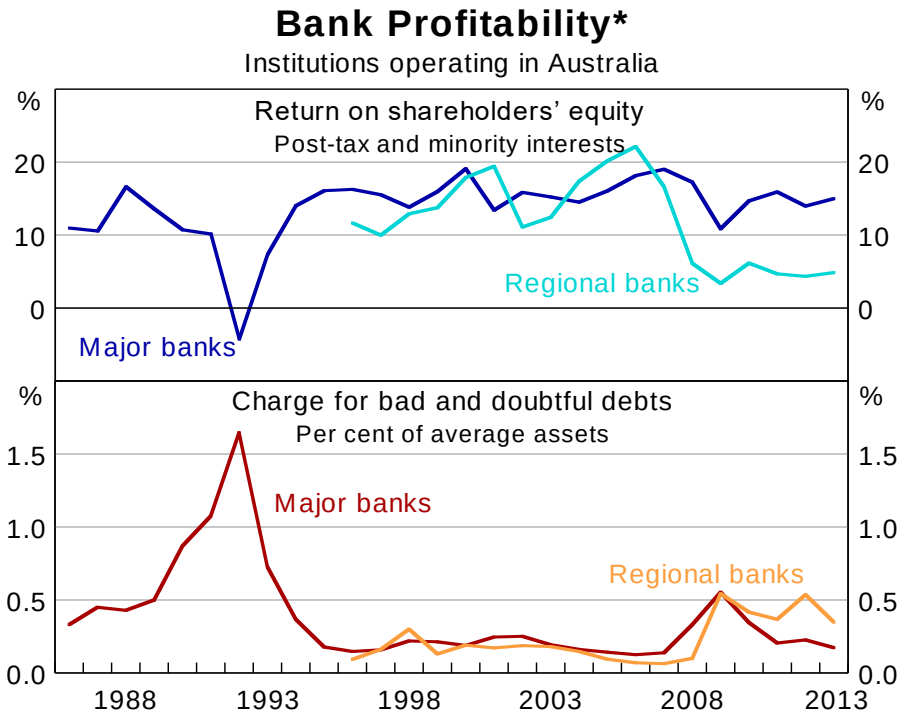
* Data from 2005 are from APRA; data before 2005 are collected from bank reports; data are annual prior to 1998 and semi-annual thereafter

Sources: APRA; Banks' financial reports; RBA

Asset quality and profitability

Australian banks experienced increased credit losses and asset write-downs during the GFC, but these were comparatively modest in scale and did not threaten the overall profitability (much less, the solvency) of the banking sector. The largest source of loan losses for the major banks was in their business loan portfolios, particularly in commercial property, and there were also some significant losses on overseas assets. Aggregate loan loss rates for the major banks peaked in 2009 at around ½ per cent of assets, and their impaired asset ratios peaked at just under 2 per cent. These figures were well below those seen in the major crisis-affected financial systems abroad, and also well below the experience of Australian banks in their last period of significant stress in the early 1990s. Major banks' return on equity remained above 10 per cent throughout the crisis years.

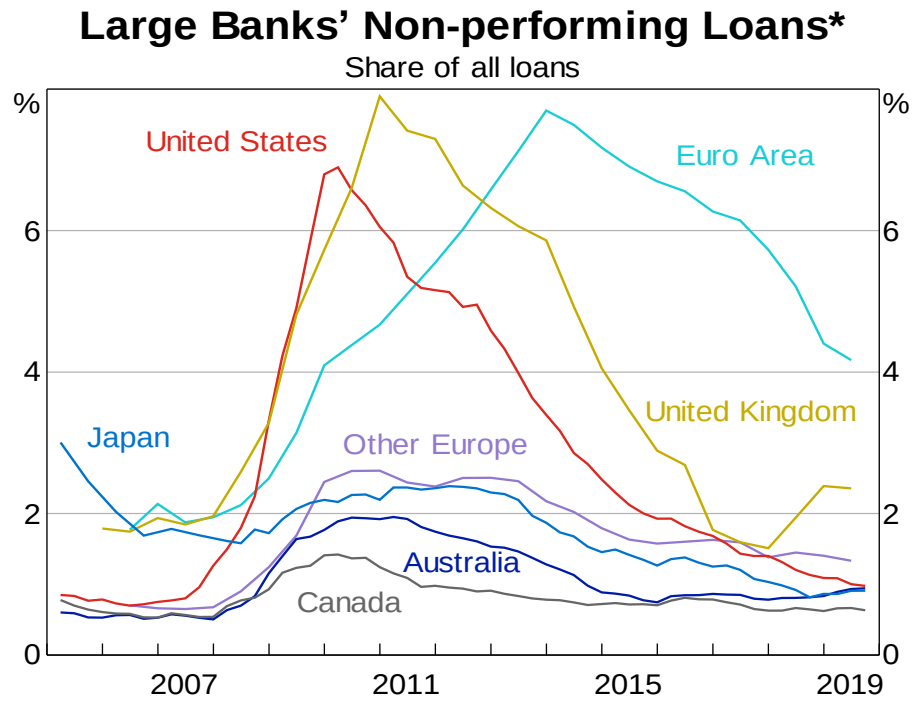
Graph 5



* From 2006 data are on an IFRS basis; prior years are on an AGAAP basis; includes St. George and, from 2009, Bankwest

Sources: RBA; banks' annual and interim reports

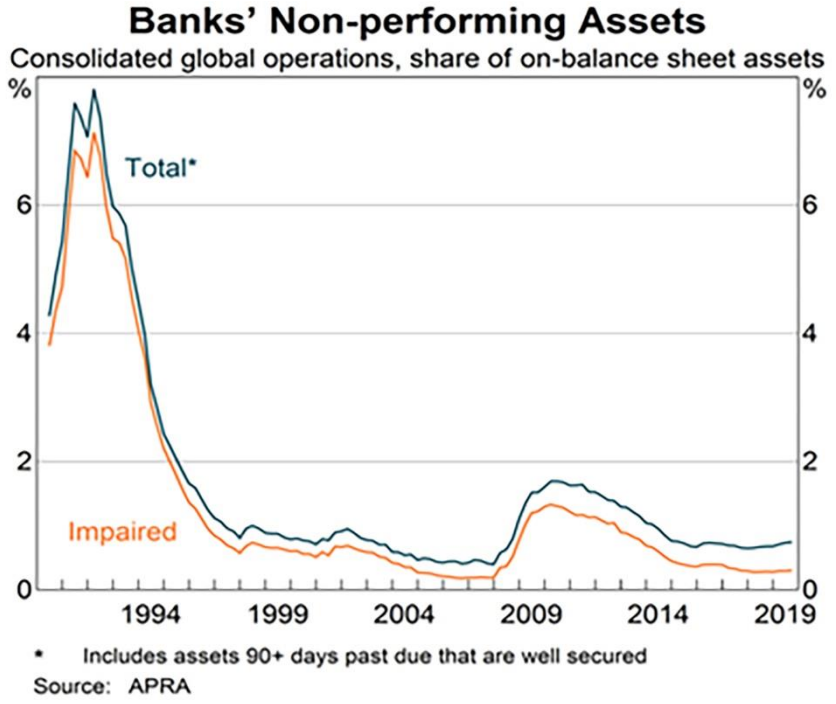
Graph 6



* Definition of 'non-performing loans' differed across jurisdictions before 2016; number of banks: Australia (4), Canada (6), Euro area (41), Japan (3), Other Europe (10), United Kingdom (4) and United States (19)

Sources: APRA; Banks' Annual and Interim Reports; Bloomberg; FSA; RBA; S&P Global Market Intelligence

Graph 7



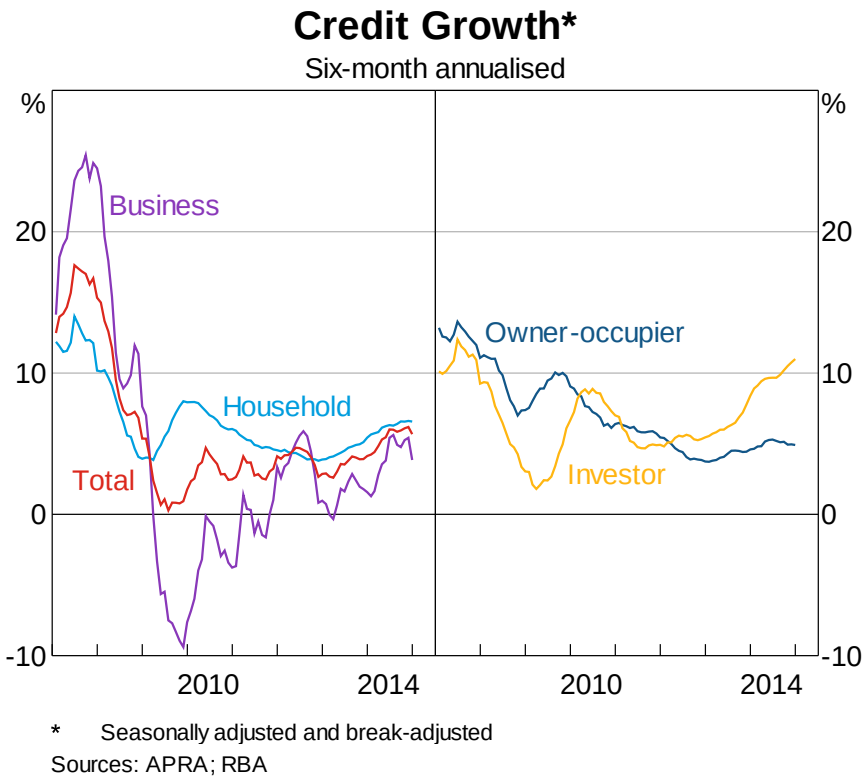
Effects on non-bank financial activity

The abrupt repricing of risks during the GFC affected a range of non-bank financial market activities and sources of financing. State governments faced increased interest spreads relative to federal government benchmarks, though this was in a context of substantially declining government funding costs overall. Net corporate bond issuance, and issuance of residential mortgage backed securities were sharply curtailed, though from late 2008 a partial recovery in the RMBS market was assisted by regular purchases being made by the AOFM. These developments formed part of a broader flight to quality which generated a degree of re-intermediation of financial flows through the banks to Australian households and businesses, particularly in the early stages of the crisis.

Credit to the household and business sectors

As crisis conditions continued and the domestic economy slowed, the flow of credit to Australian households and businesses declined. This was particularly pronounced for the business sector, with credit to the sector eventually contracting at an annual rate of almost 10 per cent in the second half of 2009. Credit to households continued to expand, though at a more moderate pace than previously (generally between about 5 and 10 per cent per annum in the early years following the onset of the crisis). But this followed a period mid-decade when credit growth had been unsustainably high, so it entailed an element of necessary correction.

Graph 8



* Seasonally adjusted and break-adjusted

Sources: APRA; RBA

In its economic statements and commentaries during the crisis-affected period the RBA noted that both supply and demand factors were at work in generating the observed credit restraint.[19] It was to be expected that banks would move to restore more prudent credit standards given the circumstances. Industry participants reported that banks were applying more stringent collateral requirements and loan covenants in their business lending and were tightening loan to valuation ratio (LVR) tests in their housing lending as well as reviewing the pricing and availability of low-doc loans. At the same time, the RBA recognised that both the household and business sectors were adopting more conservative financial strategies. In particular the business sector was engaging in significant de-leveraging, with substantial new equity raisings being made while debt levels were being reduced.

Overall the RBA commentaries at this time tended to view these developments as an appropriate response to the earlier credit over-reach domestically and to the tougher international environment. Hence, they were not viewed as an important independent contractionary force within the domestic economy.[20] But, as noted earlier, it is likely that these relatively benign outcomes were only possible because of official policy actions which alleviated the extreme funding and liquidity stress faced by banks during this period.

[19] See for example, the discussion in the March 2009 FSR.

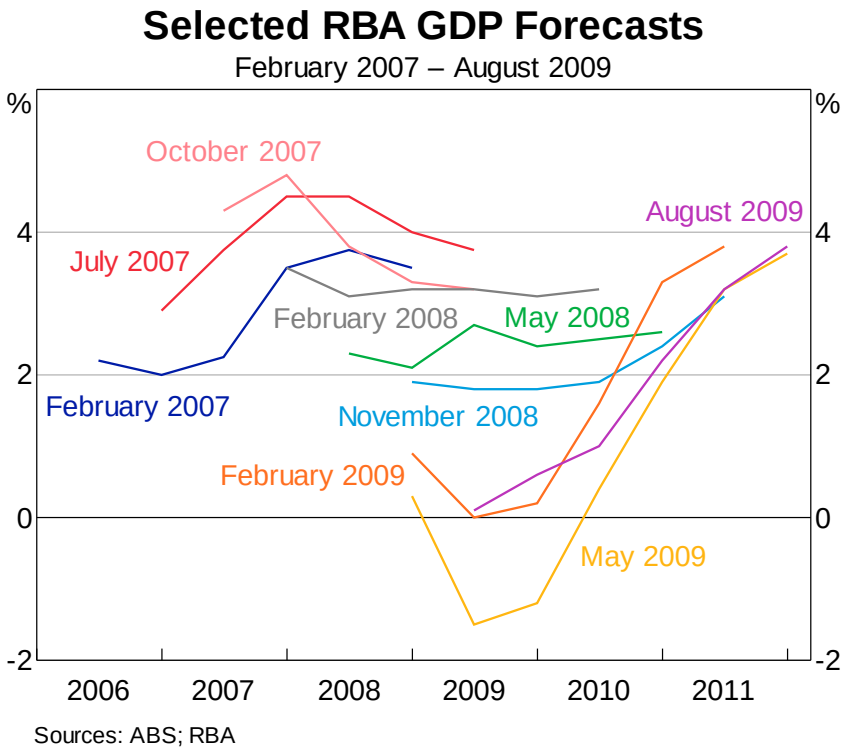
[20] The February 2009 SMP describes the slowing in credit as consistent with the general softening of demand and output rather than being a driving force.

6 THE EVOLVING ECONOMIC OUTLOOK[21]

The RBA regarded the economic outlook at the beginning of 2007 as broadly favourable. While growth had moderated somewhat during 2006, staff forecasts presented to the Board in April 2007 predicted an acceleration of growth to rates of over 4 per cent in the near term. Inflation was regarded as being uncomfortably high, being close to 3 per cent in underlying terms, but the RBA saw signs that this was moderating following increases in the cash rate that had been made during 2006.

A summary of the RBA's evolving forecasts for GDP growth is provided in Graph 9.[22]

Graph 9



Source: Board Memoranda, The Economic Outlook, 2007 – 2009 (various)

During the course of 2007, incoming data generally confirmed the ongoing strength of the global and domestic economies. In assessing the flow of new information, the Bank sought to weigh the evidence of continuing strength in demand and output against the uncertainties posed by global financial strains, particularly after August 2007.

[21] While the RBA had for some time been publishing quarterly inflation forecasts, it did not begin publishing forecasts for GDP growth and other demand and activity variables until February 2008. References to forecasts in this section are based on staff forecasts presented in RBA Board Memoranda, The Economic Outlook, normally reported quarterly but in some cases updated more frequently during this period.

[22] The focus throughout this section is on the outlook as perceived by the RBA Board. The evolution of forecasts during this period was in fact quite similar across the official agencies including the Australian Treasury. See Gruen and Stephan (2010).

Substantive revisions to the growth forecasts came in several phases.

In its October 2007 and February 2008 forecasts, the Bank scaled back expectations of GDP growth, from figures in the high 3s and 4s, to just over 3 per cent. This incorporated an assessment that global market strains would weaken world GDP, but that the effect would be relatively modest given an assumption that market conditions would gradually improve.

Forecasts reported in May and August 2008 (essentially, in the post Bear Stearns environment) were further revised downwards to show near-term growth expectations significantly below trend for the first time. At this stage, Australia's GDP growth was expected to ease back to rates of around 2½ per cent, before recovering towards the end of the forecast period.

An interim update to this assessment was provided to the Board in October 2008 in the immediate wake of the Lehman collapse. The central forecast was again revised downward to a low point of 1.8 per cent growth, expected to be reached over the year to June 2009. The special Board memorandum containing these forecasts also offered two alternative scenarios – an upside with higher commodity prices and hence a less pronounced economic downturn, and a downside incorporating an assumption of ongoing market dislocation. The downside scenario envisaged a small contraction in GDP at the point of maximum crisis impact, with the year-ended growth rate dropping slightly below zero during 2009 before gradually recovering.

Over the subsequent few months events moved quickly and prompted another round of material downward revisions in the early part of 2009. This took place in the context of a global reassessment of prospects, which reflected both the initially expected impact of the post-Lehman market dislocation and the unfolding evidence from economic data pertaining to that period. Direct evidence of the impact of these events on global demand, output and trade began to emerge at the end of 2008 and accumulated quickly in the early part of 2009. A few facts and figures cited in the February 2009 SMP make the point:

- US GDP fell by an estimated 1 per cent in the December quarter 2008
- US payrolls fell by almost 2 million in the four months to December
- Housing starts in the United States fell by 28 per cent in two months
- House prices had fallen by between 10 and 20 per cent from their peaks in major economies
- Industrial production fell by 20 per cent in Korea and by more than 25 per cent in Taiwan over the last three months of 2008
- Exports of east Asian economies in total fell by 25 per cent over the same period

The scale, speed and synchronicity of the downturns in these variables made it clear by early 2009 that the global economy was entering a severe recession. For example, the IMF WEO of April 2009 predicted that the major advanced economies would contract at an annual rate of about 4 percent at the point of maximum weakness in the first half of 2009, which would amount to the deepest world recession since the 1930s. While the IMF's predicted distribution of the crisis effects across the major economies was slightly off, in aggregate this expectation turned out to be broadly correct.

Forecasters at the RBA took the view that, in this environment, Australia would be unable to avoid a serious recession. Forecasts presented to the Board in April and May 2009 predicted that the economy would contract by around 1½ per cent on a year ended basis at the cyclical trough, accompanied by an increase in the unemployment rate of 4 percentage points. In other words, this implied a downturn of comparable scale to the early 1990s recession.

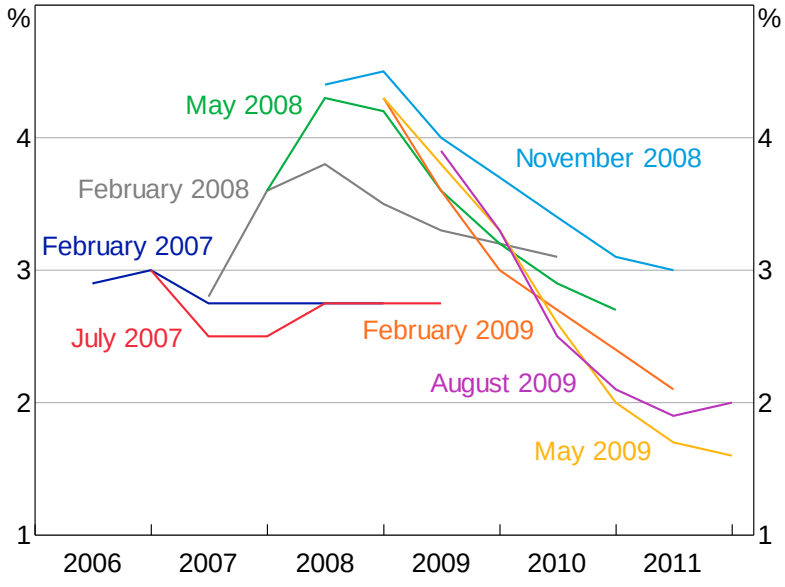
In the event, the economic downturn in Australia was much milder than predicted at this point, and after May 2009 the Bank's forecasts for GDP growth were revised successively upwards. The proximate reasons for that shift in outlook were twofold. First, the initial print for March quarter 2009 GDP (released in early June) was substantially higher than expected. The Board memorandum at that time indicates that a quarterly decline in GDP of around ½ per cent was anticipated, whereas the outcome was an *increase* of 0.4 per cent.[23] This provided a substantially higher base for subsequent forecasts. Secondly, as discussed above, there were growing signs by mid-year that a global recovery was getting underway. Hence, by the second half of 2009 it was clear that the most pessimistic assessments of the crisis impact in Australia had not been realised.

The Bank's evolving assessment of the inflation outlook was influenced by the factors discussed above and also by the flow of incoming domestic wage and price data, especially the CPI. The flow of CPI results was such that it resulted in the inflation and GDP revisions being somewhat out of synch at times, particularly in the early part of the crisis-affected period (Graph 10).

Graph 10

Selected Forecasts of Underlying Inflation

February 2007 – August 2009



Sources: ABS; RBA

Source: Board Memoranda, The Economic Outlook, 2007 – 2009 (various)

[23] Board Memorandum, Monetary Policy, June 2009. This figure has subsequently been revised upwards, such that the latest vintage of national accounts data reports an increase of 1.0 per cent).

In the first half of 2007, domestic CPI figures appeared to support expectations of a moderation in inflation, with underlying measures forecast to remain below their then-recent peak of around 3 per cent in year-ended terms. However, a run of higher than expected quarterly outcomes later in the year, and into 2008, prompted a series of upward revisions to this outlook. Beginning in the September quarter of 2007, the Bank's preferred measures of underlying inflation increased at quarterly rates of 1.0 per cent or more for five successive quarters. In year-ended terms, these measures eventually peaked at around 5 per cent in the September quarter of 2008. During this period, the Bank's forecasts continued to envisage that inflation would eventually move back towards the target, but from successively higher starting points.

By late 2008 and early 2009, the combination of a weakening economic outlook and some lower CPI figures made the Bank more confident that inflation would return to target within the normal forecast horizon. As a result, the two-year-ahead forecast in February 2009 predicted an inflation rate eventually dropping below the target mid-point for the first time in some years. This more favourable outlook was broadly validated by CPI outcomes over the next couple of years.

7 RBA LIQUIDITY SUPPORT DURING THE CRISIS

The policy actions of the RBA during the crisis period took the form of market operations to provide liquidity support (discussed in this section) and the Bank's interest rate decisions (covered in section 8).

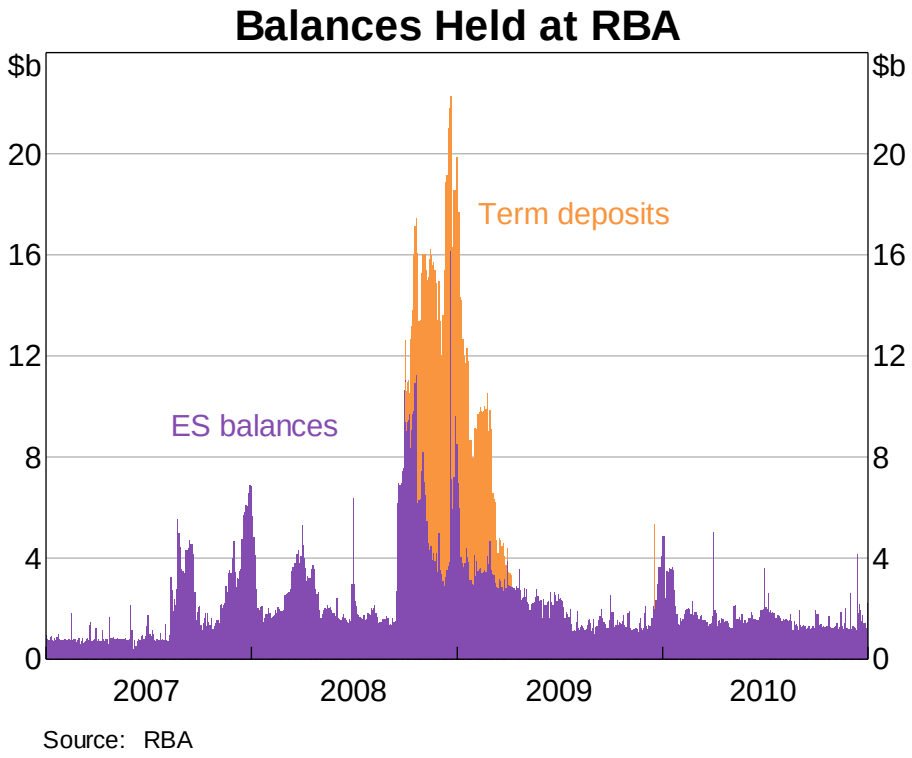
From the onset of the global market strains, the RBA saw it as a core function to respond by providing liquidity support to the domestic banking system. This was, in effect, an extension of the Bank's normal liquidity management operations. As the monopoly provider of settlement balances to the system, the RBA engages in regular operations to offset the day-to-day impact of government transactions on aggregate balances and, more strategically, to accommodate any significant changes in the system's demand for liquid funds.[24] During times of stress the demand for settlement funds will typically increase; the RBA can accommodate this through its operations to lend funds into the system under repurchase agreement (repo) – in effect, by making secured loans. These operations do not entail any material risk to the RBA balance sheet since the risk of collateral proving inadequate is dealt with by margins of overcover ('haircuts').

During the crisis period the RBA accommodated a substantial increase in the demand for settlement balances (Graph 11). The Bank also lengthened the maturity of its operations in order to provide banks with greater certainty of funding at longer horizons. Fluctuations in the aggregate demand for settlement funds broadly aligned with other indicators of market stress. In the initial wave of tension around August/September 2007, aggregate settlement balances briefly rose to levels of more than $5 billion, and they reached similar levels at end-year and again in March 2008 around the time of the Bear Stearns rescue. At the height of the global market strains in December 2008, aggregate settlement balances exceeded $10 bn. These were supplemented by substantial additional balances under the term deposit facility also provided by the Bank at that time, the counterpart to the Bank's longer-term funding operations. For

[24] For a detailed description of the RBAs market operations, see Debelle (2008)

comparison, aggregate settlement balances in the pre-crisis period had typically been around $700m.

Graph 11

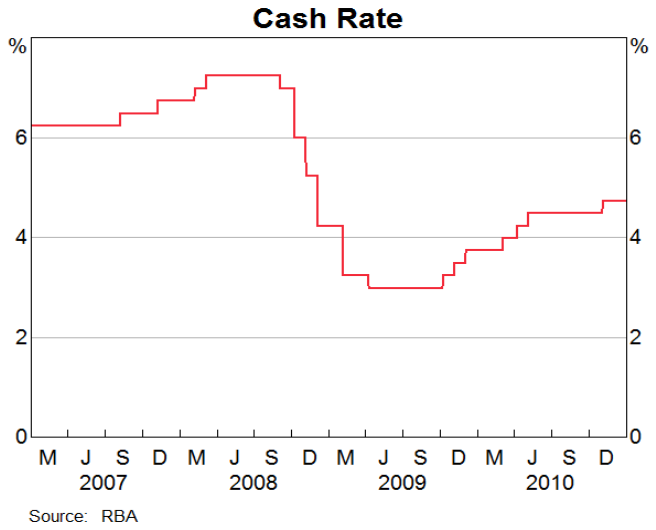


As well as expanding the scale of its liquidity operations the RBA also expanded their scope by widening the pool of eligible collateral. Under changes announced in September 2007 and October 2008, the RBA widened the collateral pool to include all bills and CDs issued by ADIs which held an Exchange Settlement account, AUD-denominated bonds issued by Australian banks, and various highly rated securities backed by prime mortgages. Significantly, the October 2008 expansion included related-party RMBS, which opened up the potential for a vast pool of additional collateral to be made available if needed, in the form of 'self-securitised' mortgages. Taken together these changes assisted in maintaining confidence and liquidity in the markets for the eligible securities, and also ensured that there would be no impediment to expanding the volume of settlement funds that could be made available as needed.

8 INTEREST RATE DECISIONS

The interest rate decisions of the RBA Board (Graph 12) during the crisis-affected period can be viewed in three distinct phases.

Graph 12



Phase 1: Pre Bear Stearns: Domestic inflation concerns predominate

In the first phase, the predominant concern of the Bank was with domestic inflation pressures. On the eve of the crisis, there was a clear bias to tighten. The February 2007 Board Memorandum, for example, discussed the prevailing high levels of capacity utilisation and the resulting upward pressures on inflation, and stated that the key task would be to assess whether further tightening would be required to contain it.[25] Hence the likelihood was that the Bank would need at least to consider further rate rises in the period ahead, continuing a lengthy but fairly gradual tightening cycle begun earlier in the decade.

At the same time, the Bank needed to weigh these domestic concerns against the growing uncertainties posed by international market developments. Monetary Policy Memoranda to the Board began referencing the US sub-prime problems in March 2007 and gave them increasing attention as the situation developed. The balance between these two considerations shifted over time and the Board faced some difficult judgments because, as various Board Memoranda make clear, the uncertainties from both sources seemed to be increasing at the same time, and they pulled in opposing directions.

In the event, the cash rate was increased on four occasions in this period. The first, in August 2007, followed one in a series of unexpectedly high CPI results and associated upward revisions to the inflation outlook. Although market volatility had already increased somewhat by that time, the August decision predated the main initial wave of turmoil associated with the BNP Paribas and Northern Rock events. Those events formed an important part of the backdrop to the Board's September and October

[25]Board Memorandum, Monetary Policy, February 2007.

meetings, but by November global markets had started to become more settled. With evidence of domestic inflation pressures continuing to build, the Board then made further increases in the cash rate at its November, February and March meetings.

Board Memoranda and Minutes over the months between August 2007 and March 2008 make clear that, in the absence of the market turmoil, the Bank would have seen a case to raise the cash rate more quickly than it did. For example, at its February 2008 meeting, the Board considered an increase of 50 basis points, which would have been an unusually strong anti-inflation action when seen in its recent context; however, it opted for the smaller 25 point increase in light of the global uncertainties. At its March 2008 meeting, the Board again considered the balance of domestic and international factors and increased the cash rate a further step, based on an assessment that the domestic inflation risk remained the predominant concern.

Phase 2: Between Bear and Lehman: a period of uncertainty

While the wave of financial turmoil that followed the Bear Stearns rescue was relatively short lived, it signalled a general softening of the world economic outlook and a shift in the balance of risks facing the RBA. Domestic inflation was still too high.[26] However, the Bank recognised that it would take time for the earlier monetary policy decisions to have their full effect and that international economic conditions were shifting. Based on these considerations, the April 2008 Board Memorandum assessed that the current policy setting was 'about right for the time being' and that the next move could be in either direction.

That assessment was broadly maintained over the next few months as international market conditions again became a bit more settled. The August 2008 Memorandum discussed ongoing inflation concerns but also noted the 'possibility that the economy will move into an uncomfortably sharp downturn' in light of the lingering international market uncertainties. It concluded that there were 'heightened risks in both directions' and that it was not clear at that stage which risk merited the most attention. By early September, however, the risks were assessed as having shifted sufficiently to the downside to call for a cash rate reduction of 25 basis points, to 7.0 per cent.

Phase 3: Post Lehman: Emergency rate cuts

As discussed above, the Lehman collapse on 15 September marked a major escalation of the financial crisis. Over the subsequent six months, the Bank would cut the cash rate by a further 400 basis points, the most concentrated series of moves in the period since interest rate changes began to be formally announced in January 1990.

These decisions were made partly as a response to the rapidly changing economic outlook, but also reflected the pervading sense of global crisis and the perceived need to provide direct relief of financial stress. A significant element of the general climate of uncertainty in Australia was the extreme volatility of the exchange rate, particularly in the six-week period between the Lehman collapse and the end of October 2008. The RBA's commentaries described this as a period of 'unprecedented volatility' in the exchange rate. In trade -weighted terms the exchange rate depreciated by more than 20 per cent, and analysis presented in the February 2009 SMP showed that intraday trading

[26] The latest reading for underlying inflation was 3.6 per cent for the year to the December quarter 2007.

ranges for the AUD/USD exchange rate were much larger than their historical average.[27] Minutes of the November 2008 Board meeting record that the Bank was intervening in the market during this period to buy Australian dollars, but that the Bank was not seeking to defend a particular level of the exchange rate. Rather, the intention was to provide liquidity to the market in disorderly conditions. The lower exchange rate was seen as having a cushioning effect on the economy, and in that sense was supporting the countercyclical impact of monetary and fiscal policies.

Volatility and dislocation also reached a peak in other markets at this time. As discussed above, this was the period of maximum dysfunction in interbank funding markets. Volatility in equity markets from October to early December was higher than at any time since at least the late 1980s.[28] It was in this climate of extreme financial volatility and economic uncertainty that the Bank made its series of emergency rate cuts in the months following the Lehman collapse.

At its October 2008 meeting, the Board was presented with a stark set of facts including a string of failures or emergency rescues of major international financial institutions and 'a virtual complete closure of capital markets in the United States'.[29] The Board Memorandum recommended a cash rate reduction of at least 50 basis points. In normal times this would have been seen as a strong action, coming as it did after the 25 basis point cut the previous month. However, in view of the severity of the situation, the Board opted for a cut of 100 basis points that month. This was followed in quick succession by cuts of 75 and 100 basis points at the November and December meetings.

The RBA Board does not normally meet in January.[30] At its December meeting the Board considered the timing of its next meeting and the implications of that for the size of the rate cut and the associated communications. The staff recommendation was for a 'substantial' but unspecified reduction. Minutes of the meeting indicate that the Board decided it could best promote confidence by making a 100 basis point move (which was at the high end of expectations) while signalling that it did not expect to hold an 'emergency' meeting in January.

By the time of the February 2009 meeting it was clear that global conditions had continued to deteriorate and accordingly the Board Memorandum recommended a further 100 basis point cut. This recommendation was made independently of the fiscal stimulus package that was being prepared for release at the same time. The minutes indicate that Treasury Secretary Henry briefed the meeting on the contents of the fiscal package which was to be announced later that day. The Board assessed that the proposed monetary and fiscal actions would be complementary and accepted the recommendation to cut the cash rate by 100 basis points. This was followed by a further 25 basis point cut in April which turned out to be the last in the cycle, bringing the cash rate to 3.0 per cent. By then the Board assessed that policy settings were providing substantial stimulus and needed to be given time to work. With economic and financial data in any case beginning to turn more positive after that time, a case for further rate cuts did not re-emerge.

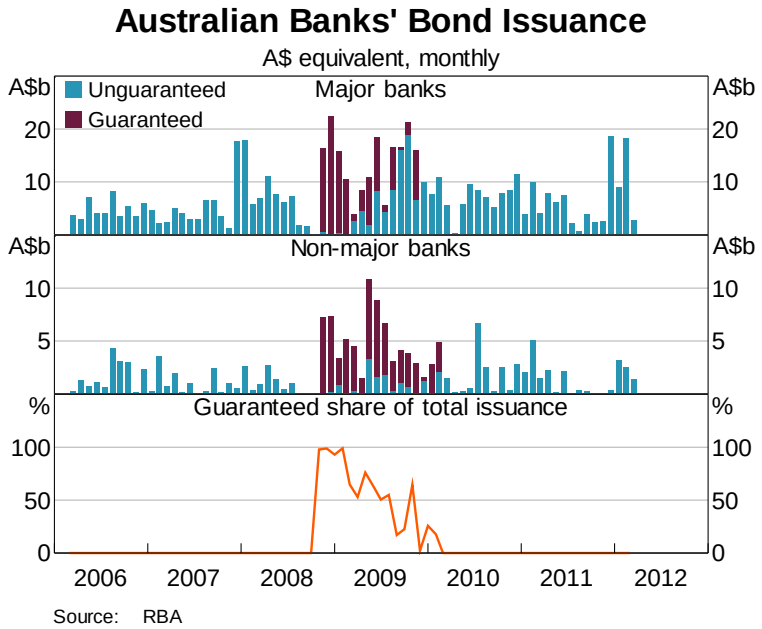
[27] The average intraday trading range in October 2008 was 3.7 cents, compared to a long-run average of 0.7 cents.
[28] Analysis presented in the February 2009 SMP (Box A).
[29] October 2008 Board minutes.
[30] The only exception to this that I am aware of was an emergency meeting in January 1990.

9 IMMEDIATE AFTERMATH OF THE CRISIS: THE RBA AND 'FUNDING PESSIMISM'

An important part of the whole-of-government response to the crisis was the wholesale funding and deposit guarantee for Australian banks announced in October 2008.[31] The components of this package were a government guarantee of bank deposits of up to $1million per customer per bank under the newly established Financial Claims Scheme, along with a fee-based guarantee available to banks for wholesale sources of funding and large deposits.[32] The announcement followed a series of similar decisions by other governments in the wake of the Lehman collapse, beginning with the Irish government at the end of September. As noted by Schwartz and Tan (2016), there was a cascading effect in these decisions; once the process started, many governments concluded it would be untenable for their banks to compete with guaranteed banks in funding markets in the strained circumstances of the time.

The guarantee scheme allowed Australian banks to broadly maintain their existing funding patterns with relatively little disruption during the period of greatest dislocation in international markets. The banks made substantial use of the guarantee to support their bond market raisings, particularly in the first six months of the scheme (Graph 13). While these arrangements were initially open ended, the wholesale guarantees were priced to ensure that banks would have an incentive to stop accessing the scheme once market conditions had sufficiently improved. Further, the terms of the scheme gave banks an incentive to buy back their guaranteed securities once they could be refinanced more cheaply without a guarantee. As a result, the banks substantially scaled back their usage of the scheme well before the closure to new issuance was announced by the government in early 2010.

Graph 13



[31] For a discussion of the decision process surrounding this, see Ken's paper

[32] Details of the guarantee arrangements are set out in Schwartz and Tan (2016).

While these arrangements helped banks to navigate the crisis period successfully, the fact that such extreme measures had been needed gave rise to concerns that the banks would be subject to an ongoing structural vulnerability on the liabilities side of their balance sheets. The concern, in essence, was that the Australian banks were sourcing too much of their funding from abroad and that the availability of foreign funding could not be relied upon in periods of stress. On that premise, an adverse shift in foreign investor sentiment could have severely disruptive effects on the Australian financial system and on the wider economy, a view that might be termed 'funding pessimism'. These concerns were canvassed by the banks themselves and formed part of the backdrop to their regulatory advocacy. They were also a repeated theme of assessments by the global credit rating agencies and were probed by official agencies such as the IMF.[33]

The consistent view of the RBA was that these concerns were much over-stated. One aspect of the hypothesised vulnerability was *currency of denomination*. It was true (and remains so) that a significant portion of Australian banks' wholesale funding is denominated in foreign currency at the point of issue. However, currency hedging by the banks means that the *effective* currency of denomination is in Australian dollars, and hence the banks do not face a currency mismatch between their assets and liabilities, a classic source of vulnerability both for banks and governments. The second and broader aspect of concern was simply the *stability* of funding supply from foreign residents, as noted above.

The Bank's analysis of these issues was set out in detail in a briefing paper to the Council of Financial Regulators in October 2010, and in updates presented to the Council in 2011 and 2012. The key arguments and conclusions from these papers are worth presenting in more detail.

The 2010 paper specifically set out to examine the vulnerability of banks to a sudden constriction of foreign funding. It noted that the central thesis of funding pessimists was based on two observations. First, that credit growth in dollar terms was typically greater than the growth in domestically-sourced funding available to the banks (the 'funding gap' met by borrowing from abroad). And second, that the size of Australia's current account deficit was similar to the size of the banks' offshore funding. These two observations were typically combined by funding pessimists in the shorthand statement that 'banks fund the current account'. The implication was that any shortfall of this particular form of capital inflow represented a point of vulnerability.

The Bank's analysis rejected this thesis on a number of grounds. First, the fact that the current account deficit was of similar size to banks' offshore funding did not imply that banks were 'funding the current account' in any mechanistic sense, since there were significant gross international flows in both directions for the other domestic sectors. These flows could be expected to be responsive to market forces if conditions changed. This led to the second, and more general point. The Bank argued that any contraction in the supply of foreign funding to Australian banks would bring into play a range of other forces that would promote bank funding from other sources. These mechanisms would include exchange rate depreciation, asset price adjustments and other market responses which would tend to shift the composition of Australia's net capital inflow

[33] IMF (2012)

towards the non-bank sectors. The Bank's analysis was that these changes in turn would have the indirect effect of increasing the availability of funding to banks from domestic sources, particularly deposits. The 2010 paper concluded that there was 'no necessary reason why such an adjustment need be disruptive'.

In support of these conclusions the Bank constructed a set of detailed projections for the Australian banking system and modelled the impact of stress scenarios involving disruptions to the availability of foreign funding. This exercise was updated a year later in October 2011 and again in 2012, taking into account developments after the original projections were made. Some summary figures from these three exercises are set out in Table 1.

Table 1

Projected funding components for Australian banks ($bn)

(a) Offshore bonds

Year of forecast	Forecasts and outcomes*					
	2010/11	11/12	12/13	13/14	14/15	15/16
2010	53	56	60	63		
2011	**-9**	47	50	53	56	
2012		**0**	23	24	26	28

(a) Deposits

Year of forecast	Forecasts and outcomes*					
	2010/11	11/12	12/13	13/14	14/15	15/16
2010	69	72	76	80		
2011	**121**	68	72	77	81	
2012		**173**	102	108	115	112

* Actual outcomes in bold
Source: Council of Financial Regulators

The 2011 paper noted that "all the scenarios from the 2010 paper overestimated banks' offshore bond funding requirements" for the following year. It went on to observe that endogenous market adjustments had resulted in lower than projected credit growth, higher deposit growth and increased capital inflow to the non-bank sector – in other words, the sorts of adjustments that were predicted if bond funding to banks were reduced. The 2012 paper reported significant further shifts in Australian banks' funding patterns in the same direction.

These shifts could be viewed as resulting from a combination of both supply and demand factors. On the supply side, offshore funding conditions for Australian banks remained less favourable than they had been in pre-crisis years, and the system was adjusting to that in a way that was more or less along the lines predicted in the RBA analysis. On the demand side, banks were pursuing an increase in deposit funding in response both to lessons learned in the crisis and to an increasing regulatory emphasis on stability of funding sources. Hence they were able to shift their funding structure towards domestic sources in response to prevailing conditions. Overall these developments were consistent with the Bank's view that market forces would tend to correct any perceived vulnerabilities of this type.

10 THE LEGACY OF THE GFC

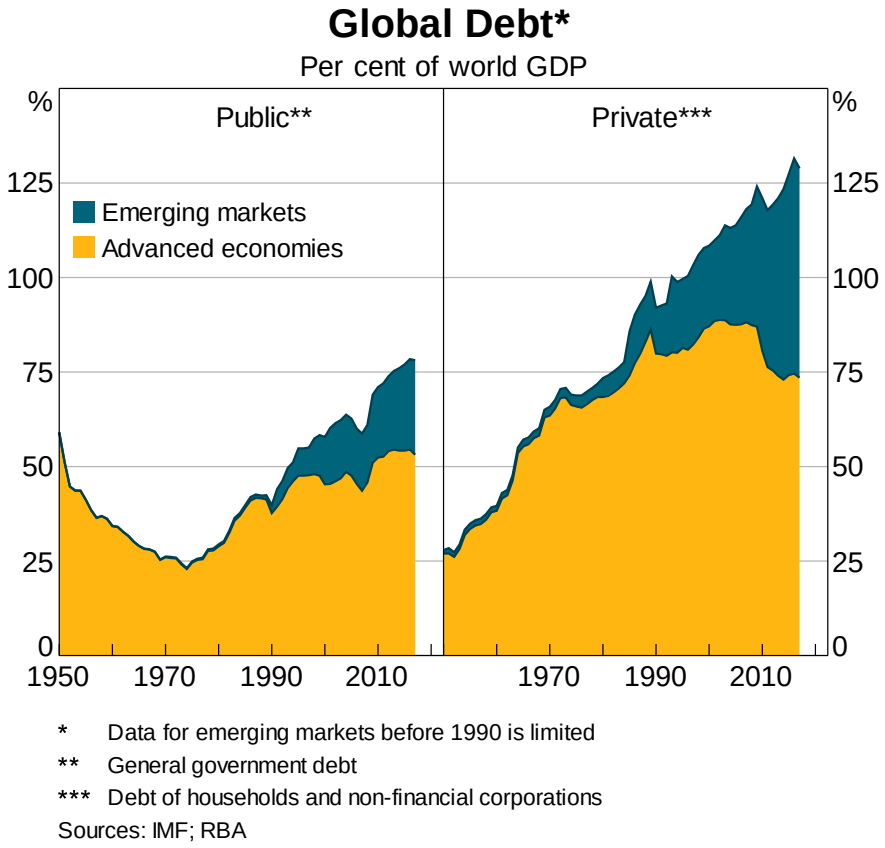
The present environment for monetary policy remains very different from the one that prevailed in the decades prior to the GFC. For much of the post-war period, the main priority for monetary policy was to resist inflation. Broadly speaking, inflation rates accelerated to unacceptable levels in the 1960s and 1970s, and monetary policy in the 1980s and early 1990s was focused on bringing this back under control. Once this was achieved, the focus through the 1990s and early 2000s was generally on cementing the policy framework (inflation targeting) that would keep inflation from re-accelerating. Hence the prevailing mindset guiding monetary policy throughout these decades was *anti-inflationary*.

In the post-GFC period the main challenges for monetary policy have come from the opposite direction. Inflation has more often been too low than too high, and the challenge has been to generate sufficient stimulus to achieve recovery and normalisation of macroeconomic conditions. While policies have succeeded in promoting substantial recovery from the GFC, the condition of the global economy has still not returned to normal in the sense that it has taken 10+ years of near-zero interest rates to achieve it and in many economies inflation is still lower than desired.

The causes of this situation have been widely debated. In a series of contributions, Summers posits that the world economy is experiencing secular stagnation, or in other words a chronic deficiency of demand.[34] Other recent contributions suggest that the neutral real interest rate (often referred to as r-star) has been declining for structural reasons, possibly including productivity and demographic trends.[35] If true, this would make any demand deficiency even harder to fight using conventional tools. Lo and Rogoff (2015) emphasised the role of the debt overhang left by the GFC, which is seen as acting as a medium-term drag on global demand. Recent BIS economic reports make some interesting observations on this front, noting that measures of the global aggregate debt-to-GDP ratio are now higher than they were in the lead up to the GFC, raising concerns about the build-up of future crisis vulnerabilities and also about the scope for further policy response (Graph 14). In essence these developments imply that global recovery has been achieved at least in part through policies that encouraged a further build-up of public and private debt, but at the cost of adding to future vulnerabilities from those sources.

[34] Summers (2016); Rachel and Summers (2019)
[35] Jorda and Taylor (2019)

Graph 14



* Data for emerging markets before 1990 is limited
** General government debt
*** Debt of households and non-financial corporations
Sources: IMF; RBA

This background would appear to explain important features of the current global policy configuration:

- Interest rates are still near zero in most advanced economies (with the US a partial exception)
- Central banks have been using a variety of unconventional measures to generate additional stimulus
- Fiscal policy is perceived to have little room to move in many economies, given the legacy of high public debt, though this has been a subject of debate (see below)
- Macro-prudential policies have (superficially) been at odds with the direction of monetary policy, in the sense that they have been working to constrain rather than promote borrowing and spending. The reason for this is that they are being directed at restraining the 'wrong' sort of financial risk-taking generated by ultra-low interest rates.

The obvious question that arises from all this is, what tools and strategies might be available to combat the next economic downturn in the event that it starts from a position where interest rates are already low. Rogoff (2017) notes that the average post war recession has been met with interest rate cuts of about 5 percentage points. Clearly that degree of response will not be available if there is a significant downturn in the near future. This is a global challenge, but one that also needs to be considered in

individual economies where the effective lower bound for interest rates is a material policy consideration.

Since Bernanke's influential speech about the Japanese case in 2002, there has emerged a fairly standard menu of policy options that feature in international and local debate on this issue.[36] The main options that have been raised are:

- Further measures to expand the central bank balance sheet, including large scale purchases of government securities ('quantitative easing'), targeted security purchases to relieve stress in credit markets, and direct lending to banks to encourage them to expand credit
- Forward guidance about the central bank's policy intentions, designed to flatten the yield curve and lower long-term borrowing costs
- Policy actions to lower the exchange rate in a given economy
- Deeply negative nominal interest rates
- Raising the inflation target in order to generate higher inflation expectations and thus lower real interest rates
- Conventional (debt financed) fiscal expansion
- Direct money-financed fiscal expansion

The relative merits and effectiveness of these options are a matter of continuing debate. A recent survey by the BIS gave qualified support to the effectiveness of central bank balance sheet measures. [37] Similarly, Bernanke (2020) argues that these measures retain scope to add further stimulus at present. If pushed to their limits, he suggests they could add the equivalent of around 3 percentage points worth of stimulus to the US economy in a downturn.[38] But, of course, there is no guarantee that this would be enough in a global recession where interest rates start from near zero. A further consideration is that these sorts of measures would be likely to amplify concerns about fuelling excessive risk taking in an environment where debt is already high.

A related question concerns the implications of the effective lower bound for the appropriate speed of policy response in a downturn. There is a seemingly plausible argument for 'saving the ammunition' – that is to say, for holding back some rate cuts until they are needed in a true emergency. In his Japan speech Bernanke (2002) makes the case that this argument is fallacious, and that in fact the opposite is true. A looming lower-bound problem is an argument for being pre-emptive in cutting rates to steer the economy more quickly away from a deflation trap. In other words, the optimal response in that situation is for the central bank to substitute speed of action for scale of action. Delayed response only makes the problem worse.

Among the other items on the policy menu above, exchange rate measures can obviously be effective at the level of an individual economy, but not for the world as a whole. Even for a relatively small individual country, they would potentially raise questions of 'competitive devaluation' which might make policy actions on this front more difficult. Deeply negative nominal interest rates are a theoretical possibility, but there would seem to be little appetite for the sort of currency re-engineering needed to

[36] A recent speech by Lowe (2019) reviewed some but not all of these options in an Australian context.
[37] Committee on the Global Financial System (2019)
[38] That is, the equivalent of a 3 percentage point cut in the policy rate.

make it feasible.[39] Raising the inflation target is another theoretically valid option, but it fails to specify a mechanism for lifting demand if inflation expectations don't respond as desired to a change in the target.

For these reasons it is not surprising that there has been an increased focus on options involving fiscal policy. Summers (2019) has been a strong advocate of using conventional (debt financed) fiscal policy to stimulate demand in the current environment. The main impediment to this from the perspective of policymakers is the high level of existing government debt outstanding in the major economies (though not in Australia). Summers argues that this should not be viewed as a significant constraint in current circumstances because governments can borrow long-term funds at extremely low interest rates, implying that higher levels of government debt can now be sustained than in the past. But a possible counterargument is that, if the intention is to facilitate an eventual renormalisation of interest rates, the additional layer of debt would ultimately have to be refinanced at higher rates and might still be problematic. Further, if the root cause of secular stagnation is excessive debt (public and private) then adding to public debt may not be a sustainable solution.

Policymakers have been understandably reluctant to focus on the last item on the menu, money-financed fiscal expansion. Nonetheless a number of prominent figures have argued that this should be in the armoury as a weapon of last resort.[40] In essence it would involve some combination of tax cuts and increased government outlays funded by central bank money creation, and hence would require coordinated action by the monetary and fiscal authorities. In his 2002 speech, Bernanke argued that there was no technical obstacle to the effectiveness of this option as a weapon against deflation, and that any impediments were to do with governance and decision-making arrangements. In other words, central banks which can create money and which have a capacity to finance the government directly do not in any technical sense 'run out of ammunition'. In the last resort they can always use these capacities to reflate an economy that would be otherwise caught in a zero-interest trap.

There is little doubt that this kind of coordinated action would be effective in adding to nominal demand.[41] The central concern is that such policies would be open to abuse by lowering normal safeguards against inflationary finance. Bartch et al (2019) for example point out that there is no track record of governments using this kind of combined monetary and fiscal action to create only moderate inflation. They nonetheless argue that, since this may be needed as a last-resort weapon, there is a case for careful preparatory work to be done on issues of governance, calibration and exit strategies so that these policies can be deployed if necessary. At this point, however, it seems that these ideas have gained little traction among current policymakers and official agencies.

In summary then, the global legacy of the GFC is a seemingly intractable combination of high debt and ultra-low interest rates. It remains possible that the world economy will grow its way out of this situation in such a way that interest rates can be re-normalised

[39] Rogoff (2017) is an advocate of this approach and sets out some options as to how it might be implemented.

[40] Examples include Turner (2013, 2015), Buiter (2014), Bernanke (2002, 2016), Bartch, Boivin, Fischer and Hildebrand (2019), Hildebrand (2019)

[41] A simple plausibility test of this proposition is to consider its opposite. Suppose a government were to systematically confiscate funds from peoples' banks accounts and then cancel the money. Does anyone think this would be anything other than contractionary? For a more rigorous argument, see Buiter (2014).

over time and debt ratios reduced. However, if the next major downturn occurs before that happens, global policymakers will face some difficult choices, and will do so without access to the same weapons that were available last time. Australia is in the fortunate position of having a low-debt government and therefore significant scope for conventional fiscal policy action if needed. But that is much less true at the global level. Hence in that situation, the questions of monetary and fiscal coordination raised here may well need to be given serious consideration.

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COVID POSTSCRIPT

The foregoing was completed in February 2020, a short time before the global pandemic became a major factor in the economic outlook. Since then the Australian economy has experienced a sharp downturn followed by what looks like, to date, a more-or-less V-shaped recovery. This has been assisted by a range of timely fiscal and monetary measures to support employment, incomes and spending.

Even with these measures in place, however, it will take some time to recover the lost ground. The latest official forecasts from the RBA continue to emphasise the high degree of uncertainty at present, and with good reason, given the unpredictability of the pandemic itself. But even in its 'upside scenario' the RBA outlook implies that it could take some years before employment and inflation can be expected to return to desired levels. In the meantime, monetary policy will be geared to maximum stimulus. The same, or similar, is happening in the major economies abroad.

So the legacy of the GFC in the form of sub-par macroeconomic outcomes, high debt and ultra-low interest rates is likely to persist, in magnified form, for the foreseeable future.

In this situation the key issue for central banks can be summed up in the question: **has monetary policy run out of firepower?** To put it another way, are interest-rate cuts the only meaningful weapon at a central bank's disposal, or can quantitative instruments make a substantive difference? And if so, how can they be most effectively deployed?

These questions have injected into public discussion a number of inter-related concepts that are not always well understood or correctly differentiated: *modern monetary theory*; *helicopter money*; *quantitative easing*; *financing the government*. These concepts are overlapping but are not identical, and they are sometimes conflated in ways that can be unhelpful and confusing. The following comments are intended to provide clarity on these points before making some concluding observations about the present situation.

"Modern Monetary Theory" (MMT)

References to "modern monetary theory" have appeared in public debate with increasing frequency in recent times.[42] The label itself is unhelpfully imprecise, and gives an impression of solidity and acceptance within mainstream thinking that is quite misleading.

MMT is best thought of as a set of ideas which purport to link classical theories of monetary financing with advocacy of increased government spending on preferred social objectives.[43] It builds from the more-or-less orthodox proposition that governments with monetary sovereignty have the technical capacity to finance their deficits through money creation; and hence, in principle, that capacity can always be used to avoid default on nominal public debt, though obviously with the associated risk of inflation. From there, proponents argue that conventional constraints on government solvency do not apply. Hence, they argue that money creation can and should be used to finance desired government spending programs, up to the point where inflation emerges as a practical constraint. In US politics, this idea has been associated recently with proposals to fund the 'green new deal'.

The injection of talk about MMT into the debate has been unfortunate in two ways. To some, it gives misleading credence to the idea that normal constraints on government spending and deficits can be ignored, an idea that policymakers have rightly resisted. At the same time, it frames the debate in an unhelpful and confusing way because of superficial similarities between MMT and mainstream proposals for monetary and fiscal coordination.

In their recent analysis of this literature, Buiter and Mann (2019) conclude that MMT contains a limited element of monetary orthodoxy but that its wider conclusions about policy strategy are unconnected to sound theory. Their one-sentence summary states bluntly: *What's right [in MMT] is not new, what's new is not right, and what's left is too simplistic.* Without going into further detail, this serves as a useful warning that references to MMT in the current policy context are likely to be a confusing distraction.

Helicopter money

The term 'helicopter money' has also received a considerable airing in recent times. It is important to recognise that MMT and helicopter money are not the same thing and, despite its cartoonish name, the concept behind helicopter money has a respectable pedigree.

The term itself originated with Milton Friedman (1969). He was using a thought experiment (a helicopter dropping newly printed money on the population) to show that money creation would be inflationary. In this context, the helicopter drop can be

[42] There are many examples, but three will suffice: Kohler (2020), Maley (2020), Cranston (2020).
[43] This summary draws from the analysis of Buiter and Mann (2019).

thought of as equivalent to a money-financed fiscal expansion. In more realistic and contemporary terms, this could be done electronically without the mythical helicopter, by making fiscal transfer payments into personal bank accounts financed by permanent central bank loans to the government. Friedman's point was that this would be inflationary. At the time, he was using this metaphor to argue against excessive monetary expansion.

That said, an underappreciated point in the central banking world is that Friedman applied his logic consistently in both directions.[44] Nowadays we think of him as the great anti-inflationist, because that was the role he played in the debate in the 1970s and 1980s. But, in the other direction, he also recognised that increased money creation could be the right response when the priority is to resist deflation**,** as it was for example in the Great Depression. The question is whether that might be the case again now.

As noted above, Bernanke revived Friedman's helicopter metaphor in his 2002 speech about how Japan might have escaped the zero-interest trap in the 1990s[45]. His argument was that central banks never truly run out of ammunition because direct financing of the government is always available as a weapon of last resort. Thus the metaphorical helicopter drop, if correctly calibrated, could be used to fight deflation when circumstances required it.

Helicopter money, then, is just a shorthand for money-financed fiscal expansion – a textbook concept the merits of which, in any given situation, can be debated within standard models.

Quantitative easing (QE) and 'financing the government'

In its post-Covid response the RBA has joined the ranks of central banks using QE as a policy tool. Since QE involves the systematic large-scale purchase of government securities by the central bank, it raises delicate questions about whether this amounts to 'financing the government' (a traditional central banking taboo) and what relation this might have with concepts of money-financed fiscal expansion. These questions are especially relevant given that the RBA has, at the same time, been encouraging the government to run larger deficits.

Here I must respectfully disagree with the RBA's argument that QE does not involve 'financing the government'.[46] It does – at least indirectly. It is true that the RBA makes a careful distinction between direct and indirect finance, and it has made clear that QE operations will only be undertaken in secondary markets (the indirect form). From a governance perspective this is an important safeguard. It underlines the central bank's

[44] This is the point emphasised by Turner (2013, 2015).
[45] Bernanke, Ben, (2002) Deflation: Making Sure "It" Doesn't Happen Here, Federal Reserve Board speeches https://www.federalreserve.gov/boarddocs/speeches/2002/20021121/default.htm
[46] Lowe (2020)

independence by avoiding any impression that monetary financing might be compelled by the government. But the mathematical result of these operations is still the same as if direct financing of the government had occurred – the government has done the spending and the RBA is holding the bonds. This conclusion is not in any way refuted by the point that the bonds eventually have to be redeemed. There is no technical obstacle to the RBA rolling over those bonds at maturity if a macroeconomic case exists to do so at the time.

This is not intended as a criticism of the policy itself, but only as an effort to be clear about concepts and terminology. The general taboo against financing the government exists for good reasons. But, as discussed above, a case can be made for limited exceptions to be made when fighting deflation while at the zero-interest bound. If a case does exist for financing the government (whether directly or indirectly), it is best to be clear about it.

The current situation

This brings us to the present.

Even before the pandemic struck, there was a serious debate within the economics mainstream about whether our policy institutions would have the ammunition needed to fight the next downturn and to support a satisfactory recovery. The pandemic and its likely aftermath have clearly increased the practical relevance of that question.

For the reasons set out above, a respectable argument can be made for running historically large fiscal deficits in this kind of environment, and for at least some of that deficit spending to be financed by central banks – in other words, through money creation. The preceding discussion has cited a number of prominent economists with impeccable policy credentials who were already advocating having that option on the table before the pandemic emerged.[47] And the case for doing so has only strengthened since then.

As things have turned out, this seems a reasonable description of the combined policy response that is now taking place. Governments around the world have increased their deficits post-Covid and a significant part of that is being funded (indirectly) by central banks, including in Australia.

To be clear, this is not MMT. It is, arguably, a form of disguised helicopter money, although it would be better if those labels were avoided entirely. These actions are being taken without explicit coordination between monetary and fiscal authorities. Arguably, however, the high-level policy consensus supporting this combined strategy

[47] See the earlier cited contributions by Bernanke, Fischer, Hildenbrand, Turner and Buiter – hardly a rogue's gallery of crude inflationists.

represents a form of ‘soft’ coordination which achieves the desired result while preserving the needed safeguards for central bank independence.

In light of the theory and history reviewed here, this paper has argued against an excessively restrictionist view of what monetary policy can and cannot do in the unusual situation where the main problem is to generate higher inflation and more stimulus. Hence the argument is broadly supportive of the *de facto* strategies that have been followed by the policy authorities to date. Monetary and fiscal policies have been working together in the right direction.

Given the unconventional nature of these policies, there is much work still to be done in building a robust framework for calibrating these measures, ensuring that proper governance safeguards remain in place, and thinking ahead about the eventual exit path. But that should not obscure the answer to the more immediate question which was posed earlier: *has monetary policy run out of firepower*? Properly understood, a central bank with responsibility for its own currency, and with the capacity to cooperate with the fiscal authority, never truly runs out of firepower. The challenge is to make sure it is used responsibly.

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