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Contents

Articles

Speeches

Appendices

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The Labour Market during the 2008–2009 Downturn

Michael Plumb, Mark Baker and Gareth Spence*

The Australian labour market has performed relatively well over the past two years or so, compared with its performance in the early 1980s and 1990s recessions and in a recent international context. This is partly explained by the milder downturn in economic activity, the earlier strength of the labour market, and greater labour market flexibility than in previous downturns.

Introduction

The Australian labour market has performed relatively well over the past two years or so, especially compared with its performance in the early 1980s and 1990s recessions and the recent experience of most other advanced economies. In particular:

- the increase in the unemployment rate has been less than expected, even after taking into account that the economic downturn was less severe than earlier thought likely;
- much of the decline in labour demand occurred via reductions in hours worked, rather than redundancies;
- it took longer than usual for the slowing in domestic activity to be reflected in a rise in the unemployment rate; and
- the decline in labour force participation has been relatively modest.

This article examines these developments, and discusses the key differences in labour market outcomes over the past two years relative to the early 1980s and 1990s recessions.[1]

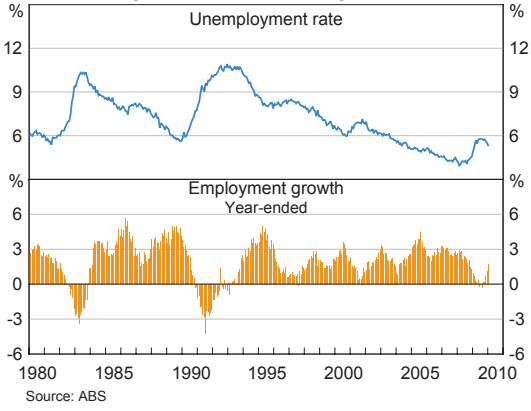
Adjusting Labour Input: Employment versus Hours Worked

Between early 2008 and mid 2009, the unemployment rate in Australia increased by around 1¾ percentage points, rising from around 4 per cent to 5¾ per cent (Graph 1).

This increase compares with a rise of around 5 percentage points in each of the early 1980s and early 1990s recessions in Australia (Graph 2), and increases in the most recent episode of around 5½ percentage points in the United States and 2¾ percentage points in Europe. The decline in labour demand was also considerably

Graph 1

Unemployment and Employment Growth



Source: ABS

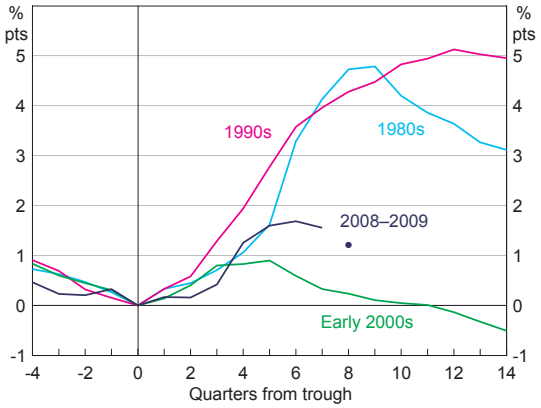
* The authors are from Economic Analysis Department.

1 For a discussion of common patterns in Australian labour market outcomes during economic downturns, see, for example, Borland (2009).

Graph 2

Change in Unemployment Rate*

Trough in unemployment rate = 0



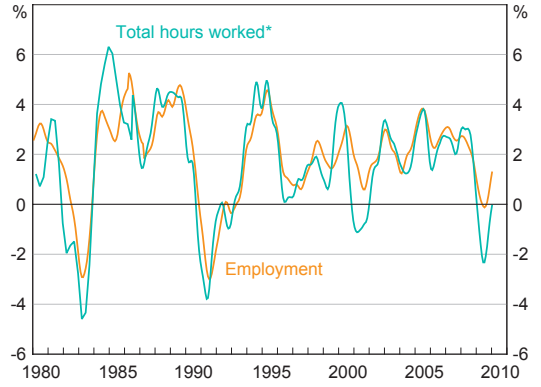
* Dot is January 2010 observation

Sources: ABS; RBA

Graph 3

Growth in Labour Input

Year-ended, trend



* Data are quarterly prior to September 1985

Sources: ABS, RBA

less on this occasion, with a peak-to-trough decline in the level of employment of ½ per cent, compared with 3½ per cent and over 4 per cent in the early 1980s and 1990s.

The most obvious explanation for these better labour market outcomes is that the recent downturn in economic activity was milder, with year-ended output growth slowing to a little below 1 per cent, compared with year-ended declines in output of 3.4 per cent and 1.6 per cent in the early 1980s and 1990s. But the milder downturn in growth only accounts for part of the better performance recently. Based on the relationship between output growth and unemployment in the early 1980s and 1990s episodes, a larger increase in the unemployment rate would have been expected recently, given the slowing in the economy that was experienced.

This outcome is partly explained by the greater degree of flexibility in employment and wage-setting practices, compared with those in the 1980s and 1990s recessions. Following a succession of reforms over recent decades, rigidities in the labour market were significantly reduced.[2] This made it easier for firms and employees to negotiate work and pay arrangements that enabled firms to preserve jobs during a period of subdued activity, partly by reducing average hours worked. While lower hours reduce compensation per employee, they avoid the significant social and economic costs associated with unemployment, including detachment from the labour force, skill atrophy and reliance on government assistance.

The decline in average hours worked per employee has been significant in the recent episode, as was the case in the early 2000s, with total hours worked falling by significantly more than the number of people employed (Graph 3). This is in contrast to the early 1990s recession, when average hours worked per employee fell only modestly, while the early 1980s episode was affected by a legislated reduction in the working week, rather than direct negotiations between firms and employees.[3]

The decrease in average hours worked in the 2008–2009 episode reflected a fall for both full-time and part-time workers. The fall, however, was more pronounced for full-time workers, and followed a broadly similar pattern to the early 2000s (Graph 4). By comparison, in the early 1990s, average hours worked by full-time employees declined only modestly, while the significant decline in the early 1980s was associated with the legislated reduction in the full-time working week.

2 See, for example, Industry Commission (1998).

3 See Bureau of Industry Economics (1984).

The decrease in hours worked during 2008–2009 also reflected a shift in the composition of employment from full-time to part-time.[4] While this is a common pattern in downturns – due to a higher proportion of full-time employment in cyclically sensitive industries such as construction and manufacturing – the decreasing share of these industries in total employment tempered this compositional effect in the most recent episode compared with historical experience.

Given that more of the reduction in labour input over 2008–2009 occurred via decreasing the working hours of employees, rather than as a result of redundancies, various measures of labour underutilisation show a more noticeable increase in spare capacity than the unemployment rate. In particular, a measure of labour underutilisation that includes the 'underemployed' – those workers who would like to work more hours – increased by nearly 1½ times more than the unemployment rate in the recent downturn (Graph 5).[5] By comparison, for this measure, the relative increase in both the early 1980s and 1990s was not as large, confirming that a higher proportion of the reduction in labour input in the current episode occurred via reducing hours worked.

Lagged Response of the Labour Market

Another feature of the recent downturn is that the unemployment rate didn't start to rise noticeably until around 1½ years after economic activity began to slow, compared with around a year or less in the early 1980s and 1990s (Graph 6).

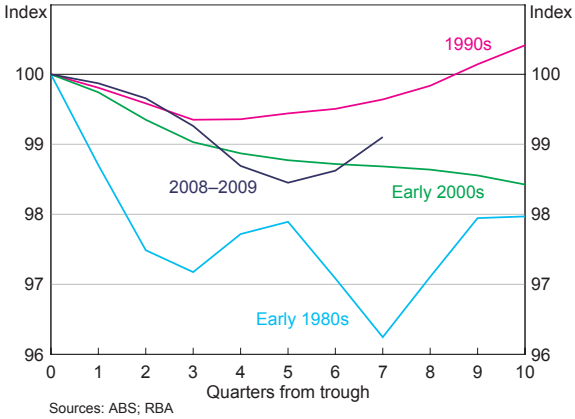
4 The ABS defines a full-time employee as someone who usually works 35 hours or more, or who worked 35 hours or more in the survey reference week.

5 The underemployment measure used here comprises part-time workers who are actively looking to work more hours and full-time workers who have been temporarily put on shorter hours for economic reasons (such as insufficient work available), weighted by an estimate of the additional hours that they want to work; see RBA (2004). This measure differs from the ABS measure of underutilisation, in that it only includes part-time workers who are actively looking to work more hours, not those who only prefer to work more hours.

Graph 4

Average Hours Worked – Full-time Workers

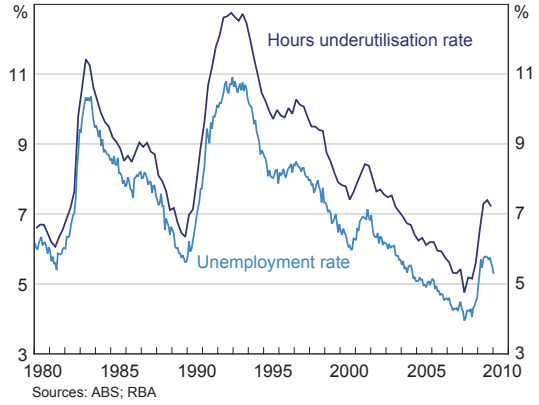
Trough in unemployment rate = 100, trend



Sources: ABS; RBA

Graph 5

Measures of Labour Underutilisation

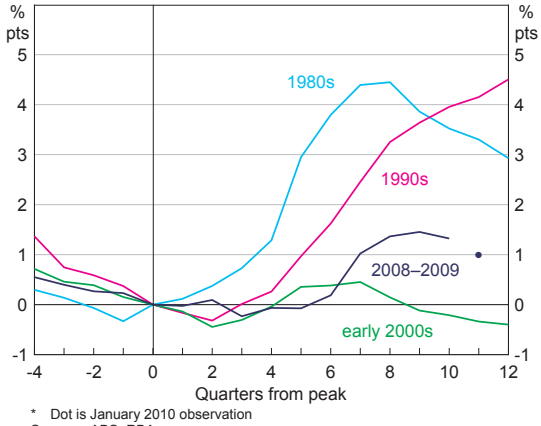


Sources: ABS; RBA

Graph 6

Change in Unemployment Rate*

Peak in year-ended GDP growth = 0

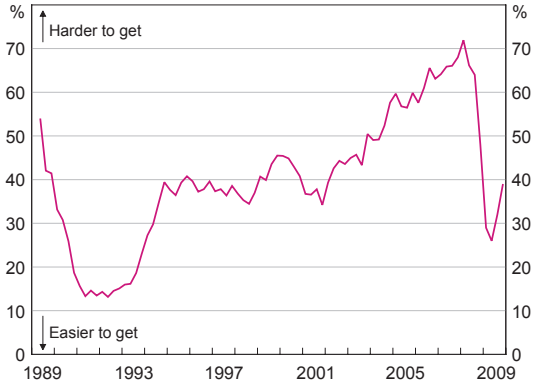


* Dot is January 2010 observation

Sources: ABS; RBA

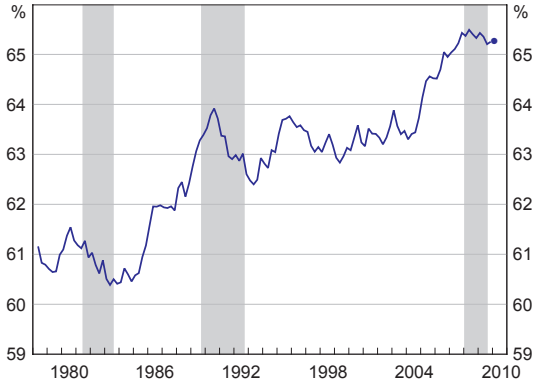
This longer lag partly reflects the significant degree of labour market tightness that existed prior to the recent downturn, with the unemployment rate falling to its lowest rate in over 30 years, employment growing at an above-trend pace, and the participation rate at its highest level since the labour force survey began in the 1960s. These outcomes reflected solid growth in the Australian economy, which has been expanding since the early 1990s. This tightness in the labour market led to a broad-based shortage of skilled labour in Australia throughout late 2007 and early 2008, and many firms found it difficult to find suitable labour to fill vacant positions (Graph 7). It is possible that firms were 'overutilising' their existing staff prior to the recent downturn, for instance, by requesting staff to work longer hours than desired. As economic activity slowed markedly through 2008, it took some time for this overutilisation to unwind by, for example, reducing working hours to more normal levels. Firms were also apparently reluctant to let go of skilled workers as activity slowed, because labour had been so difficult to source prior to the downturn. This tempered the increase in the unemployment rate as the economy slowed, and helps explain why unemployment did not rise sharply until late 2008.

Graph 7
Difficulty Finding Suitable Labour*



* Per cent of firms indicating that the availability of suitable labour is a constraint on output
Source: NAB

Graph 8
Participation Rate*
Quarterly average



* Shaded areas represent the trough to peak of the unemployment rate. Dot is January 2010 observation.
Sources: ABS; RBA

Labour Force Participation

Typically during a downturn in the labour market, labour force participation decreases. As the demand for labour declines, and the pool of unemployed increases, job seekers can become discouraged and eventually give up looking for work, thereby moving out of the labour force (which, by definition, requires active job search). The decline in the participation rate during the 2008–2009 downturn, however, was considerably less than in the earlier episodes; around ¼ percentage point, compared with 1¼–1½ percentage points in the early 1980s and 1990s (Graph 8). Again, this appears to reflect more than the relatively milder downturn in 2008–2009.

Disaggregating labour force participation data (by age, gender and marital status) shows that while most groups recorded declining or flat participation during the 2008–2009 downturn, two groups reported strong participation outcomes: older workers (those aged 55–64 years); and married females (at least in the early stages of the downturn).

One explanation is that workers who were nearing retirement age decided to stay in the workforce longer – regardless of deteriorating employment prospects – in order to make up for the decline in expected retirement income following the sharp falls in asset prices associated with the global recession. The participation rate of older workers increased sharply during 2008–2009, after

having trended upwards since the early 1990s and flattening prior to the recent downturn (Graph 9). In the early 1980s, the participation rate of this group declined noticeably, while in the 1990s it remained broadly steady. By comparison, trends in the participation rates of other age groups during the recent downturn were consistent with those in the early 1980s and 1990s, with prime-working-age participation remaining broadly flat, and youth participation declining sharply.

The participation rate of married women continued to trend upwards in the earlier stages of the recent labour market downturn, and at least as rapidly as in the period prior to it. One possible explanation is that previously non-working spouses entered the labour force in an attempt to diversify household income, owing to expectations of rising unemployment. This is in contrast to the previous two recessions, when this group's participation rate remained broadly flat. As expectations of rising unemployment subsided, the participation rate of married females moderated somewhat.

In addition, strong population growth in recent years has been driven by strong growth in the number of people aged 25–35 years, who typically have a high participation rate (Graph 10). This could partly reflect relatively high levels of immigration, with immigrants tending to have relatively high participation rates in recent years.[6]

Conclusion

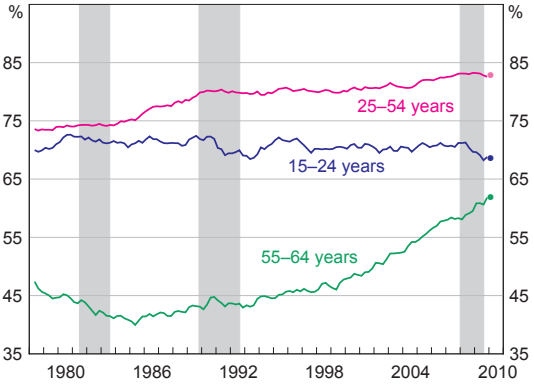
The Australian labour market fared relatively well during the 2008–2009 downturn, with the unemployment rate rising by less than expected and labour force participation remaining strong. Much of the weakening in labour demand was reflected in a decline in average hours worked, with firms and their employees negotiating arrangements that preserved jobs. These outcomes were better than might have been expected, based on the experiences of the early 1980s and 1990s recessions.

6 See Productivity Commission (2006).

Graph 9

Participation Rate*

By age, quarterly average



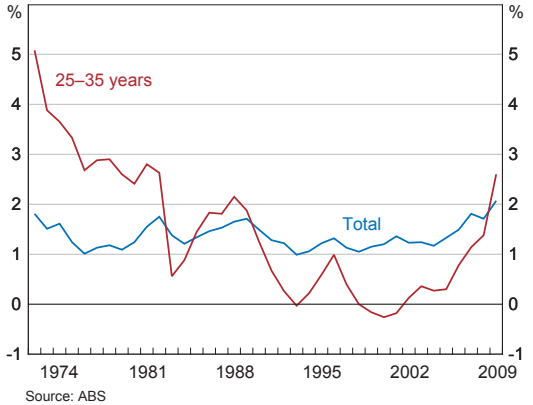
* Shaded areas represent the trough to peak of the unemployment rate. Dots are January 2010 observations.

Sources: ABS; RBA

Graph 10

Population Growth

Financial year



Source: ABS

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Measures of Underlying Inflation

Tony Richards and Tom Rosewall*

Various measures of underlying inflation are used at the Reserve Bank. These measures are useful in assessing current inflation pressures in the economy as well as the outlook for future movements in the consumer price index.

Introduction

In Australia the inflation target is expressed in terms of the average rate of increase in the consumer price index (CPI). In particular, the objective is to ensure that the rate of increase in the CPI averages between 2 and 3 per cent over the medium term. In assessing current inflation pressures and the outlook for CPI inflation, the Reserve Bank makes use of a wide range of measures of 'underlying' inflation which attempt to abstract from the short-term volatility in some prices. This article discusses the various measures of underlying inflation and the role of these in forecasting and analysis at the Bank.[1]

Measures of Underlying Inflation

Quarterly movements in the 'headline' CPI series can be volatile. This volatility reflects price changes in particular items that may be due, among other factors, to fluctuations in commodity markets and agricultural conditions, policy changes, or seasonal or infrequent price resetting. An example was the movement in banana prices in mid 2006 because of the supply disruption caused by Cyclone Larry. Following the cyclone, prices of bananas increased by around 400 per cent, before falling by almost 80 per cent by early 2007, with these movements first adding and then subtracting about ¾ percentage point to the rate of inflation. Movements in oil prices also often have a significant effect on CPI inflation. For example, over 2005–2009, the average absolute quarterly change in the price of automotive fuel (petrol, diesel and LPG) was just over 6 per cent, which implied an average contribution or subtraction to CPI inflation of over ¼ percentage point per quarter.

While some large changes in the prices of particular items will contain information about the future trend in inflation, as an empirical matter much of the quarter-to-quarter movement in the CPI tends to be temporary. Accordingly, central banks attempt to assess the 'underlying' rate of consumer price inflation, both to better understand the current trend in inflation and assist in forecasting medium-term inflation.

While underlying inflation is neither an observable variable nor precisely defined, at a conceptual level it is usually thought of as the 'persistent' or the 'generalised' component of inflation. There are many ways to estimate underlying inflation, but the two approaches most commonly used by central banks

* The authors are from Economic Analysis Department.

1 This article draws on earlier work at the Bank, including RBA (2002, 2005); Roberts (2005); Richards (2006); and Brischetto and Richards (2007).

are 'exclusion-based' measures and trimmed-mean measures.[2]

Exclusion-based measures

Traditionally, the most widely used exclusion measure in Australia has been the inflation rate for the CPI basket excluding a particular set of volatile items – namely fruit, vegetables and automotive fuel. The rationale for excluding the direct effect of those items is that their prices tend to be volatile and often do not reflect underlying or persistent inflation pressures in the economy.

Recently the Bank has been publishing a series for inflation that also excludes the deposit and loan (D&L) facilities expenditure class within the CPI. This item attempts to capture the price of the financial intermediation service that financial institutions charge for D&L facilities, but it has been subject to some measurement problems and recently has been affected by the large changes in the structure of interest rates resulting from the turmoil in financial markets over the past two years or so. Furthermore, movements in the D&L facilities index have tended to be positively correlated with movements in the cash rate, which would suggest an additional rationale for its exclusion from a measure of underlying inflation used in the monetary policy process.

There are, however, circumstances when exclusion-based measures do not provide especially good estimates of underlying inflation. These can arise when there are large temporary movements in components of the CPI that are not excluded from such measures. In addition, in some cases information about underlying inflation pressures can be lost when the 'volatile' components are excluded. For example, a measure of inflation that always omits automotive fuel prices may be smoother, but through much of the past decade might have understated overall inflation pressures as global oil prices trended up because of strong growth in global demand.

Trimmed-mean measures

Trimmed-mean measures of underlying inflation represent an alternative approach and are used in a number of central banks. The trimmed-mean rate of inflation is defined as the average rate of inflation after 'trimming' away a certain percentage of the distribution of price changes at both ends of that distribution. These measures are calculated by ordering the seasonally adjusted price changes for all CPI components in any period from lowest to highest, trimming away those that lie at the two outer edges of the distribution of price changes for that period, and then calculating an average inflation rate from the remaining set of price changes.

Different degrees of trimming are possible and will provide different estimates of underlying inflation. In practice, the Bank has tended to focus on two particular trims: the 15 per cent trimmed mean (which trims away the 15 per cent of items with both the smallest and largest price changes) and the weighted median (which is the price change at the 50th percentile by weight of the distribution of price changes). Since 2007, the Australian Bureau of Statistics (ABS) has published these two series, calculated according to the methodology used by the Bank.

The rationale for trimmed means is that there are sometimes very large changes in prices for particular items that have a significant effect on a conventional average of all price changes, but which are quite unrepresentative of price changes of other goods and services. Whereas exclusion measures remove

2 Some other measures of underlying inflation involve more significant reweighting of the CPI, giving higher weights to items that are less volatile and might contain more information about the persistent or generalised component of inflation. A disadvantage of these is that the weights are typically based on the properties of the price series, rather than households' expenditure patterns, so they will not necessarily correspond closely to the general increase in the cost of living as measured by the CPI, the target variable. Other approaches to estimating underlying inflation use econometric modelling, proceeding from various prior beliefs or restrictions about the relationship between inflation and other variables, although this type of approach is not widely used, at least in central banks' external communications. Finally, there are approaches, including those of Gillitzer and Simon (2006) and Hall and Jääskelä (2009), that employ some form of time-series smoothing.

some pre-specified items in every period regardless of whether or not their price changes are extreme, trimmed-mean measures down-weight the impact of items in a given period if their price changes are 'unrepresentative' in the period in question.[3] Accordingly, these series provide an estimate of the central tendency of the distribution of price changes that is less affected by large price changes – either increases or decreases – in individual items.[4]

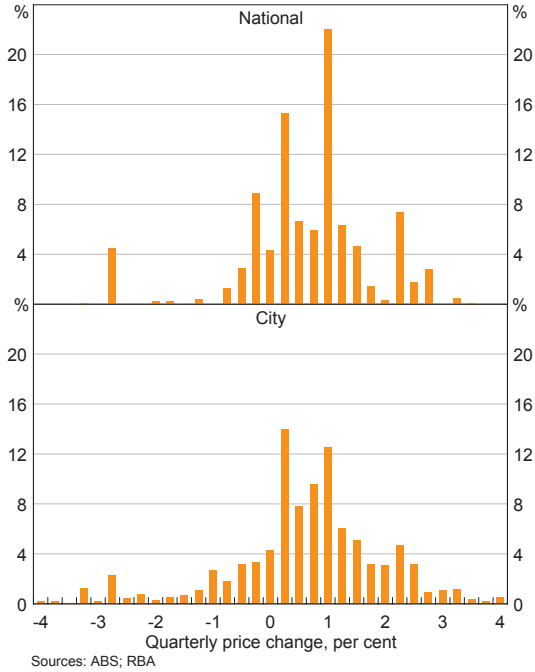
Empirical work at the Bank using data for Australia, the United States, the euro area and Japan has shown that trimmed-mean estimates perform well on a number of criteria (see Brischetto and Richards 2007). In particular, trimmed-mean measures appear to have a higher 'signal-to-noise' ratio than the CPI or some exclusion-based measures, which makes them useful in assessing ongoing inflation pressures in the economy.

Notwithstanding this, one finding from the Bank's research is that trimmed-mean estimates can be affected by the presence of expenditure items with very large weights in the CPI basket (see Brischetto and Richards 2007). Such large items make the distribution of price changes less smooth, which can add volatility to trimmed-mean measures, especially to the weighted median. This issue is particularly relevant in the United States, where the weight for 'implicit rent for home owners' is close to a quarter of the overall CPI. Research has shown that breaking this item up geographically into four regional sub-components provides a somewhat smoother distribution of price changes that is less prone to large peaks. The result is an improvement in the usefulness of trimmed-mean estimates of US inflation, especially in the case of the weighted median.[5]

While the Australian CPI is much less subject to problems of this nature,[6] the existence of CPI data for the eight capital cities allows the calculation of trimmed-mean inflation using more disaggregated data – namely 720 city-level price changes rather than 90 nationwide-average price changes. This results in a somewhat smoother distribution of price changes, as shown by the data for the December quarter of 2009 (Graph 1).[7]

As is the case with the US data, the use of a finer level of detail of price changes has a relatively limited effect on estimates of the 15 per cent trimmed mean but a more significant effect on estimates of the weighted median. For example, over 2001–2009, the average absolute difference between trimmed-mean inflation calculated using the different approaches was just 0.04 percentage points, versus

Graph 1
Distribution of Quarterly Price Changes
Share of CPI – December 2009



Sources: ABS; RBA

3 Items are 'down-weighted' in the sense that even when an item is trimmed and 'excluded' it still affects the trimmed mean. In particular, the fact that an item has been trimmed in any period means that some other item that experienced a relatively high or low price change will not be trimmed. Trimmed-mean measures are accordingly sometimes referred to as limited-influence estimators.

4 See Wilcox (2005) for further discussion of how trimmed means can be better estimators of the central part of the distribution than conventional sample means, in particular how they are more robust in cases of non-normal distributions.

5 The US weighted-median inflation rate calculated by the Federal Reserve Bank of Cleveland now incorporates this methodological improvement (see Bryan and Meyer 2007).

6 The largest single item in the Australian CPI is house purchase costs, with an effective weight of 8 per cent.

7 The bars in the graph sum to a little less than 100 per cent because a small proportion of items in the CPI had price changes outside the scale of the graph.

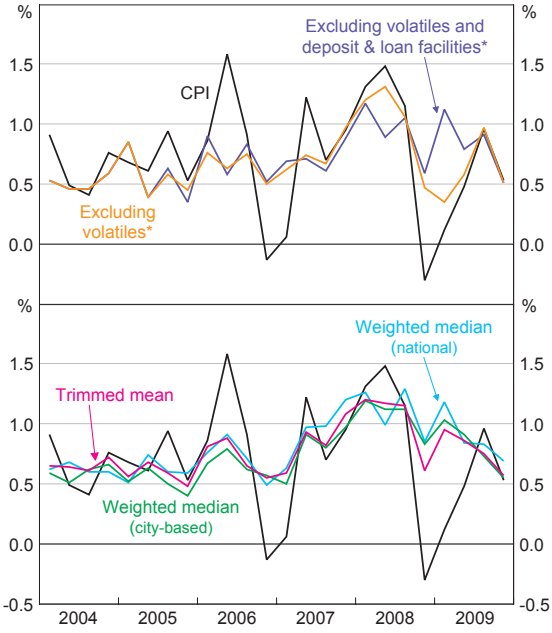
0.10 percentage points for the weighted median. In the December quarter 2009, quarterly trimmed-mean inflation was estimated at 0.57 per cent based on national data and 0.58 per cent for city-based data, whereas weighted-median inflation based on the city-based data was 0.55 per cent, compared with 0.69 per cent for the national measure.[8] Overall, based on the US evidence and staff analysis using Australian data, the use of city-level data appears to be a useful alternative to the use of national data.

Another technical issue in the calculation of trimmed-mean inflation is that year-ended underlying inflation can be based on either quarterly or annual price changes. The year-ended series published by the Bank and the ABS have typically been based on quarterly price changes, whereby quarterly rates of underlying inflation are first calculated, with the annual rate of underlying inflation based on the cumulated quarterly rates.[9] An alternative is to calculate year-ended trimmed-mean inflation based on the distribution of year-ended price changes. Previous empirical work has suggested that year-ended data should not be used in the case of large trims, such as the weighted median (see Brischetto and Richards 2007). However, for smaller trims, such as the 15 per cent trim, there do not seem to be strong reasons to prefer one approach over the other for calculating year-ended trimmed-mean inflation. Accordingly, Bank staff calculate year-ended trimmed-mean inflation using both methods.

Recent Trends in Underlying Inflation

Quarterly movements in the headline CPI and some of the underlying measures discussed above are shown in Graph 2. The broadly similar movements depicted by the various measures of underlying inflation are reflected in the relatively high correlation coefficients between these series (Table 1). While there are typically some modest differences between the underlying estimates, all these series are significantly smoother than the headline CPI measure. In recent years, there have been a number of notable examples where the underlying measures have abstracted from large changes in particular prices that had a significant effect on the headline series. In June 2006, for example, CPI inflation was 1.6 per cent in the quarter, around twice the rate of inflation suggested by various underlying measures because of large movements in banana

Graph 2
Consumer Price Inflation
Quarterly



* Volatile items are fruit, vegetables and automotive fuel
Sources: ABS; RBA

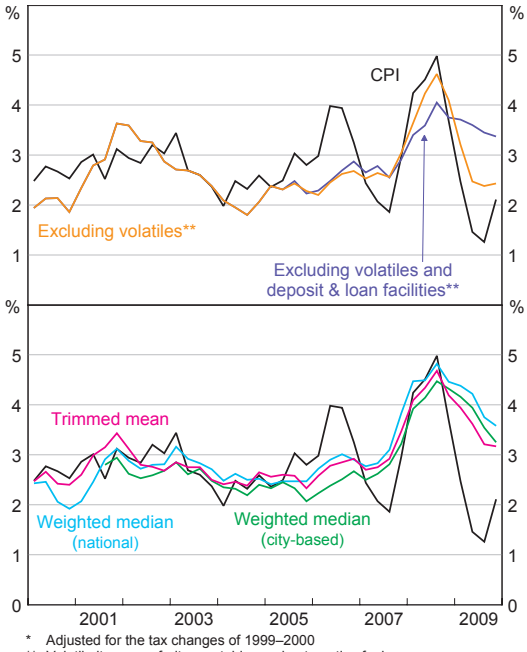
8 These estimates are based on the December quarter 2009 CPI data, seasonally adjusted at the component level, where appropriate. As with all seasonally adjusted series – including estimates of seasonally adjusted headline CPI inflation – they are subject to some modest revision as seasonal factors are re-estimated. Experience has shown that revisions to trimmed-mean inflation tend to be very small. While weighted-median inflation is more subject to revision, revisions to the city-based estimates are likely to be smaller than for the estimates based on national data.

9 This is also the practice for the trimmed-mean measures published by the Federal Reserve Banks of Cleveland and Dallas and the Bank of Japan. The practice in Canada, New Zealand and Switzerland has been to use the annual distribution of price changes.

and automotive fuel prices. More recently, large falls in automotive fuel prices and the estimated price of D&L facilities resulted in very low quarterly outcomes for CPI inflation in the December quarter of 2008 and the March quarter of 2009.

The various estimates all suggest a decline in underlying inflation through 2009, following the easing in demand pressures in the economy in 2008. The moderation in inflation is also apparent in measures of year-ended underlying inflation (Graph 3). Again, there are some divergences, but looking across the measures, year-ended underlying inflation peaked at a little over 4½ per cent over the year to the September quarter 2008 and has fallen to around 3¼ per cent over 2009. This moderation is expected to continue into 2010, with year-ended underlying inflation forecast to be around or slightly below 2½ per cent in late 2010 and early 2011.

Graph 3
Consumer Price Inflation*
Year-ended



* Adjusted for the tax changes of 1999–2000
** Volatile items are fruit, vegetables and automotive fuel
Sources: ABS; RBA

Table 1: Measures of Consumer Price Inflation
Quarterly correlation; 2001–2009

	Trimmed mean	Weighted median (national)	Exclusion (volatiles)	Exclusion (volatiles and D&L)	Trimmed mean (city)	Weighted median (city)	Headline CPI
Trimmed mean	1.00	0.89	0.68	0.70	0.98	0.93	0.57
Weighted median (national)	0.89	1.00	0.45	0.58	0.85	0.90	0.40
Exclusion (volatiles)	0.68	0.45	1.00	0.76	0.73	0.56	0.65
Exclusion (volatiles and D&L)	0.70	0.58	0.76	1.00	0.70	0.65	0.39
Trimmed mean (city-based)	0.98	0.85	0.73	0.70	1.00	0.91	0.65
Weighted median (city-based)	0.93	0.90	0.56	0.65	0.91	1.00	0.42
Headline CPI	0.57	0.40	0.65	0.39	0.65	0.42	1.00

Sources: ABS; RBA

Use of Estimates of Underlying Inflation at the Reserve Bank

Estimates of underlying inflation are a useful tool for understanding recent inflation outcomes, which is the starting point in the forecasting process. Given that CPI inflation is quite volatile, most of the models and equations used in the Bank to explain inflation use some measure of underlying inflation (often 15 per cent trimmed-mean inflation) as the dependent variable. So forecasts of inflation typically start with forecasts of underlying inflation, which then feed into the forecast for CPI inflation. In addition, an understanding of the current pace of inflation is an important judgmental input into any forecast for inflation. Measures of underlying inflation are one of the tools used by Bank staff in considering what part of recent price movements is likely to be 'noise' and what is likely to be persistent and to therefore have implications for future inflation.

As noted above, there is usually some divergence between different estimates of underlying inflation. Reflecting this, it is unlikely that any single measure of underlying inflation, or any simple formula based on the available measures, can be held up as the best measure at all times, and the relative usefulness of different series may change depending on the nature of the price shocks. Accordingly, in addition to looking at a range of underlying measures, Bank staff also look closely at the movements in particular CPI components, at analytical sub-groups of components such as tradables and non-tradables, and at the broader economic forces influencing inflation at any point. ✠

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Household Consumption Trends in China

Mark Baker and David Orsmond*

Despite strong growth in Chinese consumption, the household consumption ratio has fallen significantly. This reflects a fall in the share of national income that accrues to the household sector and a rise in the household saving ratio. Policies to encourage the growth of small and medium-sized entities, increase social spending, and reduce the focus on investment-led growth would be expected to support the level of household consumption over the medium term.

Introduction

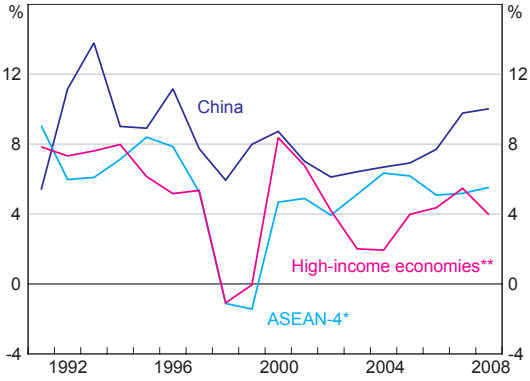
Compared with other countries, household consumption expenditure in China has grown at a strong pace for an extended period. Nonetheless, the share of household consumption in total expenditure in the Chinese economy has declined, as the growth in investment spending and exports has been even more rapid than that of consumption, especially in the 2000s decade. This article outlines these trends and the factors that have driven them, focusing on the decreasing share of total national income that accrues to the household sector and the increase in the household saving ratio. It also discusses recent government initiatives that are intended to boost consumption spending over the short and medium term.

Recent Trends in Household Consumption

Household consumption has grown rapidly in China over the past two decades, averaging around 8 per cent a year and rising to around 10 per cent in the past few years.[1] This is well above the pace recorded in most other countries, with China's real annual household consumption growth on average 3 percentage points higher than other emerging economies in Asia and 6 percentage points higher than in the G7 advanced countries (Graph 1).

Despite this strong growth, the share of household consumption in China's total expenditure has declined. For many years this trend was fairly gradual, with the household consumption ratio falling from 52 per cent of GDP in the early 1980s to 46 per cent of GDP by the end of the 1990s. However, the pace of the decline picked up noticeably in the 2000s, with the household consumption ratio falling a further 11 percentage points, to be 35 per cent of GDP in 2008. In contrast, consumption ratios in other

Graph 1
Household Consumption Growth
Two-year average annual growth

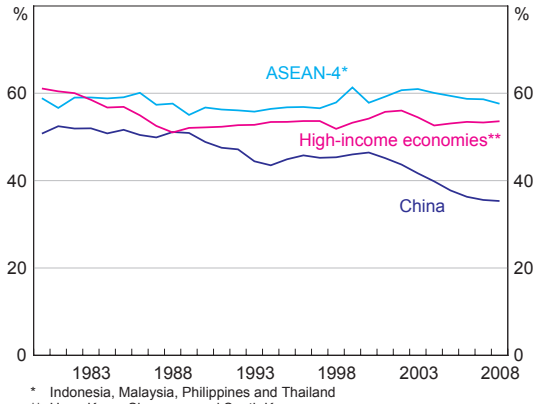


* Indonesia, Malaysia, Philippines and Thailand
** Hong Kong, Singapore and South Korea
Sources: CEIC; RBA; United Nations

* Mark Baker is from the Asian Economies Research Unit and David Orsmond is from Economic Analysis Department.

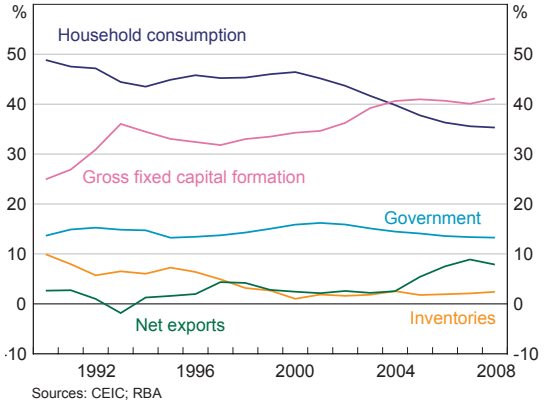
1 The Chinese statistical authorities publish estimates of nominal but not real household consumption. The estimates shown here are those of the United Nations, which are consistent with the authorities' estimates for the real growth of total consumption by the government and household sectors and budget data. Retail sales data also show strong growth for an extended period.

Graph 2
Household Consumption Ratios
Share of nominal GDP



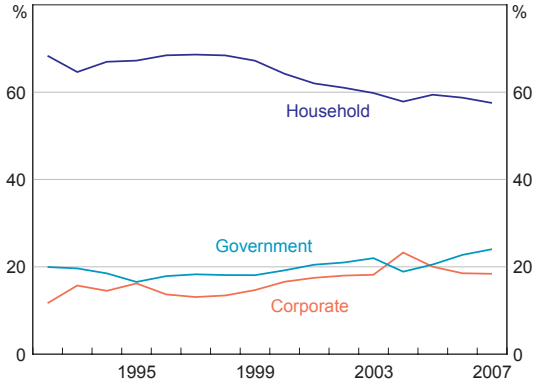
* Indonesia, Malaysia, Philippines and Thailand
** Hong Kong, Singapore and South Korea
Sources: CEIC; RBA; United Nations

Graph 3
China – Expenditure Components
Share of nominal GDP



Sources: CEIC; RBA

Graph 4
China – Disposable Income
Share of nominal GDP



Sources: CEIC; RBA

emerging Asian economies have typically remained around 55–60 per cent of GDP over recent decades (Graph 2).

The fall in the consumption share in China has been accompanied by a large increase in the shares of investment and trade in GDP (Graph 3). Although household consumption has continued to grow at a solid pace, investment spending has grown even more rapidly and the contribution to growth from net exports has also increased significantly. This divergence between the pace of real growth of consumption and that of all other spending has led to a reduction in the household consumption ratio by around 1 percentage point of GDP a year in the 2000s; slower growth of consumption prices relative to GDP prices reduced the ratio by an additional ½ percentage point a year during this period.

Changes in the Household Income Share and the Saving Ratio

Two broad factors account for the large fall in the share of household consumption in total expenditure during the 2000s: first, a decline in the share of national income that accrues to the household sector, and second a large rise in the household saving ratio.

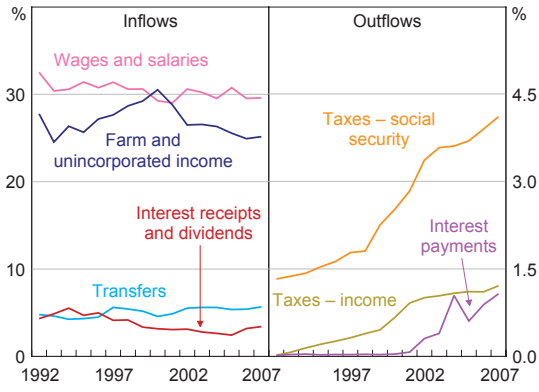
According to recently published flow of funds data, which cover the period 1992 to 2007, the share of household disposable income in GDP has declined significantly, falling from around 66 per cent in the late 1990s to 57 per cent recently (Graph 4).[2] At the same time, the shares of total national income accruing to the corporate and especially the government sectors have risen. The increase in the corporate income share mainly reflects developments in their non-production activities – lower costs following the termination in the late 1990s of the requirement that enterprises provide social services to their workers, higher dividend income from their investments abroad, and lower net interest payments – while the increase in the government income share is due to higher tax receipts.

2 For further discussion of these data and recent saving patterns, see Wiemer (2009) and the accompanying articles in that issue.

The fall in the share of household disposable income in GDP reflects comparatively weak growth in non-wage labour earnings and higher tax and interest payments. On the inflows side, almost 90 per cent of household income in China is derived from labour earnings, around half of which is wages and salaries from the formal sector and the other half is derived from farm production and other unincorporated activities. Wages and salaries from the formal sector remained fairly constant at around 30 per cent of GDP throughout the 1990s and 2000s, as strong growth in real wages offset modest growth in formal sector employment due to ongoing enterprise restructuring (Graph 5). In contrast, after rising during the 1990s, growth in income from farm production and unincorporated activities lagged the rapid pace of overall GDP by a wide margin, with its share in national income consequently falling by around 4 percentage points of GDP. Other inflows to the household sector – mainly pensions and other transfers received from the government and interest receipts – remained quite small and fairly steady as a share of GDP; dividend income paid to the household sector is negligible in China.

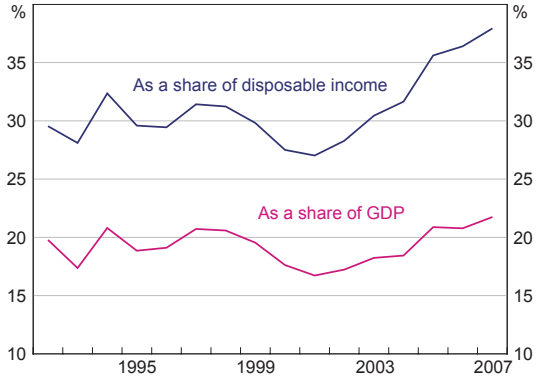
At the same time, outflows from household income increased markedly during the 2000s. Total taxes on labour income rose by 2½ percentage points of GDP, partly due to higher income tax payments but mostly reflecting mandatory contributions to a new pay-as-you-go (PAYG) pension system managed by the government sector that is being phased in across the country.[3] In addition, household interest payments increased from near zero to 1 per cent of GDP after the widespread devolution of home ownership to the household sector in 1998 and the associated increase in mortgage-related debt. As a consequence of these developments, the share of household disposable income (after tax and interest payments) in overall GDP fell sharply.

Graph 5
China – Household Income Accounts
Per cent of nominal GDP



Sources: CEIC; RBA

Graph 6
China – Household Saving Ratios



Sources: CEIC; RBA

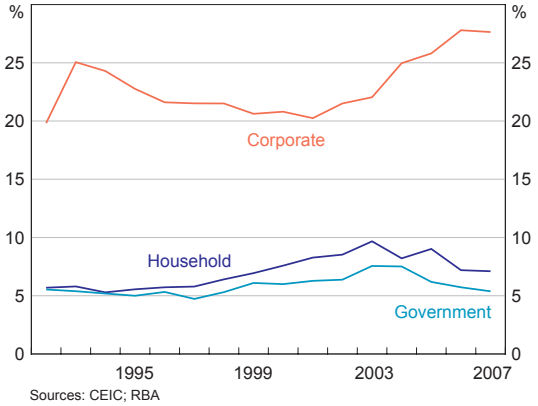
The second factor behind the comparatively slower pace of consumption growth has been the increase in household savings in the 2000s. After dipping in the late 1990s, the household saving ratio has increased steadily, rising from 27 per cent of disposable income at the start of the decade to reach a historic high of 38 per cent recently (Graph 6). This partly reflects demographic factors; China is at a peak in terms of the size of its working-age population share, which is projected to decline over the next decade. But it also reflects an increase in the desired stock of savings ahead of future spending on big-ticket items such as children's tertiary education, medical care, care of ageing parents and housing, especially

3 Starting from the year 2000, the government has been gradually replacing enterprise-based pensions with a mandatory PAYG benefit, with employer contributions set at 20 per cent and employee at 8 per cent of nominal wages; see Dunaway and Arora (2007).

in light of the termination in the late 1990s of the requirement that enterprises provide some of these services to their workers. The increase in the level of household savings needed to make these types of purchases can be considerable: with regard to home purchases alone, owner-occupiers are required to place a deposit equal to at least 20 per cent of the purchase price, although the average is much higher and many home buyers pay fully in cash.

These changes in household income and behaviour in the past decade have had a marked effect on expenditure patterns in China. First, the devolution of home ownership resulted in a near doubling in the share of dwelling investment to GDP between the late 1990s and the early 2000s, effectively representing an increase in spending by the household sector on housing at the cost of lower spending on non-housing consumption during this period (Graph 7).[4] Second, the rise in the corporate income share in part funded the large increase in business investment, especially given the absence of any dividend transfer requirement by state-owned companies and of alternative attractive saving instruments. Third, much of the increase in tax collections by the government in the early 2000s was channelled into higher publicly funded investment.

Graph 7
China – Investment
Share of nominal GDP



Sources: CEIC; RBA

Finally, given the increase in productive capacity that resulted from the higher level of business investment, rapid growth in exports relative to imports increased the trade surplus as a share of GDP, especially after 2004. All of these factors contributed to the recent large decline in the consumption to GDP share in China.

Policies to Lift Household Consumption

Over recent years, the Chinese authorities have taken a number of steps to support household consumption. Some of these measures have a short-term focus, while others are more structural in nature and involve a gradual rebalancing of economic growth away from investment and exports and towards higher consumption.

With regard to short-term policies, the VAT on cars and a number of other items has been reduced, and vouchers for certain durable goods purchases by the rural sector have been provided, in the context of the current stimulus package. Several of these policies have recently been extended. Sales of these items have increased in the past year or so, although as was noted in the November 2009 *Monetary Report* of the People's Bank of China, part of this demand likely reflects a pull forward in the timing of such purchases.

With regard to medium-term policies, the government has taken a series of steps that are likely to moderate the high household saving ratio and support consumption growth over time. Government spending on health and education has increased from around 2¾ per cent of GDP in 2006 to around 3¾ per cent of GDP by 2008, while the full phase-in of the government PAYG pension system noted earlier will gradually lift the level of pension transfers to the household sector. The government also intends to phase in a national health system and rural-sector pensions and has introduced policies to enhance the portability of pension entitlements across provinces. The health care program includes plans to develop a universal basic health insurance

4 Chinese consumption data do not include an implicit rent component to reflect the ongoing value of dwelling services.

system for urban residents, new rural cooperatives, and improvements in health care infrastructure and pharmaceutical provision. The rural pension will be paid to citizens aged over 60 years regardless of their contribution period, with the system phased in from end 2009. Credit availability to the household sector is also rising, reducing the need for saving in advance of big-ticket purchases and for precautionary saving by the household sector. These policies will, however, likely take some time to have a significant effect on the household saving ratio; the level of social spending still remains low by international standards and there are several intergovernmental issues to address to ensure the various new initiatives are fully financed over time.[5]

Several policies are also being implemented or discussed to boost the level of wage and non-wage income of the household sector. The government has introduced measures to stimulate the growth of small and medium-sized enterprises (SMEs), including guarantees on their borrowing, tax reductions and subsidies. SMEs are typically a large share of total employment in other countries and hence their expansion – especially in the retail and wholesale sectors, which are dominated by state-owned enterprises in China – could significantly boost both employment and household income over time. Other options to promote the growth of SMEs include the simplification of licensing arrangements and the development of risk-pricing and management practices in the banking sector to better assess SME loan applications. Greater competition and interest rate liberalisation within the financial sector could also raise interest rates on the sizeable pool of household deposits and thereby boost the low level of non-wage household income.

Finally, to help rebalance income and expenditure shares across the economy, several commentators have suggested that dividend distributions from state-owned enterprises be increased in order to finance higher government social spending and transfers and reduce the level of retained earnings in these enterprises.[6]

Conclusion

While household consumption has continued to grow solidly in China, its share in GDP has declined. This has been associated with a sharp fall in the share of disposable income accruing to the household sector and a rise in the household saving ratio. The authorities are putting in place policies to promote SMEs and increase social spending by the government, and are discussing other ways to reduce the focus on investment-led growth. While there are complex issues to address in each of these areas, they could over time have a substantive impact on household consumption in China.

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5 The intergovernmental reform in 1994 centralised revenue flows while leaving responsibility for much expenditure at the local level. Additional social expenditures were added as responsibilities of the local administrations in the late 1990s and only part of the new rural pension will be paid by the central government, with the share varying by province. For further details on these measures and a discussion of intergovernmental funding issues, see Qiao and Song (2009) and Dabla-Norris (2005).

6 From 2008, all non-financial state-owned enterprises pay a dividend varying between 5 to 10 per cent of their profits to the State-Owned Assets Supervision and Administration Commission; these funds are held by SASAC to cover expected future enterprise restructuring costs, such as pension obligations. For a discussion, see ChinaStakes (2007) and Kuijs, Mako and Zhang (2005).

The Australian Government Guarantee Scheme

Carl Schwartz*

The Australian Government Guarantee Scheme for Large Deposits and Wholesale Funding (the Guarantee Scheme) was announced in October 2008 amid extraordinary developments in the global financial system. Given that funding conditions have subsequently improved significantly, and that a number of similar schemes in other countries have closed, the Australian Government has announced that the Guarantee Scheme will also close to new borrowing from 31 March 2010.

Introduction

The Australian Government Guarantee Scheme for Large Deposits and Wholesale Funding (the Guarantee Scheme) was announced in October 2008 in response to extremely difficult conditions in the global financial system, and similar announcements in a number of other countries. The arrangements promoted financial system stability in Australia, and the ongoing provision of credit, by supporting confidence and assisting authorised deposit-taking institutions (ADIs) to access funding at reasonable cost at a time of considerable turbulence. They also ensured that Australian institutions were not placed at a disadvantage compared with their international competitors that could access similar government guarantees on bank debt.

Given the improvement in funding conditions, however, and the recent or imminent closure of wholesale funding guarantee schemes in a number of countries, the Government has announced that the Guarantee Scheme will close to new liabilities on 31 March 2010. The Reserve Bank has been involved in these arrangements as the Administrator of the Guarantee Scheme and, together with other agencies on the Council of Financial Regulators, in an advisory role on its design and operation. This article looks at the events leading to the introduction of the Guarantee Scheme, its main features, how it was used and the developments enabling its closure.

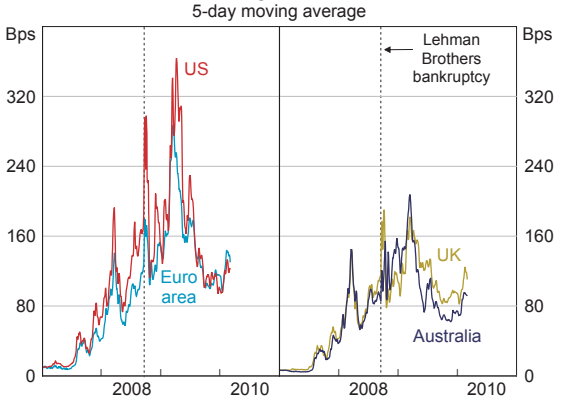
* The author is from Financial Stability Department.

The Introduction of the Guarantee Scheme

In the latter part of 2008, international developments led to extreme pressure on the availability and cost of funding for banks around the world. In September 2008, the collapse of Lehman Brothers triggered high uncertainty about the stability of the global financial system, and a virtual closure of parts of global capital markets. The perceived risk of large banks across the world, as reflected in credit default swap (CDS) premiums, rose to unprecedented levels (Graph 1) and international long-term wholesale funding markets had essentially closed to non-sovereign borrowers. Despite their ongoing strong capitalisation, earnings and asset quality, Australian ADIs were affected by these developments, with reluctance among investors to buy long-term bank debt, and signs of nervousness among some depositors.

Against this backdrop, governments in a number of countries announced the strengthening of deposit protection arrangements and the provision of guarantees for financial institutions' wholesale debt. On 12 October 2008, the Australian Government also moved to reassure investors and depositors in Australian ADIs, and to ensure that Australian ADIs were not disadvantaged compared with banks in other countries, by announcing increased depositor protection and guarantee arrangements

Graph 1
Banks' Senior 5-year CDS Premiums
5-day moving average



Sources: Bloomberg; Thomson Reuters

for wholesale funding. Further details of the arrangements – including a guarantee fee on large deposits and the parameters of the wholesale funding scheme – were announced on 24 October, following advice from the Council of Financial Regulators.

Depositor protection arrangements in Australia were mainly strengthened through the introduction of the Financial Claims Scheme, under which deposits of $1 million or below with Australian-owned banks, building societies and credit unions and Australian subsidiaries of foreign-owned banks are automatically guaranteed by the Government, with no fee payable.[1] These arrangements will remain in place until October 2011.

Separately, under the Guarantee Scheme, eligible ADIs have been able, for a fee, to offer government-guaranteed deposits greater than $1 million, and government-guaranteed wholesale funding with maturity out to five years (less in the case of foreign-bank branches).[2] These arrangements became operational on 28 November 2008, after a period of close collaboration between agencies represented on the Council of Financial Regulators – in consultation with ADIs – to establish the necessary rules, processes, documentation and architecture.

The Australian Guarantee Scheme shared many features with wholesale guarantee arrangements announced in other countries although, on balance, it was more flexible and generally at the more supportive end of the international range.

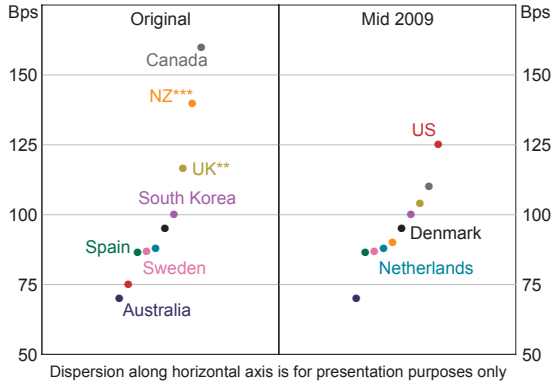
- The Government did not set a fixed date for closure of the arrangements, announcing that the Guarantee Scheme would remain in place 'until conditions normalise'. Most other countries announced a fixed window for new borrowing, often between six to nine months (Table 1). As difficult conditions extended well into 2009, many of these countries extended their arrangements, often on more than one occasion.
- The Guarantee Scheme has allowed guaranteed debt with a rolling maturity date of five years, whereas most countries specified fixed maturity dates that were relatively sooner, amounting to two to three years from the commencement of the borrowing arrangements. Again, most countries subsequently extended these dates, reflecting both the continuation of difficult conditions and an increased preference to spread banking sector debt maturities.
- The fee applicable to AA-rated institutions under the Australian Guarantee Scheme (70 basis points per annum) was at the low end of the international range for schemes with this structure (Graph 2). While initially similar to the fee in the United States (75 basis points), the United States subsequently raised its fee as part of its exit strategy. The differential between institutions with different credit ratings under the Australian Guarantee Scheme was, however, relatively large by international standards, with the fee for A-rated institutions of 100 basis points and 150 basis points for BBB-rated and unrated institutions.

1 For more detail on the introduction of the Financial Claims Scheme and changes in deposit protection internationally, see RBA and APRA (2009).

2 Foreign branches have had restricted access to the Guarantee Scheme including a shorter maturity limit (initially out to 31 December 2009, and subsequently amended to a rolling 15-month maturity). The differing treatment reflects that, unlike the foreign bank subsidiaries, foreign bank branches are not separate entities incorporated and independently capitalised in Australia – they are part of the foreign bank incorporated overseas.

In setting the guarantee fees, the Government and Council of Financial Regulators considered a range of factors, including international settings, pricing for risk, and the need to ensure that the arrangements did not continue indefinitely. The fees were set at a level between the then-current risk spreads – the product of highly stressed conditions – and spreads likely to prevail in more normal market conditions. This was designed to act as a natural exit mechanism, so that when pricing of risk improved, the yield spread between unguaranteed and guaranteed debt would narrow to below the guarantee fee and it would become cost-effective for issuers to return to unguaranteed issuance.

Graph 2
Long-term Debt Guarantee Fees for AA-rated Issuers*



* Schemes where banks issue in their own name
** RBA estimate based on CDS premiums
*** NZ$ fee (subtract 20 basis points for foreign currency fee)
Sources: BIS; RBA; central banks, debt management offices and guarantee administrators; treasury departments

Table 1: Announced Wholesale Funding Guarantee Schemes[(a)]

Date of initial announcement[(b)]	Country	Initial finish date	Initial maximum maturity date
30-Sep-08	Ireland	29-Sep-10	29-Sep-10
06-Oct-08	Denmark	30-Sep-10	30-Sep-10
06-Oct-08	Germany	31-Dec-09	31-Dec-12
08-Oct-08	United Kingdom	09-Apr-09	13-Apr-12
09-Oct-08	Belgium	31-Oct-09	31-Oct-11
10-Oct-08	Spain	01-Jul-09	01-Jul-12
12-Oct-08	Australia	Unspecified	Rolling 5 years
13-Oct-08	France	31-Dec-09	31-Dec-14
14-Oct-08	United States	30-Jun-09	30-Jun-12
19-Oct-08	South Korea	30-Jun-09	30-Jun-12
20-Oct-08	Sweden	30-Apr-09	30-Apr-12
21-Oct-08	Netherlands	31-Dec-09	31-Dec-12
22-Oct-08	Finland	30-Apr-09	30-Apr-14
23-Oct-08	Canada	30-Apr-09	30-Apr-12
01-Nov-08	New Zealand	Unspecified	Rolling 5 years

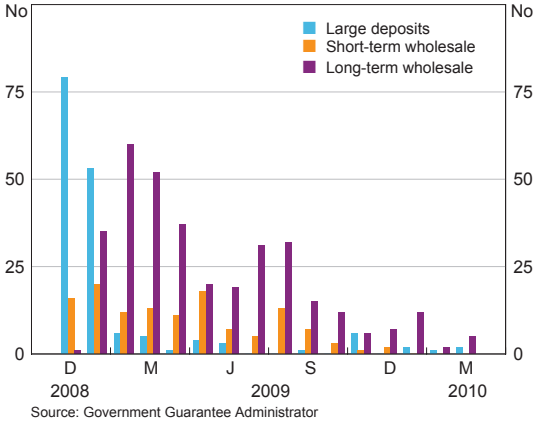
(a) Selected countries
(b) Announcement of scheme parameters typically followed the initial announcement date
Sources: BIS; central banks; debt management offices and guarantee administrators; treasury departments

Use of the Guarantee Scheme

As at January 2010, liabilities covered by the Guarantee Scheme were $166 billion, predominantly comprising long-term wholesale funding (Table 2).[3] The total amounts to 7.5 per cent of total ADI liabilities; the share of the guaranteed wholesale funding component is higher, at around 15 per cent of all wholesale liabilities. Fees payable to date by ADIs using the Guarantee Scheme total $1.2 billion, with fees currently running at around $0.1 billion per month.

The strongest growth in use of the Guarantee Scheme was in the months around its introduction, when uncertainty was very high. One indication of the take-up of the Guarantee Scheme is in the volume of Eligibility Certificates (certificates) issued by the Reserve Bank, in its role as Scheme Administrator. ADIs require a certificate to access the guarantee, with a separate certificate required for each type of liability. In the case of deposits, a large number of certificates were issued in November and December 2008, reflecting moves by a broad range of institutions to be able to offer the large deposit guarantee over customer accounts at an early stage (Graph 3 and Table 3). Once this ability had been established, there was little subsequent demand. Applications for certificates applying to wholesale liabilities – particularly long-term liabilities – were relatively less bunched towards the Guarantee Scheme's introduction, partly reflecting the narrower range of institutions typically applying for these, and also that the form of the certificates is security-specific.

Graph 3
Issuance of Eligibility Certificates



Source: Government Guarantee Administrator

Growth in the amounts guaranteed under the Guarantee Scheme also shows a tapering off as the extreme dislocation in financial markets has eased. The value of large deposits covered under the Scheme peaked in April 2009 at $24 billion and by January 2010 had fallen below $13 billion (Graph 4).

Table 2: Guarantee Scheme for Large Deposits and Wholesale Funding
Average daily values guaranteed, January 2010

	$billion	Per cent[(a)]
Large deposits	12.7	1.1
Wholesale funding	153.6	14.7
of which:		
Short-term[(b)]	17.1	
Long-term	136.5	
Total	**166.4**	**7.5**

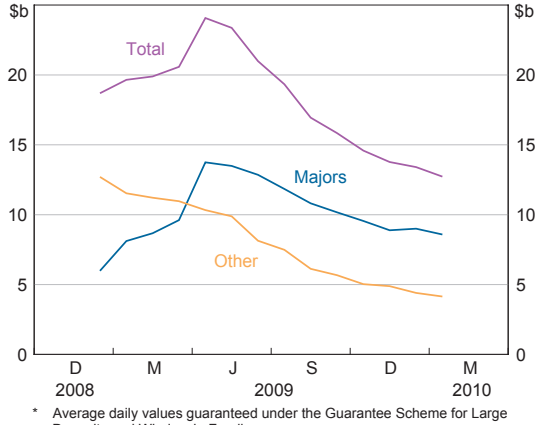
(a) Large deposits expressed as a share of total ADI deposit liabilities as at 31 December 2009. Wholesale funding expressed as a share of total ADI wholesale funding liabilities as at 31 December 2009.
(b) Short-term wholesale denotes funding with an initial maturity of 15 months and under.
Source: Government Guarantee Administrator

3 Data on liabilities covered by the Guarantee Scheme are updated monthly at www.guaranteescheme.gov.au/liabilities/summary-info.html.

Early use of the Guarantee Scheme for large deposits was encouraged by the pricing practices of a number of ADIs that were absorbing all or some of the guarantee fee to attract or retain customers. However, as concerns about the global financial system eased, ADIs became less willing to absorb the fee, and customers similarly became less inclined to pay for the additional security over what was already a low-risk investment. Although the bulk of ADIs have at least one certificate to offer guaranteed large deposits to their customers, only one-quarter of these institutions had a non-zero balance in January 2010. The value of deposits covered under the Guarantee Scheme amounts to only around 1 per cent of total deposits.

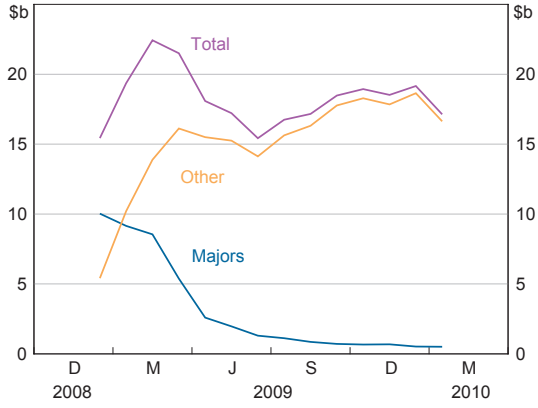
A similar fall in use, though less pronounced, is evident in the value of guaranteed short-term wholesale liabilities (Graph 5). After peaking in February 2009 at $22.4 billion, guaranteed short-term wholesale funding has fallen to average $17.1 billion in January 2010. The decline is significantly greater when looking solely at the Australian banks. Among other institutions, use of the guarantee by foreign branches has increased since May 2009, after the Government increased the maturity limit for them from the original fixed date of 31 December 2009 to a rolling 15 months. The increase was consistent with moves in a number of countries extending guarantee arrangements and maturity limits beyond those initially announced.

Graph 4
ADIs' Guaranteed Large Deposits*



* Average daily values guaranteed under the Guarantee Scheme for Large Deposits and Wholesale Funding
Source: Government Guarantee Administrator

Graph 5
ADIs' Guaranteed Short-term Debt*



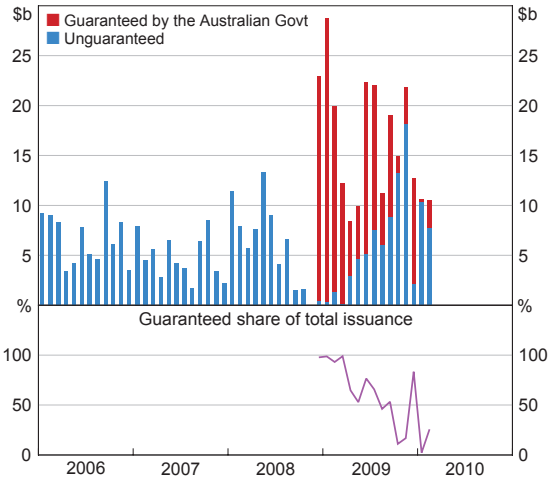
* Average daily values guaranteed under the Guarantee Scheme for Large Deposits and Wholesale Funding
Source: Government Guarantee Administrator

Table 3: Number of Institutions with One or More Eligibility Certificates
As at end February 2010

	Type of liability covered			
	Large deposit	Short-term wholesale	Long-term wholesale	Memo: total number of institutions
Australian-owned banks	13	9	9	14
Foreign subsidiary banks	8	6	4	9
Branches of foreign banks	10	9	na	34
Credit unions, building societies and other ADIs	97	1	1	123
Total	**128**	**25**	**14**	**180**

Source: Government Guarantee Administrator

Graph 6
Australian Banks' Bond Issuance*



* A$ equivalent; excludes paper with an original maturity of less than 15 months. Data are to end February 2010.
Source: RBA

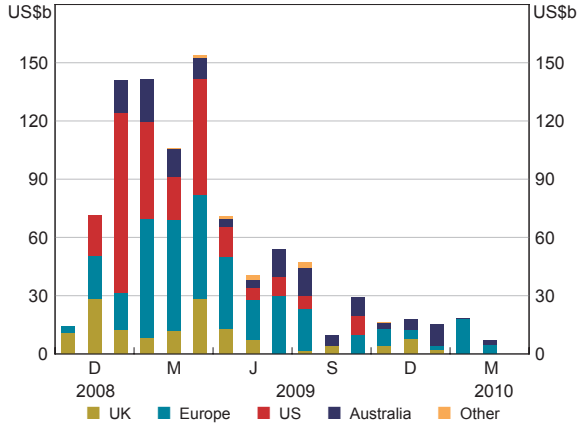
The Guarantee Scheme has predominantly been used to guarantee long-term liabilities. With extreme risk aversion prevailing in global financial markets, ADIs' access to funding through long-term bond issuance was heavily curtailed in the period between the collapse of Lehman Brothers and the Guarantee Scheme's implementation, particularly in offshore markets (Graph 6).[4] In the early months of the Guarantee Scheme, there was heavy issuance of guaranteed bonds as ADIs sought to lengthen the maturity structure of their liabilities. Overall issuance volumes were strong relative to recent history for the system as a whole and, in particular, for lower-rated banks, partially reflecting that the guarantee enabled access to new groups of investors with a mandate for AAA-rated securities.

The extreme market conditions gradually eased and by the June quarter 2009 investors were again purchasing a considerable volume of unguaranteed bonds. The share of bond issuance that is guaranteed has fairly steadily decreased with the improving conditions; after accounting for almost all issuance in the months following the Guarantee Scheme's introduction, in the early part of 2010 the share had fallen to close to zero. This reflects that the sharp compression in bank bond spreads over 2009 was more pronounced for unguaranteed bonds than for guaranteed bonds, particularly for higher-rated issuers. As a result, it is now generally advantageous for the AA-rated banks to issue unguaranteed rather than issuing guaranteed and incurring the associated fee.

For lower-rated ADIs, there continues to be little unguaranteed bond issuance. However, these institutions have traditionally not been large issuers in the bond market. In the past, many lower-rated institutions have made more use of the residential mortgage-backed securities (RMBS) market for funding, and this market has shown signs of improvement in recent months.[5] Since the announcement on 7 February 2010 that the Guarantee Scheme will soon close to new borrowing, guaranteed bond issuance from lower-rated banks has picked up from the pace of recent months.

The overall pattern of lower guaranteed bond issuance relative to early in 2009 is also evident in use of guarantee schemes in other countries (Graph 7). In addition to declining risk spreads making

Graph 7
Government-guaranteed Bond Issuance*
By region, monthly



* By financial institutions; may exclude some private placements. Data are to end February 2010.
Sources: RBA, Thomson Reuters

4 For more discussion on banks' bond issuance through this period see Black, Brassil and Hack (2010).

5 For more detail on developments in RMBS markets, and funding markets generally, see Brown *et al* (2010).

unguaranteed debt issuance more attractive, subdued guaranteed issuance also reflects that, in many countries, banks' overall requirements for new debt are not high, as both they and their customers are focused on repairing their balance sheets. In a number of countries, alternative funding sources are also being tapped; for example, European banks have issued heavily into the covered bond market, a market that has been supported by purchases from the European Central Bank.

Closure of the Guarantee Scheme

In establishing the Guarantee Scheme, the Australian Government had announced that it would remain open until markets normalise. In comparison, most other countries nominated a fixed date by which debt had to be issued. Given the continuation of difficult conditions, however, these countries typically extended the cut-off date, often on a number of occasions.

The question of when to close such arrangements requires a trade-off of different considerations. Countries have had to weigh the risks of premature closure against the longer-term costs of an extended period of government support. The Council of Financial Regulators, which has been advising the Australian Government on the Guarantee Scheme, recently recommended the closure of the arrangements. On 7 February 2010, the Government announced that the Guarantee Scheme would close to new borrowing from 31 March 2010.

A key consideration behind the Council's advice was that conditions had improved to the point where the Guarantee Scheme is no longer needed. Bank funding conditions are much improved on those prevailing at the time the arrangements were introduced, and recent use of the Guarantee Scheme appears to be largely a response to small pricing advantages rather than reflecting problems of market access. The Council also considered that there are strong grounds for the Guarantee Scheme not to remain in place for a significantly longer period than in most other countries. A number of countries have now closed their schemes: the United States, Canada, France, Korea and the United Kingdom (Table 4). Market sentiment has, to date, been resilient to the scheme closures that have occurred.

In contrast, in December 2009, a number of countries in Europe gained European Commission (EC) approval to extend their schemes past the previously announced closure date. Banking systems in this region were more affected by the financial crisis than in Australia, and the guaranteed debt maturities of their banking systems are relatively concentrated in the next few years, given that under most European guarantee schemes, eligible bond maturities were limited to two to three years. For Australian banks, with guaranteed issuance permitted out to five-year

Table 4: Announced Final Date for Issuance under Guarantee Schemes[a]

Country	Date
United States	31-Oct-09
Canada	31-Dec-09
France	31-Dec-09
South Korea	31-Dec-09
United Kingdom	28-Feb-10
Australia	31-Mar-10
Sweden	30-Apr-10
Denmark[b]	30-Jun-10
Finland	30-Jun-10
Germany[b]	30-Jun-10
Ireland[c]	01-Jun-10
Netherlands	30-Jun-10
Spain[d]	Jun-10
Belgium	31-Oct-10
New Zealand	Unspecified

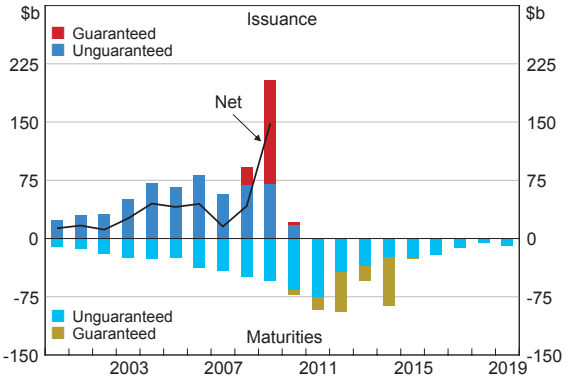
(a) Selected countries
(b) Legislation for the Scheme set until 31 December 2010, but EC approval required every six months
(c) Legislation for the Scheme set until 29 September 2010, but EC approval required every six months
(d) Exact final date unconfirmed
Sources: BIS; central banks; debt management offices and guarantee administrators; treasury departments

maturities, the overall bond maturity profile drawn from market data suggests that refinancing needs for guaranteed debt are relatively well distributed (Graph 8).

Graph 8

Australian Banks' Bonds*

A$ equivalent, yearly



* Excludes 12–15 month paper, considered as 'short-term' under the Australian Government Guarantee Scheme

Source: RBA

The Guarantee Scheme rules have been amended to give effect to the closure. Eligible institutions have until 24 March 2010 to apply for new certificates, and can issue guaranteed liabilities or create new guaranteed deposits in the period up to and including 31 March 2010. After that date, no further guaranteed wholesale liabilities or term deposits can be issued, although liabilities of these types already covered under the Guarantee Scheme will remain guaranteed until either they mature or are bought back and extinguished by the issuer. At-call deposits covered by the Guarantee Scheme on 31 March 2010 will continue to be covered until the Guarantee Scheme formally winds up in 2015, though depositors will not be able to increase the guaranteed amount above their closing balance on 31 March 2010. Fees will continue to be payable on amounts guaranteed, with the Treasurer indicating that total fees over the life of the Guarantee Scheme, absent early repayments, are likely to be around $5.5 billion.

The closure of the Guarantee Scheme does not affect the Financial Claims Scheme, under which deposit balances totalling up to and including $1 million per customer per institution are guaranteed without charge. These arrangements are scheduled to remain in place until October 2011. Enhanced depositor protection is intended to be a permanent feature of the Australian financial system, although the Government has committed to review parameters such as the $1 million cap in October 2011.

Conclusion

The Guarantee Scheme was introduced in October 2008 in response to extraordinary developments in the global financial system. It has made a positive and important contribution to the stability of the Australian financial system by ensuring that institutions continued to have access to capital markets during the most intense phase of the crisis. The arrangements have also ensured that the overall availability of funding has not been a material constraint on the capacity of Australian banks to lend and, for a time, served to mitigate the large increase in the cost of issuing debt. However, market conditions have significantly improved, and similar arrangements in a number of other countries have been closed. Accordingly, the Government, on the advice of the Council of Financial Regulators, has announced that the Guarantee Scheme will close to new borrowing from end March 2010.

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Recent Trends in Australian Banks' Bond Issuance

Susan Black, Anthony Brassil and Mark Hack*

Bonds are an important source of funding for Australian banks. While the financial crisis greatly affected capital markets, overall Australian banks retained good access to the bond market, with a sharp increase in the volume of bonds issued over the past couple of years. This reflected their sound balance sheets as well as the introduction of the Government guarantee which aided banks' access to bond markets at the height of the crisis. While price differentials continued to influence banks' decisions about where to issue bonds, during the crisis other factors increased in importance.

Introduction

Bonds account for almost one-quarter of Australian banks' total funding, with around three-quarters of the stock of bonds outstanding issued offshore.[1] While the composition of banks' funding had been fairly stable prior to the financial crisis, since then the share of bonds in overall funding has increased by a couple of percentage points as banks have sought to attract more stable and longer-term sources of funding. This article discusses the changes in the patterns of Australian banks' bond issuance, as well as the impact of the financial market turbulence on bond pricing and maturities.

Historically, Australian banks have issued bonds in a range of currencies and markets to take advantage of pricing differences across markets and for funding diversification. Australian banks have issued a large volume of bonds over the past couple of years, in part to lengthen the average maturity of their wholesale liabilities and to improve stability in their funding base. Their ability to tap capital market funding was supported by their relatively strong balance sheets and, at the peak of the dislocation in markets, the introduction of the Government's Guarantee Scheme for Wholesale Funding (discussed in 'The Australian Government Guarantee Scheme' in this issue of the *Bulletin*).[2]

The spread banks pay when issuing debt has increased substantially since mid 2007, but at the height of the crisis the increase in the spread was partly mitigated by the use of the Government guarantee. While minimising the overall cost of issuance continued to be an important determinant of where bonds were issued during the financial crisis, other factors – such as funding diversification, the ability to issue longer-maturity bonds and the capacity to raise larger volumes – increased in significance.

Patterns of Issuance

In general, the Australian banks, particularly the major banks, which account for three-quarters of banking assets in Australia, maintained good access to the bond market during the credit crisis. In part this reflects the Australian banks' sound balance sheets and profitability, which has made them attractive to investors, particularly relative to other global financial institutions.[3] The four large Australian banks are all rated AA, making them among the most highly rated banks globally by credit rating agencies. Despite their sound financial position, at the peak of the crisis the Australian major banks, like most banks globally, issued guaranteed long-term debt only (although they continued to issue unguaranteed short-term debt).

* The authors are from Domestic Markets Department.

1 For more information about banks' balance sheets, see Brown *et al* (2010).

2 See Schwartz (2010).

3 For a discussion of banks' profitability, see RBA (2009).

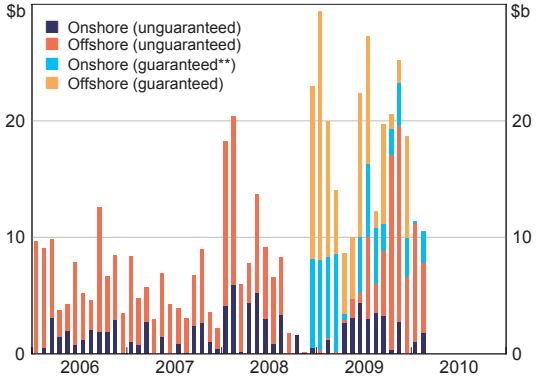
In the months immediately following the onset of the financial crisis in mid 2007, bank bond issuance continued at around the same pace as during previous years (Graph 1). Banks continued to be able to raise funds readily, albeit at a higher cost. However, other entities had difficulty accessing funds in capital markets. In particular, with securitisation markets closed, lenders such as mortgage originators which relied entirely on this market for funding were forced to slow their lending to households. As a result, the banks undertook an increased share of housing lending and provided more funding to non-bank lenders. At the same time, many companies which found tapping the bond market increasingly difficult or costly also turned to banks for funding. In part to fund this reintermediation, banks increased their bond issuance in early 2008. As it became more evident that the financial crisis would not be short-lived, the banks also issued bonds for precautionary purposes to get ahead on their funding plans. In the financial year 2007/08, bank bond issuance averaged $9 billion a month, compared with $6 billion a month in the previous year.

Bank bond issuance globally slowed sharply in September and October 2008, amid the renewed disruption to global credit markets following the failure of Lehman Brothers and the near-bankruptcy of a number of financial institutions in the United States and Europe. Uncertainty about the health of the global financial system and a sharp increase in risk aversion led to a further intensification of tensions in credit markets. Reflecting this market dislocation and the announcement of similar schemes in other countries, the Australian Government announced in October of that year that it would offer a guarantee on bonds issued by eligible authorised deposit-taking institutions for a fee. In the months following this intensification of the crisis, there was virtually no demand globally for unguaranteed financial institution debt, particularly for terms greater than one year, and what little unguaranteed debt was issued globally was at exceptionally high spreads. During this period of greatest dislocation, the guarantee enabled Australian banks to issue larger volumes and at much longer terms than would have been possible in unguaranteed form. The large issuance volumes were possible because the guarantee made regular buyers of financial institutions' debt more comfortable with the risk (as the debt was afforded the Australian Government's AAA rating) and also broadened the investor base, by attracting investors whose mandate covered sovereign-guaranteed debt. Given the historically high spreads at the time, the guarantee substantially reduced the cost to financial institutions of issuing term debt.

Graph 1

Australian Banks' Bond Issuance*

A$ equivalent, monthly



* Includes 12–15 month paper, considered as 'short-term' under the Australian Government Guarantee Scheme
** Includes A$3.25 billion of issuance guaranteed by the UK government
Source: RBA

As conditions improved, banks recommenced issuance of unguaranteed debt, although for some time guaranteed debt was still issued as it was cheaper (as discussed below) and there was investor demand specifically for the guaranteed debt. While only 15 per cent of bonds issued in the first half of 2009 were unguaranteed, that share increased to around 55 per cent in the second half of the year, rising to over 85 per cent so far in 2010.

The resurgence in unguaranteed issuance has almost entirely come from the major banks. Despite their ability to issue unguaranteed debt, there have been some guaranteed issues by major banks in recent months, notably December 2009. Typically

these have been in response to reverse enquiries (investors approach the issuer, which avoids the costs associated with investor roadshows and marketing) and when they have been cost-effective and convenient. While the smaller, lower-rated Australian-owned banks have traditionally issued bonds only sporadically, they have yet to return to their previous volumes of unguaranteed issuance, and have used the guarantee to issue more bonds than they did prior to the crisis (Graph 2). Currently, around one-third of the stock of bank bonds outstanding is guaranteed by the Australian Government; as discussed in Schwartz (2010), the Guarantee Scheme is scheduled to close to new borrowing at the end of March 2010.

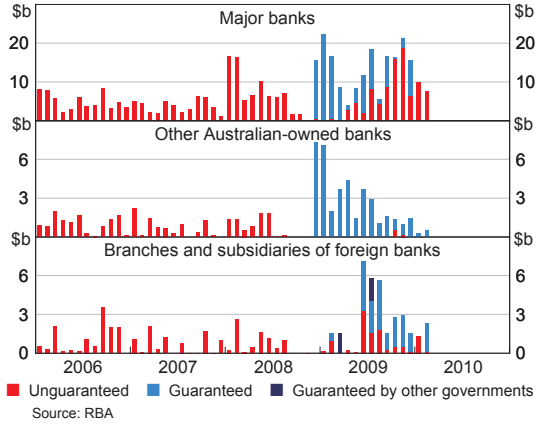
In 2009, the banks issued a record volume of bonds ($228 billion), almost double the issuance in 2008 and well above issuance in 2007 ($61 billion). The very strong issuance last year reflected balance sheet growth, refinancing and the banks increasing the duration of their wholesale funding liabilities.

Markets of Issuance

The Australian banks, particularly the major banks, have historically diversified their sources of funds by issuing bonds into a variety of markets and currencies. In this way they are able to tap a wider range of investors, enabling them to have more reliable access to markets as well as contributing to a lower cost of funds. Around 20 per cent of bonds were issued in the domestic market prior to the financial crisis, with the remaining 80 per cent issued in a range of overseas markets. The bulk of banks' offshore bond issuance was denominated in US dollars and euro, though the current stock of banks' bonds outstanding is denominated in at least 15 different currencies (Graph 3).[4]

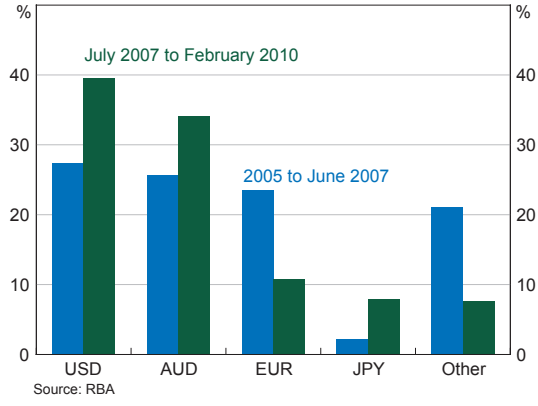
The Australian banks hedge almost all of their foreign currency bond issuance back into Australian dollars by undertaking interest rate and cross-currency swaps at the time of issuance, effectively raising

Graph 2
Australian Banks' Bond Issuance
A$ equivalent, monthly



Source: RBA

Graph 3
Australian Banks' Bond Issuance
By currency



Source: RBA

Australian dollar funds.[5] The Australian banks tend to issue in markets where it is cheapest to borrow Australian dollar equivalent funds at that time. In this way, they take advantage of pricing differentials between alternative funding markets, using derivatives to manage the associated exchange rate risks.[6]

During the financial crisis, the banks continued to access many markets but increased the proportion issued in those markets that were less impaired and

4 The banks also issue A$ bonds offshore, though these typically make up only around 2–3 per cent of issuance.

5 See D'Arcy, Shah Idil and Davis (2009). For an explanation of how the banks hedge foreign currency bonds, see Davies, Naughtin and Wong (2009).

6 See RBA (2006).

retained greater liquidity. While cost minimisation continued to influence the major banks' decisions about where to issue bonds – and whether to issue guaranteed or unguaranteed bonds – other factors such as funding diversification and the ability to issue larger or longer-maturity bonds became more important during the period of dislocation as investor demand for bank debt globally weakened. For example, at times the banks were prepared to pay a slightly higher spread in the US market where they could issue larger deals than in the domestic market. Nonetheless, price incentives saw the share of bonds issued domestically increase to around one-half following the collapse of Lehman Brothers, compared with one-quarter in the initial stages of the financial crisis, and one-fifth prior to the crisis. As unguaranteed offshore and onshore spreads have converged, the share of bonds issued onshore has returned to be around pre-crisis levels.

During the financial crisis, the banks issued a higher share of offshore bonds in US dollars and yen than they had historically, and conversely issued a lower share in euro. The major banks tapped the Samurai market – yen issuance into the Japanese market by non-residents – for the first time as they could issue bonds at a longer maturity (typically around five years) than they were able to do in most other markets at that time. The major banks also issued extendible bonds to target US money market funds (that can invest in securities of only relatively short maturities) and increased their use of private placements, particularly in the US domestic market.[7] The banks have issued guaranteed bonds both in the domestic and offshore markets, with Australian dollar and US dollar bonds accounting for the bulk of these, though other currencies have included yen, Swiss franc and pound sterling.

Bond Maturity

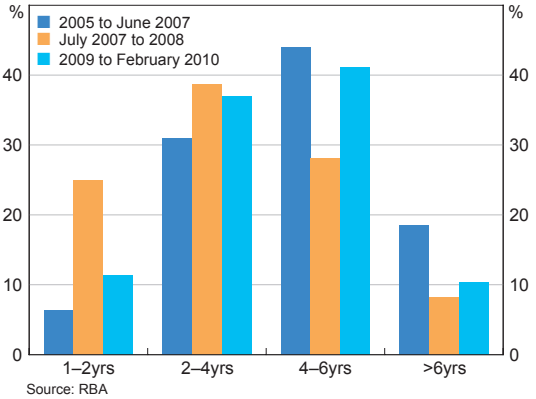
In the years leading up to the financial crisis, the Australian banks issued bonds mostly with maturities of 2 to 6 years, with an average of 5 years. With the onset of the financial crisis and the decline in risk tolerance, investors were less prepared to lock up funds for extended periods and so the distribution of bond maturities at issuance shifted toward shorter terms, with the average maturity shortened to around 3½ years (Graph 4). In some cases, at least initially, issuers also preferred to borrow at shorter terms rather than locking in high spreads. Of note, the major banks issued a sizeable amount of extendible bonds that had an initial maturity of 13 months and could be extended beyond that at the discretion of the investor. While these bonds had a 'step-up' structure, whereby the spread would increase by around 5–8 basis points each year if extended, most investors did not extend these bonds as the expected increase in bond spreads was greater. (This was in contrast to previous years, where, in an environment of narrowing spreads, investors had an incentive to extend the bonds.) In part reflecting issuance of extendible bonds, 25 per cent of bonds were issued with a maturity of 1–2 years, up from 6 per cent previously.

Initially, the Government guarantee enabled banks to issue bonds for larger amounts and for longer

Graph 4

Australian Banks' Bond Issuance

Tenor at issuance, by value



Source: RBA

7 Extendible bonds typically have an initial maturity of 13 months and thereafter have a rolling maturity of 12 months, which is extendible at the option of the investor.

terms than unguaranteed securities. Much of the increase in bond maturities over 2009, however, reflects the ability of the major banks to issue unguaranteed debt at longer maturities as market conditions have improved, including beyond the five-year limit of the Guarantee Scheme. While the distribution of bond maturities at issuance has moved toward longer terms, it is not yet back to the patterns prevailing prior to the financial crisis. For example, around 50 per cent of bond issuance since 2009 was at terms of four years or more, up from 35 per cent in the initial stage of the financial crisis, though below the 65 per cent share previously. The average term of issues domestically remains below the pre-crisis average, though the average maturity of bonds issued offshore over the past few months is around the pre-crisis average. Overall, the average maturity of the stock of bank bonds outstanding is around 3¼ years, up from 2½ years in late 2008.

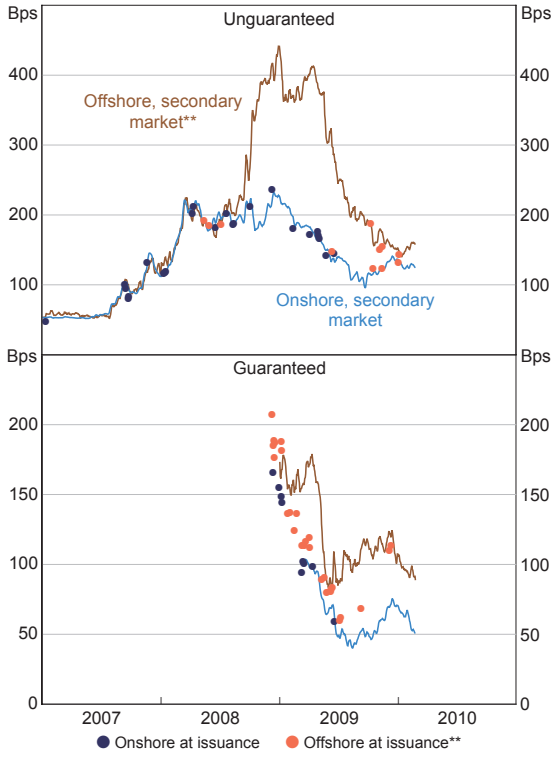
Pricing

As mentioned above, prior to the financial crisis, the major banks raised funds domestically or in various offshore markets depending on where it was most cost-effective to do so. It is possible to compare the costs incurred by the major banks, after hedging, from issuing 3-year bonds in A$ onshore and in US$ offshore, their main markets of issuance (Graph 5; the dots indicate the cost at issuance and the lines suggest where the bonds are trading in the secondary market, which provides a broad indication of the spread at which the major banks could issue in those markets).[8] Prior to mid 2007, spreads were relatively stable and there was no systematic difference in costs of issuing onshore or offshore; the spread to CGS at issuance was relatively stable and averaged 50 basis points onshore and offshore.

Graph 5

Major Banks' Bond Spreads*

A$ equivalent spreads to CGS



* Bonds >A$100 million only. Guaranteed spreads include the 70bps guarantee fee. Secondary market spreads are 5-day moving averages.
** A$ cost of US$ issues after hedging.
Sources: Bloomberg; RBA; UBS AG, Australia Branch

Consistent with the global reassessment of risk that marked the onset of the financial crisis, spreads widened from mid 2007. Markets globally, however, were similarly affected and the major banks continued to time their issuance to take advantage of differences in pricing across markets.

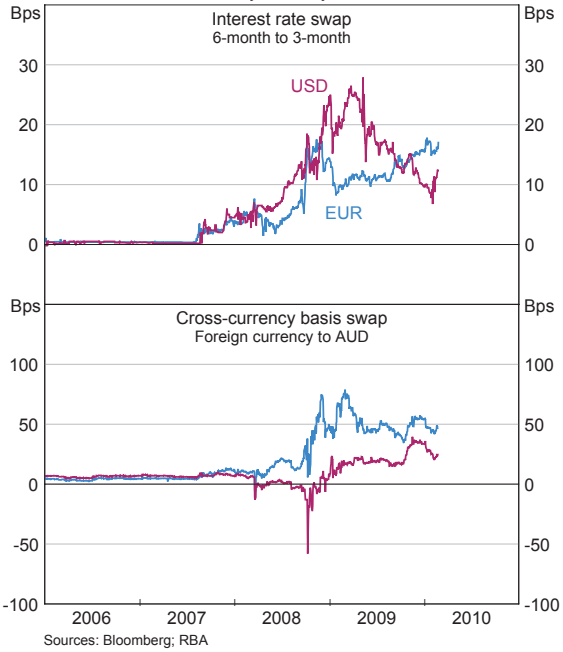
In late 2008 following the failure of Lehman Brothers, the cost of raising funds offshore (unguaranteed) increased sharply. The guarantee helped to alleviate some of these cost pressures, with guaranteed issuance initially cheaper both offshore and onshore (including the fee). Accordingly, the banks utilised the guarantee and increasingly tapped the onshore market during this period.

8 The analysis here is somewhat simplified by focusing on the 3-year spectrum only; the banks also choose between issuing at different terms. Moreover, the decision of the market of issuance encompasses all other markets and currencies, not only the A$ and US$, though these are the main currencies of issuance. This analysis also does not take into account other costs, such as roadshow/marketing costs or legal costs that may differ across markets.

Increasing investor demand for unguaranteed debt in 2009 – both onshore and offshore – as market conditions improved, saw spreads on unguaranteed bonds narrow more sharply than on guaranteed bonds. As a result, unguaranteed debt became cheaper to issue than guaranteed debt for the major banks. Initially this was for shorter terms, and then for bonds up to five years (the limit of the Guarantee Scheme), notwithstanding some movement in the relative spread following the announcement of the cessation of the guarantee of wholesale funding. The costs of raising funds without the guarantee offshore and onshore converged as offshore funding markets became more settled.

The volatility in offshore funding costs during the financial crisis partly reflected sharp moves in the spreads on interest rate and cross-currency basis swaps, which the banks use to hedge their foreign exchange exposure (Graph 6).[9] While these markets tend to be relatively liquid during normal market conditions, the cost of hedging became less predictable and more expensive during the financial crisis; in previous years, these swap spreads were steady at around 5 basis points, whereas they have ranged up to 80 basis points more recently. With these costs varying day to day during the financial crisis, the banks timed their bond issuance to try to minimise their hedging costs (and overall issuance cost).

Graph 6
Swap Spreads
3-year, daily



Sources: Bloomberg; RBA

9 Cross-currency swaps are used to convert foreign currency payments into A$ payments. Interest rate swaps are often used to hedge semi-annual bond coupon against 3-month LIBOR, since cross-currency swaps are typically benchmarked to 3-month LIBOR.

Conclusion

Bonds are an important source of funding for Australian banks, accounting for almost one-quarter of their liabilities. The financial crisis greatly affected term capital markets and accordingly the banks' bond issuance. Overall, the banks retained good access to bond markets, largely underpinned by their high profitability and strong credit ratings. At the height of the crisis, they were able to issue bonds, particularly in large volumes and for long terms, because of the Government guarantee. The guarantee also substantially reduced the cost of issuing debt, although this cost advantage gradually declined over time. The Australian banks have issued a record volume of bonds over the past couple of years, in part to lengthen the maturity of their wholesale liabilities.

Australian banks traditionally issued in a wide range of markets to take advantage of differences in cost as well as for funding diversification. While cost minimisation continued to be a significant driver of issuance patterns through the financial crisis, other factors – including market liquidity and the size and maturity of bonds that could be issued in particular markets – became more important. As spreads and risk aversion have declined, the large Australian banks have significantly scaled back their usage of the guarantee, and have been able to issue unguaranteed bonds cost-effectively since around the middle of 2009.

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Recent Developments in Banks' Funding Costs and Lending Rates

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The global financial crisis has affected the cost and composition of Australian banks' funding, with flow-on effects to their lending rates and net interest margins. Since mid 2007, Australian banks' overall funding costs have risen significantly relative to the cash rate, mainly reflecting the higher cost of deposits and long-term wholesale debt, and changes in their funding mix. Australian banks' lending rates have also risen significantly relative to the cash rate. For the major banks, the increases in lending rates have more than fully offset their higher funding costs, with their net interest margins in late 2009 about 20–25 basis points above pre-crisis levels. Since then, margins may have narrowed slightly.

Introduction

Australian banks raise funding from deposits and in capital markets so their funding costs, and consequently lending rates, are affected by financial market conditions. For several years up until mid 2007, with market conditions and spreads stable, banks' overall cost of funds tended to follow the cash rate, and therefore banks tended to adjust their lending rates mainly in response to changes in the cash rate. Since then, the global financial crisis has pushed up banks' funding costs relative to the cash rate and this has been reflected in their lending rates. This article updates previous Reserve Bank research on banks' funding costs.[1] The article notes that banks' overall funding costs remain significantly higher relative to the cash rate than they were in mid 2007, mainly due to the large increases in the cost of deposits and long-term wholesale debt, and a shift in banks' funding mix towards these more expensive, but typically more stable, types of funding.

Banks' lending rates have also risen relative to the cash rate. The increases have been largest for business and personal loans, in part reflecting a reappraisal of risk on this lending during the recent slowdown in the Australian economy, and smallest for variable-rate mortgages. The bulk of the increases occurred during 2008 and early 2009.

Most of the increase in banks' lending rates over the cash rate since mid 2007 has been due to their higher funding costs. For the major banks, however, there has also been an increase in their net interest margins (NIMs), which in late 2009 were about 20–25 basis points above pre-crisis levels. The major banks' higher NIMs have supported their return on equity, partly offsetting the negative effects of the cyclical increase in their bad debts expense and the additional equity that they raised during the downturn. The regional banks' NIMs have declined steadily for much of the crisis period, mainly reflecting the larger increase in their funding costs, though recently they have risen a little.

Composition of Banks' Funding

Banks operating in Australia have diverse funding bases, with most funding sourced from deposits, short-term and long-term wholesale debt. The funding mix differs somewhat across banks,

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1 Most data in this latest article are until end February 2010. The previous article is Davies, Naughtin and Wong (2009).

however, with the major banks having a slightly larger share of deposit funding than the banking system as a whole and relying very little on securitisation (Table 1). Regional banks generally have more deposits and make greater use of securitisation and less use of offshore funding, while foreign-owned banks have less deposits and correspondingly more funding from domestic capital markets and offshore.

The funding mix of banks in Australia was fairly stable during the few years leading up to the onset of the global financial crisis in mid 2007. However, the financial crisis has had a significant impact on the relative cost of banks' various funding sources. Globally, it has also led to a renewed focus on the composition of banks' funding. As a result, banks in Australia have increased their use of deposits and long-term debt, as these funding sources are perceived to be relatively stable, and reduced their use of short-term debt and securitisation.

The share of funding that comes from deposits for all banks in Australia has risen by 3 percentage points since mid 2007 to 42 per cent, with most of this increase occurring during the height of the financial

Table 1: Funding Composition of Banks in Australia[a]
Per cent of funding liabilities

	June 2007	January 2010
Major Banks		
Domestic deposits	43	48
Short-term wholesale debt[b]	24	18
Long-term wholesale debt	21	25
Equity	7	8
Securitisation	5	1
Regional banks		
Domestic deposits	39	47
Short-term wholesale debt[b]	23	14
Long-term wholesale debt	10	17
Equity	11	13
Securitisation	17	9
Foreign-owned banks		
Domestic deposits	27	24
Short-term wholesale debt[b]	58	58
Long-term wholesale debt	11	16
Equity	2	2
Securitisation	2	0

(a) The classification of individual banks into major, regional and foreign-owned banks is the same in both periods, and is based on their classification in January 2010. Hence the changes in funding composition are unaffected by the recent merger and acquisition activity in the Australian banking sector.
(b) Includes deposits and intragroup funding from non-residents.
Sources: APRA; RBA

crisis in 2008 and early 2009 (Graph 1). Term deposits have accounted for most of the growth in banks' deposit funding. The regional banks have had the largest rise in deposit funding, while the major banks have also increased their use of deposit funding. In contrast, the foreign-owned banks have experienced a fall in the proportion of funding coming from domestic deposits. Looking forward, it is not clear that there is much additional scope for the banking system as a whole to materially increase its use of deposit funding. Over the past year, the share of deposits in the total funding of banks in Australia has been little changed, even though banks have been offering very high interest rates to try to attract additional deposits.

The share of funding sourced from long-term wholesale debt (domestic and foreign) for the overall banking system has increased by 6 percentage points since mid 2007 to about 24 per cent, with all of the main groups of banks increasing their use of this funding source. During late 2008 and the first half of 2009 the banks mainly issued government-guaranteed bonds, but as market conditions have improved they have increasingly issued unguaranteed bonds.[2]

Short-term wholesale debt (domestic and foreign) currently accounts for about 24 per cent of banks' funding; this is down from a little over 30 per cent in mid 2007.

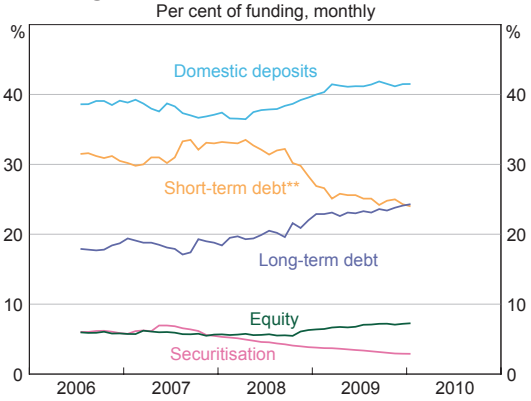
The share of banks' funding that is from securitisation has halved to 3 per cent over the course of the financial crisis, as outstanding residential mortgage-backed securities (RMBS) have continued to amortise and there has been very little new issuance. This downward trend may start to change during 2010, as there have recently been signs of improvement in the cost and availability of securitisation funding.

The major and regional banks have also bolstered their balance sheets by raising equity, through a combination of retained earnings and sizeable share placements in late 2008 and during 2009. For the banking system, the share of equity in total funding liabilities has increased by 1 percentage point since mid 2007 to about 7 per cent.

Graph 1

Funding Composition of Banks in Australia*

Per cent of funding, monthly



* Adjusted for movements in foreign exchange rates
** Includes deposits and intragroup funding from non-residents
Sources: APRA; RBA

Cost of Funding

The cash rate still has a large influence on banks' funding costs. However, the global financial crisis and its ongoing effects have caused the costs of all of the banks' main sources of funding to rise relative to the cash rate and relevant money market rates. The increases have been particularly large for deposits and long-term wholesale debt. The shift in banks' funding mix towards these typically more stable, but also more expensive, sources has also contributed to the rise in their overall funding costs.

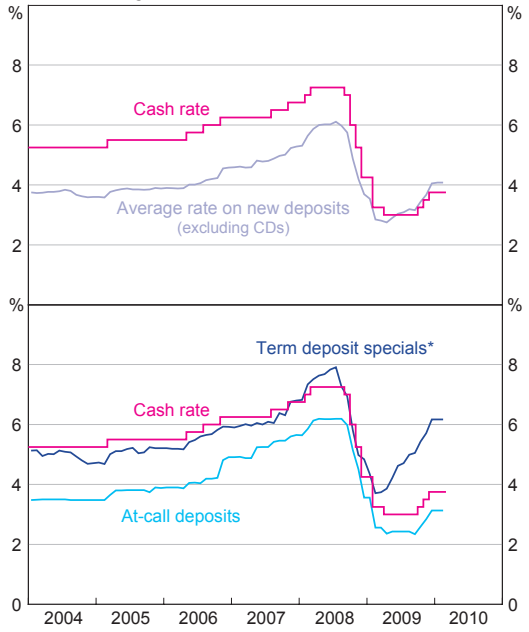
Deposits

Competition for deposits in Australia has intensified over the past two years, resulting in a significant increase in deposit rates relative to market benchmark rates. Overall, it is estimated that the average cost of the major banks' new deposits is currently slightly higher than the cash rate, compared with about 150 basis points below the cash rate prior to the

2 For more details on banks' bond issuance see Black, Brassil and Hack (2010), and for details on the Government wholesale funding guarantee see Schwartz (2010).

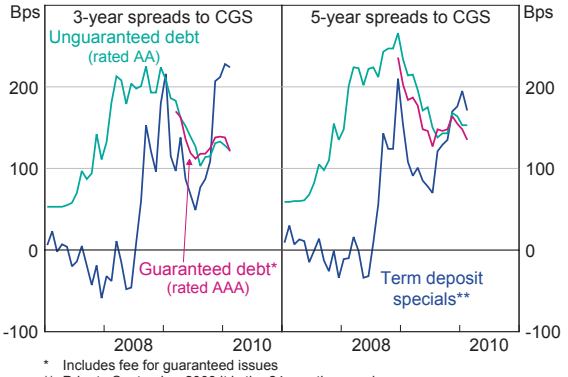
onset of the financial crisis (Graph 2). The regional banks have likely seen a slightly larger increase in their deposit costs, reflecting their greater use of term deposits.

Graph 2
Major Banks' Deposit Rates



* Average of 1–12, 24-, 36- and 60-month terms at the major banks
Source: RBA

Graph 3
Major Banks' Pricing of Term Deposits and Bonds
A$ debt



* Includes fee for guaranteed issues
** Prior to September 2008 it is the 24-month spread
Sources:Bloomberg; RBA; Thomson Reuters; UBS AG, Australia Branch

Within the deposit market, competition has been strongest for term deposits, which account for about 40 per cent of the major banks' deposits and about 55 per cent of the regional banks' deposits. The average rate on banks' term deposit specials – the most relevant rate for term deposit pricing – is currently about 140 basis points above money market rates over equivalent terms, whereas in the few years prior to the global financial crisis it was generally about 60 basis points below it. The banks have been offering significantly higher rates across all of their term deposit specials, from 1 month to 5 years. For the major banks, their rates on 3- and 5-year term deposits are currently 30–100 basis points higher than the yields on their unguaranteed bonds of equivalent maturity (Graph 3). For the regional banks, the interest rates on their longer-term deposits are estimated to be still a little below the yields on their unguaranteed bonds, as the spreads on their bonds are higher. The banks' aggressive pricing of term deposits partly reflects a view that they are a reasonably stable source of funding and that the fixed rates on individual term deposits allow banks to offer high interest rates to attract new deposits without immediately repricing their existing deposit base.[3]

Rates on at-call savings deposits – including bonus saver, cash management and online savings accounts – have also risen relative to the cash rate (from which these deposits are priced). The average rate on the major banks' at-call deposits, which account for a little under half of their total deposits, is currently around 60 basis points below the cash rate, compared with around 100 basis points below in mid 2007. The major banks have also started

3 The contractual maturity of term deposits (which is generally between 3 and 12 months, but can be as long as 5 years) is longer than the contractual maturity of at-call deposits (effectively 1 day). However, there is likely to be much less difference in the behavioural maturities of term and at-call deposits, as banks normally allow depositors to redeem their term deposits early by paying a break fee and/or forfeiting some accrued interest, and it is easier for depositors to switch their term deposits between banks as they are discrete investments whereas at-call accounts are more ongoing in nature.

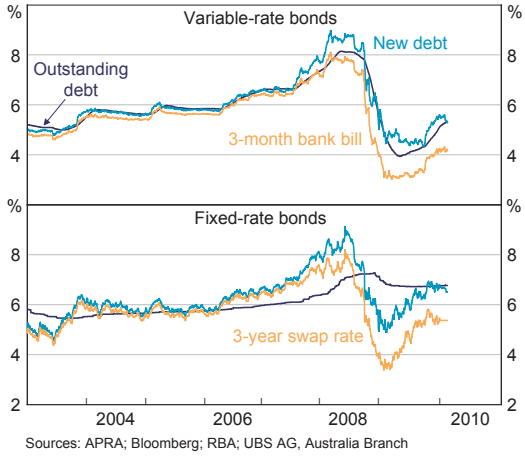
offering higher introductory rates on some of their at-call accounts to attract new customers. These introductory rates are often well above the cash rate, although they typically only last for a few months.

Wholesale debt

The higher cost of long-term wholesale debt funding has also made a significant contribution to the overall rise in banks' cost of funds. For several years up to mid 2007, the major banks were typically able to issue 3-year bonds in Australia and offshore at an overall spread (including the hedging costs on foreign currency debt) of 10–20 basis points over bank bill or swap rates (Graph 4).[4] However, primary market spreads on banks' bonds have risen significantly, as greater risk aversion has seen investors demand larger risk premia to provide term funding to banks. The cost of hedging foreign currency debt back into Australian dollars has also been high and volatile. The overall cost to the major banks of issuing new 3-year bonds peaked in early 2009 at about 170 basis points over bank bill or swap rates for debt issued in Australia and about 200 basis points for debt issued offshore. The improvement in capital market conditions over the past year has seen the cost of issuing new debt decrease to about 80–120 basis points.

The average cost of the major banks' outstanding long-term debt is estimated to have risen by less – about 100 basis points relative to money market rates – as the higher spreads described above only affect banks' new bond issuance, not their outstanding stock of debt that was issued prior to the onset of the financial crisis. If bond spreads and hedging costs remain around their current levels, then as maturing bonds are rolled over, the average

Graph 4
Major Banks' Long-term Capital Market Funding



Sources: APRA; Bloomberg; RBA; UBS AG, Australia Branch

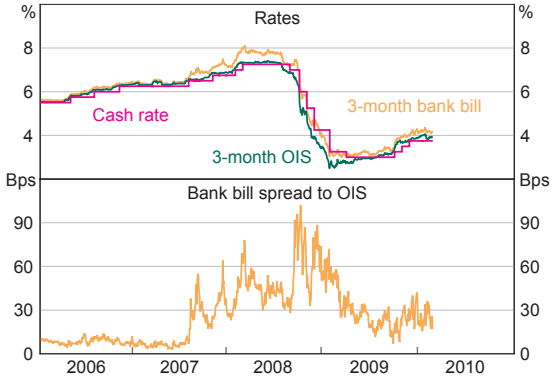
spread on banks' outstanding long-term debt is estimated to increase by about 30 basis points over the next year and a half and broadly stabilise thereafter.

The regional banks, which are smaller and have lower credit ratings than the major banks, have experienced an even larger increase in the cost of long-term wholesale debt, but it is a smaller share of their total funding. Prior to the onset of the financial crisis, regional banks were able to issue 3-year bonds at an estimated overall spread of about 30–50 basis points over bank bill or swap rates. However, the overall cost to the regional banks of issuing new unguaranteed 3-year bonds is currently about 200–250 basis points, and was considerably higher at the peak of the financial crisis.

Short-term wholesale debt accounts for about one-quarter of banks' funding, and is priced mainly off 1- and 3-month bank bill rates. Prior to mid 2007, bank bill rates closely tracked the market's expectation for the cash rate (the overnight indexed swap or

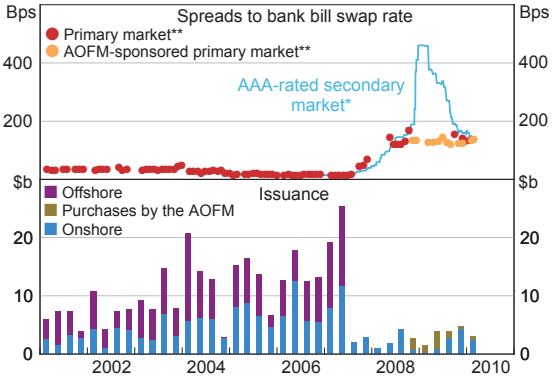
4 The swap rate is the base interest rate for most fixed-rate debt in Australia. It is the fixed rate that one party is willing to pay in exchange for receiving the average bank bill rate over the term of the swap. See Appendix A of Davies *et al* (2009) for a detailed description of the costs of hedging foreign currency debt liabilities back into Australian dollars using cross-currency interest rate swaps.

Graph 5
Money Market Interest Rates



Sources: AFMA; RBA; Tullett Prebon (Australia) Pty Ltd

Graph 6
Australian RMBS



* 5-day rolling moving-average
** Primary RMBS spreads are face value weighted monthly averages of AAA-rated RMBS with conservative average LVRs
Sources: RBA; Royal Bank of Scotland

OIS rate) with the spread between 3-month bank bills and 3-month OIS remaining stable at around 10 basis points (Graph 5). The onset of the global financial crisis saw bank bill rates rise well above OIS rates, with the spread peaking at about 100 basis points in October 2008. Due to the short maturity of this debt, these higher spreads flowed quickly through to banks' funding costs. Through 2009, however, the sizeable risk premia that were evident in bank bill rates for much of the previous two years largely dissipated. Hence, major banks' short-term capital market debt is currently only about 15–20 basis points more costly relative to the market's expectation for the cash rate than it was in mid 2007, and is adding little upward pressure to banks' overall funding costs compared with other sources. For the regional banks, the increase in the cost of short-term debt has been slightly larger.

RMBS account for only a small share of the major banks' funding, but are reasonably important for the smaller financial institutions. The cost of new securitisation funding (but not existing funding) has risen significantly since the onset of the global financial crisis and new issuance was scarce between mid 2007 and mid 2009, as demand from private investors fell away (Graph 6).[5] Much of the issuance by Australian entities during late 2008 and early 2009 was purchased by the Australian Office of Financial Management (AOFM) under a Government plan to support securitisation and so smaller housing lenders. Since mid 2009, however, the securitisation market has started to recover, with the volume of issuance to private investors picking up and spreads narrowing noticeably. Spreads on RMBS are similar for the different types of banks (and also for non-banks). This means that securitisation is relatively more cost-effective for the smaller banks, given that spreads on their on-balance sheet wholesale debt (particularly long-term debt) are much higher than for the major banks. Overall, securitisation is once again a viable funding option for lenders, and going forward, it is likely that they will increase their use of this source.

The major and regional banks also issued a significant amount of new equity and hybrid securities during late 2008 and 2009 to further strengthen their balance sheets and support lending growth. This additional capital was expensive for the banks, as their share prices were reasonably low through much of this period, and spreads on hybrid securities have increased markedly since mid 2007. While this has had only a modest impact on overall funding costs given their small shares in total funding, it has contributed to the recent decrease in their return on equity.

5 For a detailed discussion on developments in the Australian securitisation market, see Debelle (2009).

Overall funding costs

Taking into account the costs of individual funding sources noted above, and weighting them by their share of total bank funding, allows an estimate of the overall change in banks' funding costs. It is estimated that the average cost of the major banks' funding is about 130–140 basis points higher relative to the cash rate, than it was in mid 2007 (Graph 7). Most of the increase in the major banks' funding costs occurred during 2008 and early 2009 when the financial crisis was at its worst. Since mid 2009, the major banks' overall funding costs are estimated to have risen only a little more than the cash rate. The higher cost of deposits has made the largest contribution to the overall increase, reflecting their large weight in total funding and the 160–165 basis point rise in deposit rates. Long-term wholesale debt has also made a substantial contribution to the increase in the major banks' overall funding costs, while the cost of short-term wholesale debt initially rose but is now much closer to pre-crisis levels.

The available evidence suggests that the overall increase in the regional banks' funding costs since the onset of the financial crisis has been larger than that experienced by the major banks. This mainly reflects the bigger rises in the cost of the regional banks' deposits and wholesale debt funding and the shift in their funding mix from securitisation to deposits, which is currently a relatively expensive source of funding.

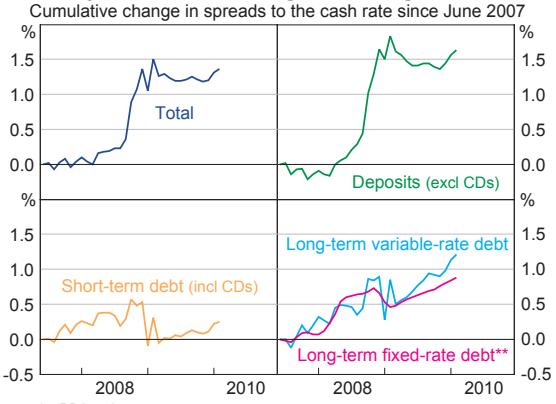
Banks' Lending Rates and Margins

In setting interest rates on loans, banks take into account changes in their overall cost of funds. For a number of years prior to the global financial crisis, banks' overall cost of funds followed the cash rate reasonably closely as risk premia in markets were low and stable, and therefore banks tended to adjust their lending rates mainly in response to the cash rate. The relationship between the cash rate and the banks' indicator rates on variable housing and small business loans was particularly close from 1998 to 2007, though the average actual rates paid by housing and business borrowers declined a little relative to the cash rate during this period (Graph 8). Before then, however, banks' lending rates did not follow the cash rate particularly closely.

Graph 7

Major Banks' Average Funding Costs*

Cumulative change in spreads to the cash rate since June 2007

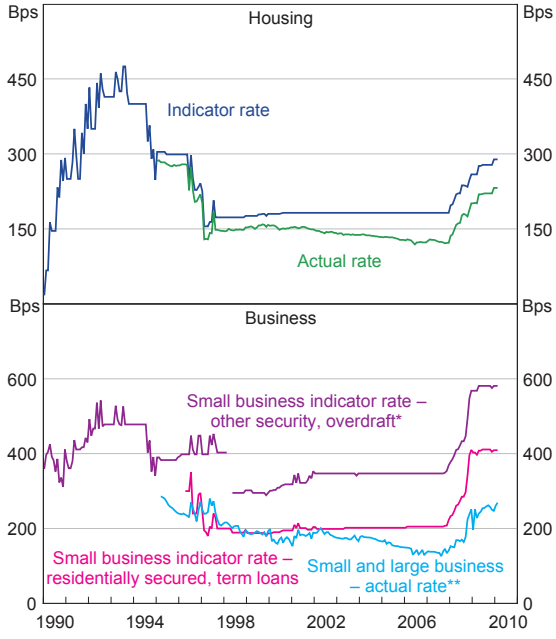


* RBA estimates
** Spread to 3-year average CGS yield
Source: RBA

Graph 8

Variable Lending Rates

Spread to cash rate



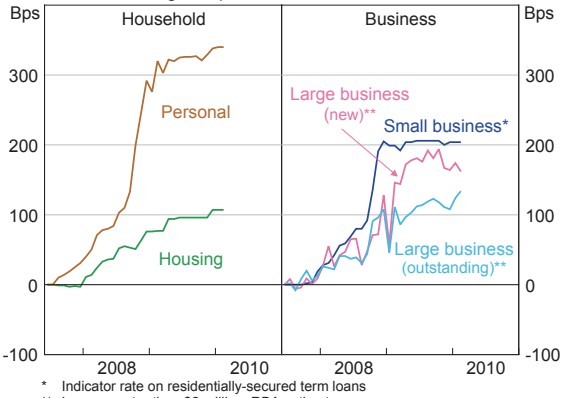
* Break reflects significant changes in banks' lending products
** RBA estimates
Sources: APRA; Perpetual; RBA

As the global financial crisis unfolded, banks' lending rates have risen relative to the cash rate, reflecting their higher funding costs. The banks have raised their lending rates relative to the cash rate for all of their loan products. The sizes of the increases have varied considerably across the different loan types, however, reflecting factors such as changes in the banks' perceptions of the riskiness of the borrower, the speed at which loans can be repriced, and the sensitivity of the borrower to changes in lending rates. While lending rates often do differ between the banks, for equivalent products neither the major banks nor other banks have materially higher or lower lending rates.

The average rate on outstanding (fixed and variable-rate) housing loans has increased by around 145 basis points relative to the cash rate since mid 2007. Rates on variable housing loans have increased by around 110 basis points over this period (Graph 9). Spreads on the major banks' new 3- and 5-year fixed-rate housing loans have risen by 170–180 basis points relative to equivalent maturity swap rates (and by more relative to the cash rate because of the current slope of the yield curve).

Personal and business loans have had larger increases. For personal loans, interest rates have risen by 340 basis points relative to the cash rate since mid 2007. This significant increase partly reflects the fact that banks' arrears and losses on personal loans have risen more quickly than on their housing loans.

Graph 9
Variable Lending Rates
Cumulative change in spreads to the cash rate since June 2007



* Indicator rate on residentially-secured term loans
** Loans greater than $2 million, RBA estimates
Sources: APRA; RBA

The major banks' variable indicator rates on small business lending have risen by around 200 basis points relative to the cash rate since mid 2007, and some individual borrowers may also have faced additional increases in risk margins.[6] The higher indicator rates have flowed through immediately to new and existing loans. For fixed-rate loans to small businesses, which account for about one-third of outstanding lending, spreads over swap rates on new loans have generally risen by 140–160 basis points. Overall, interest rates on outstanding (fixed and variable-rate) loans to small businesses have increased by about 200 basis points relative to the cash rate since mid 2007.

There can be considerable variation in interest rates across large businesses, as banks base their pricing on the characteristics of the individual borrower. Banks have increased their spreads (over bank bill rates) on new loans (including refinancings) over the past two years, due to their higher funding costs and a pick-up in arrears and losses on business lending as the Australian economy slowed. The available evidence suggests that the average spreads on new term loans to large businesses increased by about 200 basis points from around 50–100 basis points in mid 2007 to a peak of around 250–300 basis points in mid 2009. Since then, spreads have declined a little. These higher spreads have been gradually flowing through to the stock of outstanding large business loans – since mid 2007, banks have repriced about two-thirds of their outstanding loans. Overall, the average interest rate on outstanding (fixed- and variable-rate) large business loans is estimated to have risen by about 135 basis points relative to the cash rate since mid 2007. This is less than the increase on small business loans because a bigger share of

6 The higher risk margins apply mainly to non-residentially secured loans. For residentially secured loans, which account for the bulk of lending to small businesses, additional risk margins are generally not applied.

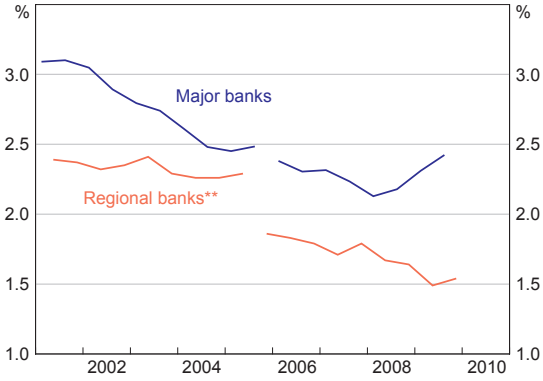
large business loans are at variable rather than fixed rates and, to date, not all outstanding loans have been repriced at the higher spreads.

Overall, the major banks' average interest rate on their outstanding household and business loans is estimated to be around 160–165 basis points higher relative to the cash rate, than it was in mid 2007. This overall rise is at the lower end of the range of increases in the main loan types, as through the crisis period, the share of housing loans (which have lower spreads) in the major banks' overall loan books has increased and the shares of business and personal loans have decreased a little.[7] Regional banks have likely recorded a slightly smaller increase in their average lending rate, as more of their lending is for housing. Most of the increases in the spreads between household and business lending rates and the cash rate took place during 2008 and in the early months of 2009, when the global financial crisis was at its worst and banks were facing increasing funding cost pressures.

For all banks, most of the increase in their lending rates over the cash rate since mid 2007 has been due to their higher funding costs. For the major banks, however, there has also been some widening in their lending margins. Information published by the major banks in their financial statements shows that the average NIM on their Australian operations was around 2.4 per cent in the second half of 2009, about 20–25 basis points above pre-crisis levels (Graph 10).[8]

The major banks' higher NIMs have supported their return on equity, partly offsetting the negative effects of the cyclical increase in their bad debts expense and the additional equity that they raised during the downturn. In recent months, margins may have narrowed slightly, due to the ongoing strong competition for deposits and a small decline in spreads on new lending to large businesses.

Graph 10
Banks' Australian Net Interest Margin*



* From 2006 data are on IFRS basis; prior years are on AGAAP basis
** The latest data point is an estimate based on available data
Sources: RBA; bank reports

The regional banks' NIMs have declined steadily for most of the crisis period, though in the latest half-year there have been some signs that their NIMs have risen a little. In the six months to December 2009 the regional banks' average NIM was around 1.6 per cent, about 20 basis points lower than in mid 2007. The narrowing in the regional banks' average NIM is due to their overall funding costs having risen by more than the major banks, and their overall lending rates having risen by a little less, reflecting differences in their lending mix.

7 Business credit grew steadily until late 2008, but over the past year many businesses have sought to reduce their leverage by raising equity to pay down debt. For more details see Black, Kirkwood and Shah Idil (2009).

8 The major banks' published NIM measure includes the interest received on their total financial assets (loans, liquid assets and other debt securities), not just their loan assets, which is the focus of the analysis in this article.

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Global Foreign Exchange Turnover

Crystal Ossolinski and Andrew Zurawski*

The most recent six-monthly data on global foreign exchange turnover show a rebound in activity between April and October 2009 across all markets and major currency pairs. The broad-based increase in turnover is in line with the improvement in global economic and financial conditions since early 2009. Despite the rebound, turnover remains below the peak in early 2008.

Introduction

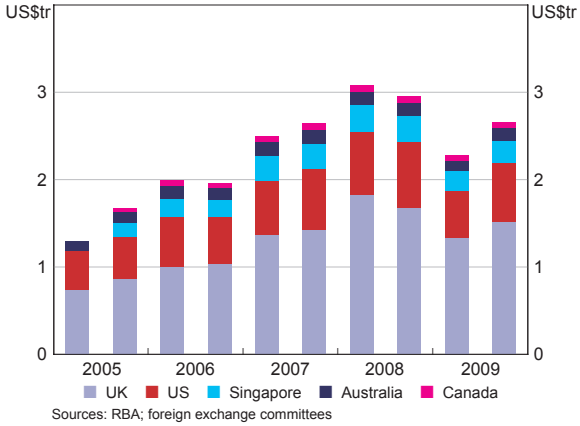
This article discusses developments in the global foreign exchange market between April and October 2009. It draws on semi-annual average daily turnover data for the foreign exchange markets of Australia, Canada, Singapore, the United Kingdom and the United States. These data are compiled by foreign exchange committees in each of these markets by surveying financial institutions active in foreign exchange markets.[1] These five markets account for just over 60 per cent of global foreign exchange activity and hence provide a good indication of global trends. In addition, the article discusses more recent developments in the Australian foreign exchange market using monthly turnover data collected by the Reserve Bank of Australia.

The most recent semi-annual data show that turnover in foreign exchange markets rebounded in the half-year to October 2009, following a period when activity declined due to the detrimental effects of the global financial crisis on cross-border investment flows and international trade. This pick-up accords with the general improvement in economic and financial conditions since early 2009. More recent monthly data for Australia confirm the ongoing recovery in foreign exchange turnover.

Global Developments

Average daily turnover in the five major foreign exchange markets noted earlier increased by 17 per cent between April and October 2009 to $2.7 trillion (Graph 1). This was the first increase in turnover since the six months to April 2008 and was broad-based across markets and currency pairs, indicating the continued importance of global factors.

Graph 1
Foreign Exchange Turnover by Market
Average daily turnover – April and October

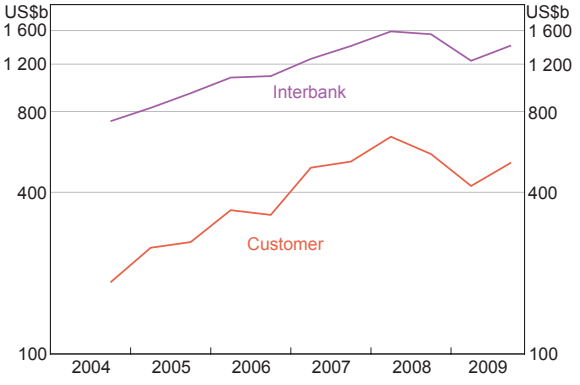


Sources: RBA; foreign exchange committees

* The authors are from International Department.

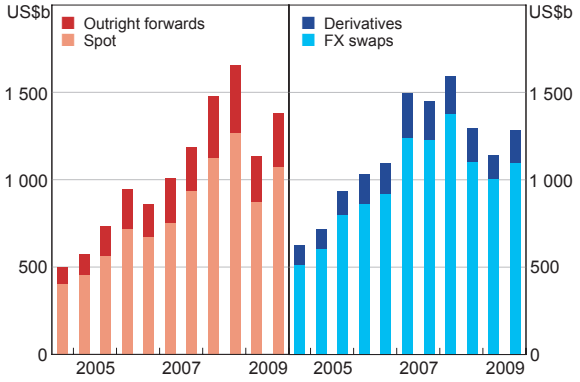
1 See <http://www.rba.gov.au/AFXC/index.html>. Data for the five markets are collected for the months of April and October each year. The previous article on these data, Zurawski and Ossolinski (2009), included data for Japan that are only published for April each year. Data on turnover for the global foreign exchange market are collected every three years by the Bank for International Settlements (BIS Triennial Survey); the next triennial survey is for April 2010, with data available in late 2010.

Graph 2
Foreign Exchange Turnover by Counterparty*
Average daily turnover – April and October, log scale



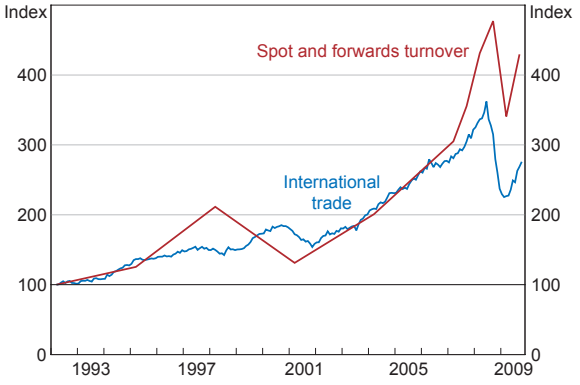
* Australian, UK and US markets only
Sources: RBA; foreign exchange committees

Graph 3
Foreign Exchange Turnover by Instrument
Average daily turnover – April and October



Sources: RBA; foreign exchange committees

Graph 4
Trade and Foreign Exchange Turnover
Major markets, April 1992 = 100



Sources: BIS; RBA; Thomson Reuters; foreign exchange committees

Data on turnover for Australia, the United Kingdom and the United States can be separated into transactions occurring in the interbank market and transactions between foreign exchange dealers and their non-bank customers (which include non-bank financial institutions, importers and exporters). The recovery in the non-bank customer market has been somewhat more pronounced than in the interbank market, with turnover increasing by 22 per cent over the six months to October 2009, compared with a 14 per cent increase in the interbank market (Graph 2). The rebound in customer demand follows a proportionately larger fall in this segment during the crisis period.

The pick-up in overall turnover was broad-based across all instruments over the six-month period (Graph 3). The rebound in spot and forwards turnover was particularly sharp. One factor driving the rebound in turnover in these instruments was the recovery in international trade from its crisis-related trough in early 2009. International trade generates demand for spot and forward foreign exchange because, for most transactions, one party must exchange their domestic currency for the invoice currency. This can be undertaken in either the spot market or in the forward market ahead of the invoice payment; the latter also provides a hedge against subsequent exchange rate movements. As a result, growth in turnover in spot and forward foreign exchange has historically been closely linked to developments in gross trade (Graph 4).

Turnover in foreign exchange swaps, cross-currency swaps and options also increased over the period, but, as for spot and forwards, turnover still remains below its peak in 2008. Turnover in options increased particularly strongly (42 per cent), following sharp falls since April 2007 (Graph 5). The increase in turnover of these instruments (and also turnover in spot and forwards) is likely to be linked to renewed cross-border investment activity in 2009, particularly the recovery in debt flows that are typically hedged using swaps. Data from the Bank for International Settlements (BIS) indicate that cross-border lending

by banks, which contracted substantially over 2008, picked up in the second and third quarters of 2009. Likewise, balance of payments data for major economies indicate that gross private cross-border investment flows resumed over the course of 2009, after being scaled back during the crisis period.

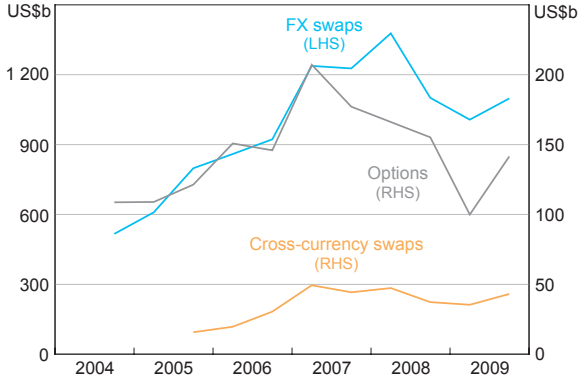
Consistent with the turnover data, data collected by the BIS indicate that the value of foreign exchange derivative contracts (forwards, foreign exchange swaps, cross-currency swaps and foreign exchange options) outstanding in the G10 countries and Switzerland also increased over the first half of 2009, after declining through the crisis period (Graph 6). The notional value of contracts outstanding rose by 10 per cent between December 2008 and June 2009, although it remains 22 per cent below its June 2008 peak. As for the turnover data, changes in the notional value of contracts outstanding were similar across currency pairs.

Australian Developments

Over the six months to October 2009, developments in the Australian market broadly followed those in the four other markets, suggesting that the same global factors were important in driving recent developments in Australia. As in the other markets, aggregate turnover in the Australian market increased strongly, but remained well below its early 2007 peak (Graph 7). Combined spot and forwards turnover increased by 66 per cent, a somewhat sharper increase than seen in other regional markets, partly reflecting the relatively sharp pick-up in Australia's international trade in late 2009. Turnover of foreign exchange swaps in the Australian market fell over the six months to October 2009. However, consistent with renewed gross cross-border investment flows and the modest growth in turnover of foreign exchange swaps in other regional markets, recent monthly data collected by the Reserve Bank of Australia indicate that average turnover in the Australian foreign exchange swaps market has since increased modestly.[2]

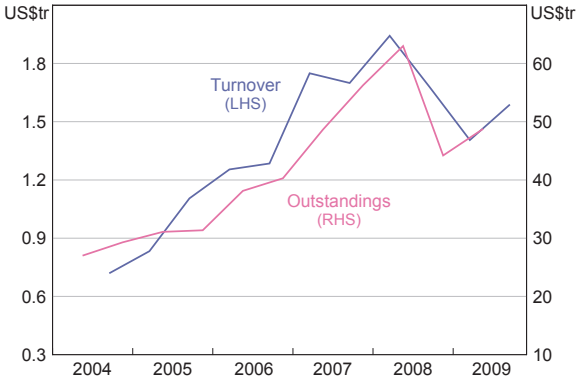
2 For a review of Australian capital flows during the financial crisis, see D'Arcy and Ossolinski (2009).

Graph 5
Foreign Exchange Turnover by Instrument
Average daily turnover – April and October



Sources: RBA; foreign exchange committees

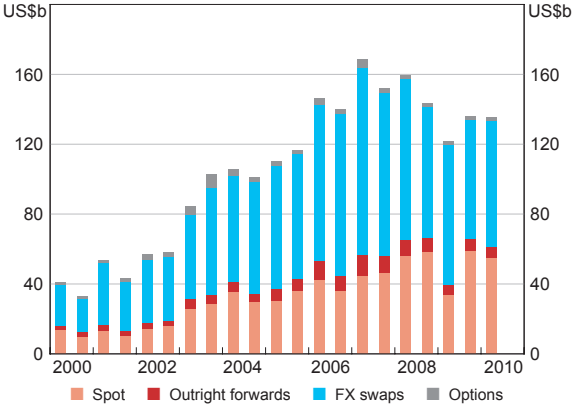
Graph 6
Foreign Exchange Turnover and Outstandings*
Semi-annual, notional values



* Turnover is average daily turnover for April and October; outstandings is the notional value of foreign exchange forward, swap and option contracts outstanding at end June and end December

Sources: BIS; RBA; foreign exchange committees

Graph 7
Australian Foreign Exchange Turnover
Average daily turnover – April and October*



* The observation for 2010 is the average of the three months to January 2010 (the latest data available)

Source: RBA

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The Foreign Exchange Market and Central Counterparties

Mark Manning, Alex Heath and James Whitelaw*

The financial crisis has led to considerable efforts to improve risk management practices in financial markets. One of the main proposals being suggested in international fora is to increase the use of central counterparties. This article discusses the potential for central counterparty arrangements to complement existing risk management practices in the foreign exchange market.

Introduction

In response to the global financial crisis, there has been much discussion globally about how the infrastructure and risk management practices in financial markets can be improved to ensure they are more resilient.[1] In particular, the collapse of Lehman Brothers and the problems experienced in resolving issues at the troubled insurer AIG have highlighted the need for improvement in risk management practices in many over-the-counter (OTC) derivative markets. One of the main proposals under consideration is to increase the use of central counterparties.[2] This has the potential to improve counterparty risk management through multilateral netting, provide operational efficiencies and more effective default resolution, and increase market transparency.

Central counterparties have long been used in exchange-traded equity and derivative markets and, over the past decade or so, have been developed for a range of OTC derivatives including interest rate and equity products. Following the recent market disruptions, considerable effort has also been devoted to setting up central counterparties for credit derivatives. In contrast, central counterparties have not been widely used in the foreign exchange market, and there has been only limited support from industry participants for a move in this direction (FXC 2009; FXJSC 2009; ISDA 2009a). This article first discusses the general case for the use of central counterparties and then considers the application of these arrangements to the foreign exchange market.

The Role of Central Counterparties in OTC Markets

In the absence of a central counterparty, the original counterparties to an OTC derivative trade retain direct obligations to one another for the life of the contract. Should one party fail and the contract be terminated, the other party faces the risk that replacing the trade might only be possible on unfavourable terms. At least in the inter-dealer market, bilateral arrangements of this nature are often underpinned by standard legal documentation developed by the International Swaps and Derivatives

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1 Ahead of the G-20 meeting in Pittsburgh in late September 2009, the Financial Stability Board made a range of commitments, subsequently endorsed by the G-20 Leaders, to improve practices in financial markets. See FSB (2009).

2 Cecchetti, Gyntelberg and Hollanders (2009) outline the economic benefits of central counterparties and provide an update on regulatory and market developments.

Association (ISDA), which sets the parameters for the management of this replacement-cost risk through bilateral (close-out) netting and margin requirements.

In contrast to these arrangements, a central counterparty assumes responsibility for the obligations associated with the contract by becoming the buyer to every seller, and the seller to every buyer. This occurs through a legal process known as novation. As such, numerous bilateral exposures are substituted for a single exposure to a highly rated central counterparty. The resulting multilateral netting has the potential to substantially reduce the size of outstanding obligations relative to bilateral arrangements. These smaller exposures are then typically subject to standardised risk management tools, including initial and mark-to-market margins.[3] A central counterparty also typically maintains additional financial resources to deal with a default. These resources may include, for example, participant contributions to a pooled guarantee fund and/or the central counterparty's own capital. A central counterparty can also encourage more streamlined trade and post-trade processing.

Since a central counterparty has full information on outstanding exposures related to trades that have been novated to it, it is also well positioned to manage a participant's default. As central counterparties can see the size and location of market exposures across all participants, they can mitigate systemic risks by managing the close-out and replacement of trades in the event of a participant default. They can also provide regulators with a clear focal point for regulation, as well as a centralised source for the collection and publication of trading data.

Notwithstanding these benefits, a central counterparty model raises a number of issues. First, a central counterparty concentrates counterparty risk on a single institution. The potential systemic importance of this institution places greater emphasis on the need for appropriate risk management practices by the central counterparty.

Second, novating some contracts to a central counterparty can have the unintended consequence of increasing the counterparty risk among products that are not novated because less bilateral netting is possible (Duffie and Zhu 2009). Without more information, it is difficult to assess how much this 'un-netting' might offset the reduction in counterparty risk that occurs through the multilateral netting of contracts. It depends on a number of factors that affect the scope of both bilateral cross-product netting agreements and central counterparty coverage, and the nature of participants' portfolios. The degree of un-netting could be mitigated by central counterparties accepting a broad range of products, although this would increase the concentration of risk on the central counterparty and not all products are suitable for novation to a central counterparty.

3 *Initial margin* is collected at the time a position is established to cover potential adverse price moves between the time the last mark-to-market margin call was settled and the time at which a defaulter's open positions can be closed out. A central counterparty typically makes *mark-to-market margin* calls at least daily, collecting funds from participants that have incurred mark-to-market losses on their open positions, and paying funds to those with mark-to-market gains.

The above discussion makes it clear that the net benefits of a central counterparty will differ across the various OTC derivative instruments and will depend on at least three broad factors.

- Product characteristics: Central counterparties can most easily manage the replacement cost risks of products that have reliable and frequently quoted prices and relatively standardised terms. The scale of replacement-cost risks is larger, and therefore potentially harder to manage, for products with more volatile prices, settlement dates further into the future and larger amounts outstanding.
- Structure of participation: The greater the number of counterparties and the number of trading relationships between them, the larger the benefits of multilateral netting and default-management arrangements provided by a central counterparty. The reduction in the administrative burden of maintaining bilateral relationships, which includes individual credit checks, position monitoring and back-office procedures, will also be larger. The structure of participation and the nature of the portfolios being managed will also affect the scale of un-netting that may occur with the introduction of a central counterparty.
- Existing risk management and post-trade processes: The benefits from introducing a central counterparty depend on the breadth and quality of existing collateralisation and other risk management practices, including the degree of automation in post-trade processes.

Even in situations where an evaluation of these factors might argue in favour of a central counterparty, the market might not voluntarily adopt such a solution. First, individual participants may not fully internalise the costs of systemic risk and therefore place less weight on the risk-reducing benefits of a central counterparty; this is more likely to be the case if some institutions are perceived to be too big to fail. Second, in bilaterally cleared OTC derivative markets, dealers with high credit ratings should, other things being equal, be better placed to compete for business; a central counterparty could remove this competitive advantage and therefore reduce their incentive to support its development. Finally, coordination issues may also arise. Even where private incentives may be sufficiently strong, a workable market solution may require industry participants to coordinate to introduce a new market structure. Cooperation to design and fund a new piece of infrastructure can be difficult, particularly where participants otherwise compete with one another. In some cases, the public sector may be required to facilitate and encourage cooperation, as was the case with the establishment of CLS Bank in 2002 (see below).

The Foreign Exchange Market

As discussed above, the benefits of using a central counterparty are likely to vary across OTC derivative instruments depending on the characteristics of the products, the structure of the market, and the existing risk management practices and infrastructure. This section discusses these aspects of the foreign exchange market and, in particular, how they might bear on the potential role for a central counterparty.

Product characteristics

The foreign exchange market is very large, with more than US$3 trillion of value traded daily across products in 2007, the most recent year for which global data are available (Table 1). The largest segment is foreign exchange swaps, which accounted for around US$1.7 trillion of daily turnover in 2007. Foreign

exchange swaps, as well as spot and outright forward contracts, are highly standardised, generally liquid, and subject to transparent pricing. As a result, more than half of spot transactions and up to 30 per cent of transactions in forwards and foreign exchange swaps are executed across electronic platforms (Gallardo and Heath 2009). Since many of the characteristics that facilitate electronic trading also allow for more efficient netting and reliable risk management, these markets are, in principle, good candidates for novation to a central counterparty. Similarly, currency swaps typically have relatively simple structures and can be reliably priced. Foreign exchange options, on the other hand, are less standardised and less liquid and their pricing is typically less transparent.

The total value of outstanding positions in the foreign exchange market was US$58 trillion in June 2007. While average daily turnover is concentrated in spot and short-dated foreign exchange swap transactions, turnover in longer-dated foreign exchange contracts accumulates to a sizeable share of outstanding positions: in 2007, the value of outstanding forward, foreign exchange and currency swap contracts with a term longer than seven days is estimated to have been around US$42 trillion. The scale and term of these outstanding positions indicate that replacement-cost risk could be a significant issue for participants in the foreign exchange market. In combination, therefore, the characteristics of foreign exchange instruments suggest that there could be a role for central counterparties in the foreign exchange market.

Table 1: Key Characteristics of Product Types in the Foreign Exchange Market
US$ billion

	Spot	Outright forward	Foreign exchange swap	Currency swap	Foreign exchange option
Average daily turnover April 2007	1 005	362	1 714	31	212
of which < 7days	na	154	1 329	6	na
> 7days	na	208	382	25	na
Average term[(a)]					
< 7days	na	2	2	2	na
> 7days	na	99	107	293	na
Outstanding positions[(b)] end June 2007	na	9 836	19 935	14 127	13 662
of which < 7days	na	165	1 425	24	na
> 7days	na	9 671	18 510	14 103	na

(a) RBA calculations based on BIS (2007).
(b) Outstanding positions are from BIS Table E.38. Breakdowns between forwards and foreign exchange swaps and of outstanding positions by term are estimates based on turnover data in BIS Table E.1.
Sources: BIS (2007); RBA

Structure of participation

As noted above, the structure of participation in a market, in particular the number of counterparties, can affect the extent to which multilateral netting reduces counterparty risk. Although there is a wide range of end-users in the foreign exchange market, including businesses, individuals and governments, the vast majority of transactions – by value – is carried out by a relatively small number of large dealers. According to the most recent *Euromoney* survey, the top five dealers account for more than 60 per cent of the value of transactions globally (*Euromoney* 2009). This is consistent with statistics from the BIS, which show that in 2007, even in the largest foreign exchange markets of the United Kingdom and the United States, 75 per cent of turnover was accounted for by no more than 12 banks (Table 2). A market with 12 larger participants is likely to deliver some benefits in the form of operational efficiencies and multilateral netting (see below), but whether these are large enough to offset costs such as un-netting is an empirical issue that is difficult to address without additional information.

The structure of the foreign exchange market suggests that participation in a central counterparty would be likely to be tiered; i.e. large dealers would become direct clearing members and, in turn, provide client-clearing services to other market participants. This might raise questions for regulators around the potential for a high concentration of risk in – and high level of dependence on – a small group of direct clearing members. There are also issues regarding the segregation of client positions and collateral, and their portability in the event of a participant's default.

The global nature of the foreign exchange market also raises some important considerations for the implementation of a central counterparty, with around 75 per cent of total turnover distributed over seven trading centres (Table 2). This suggests that any central counterparty for foreign exchange might be global in nature. This would both be operationally complex and require a high level of cooperation among regulators. However, global provision of central counterparty services is not without precedent. For instance, LCH.Clearnet's SwapClear covers interest rate swaps in 14 currencies and is expanding its membership to accommodate participants in multiple markets. In addition, CLS, the existing centralised settlement service for the foreign exchange market, also operates effectively across multiple markets.

Table 2: Global Foreign Exchange Markets
April 2007

	Number of banks accounting for 75% of turnover in each market	Share of global turnover (%)
United Kingdom	12	34.1
United States	10	16.6
Switzerland	3	6.1
Japan	9	6.0
Singapore	11	5.8
Hong Kong	12	4.4
Australia	8	4.3
France	4	3.0
Germany	5	2.5
Canada	6	1.5

Source: BIS (2007)

Existing risk management and post-trade processes

In the foreign exchange market, bilateral counterparty risk mitigation practices are common and market participants have access to some of the post-trade services typically offered by a central counterparty through the centralised international settlement infrastructure provided by CLS Bank.

Bilateral payment and close-out netting under ISDA Master Agreements is common market practice in the foreign exchange market (FXJSC 2009). Data from the BIS indicate that enforceable (often cross-product) bilateral netting agreements reduce the total gross value across all global OTC derivative positions by around 85 per cent – a netting ratio of 6.8.[4] Assuming that the same netting ratio applies to foreign exchange contracts with a term longer than seven days, the outstanding position of US$42 trillion noted earlier amounts to an effective exposure closer to US$6 trillion. Based on the stylised and simplifying assumption that this exposure is distributed equally across 12 equal-sized participants in the foreign exchange market, this implies that each participant will have an exposure of US$520 billion after bilateral netting.

Using these estimates, it is possible to make some illustrative calculations of the potential size of replacement-cost risk facing each participant under different assumptions about risk management arrangements. Assuming one of the 12 participants defaults; that this participant has a mark-to-market loss on its exposure; and the other 11 participants have equal mark-to-market gains; then the non-defaulting participants will incur costs to replace the contracts on which the other participant has defaulted. Assuming an extreme exchange rate movement of 15 per cent on all contracts, the cumulative exposure where there is no bilateral netting would be almost US$50 billion for each participant (Table 3).[5] If it is assumed that bilateral netting is used by all participants, then the cumulative exposure for each participant would be around US$7 billion.

In OTC markets, it is becoming increasingly common to supplement the use of bilateral netting agreements with collateral agreements (typically ISDA Credit Support Annexes) to effectively post margin against mark-to-market losses on bilaterally netted exposures. According to the most recent survey by ISDA of collateralisation practices, almost 50 per cent of exposures by value across foreign exchange derivative products were collateralised at the end of 2008 (ISDA 2009b). In addition, the use of standard bilateral collateralisation agreements for foreign exchange contracts has almost certainly increased since the onset of the recent financial crisis when concerns about counterparty risk intensified.

Table 3: Risk Implications of Alternative Risk Management Arrangements
US$ billion

	Total loss shared	Individual bank's loss
No counterparty risk management	528.6	48.1
Bilateral netting only	78.0	7.1
Bilateral netting and mark-to-market margin	7.8	0.7
Central counterparty	0	0

Source: authors' calculations

4 This netting ratio is derived with reference to Table 1, p 5 of BIS (2009). It is the comparison of the gross credit exposure of US$3.7 trillion, which takes into account legally enforceable bilateral netting agreements, with the total gross market value of US$25.4 trillion.

5 Specifically, the US$3.5 trillion position of each participant (US$42 trillion divided by 12) is multiplied by 15 per cent to obtain the mark-to-market loss from default and then divided among the remaining 11 participants. A 15 per cent change in the exchange rate is consistent with the 99th percentile of the distribution of EUR/USD currency returns over the 15 years to 2009, calculated for horizons longer than 100 days.

Furthermore, risk management tools other than collateralisation, such as position limits, early termination options, and charges over balance sheet assets, are often applied in relation to non-financial end-users of OTC derivatives.

To the extent that participants in the foreign exchange market do use standard bilateral collateralisation agreements, their exposure to counterparty risk will be lower than if they only use bilateral netting. Extending the above example, if all market participants are paying mark-to-market margins to each other to settle gains and losses on outstanding positions each day, they ensure that their maximum exposure in the event of a default is only the price movement over one day. Assuming an adverse exchange rate movement over one day of 1.5 per cent, the potential loss falls from US$7 billion to US$0.7 billion, a tenfold decrease.[6] This highlights the importance of netting and posting mark-to-market margins in the management of replacement cost risk.

In general, a central counterparty enforces mark-to-market margining and also requires an initial margin to be posted at the time a position is established. Given that a central counterparty allows for multilateral netting, the total amount of initial margin that needs to be posted could be significantly lower than what would be needed if only bilateral netting were possible. Based on some simplifying assumptions, in a market with 12 equal-sized participants multilateral netting could reduce exposures relative to the case where there is only bilateral netting by a factor of more than three.[7] Using the estimates in this example would reduce the initial margin to be posted from US$0.7 billion to US$0.2 billion. Thus, when considering different risk management arrangements, each participant is comparing the low-probability loss of US$0.7 billion with bilateral netting and mark-to-market margin with the interest costs associated with an initial margin of US$0.2 billion with a central counterparty.

Another important feature of the risk management infrastructure in the foreign exchange market is CLS, which was introduced in response to regulatory concern about the scale of foreign exchange settlement risk (also known as Herstatt risk). Settlement risk arises if the two legs of a foreign exchange transaction are not settled simultaneously, leaving one party exposed to a gross exposure should its counterparty default. CLS eliminates this settlement risk by coordinating the exchange of currencies by way of a 'payment-versus-payment' settlement process. Since its introduction, the number of participants in CLS and the volume of foreign exchange transactions settling through it have increased such that more than half of all trades are now settled via CLS (CPSS 2008).[8] Even before the default of Lehman Brothers, foreign exchange market participants were exploring ways to expand the coverage and penetration of CLS (both in terms of participants and currencies) and were looking to introduce a facility for same-day settlement in CLS. The financial crisis has heightened interest in these enhancements, although there are limits to what can be achieved, particularly in the near term. CLS also recently announced its intention to use its extensive transaction-level data to provide a trade repository service for the foreign exchange market to meet regulators' demands for market transparency.

Although CLS does not manage the replacement-cost risks arising prior to settlement, which is a core function of a central counterparty, it does carry out other key post-trade functions that might be provided by a central counterparty in other contexts (Table 4). Thus, while the basic role played by each is quite distinct, there is some overlap.

6 A 1.5 per cent change in the exchange rate is consistent with the 99th percentile of the distribution of EUR/USD daily currency returns.

7 Assuming that trading positions are drawn from a normal distribution, the netting ratio will be equal to the square root of the number of trading partners (Jackson and Manning 2007).

8 It is believed that market penetration has recently increased further, reflecting a heightened focus on counterparty credit risk in the wake of the Lehman Brothers' default. See CLS (2009) for a further discussion of the global foreign exchange market and the role of CLS.

Conclusion

This article has discussed the potential role for central counterparties in the foreign exchange market. With high outstanding notional values and volatile price movements, it is important for robust arrangements for managing replacement-cost risk to be in place. One way of achieving this would be through the introduction of a central counterparty. However, before steps in this direction are taken, further work is needed to assess the benefits of a central counterparty in the foreign exchange market, particularly given the arrangements that are currently in place to manage counterparty risk.

Table 4: Post-trade Services Offered by Typical Central Counterparties and CLS

Post-trade process	Explanation	Central counterparty[a]	CLS
Matching	Counterparties confirm the economic terms of the trade with each other in order to mitigate operational risk and contractual disputes, and ensure accurate data flows to risk management systems	✗	✓
Confirmation processing	Contract becomes legally binding, generally according to standard documentation such as that provided by ISDA	✗	✓
Calculation of obligations	Obligations arising in relation to the trades are calculated among participants	✓	✓
Novation	A third party becomes the legally binding counterparty to both sides of every trade, taking offsetting long and short positions	✓	✗
Multilateral exposure netting	Participants' obligations to and from other participants are netted as though participants were dealing with a single counterparty	✓	✗
Collateral and replacement cost risk management	The calculation and collection of initial and variation margin from adverse prices moves and participant default (replacement-cost risk) prior to settlement	✓	✗
Multilateral payment netting	Payment obligations at trade termination date are calculated on a net basis across participants	✓	✓[b]
Settlement	Final settlement of payment obligations between counterparties	✗	✓

(a) The precise functions carried out by central counterparties vary. Here, we assume a typical model whereby the central counterparty accepts a feed from an electronic trading venue or confirmations processing platform, calculates and risk manages participants' obligations and then submits net settlement instructions to a payment system.
(b) Payment obligations in CLS are netted, although settlement is gross.

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Address to the Reserve Bank of Australia's 50th Anniversary Gala Dinner

Glenn Stevens, Governor

Sydney, 8 February 2010

Treasurer, Shadow Treasurer, former Prime Ministers, former Treasurers, distinguished guests, ladies and gentlemen, colleagues and friends, welcome.

I welcome former Reserve Bank Governors Bob Johnston, Bernie Fraser and Ian Macfarlane; former Deputy Governors; and current and past members of the Reserve Bank Board and the Payments System Board.

I welcome also the Governors, Deputy Governors and other representatives of 30 central banks from the Asia-Pacific region and around the world; our colleagues from the Bank for International Settlements; and past and present friends and colleagues from the public and private sectors. It is a very great pleasure indeed to welcome you all to Sydney and to this occasion.

Fifty years ago, the Reserve Bank of Australia commenced operations as Australia's central bank. That occasion, though, was the end of a long journey.

The history of the RBA actually began much earlier. Not many people realise that the RBA is, by a different name, in fact the entity that opened its doors for business in Melbourne on 15 July 1912, as the Commonwealth Bank of Australia. Conceived as a publicly owned commercial bank that would compete with the private banks, but act in a more stable fashion, the Commonwealth Bank quickly became a significant force in the banking landscape.

The story of how central banking evolved in Australia in the 20th century is told in the monograph prepared specially for this occasion by Professor Selwyn Cornish of the Australian National University. The early part of the story is bound up with the history of the young Federation, itself dating only from 1901. At that time, Australia had no central bank. Notes issued by private banks circulated, and reserve balances were held in sterling accounts in London.

The financial system serving the Australian colonies had been notoriously unstable during the 1890s. After a speculative property boom rivalling anything we have seen in recent times, the ensuing collapse saw more than half of the deposit-taking institutions close their doors.

With Federation, the new Federal Parliament gained constitutional power over currency and banking matters. The Australian Labor Party's platform included a pledge to establish a 'Commonwealth Bank' to be 'a bank of issue, deposit, exchange and reserve'. When the ALP won office in 1910, the Government duly brought forward a bill to establish the new Bank. Indeed, Prime Minister Andrew Fisher opened the first savings account.

Initially, the functions were limited to commercial ones. Over many years, the Commonwealth Bank slowly acquired central banking functions. As with many central banks, war financing brought the Bank to prominence in the 1914–18 conflict. The note issue, initially a function of the Treasury, was transferred to the Bank in the 1920s.

In the 1920s and early 1930s, further legislative attempts were made to strengthen the

Commonwealth's role as central bank. At least one Federal Treasurer (Theodore) made the case for a pure 'central reserve bank'.

But major progress was not made until an inquiry after the Great Depression outlined the intellectual foundations for the conduct of the modern central bank. The 1937 Royal Commission's findings led in due course to major legislative change, culminating in the Commonwealth Bank being given explicit macroeconomic policy goals in the 1945 Act.

The charter given to the Commonwealth Bank in that Act obliged it to conduct policies as to best contribute to:

(a) the stability of the currency of Australia;

(b) the maintenance of full employment in Australia; and

(c) the economic prosperity and welfare of the people of Australia.

They are the same words that are set in stone in the foyer at 65 Martin Place today.

The same legislation, I might add, abolished the Bank's Board, in favour of a system that effectively made the Governor the sole decision-maker. The Board was re-instituted in 1951 and today's Board in fact is the continuation of that Board, with the same mix of internal and external members.

Yet the Commonwealth Bank was still also a commercial bank. Various arguments were made, including by the Governor of the day, as to why it was acceptable, even desirable, for the central bank both to regulate, and to compete with, the private banks. But by the late 1950s, the opposition of the private banks was intense, and our position as poacher and gamekeeper was no longer tenable.

And so, at least 30 years after the discussion began about the merits of having a separate institution dedicated solely to central banking, the Reserve Bank of Australia was established to continue the central banking activities, while the commercial functions were placed in the Commonwealth Banking Corporation. Interestingly enough, whereas in the 1930s the Labor Party was inclined to move ahead with developing central banking and the conservative parties had resisted it, in 1959 it was a conservative government that introduced legislation to create the Reserve Bank and the Labor opposition voted against it. So, both parties have been on both sides of this debate! And no-one could say that Australia rushed into the decision.

The Reserve Bank opened for business on 14 January 1960. It had the same policy charter as the Commonwealth Bank had had, and an almost identical Board, including the Governor, who had been appointed to the post in 1949, and was eventually to retire in 1968 after a tenure of almost 19 years – longer even than Alan Greenspan. I confidently predict that this record will never be equalled in Australia.

While the early leaders of the RBA sought to make it a distinctive institution, they also stressed the continuity of the central banking functions that had carried over from the Commonwealth Bank. One legacy of that history is that we not only have some old silver teapots carrying the CBA inscription, we also hold many of the very valuable archives of the early Commonwealth Bank. Some items from those archives – which date back to the convict era – are being shown this year for the first time in a modest display in our Currency Museum at head office.

Over 50 years, the RBA has been present at, and part of, some of the great ups and downs of the Australian economy and the financial system. It has engaged in many arguments about public policy within its sphere of responsibility and competence. It won some of those arguments, and lost others. It has had its share of critics, and still does. Through all that it sought to call things as it saw them, even if it tended to put its views a little obliquely at times.

It has always had a Board a majority of whose members have been drawn from outside the organisation, from commerce, academia and the broader community. A part-time Board with the decision-making power over monetary policy

is unusual among central banks – I can think of no other major country with that structure. Yet that broader representation has given the Bank a degree of legitimacy that we might otherwise have struggled to achieve in Australian society. And I can say that in the 140 or so meetings of the Board in which I have participated, the members have always carefully set aside sectional and personal interest to act in the national interest.

There are still some with us – even some here tonight – who were present at the creation in 1960. They and others worked hard over the years to establish and nurture a culture and an institution. Many others here have had a connection with the Bank in some way – political leaders, professional colleagues in government, counterparts in the financial sector, or colleagues from abroad. All of you have played a part in creating an institution.

Some of you won't have agreed with things we have said or done at one time or another! But you nonetheless sustained support for the Bank as an institution and for the arrangements under which we operate. Whatever success we may have had over the years owes a lot to the support and trust that the financial sector, the political leadership and our community – whom we serve – have been prepared to give us, even on occasions when they didn't agree with us. We have also benefited greatly from the support of our international colleagues.

Thank you for that support. We shall continue to do our utmost to be worthy of it. Thank you all for coming to be part of this celebration. Please enjoy your evening.

Mining Booms and the Australian Economy

Ric Battellino, Deputy Governor

Address to The Sydney Institute, Sydney, 23 February 2010

Introduction

The topic of my talk tonight is 'Mining Booms and the Australian Economy'. I have chosen this topic because the Australian economy is currently experiencing a surge in mining activity, one of a sequence of mining booms since the European settlement of Australia. These have been a powerful force in shaping the Australian economy.

Tonight I want to review the effects of these booms. Of particular interest is the question of whether there are recurring themes from which we can draw lessons on how to manage the current episode.

My talk is based on research by a couple of my colleagues from the Bank which draws on the work of several economic historians.[1] I won't take time to list these references now, but they are shown at the end of my talk.

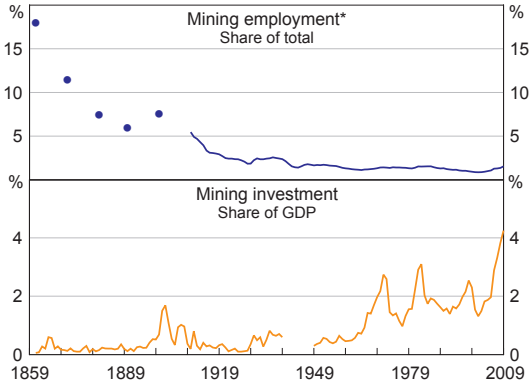
Mining Booms in Australia

The distinguishing features of a mining boom are significant increases in mining investment or mining output, usually both, which go on to have important macroeconomic consequences.

On this basis, I think we can identify five major mining booms during the past two hundred years or so (Graphs 1 and 2). These are:

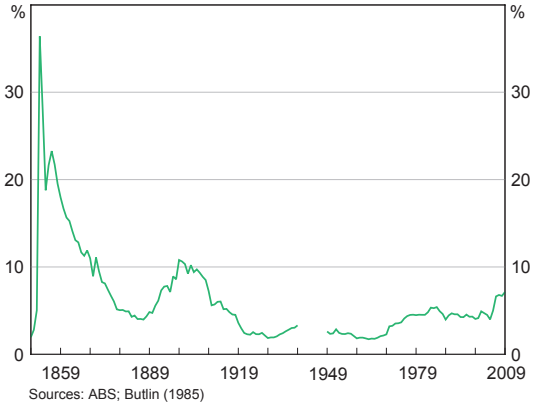
- the 1850s gold rush;
- the late 19th century mineral boom;

Graph 1
Mining Employment and Investment
Annual



* Data before 1890 are for NSW, Queensland, South Australia and Victoria
Sources: ABS; Butlin (1964, 1985); RBA; Withers, Endres and Perry (1985)

Graph 2
Mining Value Added
Per cent of nominal GDP, annual



Sources: ABS; Butlin (1985)

1 I would like to thank Ellis Connolly and Christine Lewis for this work. The data underlying the graphs in this speech are drawn from multiple data sources, which may affect the comparability of series over time.

- the 1960s/early 1970s mineral and energy boom;
- the late 1970s/early 1980s energy boom; and
- the current episode, which is again both a mineral and energy boom.

There have also been quite a number of other mini booms in mining activity, but given the time available I am going to limit myself to the five episodes I have just noted.

I will start with a brief summary of the causes, characteristics and consequences of each of the booms, and then provide a more general assessment of their macroeconomic implications.

(a) The 1850s gold rush

The 1850s gold rush was the first major mining boom in Australia. Economic historians note that the timing of these gold discoveries may have been related to international developments such as the California gold rush of the late 1840s, which had heightened general interest in gold exploration and mining. The first well-publicised find of gold in Australia, near Bathurst in New South Wales, was by a veteran of the California gold rush. Domestic economic developments may also have influenced the timing, as the continuing effects of the 1840s recession meant that labour in Australia was abundant and mobile, and therefore more likely to become involved in prospecting.[2]

This boom ended up being mainly centred on the gold fields of Victoria. It was atypical compared with later booms in that it was not accompanied by a large increase in mining investment. At that stage, large amounts of capital were not readily available and, in any case, the form of mining that was taking place – surface alluvial mining – was well suited to large inputs of labour and little input of capital.

The boom lasted for about a decade and a half; by the mid 1860s, the gold rushes of Victoria had largely faded.

Measured in terms of value added to GDP, this boom greatly exceeded all subsequent mining booms. At its peak in 1852, mining comprised about 35 per cent of GDP.[3] This created tremendous upheavals in the economy at the time. The value of exports from New South Wales and Victoria rose by a factor of six in three years, and exports of gold exceeded wool exports for the following 18 years.[4]

Labour flowed strongly to the gold states, particularly Victoria, and Melbourne became the largest city in Australia. Some of this flow of labour came from other states. For example, the male populations of South Australia and Tasmania fell by 3 per cent and 17 per cent respectively in 1852. But a large amount of labour also came from sharply increased immigration; the Australian population almost trebled during a 10-year period.[5]

Wages rose sharply, at first in mining, then across the country as labour flowed to the diggings. Between 1850 and 1853, wages in Victoria rose by 250 per cent.[6]

Colonial governments had no powers over the money supply or the exchange rate.[7] The money supply trebled in the space of a couple of years. All the adjustment in the economy took place via inflation. The rise in inflation meant that by the middle of the boom the real exchange rate was about 50 per cent higher than at the start.

There was evidence of what we now call the 'Dutch disease' – i.e. damage to some non-mining industries because of the difficulty of retaining labour, increased costs and the high real exchange rate.[8] For example, shepherds' wages doubled between 1850 and 1853, creating difficulty for the wool industry and wool exports grew at much reduced rates. Also, according to one data source, the number of manufacturing

2 See Blainey (1963, p 12, 1970).

3 See Butlin (1985).

4 See Doran (1984); Maddock and McLean (1984).

5 See Blainey (1963, p 62); Maddock and McLean (1984).

6 See Maddock and McLean (1984).

7 See Maddock and McLean (1984).

8 Gregory (1976).

establishments in New South Wales fell from 165 in 1850 to 140 a couple of years later.[9]

The overall impact on economic activity was, however, highly positive. Confidence was high, the flow of immigration greatly boosted demand for goods and services, and industries servicing the mines – e.g. sawmilling, brick-making and transport – all boomed. Parts of agriculture also benefited from greatly increased demand for food. The infrastructure provided to service the mines – such as extensive road-building – went on to have many positive effects in terms of opening up agricultural land. GDP growth remained very strong for a decade after the boom peaked.[10]

Despite having a new source of tax and licence revenue, governments faced pressures in their finances, both because of strong demand for infrastructure spending and sharply rising costs of providing it. In 1853, for example, the Victorian Government spent £520 000 on roads, compared with £11 000 two years earlier.[11] Governments therefore resorted to borrowing, which they did through London markets. They found this relatively easy to do, as the discovery of gold had made the colonies more creditworthy.

(b) The late 19th century mineral boom

The second boom was that in the late 19th century.

This boom was driven by the discovery and development of new gold and metal mines across the country, but particularly in Western Australia, Queensland and western New South Wales. Partly this was the natural consequence of the spread of the population to more remote areas, but partly it reflected capital market developments. There was ample capital available in London to fund exploration activities as the recession in the early 1890s had led to a fall in investment opportunities. Also the development of the 'no-liability' company made it much easier to access this capital. In 1894, 94 Western Australian companies had been floated in London; two years later there were 690.[12] Sadly for the British investors, much of this money was never repaid in dividends, an indication of the risks that can be involved in mining investment.

The main part of this boom took place against a very subdued economic background, both in Australia and in the major economies. The financial collapses that occurred after the bursting of the 1880s property bubble had led to a global depression with very large falls in output and high unemployment.

The continuing effects of that financial collapse meant that this boom, somewhat unusually, was not accompanied by a sharp acceleration in money supply growth. Similarly, the large amount of spare capacity in the economy meant that there was significant deflation at the start of the boom, which limited the subsequent peak in inflation.

There were some pressures on wages as the unemployment rate fell sharply from the very high levels of the early 1890s, and there were signs of rising industrial disputation. The real exchange rate, however, did not move much through this episode.[13]

The current account, which had moved to a very large deficit during the 1880s property bubble (13 per cent of GDP) moved back to a more normal small deficit in the 1890s, and eventually into surplus when the mining boom ended and the economy slowed in the early 1900s.[14]

The inter-regional effects of the boom, as in the 1850s, were very powerful. There were strong flows of labour to the new mine sites. The population of Western Australia increased from 48 000 to 180 000 during the 1890s; and the population of Broken Hill

9 See Maddock and McLean (1984).

10 See Blainey (1963, p 62); Doran (1984); Maddock and McLean (1984); Butlin (1986).

11 See Doran (1984).

12 See Blainey (1963, pp 187, 190).

13 See Blainey (1963, p 303); McKenzie (1986).

14 See Belkar, Cockerell and Kent (2007).

grew from 6 000 in 1888 to almost 20 000 in 1891. Charters Towers had its own stock exchange.[15]

There were also significant shifts in industrial composition. Exports of wool and grains stagnated and metals took over as Australia's leading export.[16]

Eventually, the combination of rising costs and falling profits meant that capital dried up, investment fell, and the boom ended. Some of the policy actions taken at that time – such as the imposition of tariffs to protect urban industries – had powerful long-run influences.[17]

(c) The 1960s/early 1970s boom

The third boom was that in the 1960s/early 1970s. This boom was quite broadly based, but the key parts were sharp increases in mining of coal and iron ore, and the development of oil and bauxite discoveries.

The background to this boom was that both the global and domestic economies were becoming increasingly stretched, with rising commodity prices and rising inflation more generally. Particularly important for Australia during this period was the economic development of Japan. As well as adding to the global demand for resources, this had particular significance for Australia because Japan's proximity lowered transport costs and made certain mineral discoveries economically viable.

This boom differed from the episodes in the 19th century in that it was more capital intensive. Partly this reflected supply factors, as global capital markets had developed significantly since the turn of the century. Partly it was also technological, as some of the resources could only be developed with large-scale investment. Mining investment rose from about ½ per cent of GDP in 1960 to a peak of almost 3 per cent in the early 1970s.

Export prices rose strongly, particularly in the early 1970s, resulting in a large swing in income towards exporters. The current account of the balance of payments moved to surplus, an outcome that has not been repeated since.

Employment grew strongly in the second half of the 1960s, by close to 3 per cent per annum, due to large-scale immigration and increased female participation. Wages rose strongly, and the centralised wage fixing system spread the increases widely through the community.

The nominal exchange rate remained relatively fixed until towards the end of the boom, the eventual appreciation of the exchange rate in the early 1970s coming too late to benefit the economy. Money supply growth picked up to over 20 per cent per annum in the early 1970s and fiscal policy also became expansionary. Inflation rose sharply.

Tariff cuts were introduced in 1973 to help control inflation, but the benefit of this was later offset by the imposition of import quotas to try to protect manufacturing jobs.

By the mid 1970s, both the Australian economy and the global economy were experiencing severe difficulties, primarily flowing from the adverse consequences of very high inflation. The boom therefore ended; mining investment fell to low levels, and commodity prices stagnated.

(d) The late 1970s/early 1980s boom

The fourth major boom was in the late 1970s/early 1980s. This boom was largely driven by the energy sector, in particular steaming coal, oil and gas. This followed the second of the oil price shocks in the late 1970s. In addition, the increased cost of energy made Australia an attractive place for energy-intensive activities such as aluminium smelting.

Investment in mining started to pick up in the late 1970s and increased sharply in 1981 and 1982.

This mining boom led to a sense of euphoria about Australia's future which was accompanied by a resurgence of wage demands and rising inflation. Monetary and fiscal policies were tightened but did not succeed in keeping the economy in check.

15 See Blainey (1963, p 194); Doran (1984); Withers *et al* (1985).

16 See Blainey (1963, p 248).

17 See Blainey (1963, p 289).

The exchange rate system at that time involved management of the Australian dollar against a trade-weighted index of currencies. The authorities followed a policy of appreciating the exchange rate, but, with the benefit of hindsight, the rate of appreciation was relatively mild and did little to insulate the Australian economy from rising inflationary pressures.

The boom was relatively short-lived. The downturn in the global economy in 1981, following the oil price shock, meant that demand for energy ended up being much less than had been expected; this was reflected in both the volume and the prices of exports. At the same time, the distortions caused by high wage growth and inflation, and the resulting tight policies, meant that by 1982/83 the domestic economy had followed the global economy into a severe recession.

(e) The current boom

This brings me to the surge in mining investment that is currently under way. This is again very broad-based across a range of resources, but the core part centres on the large expansion in the iron ore, coal and gas industries. It has been, to a large degree, driven by demand for resources by emerging economies, with China being the most significant.

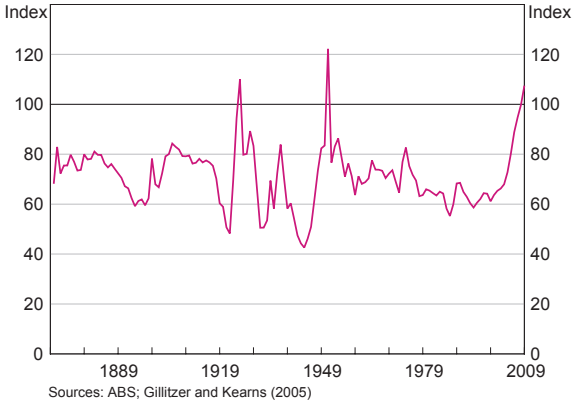
Judged by the pattern in mining investment and commodity prices, the start of this boom can be dated from around 2005. By 2007 and early 2008, it was severely testing the productive capacity and flexibility of the economy. That all changed in the second half of 2008, as the effects of the mining boom were offset by the impact of the global financial crisis. However, now that this has passed, the underlying dynamics of the resource boom are starting to reappear.

Many of the characteristics of this episode have been similar to those of earlier booms, but there are a few key differences worth noting:

- First, mining investment as a share of GDP has been significantly higher than recorded in previous booms and is thought likely to rise further. In terms of additions to output, the contribution of mining this time has been larger than that during the booms of the 1960s and 1970s, but still below that of the late 19th century and much lower than that in the 1850s.
- Second, the terms of trade have risen much more than they did in earlier mining booms. The current level of the terms of trade rivals the sharp peaks that were associated with rises in wool prices following the First World War and during the Korean War (Graph 3). The current mining boom has seen both the volume and the price of resource exports rise strongly.
- Third, this is the first boom during which the exchange rate has been floating, and in which a significant rise in the nominal exchange rate has been an important part of the economic adjustment. This has added an important degree of flexibility to the economy, by allowing the real exchange rate to rise through a means other than inflation.

How long the current surge in mining activity will continue is uncertain. Past booms do not seem to have lasted more than about 15 years before resource depletion, or international or domestic developments, acted to slow economic activity and bring the boom to an end. On this occasion,

Graph 3
Terms of Trade
2007/08 = 100, annual



Sources: ABS; Gillitzer and Kearns (2005)

the growth potential of countries such as China and India suggests that the expansion in resource demand could continue for an extended period, though this will depend at least to some extent on the economic management skills of the authorities in these countries, not to mention our own.

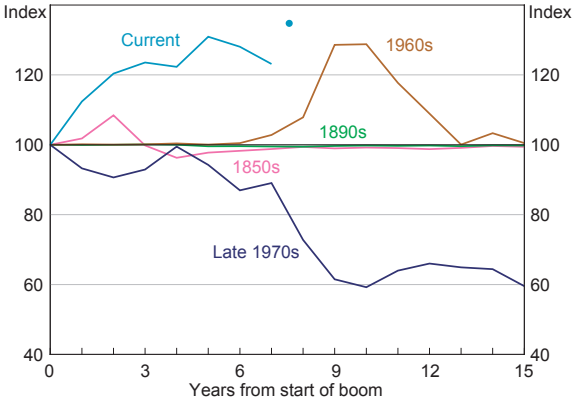
Assessment

The booms that I have described took place over a period of about 160 years, and against very different backgrounds. Yet, some similarities come through.

The first point that stands out is the important role played by global events in causing mining booms in Australia. In some cases this was due to the effect on prospecting activity (e.g. the impact of the California gold rush in the 1850s boom and the availability of international capital to fund the 1890s boom); in some cases it was due to a change in the relative prices of commodities on global markets (e.g. the late 1970s boom); and in others due to the emergence of powerful new trading partners (e.g. the development of Japan in the 1960s and the development of China and India recently).

The second point is that the overall impact of each boom was to strengthen the economy. Increased investment in mining, higher income from mining activities, and the need for increased infrastructure to service the mines all worked in this direction. Also, each boom had high, or increasing, population growth in its early years which added to the economic momentum. Not everybody benefited from that economic pick-up and some industries went into decline due to the difficulty in competing for workers with the newly expanding sectors.

Graph 4
Nominal Exchange Rate
Year-average, start year = 100*



* t = 0 at 1850, 1890, 1964, 1977, 2002; rates for the 19th century are bilateral against the London pound, 1960s are against the US dollar, later data are trade-weighted indices with December 2009 shown as a dot
Sources: Global Financial Data; RBA

The third point that seems clear from history is that every mining boom was accompanied by increased inflationary pressure. Sometimes this was part of a global story, sometimes it was due to wage behaviour, but the general factor was pressure on the productive resources of the economy due to the expansion of economic activity. Leaving aside the current episode, only in the 1890s boom, which began when the economy had large-scale spare capacity, was the rise in inflation contained to single digits.

One interesting issue is the role of the exchange rate in these booms. Theory suggests that part of the adjustment process for an economy experiencing a mining boom is a rise in the real exchange rate in order to facilitate the flow of real resources that is needed. In all the previous booms, however, the nominal exchange rate was either fixed or managed very tightly. The real exchange rate could therefore only adjust through inflation.

In the current episode, with a floating rate, the behaviour of the nominal exchange rate has been very different from the past (Graph 4). It has risen early in the boom and by a large amount. This has been an important factor helping to dissipate inflationary pressures.

Conclusion

Let me conclude.

History tells us that mining booms are periods of significant economic change and that they can pose complex challenges for policy-makers. Key among these is the need to ensure flexibility in the economy and maintain disciplined macroeconomic policies in

order to contain the inflationary forces generated by the boom.

History also shows that, in the past, these challenges proved to be quite difficult to deal with. However, in the 30 years since the previous boom, the Australian economy has developed in ways that should make it better able to accommodate the surge in mining activity that is currently under way. The floating exchange rate is a key difference, but goods and labour markets are also more flexible, and the monetary and fiscal policy frameworks are now more soundly based. This gives grounds for confidence that we can do better this time, but the task will not be without challenges.

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Some Comments on Bank Funding

Ric Battellino, Deputy Governor*

Remarks to 22nd Australasian Finance and Banking Conference, Sydney, 16 December 2009

One of the widely drawn lessons from the financial crisis is that banks should source more of their funding from deposits and less from short-term debt markets.

I want to spend some time today talking about this, focusing in particular on:

- How significant are the benefits of such a shift?
- How feasible is it for banks to shift their funding sources?
- What is the impact on banks' cost of funds? and
- What are the implications for the level of interest rates?

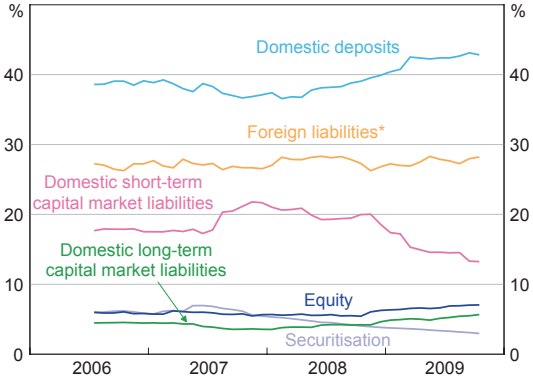
Bank Funding

Banks in Australia have reasonably diverse funding bases: deposits account for 43 per cent of funding, split fairly evenly between households and businesses; domestic capital markets provide a further 19 per cent of funding; and foreign capital markets 28 per cent. Securitisation and equity account for 3 per cent and 7 per cent of funding respectively (Graph 1).

Since mid 2007, the share of banks' funding that has come from deposits has risen by 5 percentage points, with increases in both household and business deposits. Banks have used these funds to replace some of their short-term capital market debt.

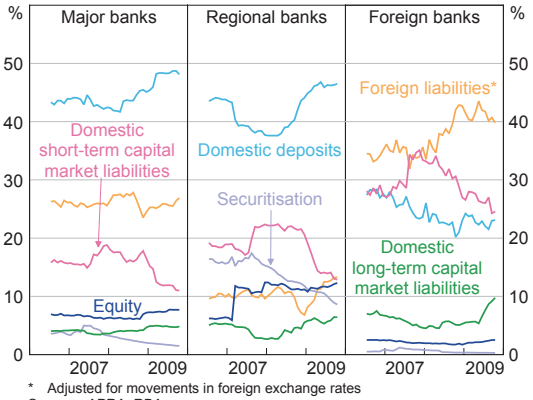
The increased use of deposit funding has been evident in both the major banks and in the regional banks. The foreign-owned banks, in contrast, have experienced a fall in the proportion of funding coming from domestic deposits (Graph 2).

Graph 1
Funding Composition of Banks in Australia
Per cent of funding, monthly



* Adjusted for movements in foreign exchange rates
Sources: APRA; RBA

Graph 2
Funding Composition of Banks in Australia
Per cent of funding, monthly



* Adjusted for movements in foreign exchange rates
Sources: APRA; RBA

* I would like to thank Michael Davies, Anna Brown and Tegan Hanrick, who undertook the research for this talk.

How Stable Are Bank Deposits?

Assessing the relative stability of banks' various funding sources is not straightforward, as there can be significant variation even within each category of funding. For example, government-guaranteed deposits are 'stickier' than non-guaranteed deposits, household deposits tend to be stickier than corporate and institutional deposits, while internet deposits are less stable than other at-call deposits. Deposits from corporates and other financial institutions are unlikely to be much more stable than short-term debt, particularly in a crisis. Offshore capital market funding can be less stable than domestic capital market funding, as during crises investors often have a strong home bias.

The behavioural maturity of a given funding source can also be very different from the contractual maturity, especially during financial crises. It is the behavioural maturity that matters most, and during a severe crisis this can shorten significantly for many funding sources. This is because banks can come under pressure to allow term deposits to be redeemed early and to buy back short-term capital market debt. While a bank could try to enforce the contractual maturity on its funding, the reality is that, unless the bank is already in great difficulty, this could draw attention to itself and accentuate its problems.

Another issue is that the behaviour of new depositors attracted through more competitive pricing may also be very different from that of existing depositors. These new deposits are likely to be more price sensitive and less stable. The benefit, in terms of funding stability, which comes from increasing deposits through competitive pricing, may therefore be somewhat illusory.

How Do Australian Banks Compare Internationally?

There is a common perception that banks in Australia make less use of deposits to fund themselves than do banks in other countries. However, the difference between Australian banks and their overseas peers is sometimes exaggerated by inconsistencies in the data across countries.

Table 1 contains some data the Reserve Bank has put together on deposit funding for the major banks in Australia, Canada, Germany, Japan, the United Kingdom and the United States. We have tried to make the data as consistent as possible although they are probably still a long way from being fully consistent. The data show that, contrary to popular perception, the share of funding from deposits for the major banks in Australia is similar to that for the major banks in Germany, Japan, the United Kingdom and the United States.[1]

Table 1: Share of Domestic and Foreign Deposits in Total Funding[(a)]
December 2008, per cent

	Major banks
Australia	61
Canada	77
Germany	56
Japan	69
United Kingdom	60
United States	56

(a) Data based on the major banks in each country. Deposits include CDs. Total funding equals total liabilities, excluding derivative liabilities.
Sources: RBA; banks' financial statements

Another commonly quoted metric used to support the case that Australian banks are underweight deposits is the relatively high ratio of loans to deposits in Australia. The ratio for the major banks in Australia is around 130 per cent, whereas in most overseas countries the ratio varies between 80 per cent and 100 per cent (Table 2). However, as I have noted, this

1 The figures for deposit shares in the table are higher than the figures quoted earlier in this talk because of definitional differences. To allow international comparisons, the figures for deposits in the table include certificates of deposit (CDs) and are for the banking group, and hence include overseas as well as domestic operations. The denominator used to measure total funding is on-balance sheet liabilities (excluding derivatives) rather than total funding including equity and securitisation.

is not due to Australian banks having lower deposit funding. The high ratio of loans to deposits reflects differences in asset composition. Banks in Australia mainly have loans on the asset side of their balance sheet, whereas banks overseas often have large holdings of debt securities. This results in a higher ratio of loans to deposits in Australia. But, rather than being a weakness, I would regard this as a strength of the Australian banks, as events of the past couple of years have shown that holdings of securities can be more risky than loans.

Table 2: Ratio of Loans to Deposits[(a)]
December 2008, per cent

	Major banks
Australia	131
Canada	91
Germany	97
Japan	79
United Kingdom	89
United States	96

(a) Data based on the major banks in each country. Foreign and domestic loans and deposits (including CDs).
Sources: RBA; banks' financial statements

How Far Can Banks Lift their Deposit Ratios?

An individual bank has a large amount of discretion in the way it funds itself, as it can bid more aggressively for the type of funds it wants and compete them away from other banks. The banking sector as a whole, however, has much less flexibility. For the banking sector as a whole to increase its use of deposit funding, it needs to be able to induce a shift in the structure of the financial system away from financing through capital markets to on-balance sheet funding through the banking sector. Put another way, for the banking system as a whole, the share of deposits in total funding can increase only to the extent that investors reduce their holdings of securities and place the proceeds on deposit with banks.

There are limits to the extent this can happen since there are a range of structural, economic and cultural factors that shape the composition of a financial system, and these do not change quickly. In fact, the trend in most economies is for savings over time to move away from simple instruments such as bank deposits towards debt securities and equities.

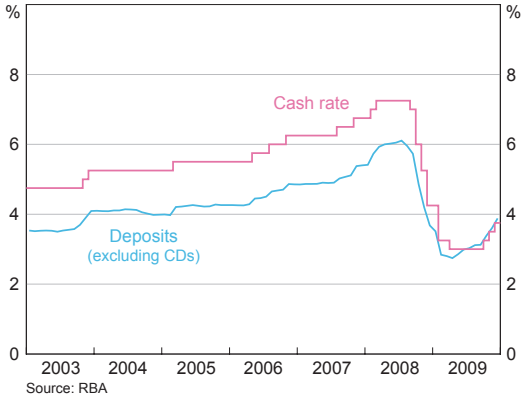
To try to shift savings back to deposits would require a reversal of these trends, and there must be doubts about how feasible that would be. There is also the question of whether it would be sensible from the point of view of the overall functioning of the economy and the financial system.

As I noted earlier, over the past year Australian banks as a whole have managed to increase the share of their funding that comes from deposits. However, the bulk of this occurred during the period of high risk aversion late last year and early this year, when investor perceptions were that bank deposits were safer than debt securities and unit trusts. Over the past six months, as risk appetite among investors has returned, the deposit funding share of banks has stopped rising. It would seem that banks have largely exhausted the available opportunities to induce investors to increase their holdings of bank deposits. The so-called 'deposit war' among banks is producing very attractive interest rates for depositors but little net benefit for the banking system as a whole in terms of increasing deposit funding.

What Is Happening to the Cost of Deposits?

The increased competition by banks for deposits has added substantially to their cost of funds. It used to be the case that on average banks paid about 125 basis points less than the cash rate on deposits. Now they are paying interest rates that are on average

Graph 3
Average Cost of New Deposits to Major Banks



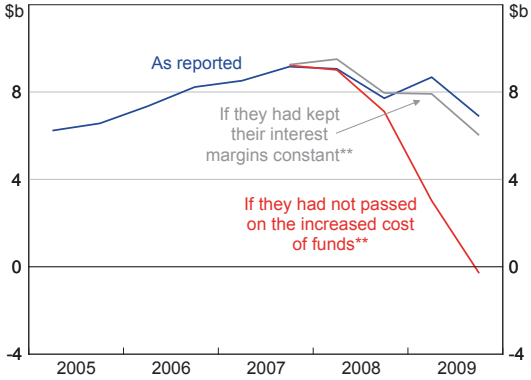
Source: RBA

Table 3: Estimated Change in Cost of New Funds Relative to the Cash Rate – Major Banks
Since July 2007

	Basis points
Deposits	147
– transactions	250
– savings	36
– term	250
Short-term debt (incl CDs)	13
Long-term debt	173
Total	108

Source: RBA

Graph 4
Major Banks' Net Profit*
Semi-annual



* From 2006, figures are under AIFRS
** RBA estimates
Sources: RBA; banks' financial reports

in line with the cash rate (Graph 3). In the case of term deposit 'specials', which are the main vehicle through which banks are currently competing for deposits, interest rates can be as much as several hundred points above the cash rate.

Table 3 shows how the cost of various types of funding for the major banks has changed, relative to the cash rate, since the start of the financial crisis in mid 2007. It shows that the cost of new deposits has risen on average by 147 basis points relative to the cash rate over that period. This rise was mainly driven by an increase of about 250 basis points in the relative cost of term deposits. The cost of short-term debt relative to the cash rate has not changed much over the period, while the cost of new long-term debt has risen by 173 basis points relative to the cash rate.

The table indicates that the push by banks to increase the share of their funding that comes from deposits has added substantially to their costs. At the same time, the cost of long-term debt has risen sharply relative to the cash rate because of the global crisis.

These changes in banks' cost of funds relative to the cash rate have meant that the relationship between bank lending rates and the cash rate has also become looser. It is difficult for banks to adjust their lending rates in line with changes in the cash rate when the cost of their funds is rising substantially relative to the cash rate.

We estimate that if banks had not adjusted their lending interest rates to reflect their higher cost of funds over the past couple of years, they would now be incurring losses (Graph 4). That would have threatened their ability to keep raising funds and, in turn, their capacity to lend. In the event, early in the financial crisis, banks did not pass on all of the increase in their cost of funds, but recently increases in lending rates have run ahead of the cost of funds. Banks' margins are now a little wider than at the start of the crisis, and therefore are adding to profits.

The margin between the cash rate and banks' lending rates receives considerable public attention. This is understandable because changes in it are very visible. This margin, however, can change for many reasons, so it is difficult to interpret. A widening in it might be due to banks making unjustified increases in their lending rates, or it might reflect market developments that have pushed up banks' cost of funds relative to the cash rate.

Some have argued that variability in this margin means that monetary policy is less effective. This, however, misses the very important point that the Reserve Bank takes account of the changing relativities between the cash rate and other interest rates when setting the cash rate. Other things equal, if interest rates in the economy are rising relative to the cash rate, there is less need for the cash rate to rise.

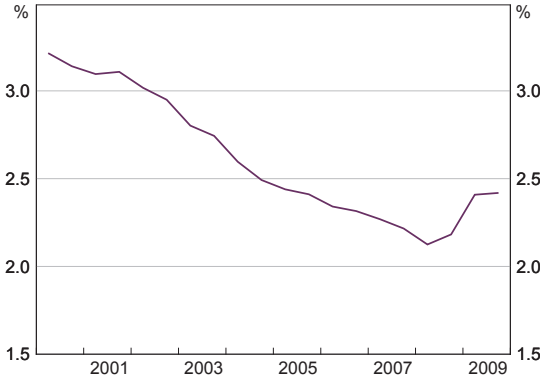
The more relevant margin is that between the average interest rate on bank loans and the average cost of the funds used by banks to finance their loans. This is usually referred to as banks' net interest margin.

Between 2000 and 2007, the net interest margin on the major banks' Australian operations had narrowed by about 100 basis points (Graph 5). This was driven by competition, and was made possible by sizeable reductions in banks' operating costs over that period, which allowed banks to continue operating profitably despite falling margins.

As I mentioned, early in the financial crisis, the banks' net interest margin was squeezed further, as the cost of funds rose sharply and banks did not fully pass this on to interest rates on loans. Over the past year or so, however, margins have widened again, and they are now about 20 basis points above pre-crisis levels.

This recent widening in the net interest margin has been largely due to wider margins on banks' business lending. The margin on variable housing loans is much the same today as it was at the start of the crisis; it had fallen until recently and the increase

Graph 5
Major Banks' Australian Net Interest Margin



Sources: RBA; banks' financial reports

in home loan interest rates in December restored it to around its pre-crisis level.

Margins on business loans, however, are now substantially higher than they were immediately before the crisis. This comes after a prolonged period when margins on business loans had narrowed.

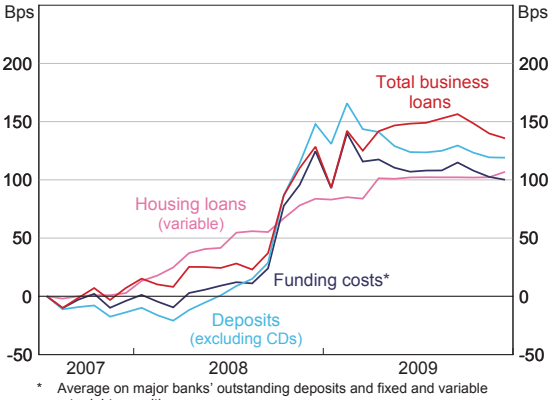
Margins on business loans tend to vary over the economic cycle, reflecting changes in perceptions of risk by banks. During periods of a strong economy, banks tend to cut their margins as they see business loans as being less risky. In contrast, when the economic and business outlook is uncertain and loan losses are rising, as has been the case over the past couple of years, banks see loans as being more risky and margins widen.

With the economy and business climate now improving, the economic justification for wider margins on loans is becoming less compelling, so it would be reasonable to assume that, in a competitive banking sector, we should see margins level out soon. Over the past couple of months, there have been some signs that this is starting to occur.

What Does this Mean for Monetary Policy?

As I have noted, over the past couple of years, the interest rates that matter in the economy – the rates on housing and business loans and the rates on deposits and debt securities – have all risen relative to the cash rate (Graph 6). The Reserve Bank has taken these changing relativities into account in its monetary policy decisions.

Graph 6
Cumulative Change in Margins Between Various Interest Rates and the Cash Rate
Since July 2007



* Average on major banks' outstanding deposits and fixed and variable rate debt securities
Sources: APRA; RBA

One of the implications of doing so, however, is that it has altered the relativity of the cash rate compared with its historical ranges. I want to end with a few words on this, and what it means for the interpretation of monetary policy settings.

As you know, the cash rate is currently 3.75 per cent. This is still 50 basis points below the previous cyclical low of 4.25 per cent in 2001. On the surface this might suggest that the cash rate is still unusually low. However, with other interest rates in the economy having risen by at least 100 basis points relative to the cash rate over the past couple of years, they are now above their previous cyclical lows.

Another way to think about this is that the current level of deposit rates, housing loan rates and business loan rates would have been consistent, before the crisis, with a cash rate of at least 4.75 per cent.

Taking these considerations into account, it would be reasonable to conclude that the overall stance of monetary policy is now back in the normal range, though in the expansionary segment of that range.

The appropriateness of this will be monitored by the Reserve Bank over the months ahead in the light of the data becoming available on economic activity and inflation.

Reserve Bank Publications

Most of the publications listed below are available free of charge on the Bank's website (www.rba.gov.au). Printed copies of these publications, as well as a wide range of earlier publications, are also available on request; for details refer to the enquiries information at the front of the *Bulletin*.

Statement on Monetary Policy

These statements, issued in February, May, August and November, assess current economic conditions and the prospects for inflation and output.

Financial Stability Review

These reviews, issued in March and September, assess the current condition of the financial system and potential risks to financial stability, and survey policy developments designed to improve financial stability.

Annual Reports

- Reserve Bank of Australia Annual Report
- Payments System Board Annual Report

Research Discussion Papers (RDPs)

This series of papers is intended to make the results of current economic research within the Bank available for discussion and comment. The views expressed in these papers are those of the authors and not necessarily those of the Bank.

The abstracts of most RDPs and the full text of RDPs published since 1991 are available on the Bank's website.

Conference Volumes

Conference Volumes published since 1993 are available on the Bank's website. The most recent titles are:

- *50th Anniversary Symposium,* February 2010
- *Inflation in an Era of Relative Price Shocks,* August 2009
- *Lessons from the Financial Turmoil of 2007 and 2008,* October 2008
- *The Structure and Resilience of the Financial System,* November 2007
- *Demography and Financial Markets,* October 2006
- *The Changing Nature of the Business Cycle,* October 2005
- *The Future of Inflation Targeting,* November 2004
- *Asset Prices and Monetary Policy,* November 2003

Other publications

The Bank periodically produces other publications that may take the form of submissions to inquiries, surveys or consultation documents. Some recent examples include:

- *A Revised Interchange Standard for the EFTPOS System,* November 2009
- *Self-Assessment of the Reserve Bank Information and Transfer System,* September 2009
- *Survey of the OTC Derivatives Market in Australia,* May 2009
- *Consultation on Assessing Sufficient Equivalence,* May 2009
- *Equity and Diversity Annual Report*, 2009

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Developments in Financial Regulation, Address by Glenn Stevens, Governor, December 2009

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Whither Securitisation?, Address by Guy Debelle, Assistant Governor (Financial Markets), November 2009

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