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Housing Turnover and First-home Buyers

Paul Bloxham, Daisy McGregor and Ewan Rankin*

While housing turnover varies over time, on average, around 6 per cent of the housing stock, or around 500 000 dwellings, change ownership each year. In 2009, first-home buyers accounted for an unusually large share of this turnover, although this share has since declined. As first-home buyers make greater use of mortgages to fund purchases than do repeat buyers, this shift in the composition of turnover helps to explain the recent divergence in movements in housing prices and loan approvals.

Introduction

Periods of strong growth in housing prices are usually associated with a pick-up in turnover in the housing market and an increase in housing loan approvals. Shifts in the mix of buyers in the housing market can, however, affect the relationship between prices, turnover and finance. This article reviews recent trends in housing turnover in Australia, including changes in the role played by first-home buyers. It also discusses recent trends in housing finance.

Housing Turnover and Financing

There are no timely official data on the number of housing transactions in Australia. Measures can, however, be constructed using data from private-sector entities which purchase information on land title transfers from state lands departments and supplement this with other information on dwelling sales. Owing to lags in the collection process, reliable estimates are typically not available until around six months after the reference period, with initial estimates usually underestimating the number of property transactions that actually took place.[1] An alternative and timelier source of information is provided by lending statistics from financial institutions, including the monthly housing loan approvals data, although the usefulness of these data as a measure of turnover is limited by the fact that not all home purchases involve a loan from a financial institution. An additional source of disaggregated information on the characteristics of households that buy their homes is the household surveys, including the Household, Income and Labour Dynamics in Australia (HILDA) Survey and the ABS Survey of Income and Housing (SIH), with the latest SIH for 2007/08 including a special module on Housing Mobility and Conditions.

The estimates of turnover from private-sector providers suggest that in the past five years an average of around 500 000 dwellings have been sold each year, or around 6 per cent of the total number of dwellings (Graph 1).[2] These estimates also suggest that housing turnover has varied significantly over time. Turnover was particularly high during the period of strong housing price and credit growth in 2002–2003, when it rose to around 7½ per cent of the number of dwellings, partly reflecting a high level of investor activity. At the same time, housing equity withdrawal also rose

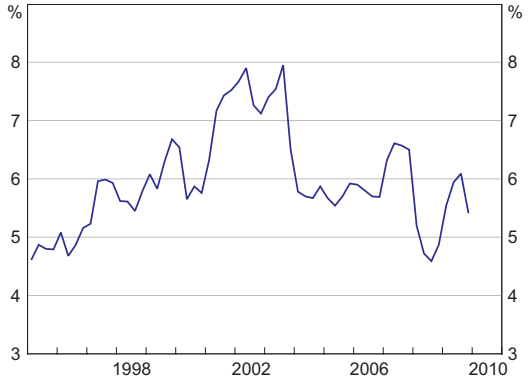
* The authors are from Economic Analysis Department.

1 In the past, these data problems also made measuring growth in housing prices difficult as the early samples of sales were not representative of the broader housing stock. However, statistical approaches to control for these, and other issues associated with changing sample composition, have helped overcome this problem (see for example, Hansen, Prasad and Richards 2006).

2 These estimates will understate total turnover as they do not include all newly built dwellings and transfers within families that are not sales.

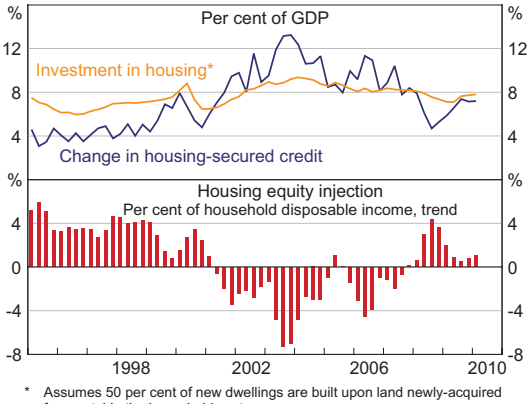
and reached its peak level in late 2003 (Graph 2).[3] By comparison, the recent rise in housing prices has been accompanied by only a modest increase in turnover, to around average levels, with the increase mostly driven by first-home buyers. In late 2009, housing turnover was well below the levels reached earlier in the decade and households continued to inject equity into the housing stock.

Graph 1
Housing Turnover*
Share of the number of dwellings, annualised



* Average of data from APM and RP Data-Rismark, seasonally adjusted
Sources: ABS; APM; RBA; RP Data-Rismark

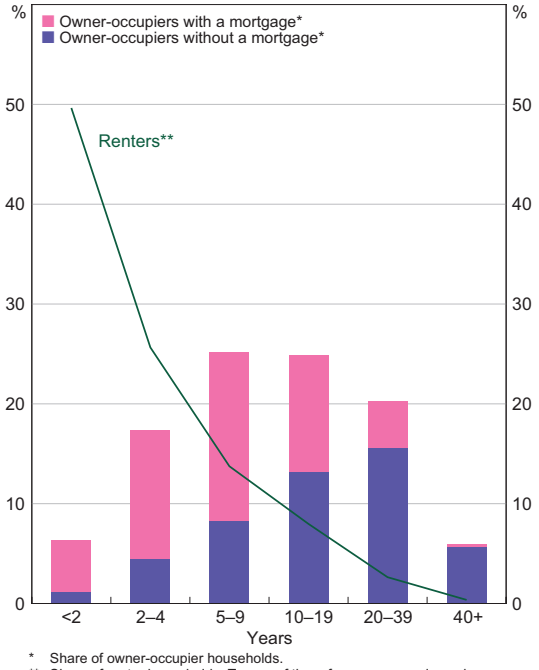
Graph 2
Housing Equity Injection



* Assumes 50 per cent of new dwellings are built upon land newly-acquired from outside the household sector
Sources: ABS; Australian Treasury; RBA

The 6 per cent average rate of turnover suggests an average holding period of about 17 years, although this aggregate estimate masks significant differences in turnover across households. Data on household tenure from the SIH suggest that in 2008 around one-quarter of owner-occupier households had not moved for over 20 years, and over half of owner-occupiers had been in the same home for at least 10 years (Graph 3).[4] On the other hand, of those households that had been in their dwelling for less than five years in 2008, around half had moved at least twice during that period. As might be expected, younger households account for a greater share of moves than older households; households with a household head

Graph 3
Years in Current Dwelling
As at 2008



* Share of owner-occupier households.
** Share of renter households. Tenure of the reference person in each household.
Source: ABS

3 When people move house they often withdraw equity which is used for other expenditure, for example on other assets (see Schwartz *et al* 2006). Housing equity withdrawal (injection) is defined as the extent to which the net change in borrowing for housing is above (below) the net change in the housing stock (including alterations and additions).

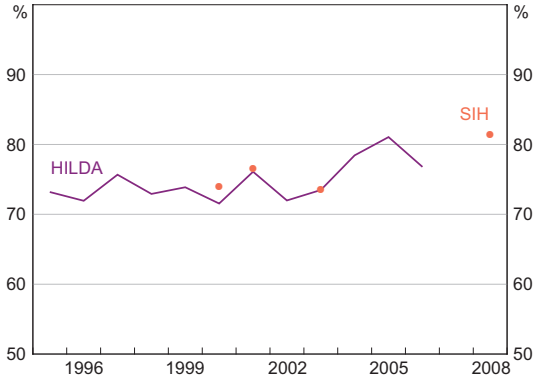
4 While the SIH tracks households, rather than dwellings, movements of owner-occupier households between dwellings are highly correlated with dwelling sales. The SIH suggests that in 2008, on average, owner-occupier households had been in their dwellings for 15 years.

aged between 25 and 44 years account for over half of all owner-occupier household movements. Renters also move more often than owner-occupiers, with around half of all renters reported to have been in their current dwelling for less than two years in 2008. Across the states, housing turnover has typically been highest in Western Australia and Queensland, partly reflecting higher population growth. Estimates suggest that over the past decade, on average, around 7 per cent of the dwellings in Western Australia and Queensland changed ownership each year, while an average of around 5 per cent were sold each year in the other states.

With regard to financing, household survey data suggest that around one-quarter of dwelling transactions do not involve a mortgage (Graph 4).[5] This is consistent with data from lands departments in New South Wales and Victoria on land title transfers. The surveys also suggest that the proportion of transactions with a mortgage has risen over recent years, partly reflecting the rising cost of housing.

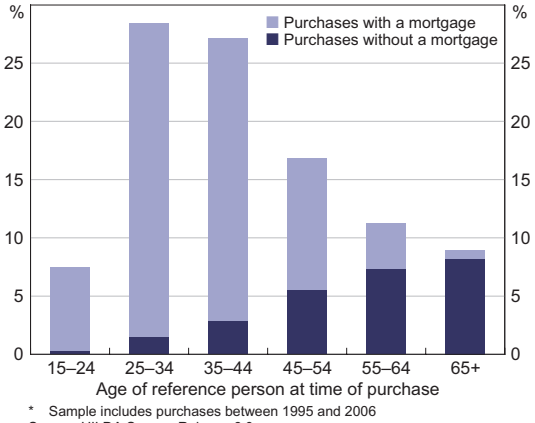
As might be expected, households that have been in their dwelling the longest are less likely to have a mortgage, with many of these households having paid off their housing loan. As at 2008, around half of all owner-occupier households had a mortgage, but only around one-fifth of those that had been in the same dwelling for more than 20 years had a mortgage (Graph 3). Not surprisingly, household surveys also suggest that housing purchases with mortgage finance are more common for younger households than for older households, as older households have built up higher levels of housing equity and other wealth. Since 1995, around 85 per cent of purchases by younger households involved a mortgage, compared with only around 20 per cent of purchases by households with a head over 55 years of age (Graph 5). The SIH also asks households questions about their motivation for moving, with households with a head over 55 years twice as likely to have reported that they moved to 'downsize' or for a 'lifestyle change' compared with younger households. In many cases this is likely to involve moving to a lower-valued property, further lessening the need for mortgage finance.

Graph 4
Mortgaged Dwelling Purchases
Owner-occupiers, share of total



Sources: ABS; HILDA Survey, Releases 2.0 and 6.0

Graph 5
Dwelling Purchases by Age*
Owner-occupiers, share of total



* Sample includes purchases between 1995 and 2006
Source: HILDA Survey, Release 6.0

5 Estimates from HILDA are based on questions in both the 2002 and 2006 surveys about whether the household purchased their current dwelling with a mortgage and when that purchase occurred. The SIH estimates are based on questions about whether a household has purchased a dwelling and whether they have a mortgage on their dwelling in the survey years: 1999/00, 2000/01, 2002/03 and 2007/08.

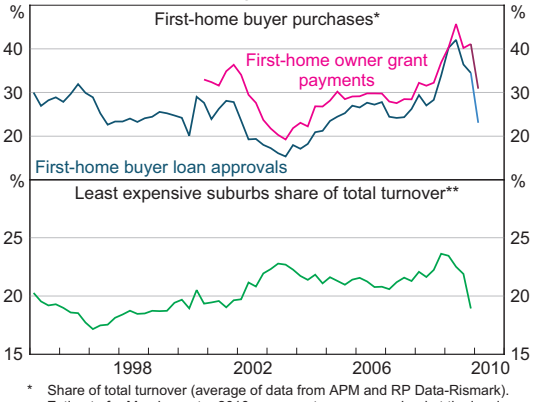
First-home Buyers

Over the past decade, first-home buyers have accounted for around 25–30 per cent of all home sales, although there has been significant variation in this proportion over time, partly reflecting changes in government grants to first-home buyers and the level of interest rates. In late 2008 and through 2009, first-home buyer activity was increased by the Australian Government's First Home Owners Boost, which was introduced in October 2008 and phased out in late 2009. First-home buyer activity was also boosted by state government grant supplements and the reduction in interest rates over late 2008 and early 2009. In mid 2009, the number of first-home owner grants rose to its highest level on record, with grant recipients accounting for more than 40 per cent of total housing turnover (Graph 6). The number of first-home buyer housing loan approvals also rose to its highest share of total housing turnover since at least the mid 1990s. More recently, the share of first-home buyers in the housing market has declined, reflecting the reduction of most of the government grants and the increase in mortgage rates to around average levels. Given that first-home buyer loan approvals and grants have both fallen by around 30 per cent in the March quarter 2010, the first-home buyer share of overall housing turnover is likely to have declined significantly over the period.

The run-up and subsequent decline in first-home buyer activity has had an effect on the composition of housing turnover as, on average, first-home buyers are likely to buy less expensive houses than other buyers. Partly reflecting this, the share of total housing turnover in the least expensive suburbs rose during 2008 and remained elevated in early 2009. The subsequent decline in first-home buyer purchases has seen the share of housing turnover in the least expensive suburbs fall sharply, back to levels seen around the start of the decade.

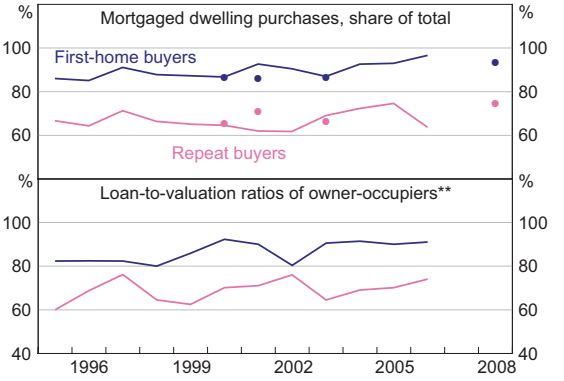
The changes in first-home buyer activity have had implications for measures of new lending, as first-home buyers are significantly more likely than repeat buyers to purchase a dwelling with a mortgage. Household surveys suggest that, on average, around 90 per cent of purchases by first-home buyers involve a mortgage, compared with around 65 per cent of owner-occupier repeat-buyer purchases (Graph 7). The share of mortgaged purchases by first-home buyers has also trended upwards over the past decade or so, which reflects both the increased availability of credit and

Graph 6
First-home Buyers and Turnover



* Share of total turnover (average of data from APM and RP Data-Rismark). Estimate for March quarter 2010 assumes turnover remained at the level of December quarter 2009.
** Least expensive 20 per cent of suburbs in capital cities.
Sources: ABS; APM; NSW Office of State Revenue; RBA; RP Data-Rismark

Graph 7
Housing Finance*
Owner-occupiers



* HILDA data shown as lines while SIH data shown as dots
** At purchase; median
Sources: ABS; HILDA Survey, Release 6.0

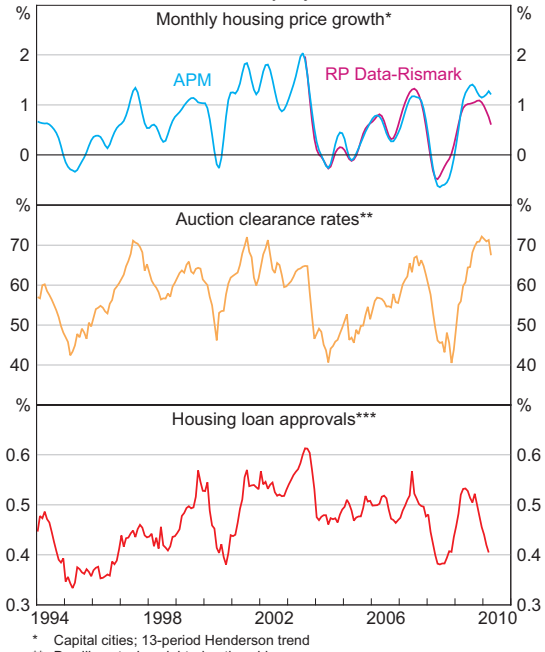
the increase in housing prices relative to incomes. Consistent with this, there has been a modest upward trend in first-home buyer initial loan-to-valuation ratios over this period.

The combination of large movements in the first-home buyer share of housing turnover and the greater propensity of first-home buyers to use mortgages from financial institutions helps to explain the recent divergence between housing loan approvals and housing price growth. While movements in housing prices, auction clearance rates and housing loan approvals are typically highly correlated, over the six months to March 2010 the value of housing loan approvals fell by 16 per cent, while auction clearance rates and growth in housing prices remained buoyant (Graph 8). A rise in the proportion of housing purchases not involving mortgages from financial institutions, due to declining first-home buyer activity, provides part of the explanation for the divergence. The timing of the rise and fall in first-home buyer activity also corresponds with housing price developments at the lower end of the housing market. Housing prices in the least expensive suburbs began to increase in late 2008, earlier than the rise in the upper part of the market, and growth in housing prices in the least expensive suburbs has eased recently, consistent with reduced first-home buyer purchases. As the composition of housing turnover normalises, the more typical relationship between housing price growth, loan approvals and auction clearance rates is likely to be re-established.

Graph 8

Housing Market Indicators

Seasonally adjusted



* Capital cities; 13-period Henderson trend
** Dwelling stock-weighted nationwide measure
*** Share of the value of the dwelling stock
Sources: ABS; APM; RBA; REIV; RP Data-Rismark

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Hansen J, N Prasad and A Richards (2006), 'Measuring Housing Prices: An Update', RBA *Bulletin*, June, pp 1–7.

Schwartz C, T Hampton, C Lewis and D Norman (2006), 'A Survey of Housing Equity Withdrawal and Injection in Australia', RBA Research Discussion Paper No 2006-08.

Price-setting Behaviour – Insights from Australian Firms

Anna Park, Vanessa Rayner and Patrick D'Arcy*

Since 2004, the RBA has been conducting a survey of how firms set prices, how frequently they review and change prices, and what factors influence these decisions. The results show that firms employ a range of approaches to price setting, with around half reviewing their prices at a regular interval. Early in the survey period, costs were the most important factor in price setting, though demand considerations became more important when economic conditions softened.

Introduction

The way firms set prices can be a key determinant of the dynamics of the inflation process. Given this, over recent years a number of central banks, including the Reserve Bank of Australia (RBA), have conducted surveys of how firms set prices, how frequently they review and change their prices, and what factors influence these decisions.[1] This article discusses the results of an ongoing survey that has been conducted by the RBA since 2004.

The main findings can be summarised as follows:

- the surveyed firms employed a range of approaches to price setting, with slightly more setting prices as a mark-up on costs rather than in response to various demand factors;
- broadly the same number of surveyed firms reviewed prices at regular intervals (most commonly annually) as reviewed prices with each transaction or in response to external factors, although behaviour differs across sectors; and
- costs were the most important driver of price adjustment over the first part of the sample period, with demand considerations becoming more important when economic conditions softened in late 2008.

The Survey

The RBA has been surveying firms about the way they set prices since 2004. The survey has been conducted in two parts. The first was undertaken over an 18-month period from late 2004, with around 700 firms responding to a detailed set of specific questions about their pricing strategies, the timing of price reviews and adjustments, and the reasons for these adjustments. Questions about the factors influencing pricing decisions have been continued into the second part of the survey, which has run on an ongoing basis, involving around 60 firms each quarter. The survey has covered both 'large' firms (with more than 200 employees) and 'small to medium' firms (with less than 200 employees) across a wide range of industries (Table 1).

In the survey conducted from 2004–2006, firms were asked to identify the most significant influence on their price setting. In a similar fashion to surveys conducted by other central banks, firms were

* Anna Park and Vanessa Rayner are from Economic Analysis Department; Patrick D'Arcy is from International Department.

1 Following the initial study in the United States (Blinder *et al* 1998), price-setting surveys have been conducted by the central banks of Canada, England, Japan, Sweden and New Zealand, as well as a number of euro area central banks.

Table 1: Characteristics of Firms

	Per cent of firms surveyed	Share of gross value added in GDP
Industry sector[a]		
Agriculture	2	3
Construction	13	8
Manufacturing	28	14
Mining	4	3
Utilities	2	3
Wholesale & retail trade	17	13
Transport & storage	7	6
Business services	21	27
Household services	3	20
Tourism	3	4
Firm size[b]		
Small to medium	34	49
Large	66	51

(a) Industry shares are calculated using a five-year average of the ratio of industry gross value added to GDP(P), from June 2001 to June 2006.
(b) Firm size shares are calculated using gross value added data from 2001. Large firms have more than 200 employees.
Sources: ABS, RBA

categorised into six broad groups, in particular firms that:

- predominantly used a cost plus fixed percentage mark-up;
- predominantly used a cost plus a variable percentage mark-up;
- set prices based on 'general market conditions';
- reported that 'competitors' prices' were the most important influence;
- reported that 'the level of demand' was the most important influence; and
- reported that the customer sets the price.

Firms were also asked how frequently prices were reviewed, in particular whether price reviews were conducted at a set frequency ('time-dependent') or whether prices were fixed until there was a sufficiently large change in market conditions ('state-dependent'). In order to assess the frequency of price changes, the survey asked how many times the firm adjusted prices in the previous 12 months. Further, to explore the reasons for price changes, the survey asked firms to identify the relative significance of a list of factors in driving price changes. These included: *costs, demand, competitor price movements, exchange rate movements and regular adjustments*. (This question has been continued beyond 2006, which enables an assessment of how pricing behaviour has adjusted to changes in economic conditions as outlined in the final section of this article.) In addition, firms were asked if they offer 'regular discounts', such as a routine percentage reduction for larger customers, or if they offer 'discounts that vary with market conditions'. Finally, the structural characteristics of each firm were also recorded, as well as their exposure to domestic and external competition.

Survey Results

How are prices determined?

When asked to describe how prices are set, one-half of the firms surveyed during the 2004–2006 period indicated that internal cost considerations were the most significant factor, while almost as many indicated that pricing decisions were driven primarily by demand factors. Of the firms that predominantly focused on cost factors, around half reported that they set prices as a fixed mark-up over costs, while the rest reported they set prices based on costs plus a margin that varies in line with demand conditions (Table 2).

Table 2: Firm Pricing 'Models'
Which of the following is most significant for the firm's price setting?

	Per cent of firms
More cost-focused	**49**
Cost plus fixed mark-up	23
Cost plus variable mark-up	26
More demand-focused	**45**
Market conditions	25
Competitors' prices	11
Level of demand	4
Customer sets price	5
Other	**6**

Source: RBA

Table 3: Dominant Pricing Strategy by Firm Characteristic
Per cent of firms

	Cost-focused[(a)]	Demand-focused[(b)]	Other
Total sample	**49**	**45**	**6**
Industry[(c)]			
Agriculture	18	82	0
Construction	71	27	2
Manufacturing	47	46	6
Mining	18	71	11
Utilities	18	27	55
Wholesale & retail	44	50	7
Transport & storage	57	30	13
Business services	55	44	1
Household services	35	30	35
Tourism	20	80	0
Firm size[(c)]			
Small to medium	56	42	2
Large	46	45	9
Import competition[(c)]			
Significant	33	62	4
Moderate	54	39	7
Minor	50	41	8

(a) Sum of 'direct cost-plus fixed mark-up' and 'direct cost-plus variable mark-up' categories.
(b) Sum of 'market conditions', 'competitors' prices', 'level of demand' and 'customer sets the price' categories.
(c) Chi-squared tests of independence were conducted for each heading group. The null hypothesis of no relationship was rejected at the 5 per cent level of significance.
Source: RBA

The survey results suggest that pricing strategies differed significantly across industries (Table 3). Cost-focused strategies were dominant for the construction and transport & storage industries. This is not surprising given that during the first part of the survey period the construction industry was operating close to full capacity, so increases in costs were swiftly passed into prices. In contrast, pricing was more demand-focused in the commodity-producing agriculture and resource industries. In these industries, global demand factors were particularly important in determining prices. Similarly, demand-focused pricing dominated in the tourism industry; for example, accommodation prices and airfares were often quick to respond to changes in demand. A relatively high proportion of firms in the utilities and household services industries reported 'other' pricing strategies, consistent with the significance of price regulation in these sectors.

In terms of the structural characteristics of the surveyed firms, those exposed to a larger degree of import competition tended to use more demand-focused approaches to price setting. In terms of size, cost-focused approaches were more common among smaller firms; this may be because it is costly to gather the information required to review prices, encouraging smaller firms to use a simple cost-plus mark-up approach.[2]

In response to the questions about discounting, around 40 per cent of firms said they undertook some type of significant discounting, with around one-quarter of all firms using discounting to manage fluctuations in market conditions. Larger firms were a little more likely to discount and had a higher tendency to vary discounts as market conditions change (Table 4). Discounting was also more prevalent among firms exposed to a higher degree of import competition, and among firms that used demand-focused pricing strategies.

Table 4: Dominant Discounting Strategy by Characteristic
Per cent of firms

	Standard discounts	Discounts on market conditions	No significant discounts
Firm size[(a)]			
Small to medium	16	22	62
Large	13	31	57
Import competition[(a)]			
Significant	21	40	38
Moderate	17	22	60
Minor	12	24	64
Pricing strategy[(a)]			
Cost-focused	13	24	63
Demand-focused	16	34	50

(a) A chi-squared test of independence between the firm characteristic (rows) and pricing behaviour (columns) was conducted. The null hypothesis of no relationship was rejected at the 5 per cent level of significance.
Source: RBA

2 These two findings are consistent with the euro area central banks' survey results presented in Fabiani *et al* (2006), that find the lower the level of competition, or the smaller the firm, the more likely mark-up pricing is used.

How often are prices reviewed?

Around half of the surveyed firms reviewed prices at a set frequency ('time-dependent') (Table 5). This is lower than the shares reported in international pricing studies.[3] The most commonly reported frequency was annual, while less than 15 per cent of firms conducted reviews monthly or weekly. This result suggests that for many firms the cost of conducting frequent reviews is greater than the expected benefit, particularly during a period of relatively stable demand and inflation.

Around one-quarter of firms reviewed prices for each transaction, with the large majority of these firms in the business services and construction industries. Of those firms, the most common trigger for a review was a change in costs (cited by nearly 30 per cent of firms), consistent with the dominance of cost-focused pricing models in these industries.

How often are prices changed?

Around 40 per cent of firms reported that they had changed prices once over the previous 12 months (Graph 1).[4] Just 15 per cent of firms did not change prices at all. At the other end of the spectrum, about 25 per cent of firms reported changing prices more than once a month in the previous year.

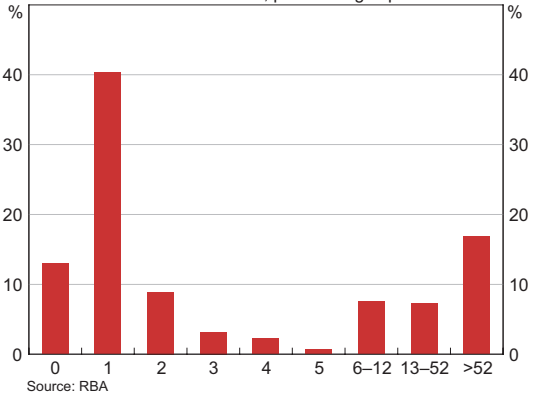
Price changes were most frequent in the goods sector, with a median of two price changes in a 12-month period (Table 6). The median frequency of price changes was similar for both small and large firms, although a higher proportion of large firms changed their prices more than once a week. This is consistent with the administrative and management costs associated with the price-setting process being particularly high for small firms, resulting in fewer price reviews and price changes.

Table 5: Price Reviews
How frequently are prices reviewed for the firm's major product category?

	Per cent of firms
State-dependent	**29**
For each transaction	**25**
Time-dependent	**46**
Annually	23
Semi-annually	6
Quarterly	6
Monthly	7
Weekly	4

Source: RBA

Graph 1
Frequency of Price Changes
Share of firms interviewed, price changes per annum



Source: RBA

The nature of firms' costs also appeared to influence the frequency of price changes. Firms with imported input costs accounting for a high share of total costs reported more frequent price changes and reviews than those with a lower share. A similar pattern was apparent for material costs. The share of labour costs had the opposite effect on the frequency of price adjustments and reviews, consistent with material costs and imported costs being more volatile than labour costs.

3 For example, for the United States and the United Kingdom, Blinder *et al* (1998) and Hall, Walsh and Yates (2000) find that 60 per cent and 79 per cent of firms followed time-dependent rules. For the euro area economies Fabiani *et al* (2006) ask a slightly different question, and find that most firms follow both time-dependent and state-dependent rules.

4 For questions on the frequency of price reviews and changes where the firm has multiple product lines, the survey asked the firm to focus on their major product category.

Table 6: The Influence of Firm Characteristics on Price Change Frequency[(a)]
Price adjustments per annum

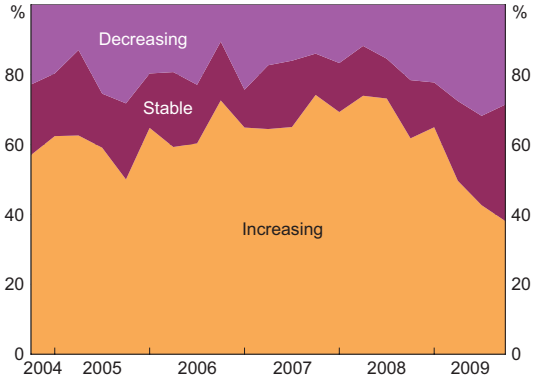
	Median		Median
Sectors*		**Firm size**	
Goods production	2	Small to medium	1
Goods distribution	2	Large	1
Services	1		
Market share*		**Labour costs***	
Less than 20 per cent	2	Less than 20 per cent	3
20–40 per cent	2	20–50 per cent	2
Greater than 40 per cent	1	Greater than 50 per cent	1
Domestic competition*		**Material costs***	
Significant	2	Less than 20 per cent	1
Moderate	1	20–50 per cent	2
Minor	1	Greater than 50 per cent	3
Import competition		**Imported costs****	
Significant	2	Less than 20 per cent	1
Moderate	2	20–50 per cent	2
Minor	1	Greater than 50 per cent	3

(a) A Kruskal-Wallis rank sum test of the equality of medians was conducted. * and ** indicate rejection of the null hypothesis at the 10 and 5 per cent levels, respectively.
Source: RBA

How Do Pricing Decisions Vary with Economic Conditions?

The first part of the pricing survey provided some stylised facts about the price-setting process used by Australian firms. The second part of the survey provides some insights into how pricing behaviour varies with economic conditions.

Graph 2
Price Changes
Per cent of firms



Source: RBA

According to the survey results, the share of firms raising their prices increased gradually through much of the past decade, up until the second half of 2008, when firms started to report a moderation in inflationary pressures (Graph 2). Reflecting this change, in both 2008 and 2009 the share of firms cutting prices was significantly higher than in previous years.

As part of the ongoing survey, firms were asked why they changed their prices, and to indicate the importance of five factors – demand, costs, competitors' price moves, exchange rate movements and regular price adjustments – on a scale from unimportant (a score of 1) to very important (a score of 4). The relative importance of each of the five factors was different for firms raising prices and firms lowering prices (Graph 3). Cost changes were significantly more important for firms increasing prices. On the other hand, competitors' price changes and exchange rate movements were

relatively more important in explaining price decreases than price increases. The importance of demand conditions was broadly balanced for firms increasing or decreasing prices.

The relative importance of factors explaining price changes has varied over time: from late 2004 until mid 2007, the share of respondents reporting cost pressures and strong demand growth as important factors explaining price changes gradually increased, though cost pressures remained the dominant factor (Graph 4). While the share of firms citing cost pressures continued to drift higher into 2008, demand growth became a less important factor. But from early 2009 when the slowdown in economic growth resulted in a moderation in inflationary pressures, an increasing number of firms cited demand factors as a reason to lower prices. The exchange rate also became a more important consideration in late 2008, in line with the large depreciation of the Australian dollar, and the subsequent appreciation in 2009.

Conclusion

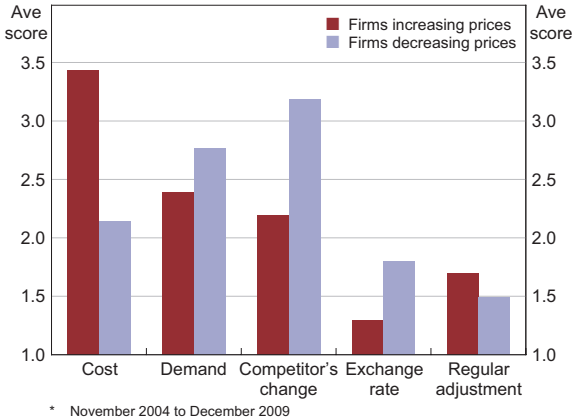
The results of the Reserve Bank's pricing survey suggest that the key drivers of price changes vary both amongst different types of firms and over time. In general, around half of the surveyed firms use a cost-plus mark-up approach to price setting while the other half reported that they respond more to market conditions. Many firms also appear to review prices at a regular interval, typically on an annual basis. Price reviews and changes tend to be more frequent for those firms in the goods sector. These results are broadly consistent with the findings of similar studies in other countries.

The RBA survey also indicated that firms' price-setting behaviour changed somewhat during the recent economic slowdown, with demand factors becoming a more important determinant of price-setting decisions. Through 2009, the share of firms highlighting the importance of demand factors when setting prices increased significantly, whereas the share of firms citing the importance of cost factors fell by one-third. In general, cost pressures were found to be relatively more important for firms raising prices, whereas demand conditions, competitors' price decreases and exchange rate movements were relatively more important for firms during periods in which they were lowering prices.

Graph 3

Factors Explaining Price Changes*

Significance of factors on decision to change prices



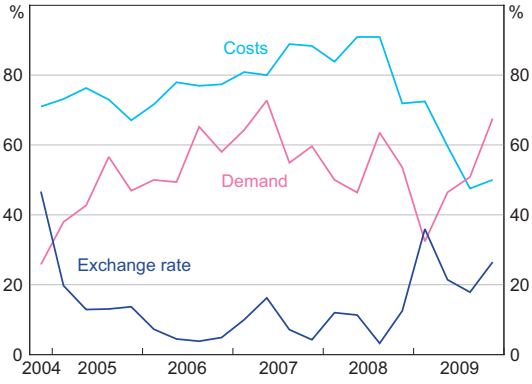
* November 2004 to December 2009

Source: RBA

Graph 4

Factors Explaining Price Changes

Per cent of respondents citing important or very important



Source: RBA

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Demography and Growth

Jamie Hall and Andrew Stone*

Substantial demographic shifts are under way in many countries which could have a sizeable impact on trend growth rates over coming decades. This article explores some of these demographic developments, particularly in relation to population growth and age structure, for a range of economies. It also examines some of the direct effects that these changes could have on average growth over the next 10 years.

Introduction

Demographic change can have profound effects on a country's economy and public finances. These effects generally manifest themselves over multi-decade periods, but the deterioration in many countries' public finances and concerns about their underlying growth potential have recently brought demographic issues to the fore. Against this background, this article reviews the medium-term demographic changes projected to occur in a range of economies – the United States, Japan, Germany and Italy, along with China, India, Mexico, Korea, Indonesia and 'east Asia (excluding China and Japan)'.[1] These countries are either important to Australia as trading partners or illustrate the various demographic challenges now facing different economies. The article then sets out the key channels through which demography influences countries' trend growth rates, and quantifies in broad terms the scale of the likely direct impact of demographic developments over the next decade.[2]

Projected Demographic Developments

The demographic data used in this article are taken from the 2008 Revision of the UN's *World Population Prospects,* adopting the central scenarios for the population projections for each country (as opposed to the high- and low-fertility variants).[3] These central scenarios assume a continuation of recent patterns and policies on migration in each nation – so that the possibility of substantial shifts in migration trends should be thought of as a key caveat to the analysis presented here.[4]

At a global level, steep declines in fertility rates have seen world population growth fall from an annual rate of 2 per cent in the 1970s to around 1.2 per cent today, largely reflecting the tendency for family size to decline with improvements in living standards (Graph 1). Although long-term projections are subject to considerable uncertainty, world population is now forecast to peak in the second half of this century, at somewhat over 9 billion, before starting to decline.

* The authors are from Economic Analysis Department.

1 In addition to Korea and Indonesia, this latter bloc includes Hong Kong, Malaysia, the Philippines, Singapore, Taiwan and Thailand.

2 While the graphs in this article generally extend to 2050, the focus in the analysis is on the next decade. This reflects that, absent significant changes in net migration patterns, considerable reliance can be placed on demographic projections of working-age population growth over a 10-year horizon, since all those who will enter the working-age cohort by 2020 have already been born.

3 See <http://esa.un.org/unpp/> and UN (2009). Data for Taiwan are sourced from the US Census Bureau's International Data Base.

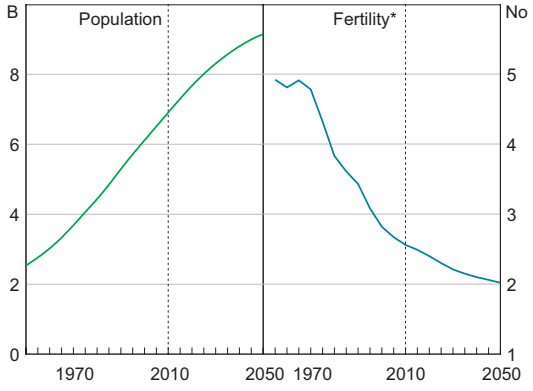
4 Recent developments in Australia illustrate how large an impact shifts in migration numbers can have on projections of labour force and output growth, as discussed in RBA (2009).

These global data, however, mask notable differences in demographic developments at a national level (Graph 2). In Europe, fertility rates in many countries have, for some time, been far below the level consistent with a stable population in the long run (absent net immigration), and population has already started to decline in Germany. A range of countries in Asia are also expected to see population declines and significant population ageing in the foreseeable future. For example, China's population is projected to peak in around 20 years' time at just under 1½ billion, before slowly contracting. In Korea, the population is expected both to peak earlier (around 2020) and thereafter to fall more noticeably; and in Japan the population has already started to turn down and, absent a major change in birth rates or immigration, appears poised to experience an almost unprecedented peace-time decline of around 20 per cent over the next four decades. In contrast, population continues to rise rapidly in Indonesia and India, with the latter expected to overtake China as the world's most populous nation in around 2030.

Besides population, another summary indicator of demographic trends, capturing changes in a country's age structure, is the dependency ratio – the non-working-age population expressed as a percentage of the working-age population (defined here as those aged 15 to 64). In many countries the dependency ratio rose through the 1950s and then fell steeply through the late 1960s, 1970s and 1980s, with the exact timing varying by country (Graph 3). While these declines were sizeable in the United States, Germany and Italy, they were much larger again in China, Indonesia, Korea and Mexico – with China also experiencing a further marked step-down in its dependency ratio over the past 15 years. In all countries except India, however, this situation is expected to reverse over the next four decades – in some cases very sharply (Japan, Korea, Germany, Italy) – with dependency ratios projected to rise to form the second half of the rough 'U'-shape evident for most countries.

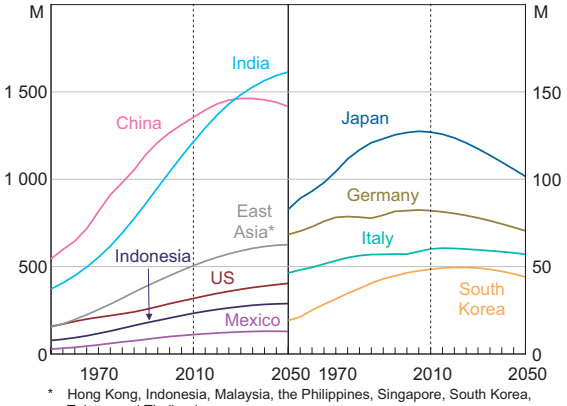
These 'U'-shapes generally reflect the gradual ageing of the population following the post-War baby boom. This boom resulted in high youth dependency in most countries through the 1950s and 1960s, but falling birth rates then saw plummeting youth dependency, which in turn drove down overall dependency ratios (Graph 4). This situation is now reversing, as the post-War generation enters retirement, rapidly lifting aged dependency ratios in most economies.

Graph 1
World – Population and Fertility



* Children born per woman
Source: United Nations

Graph 2
Population



* Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: United Nations; US Census Bureau

Of course, implicit in the terminology 'dependency ratio' is that age 65 represents a suitable threshold for judging when individuals should cease to be viewed as 'working age', and instead become 'dependants'. Whether this will continue to be so is an important issue. In this context, it is notable that various countries have already taken steps to mitigate some of the impact of rising aged dependency, through gradual increases in the pension age.

A further aspect of rising dependency ratios is the extent to which these reflect projected increases in the proportion of very elderly people in the population. In many European nations, with life expectancy continuing to rise and low birth rates for the past several decades, the 'very old age dependency ratio' – those aged 80 and over as a percentage of the working-age population – is anticipated to pick up sharply (Graph 5). The same is true for Japan and Korea, with the rapid increase phase for this ratio already well under way in Japan. By contrast, in the United States the rise in the very old age dependency ratio is projected to be more gradual (albeit still substantial), while in India and Indonesia little increase in this ratio is expected for the foreseeable future.

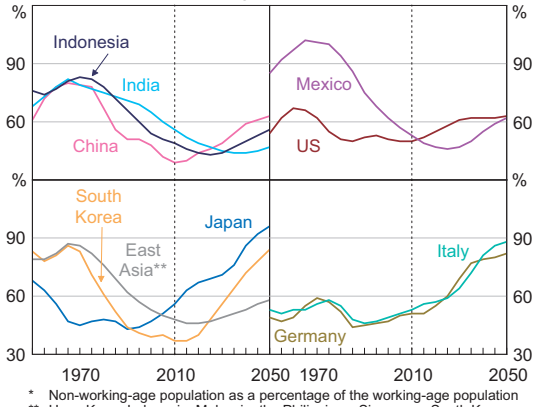
Quantifying the Impact of Demography on Growth

Demography has both direct and indirect effects on a country's GDP growth. The main focus in the following is on the direct impacts, although there is also a brief discussion of some of the potential indirect effects.

Principal direct effects of demography on growth

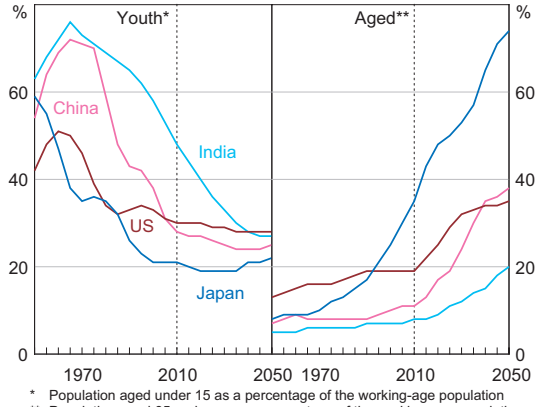
Annual output growth can be decomposed into the sum of growth in total labour input and labour productivity growth. Demographic change directly influences growth through its impact on the first of

Graph 3
Dependency Ratios – Total*



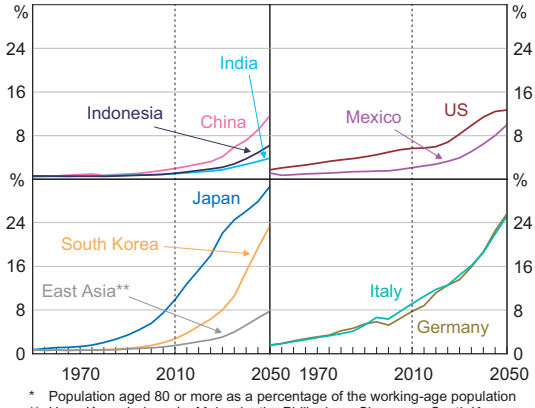
* Non-working-age population as a percentage of the working-age population
** Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: United Nations; US Census Bureau

Graph 4
Dependency Ratio – Youth and Aged



* Population aged under 15 as a percentage of the working-age population
** Population aged 65 and over as a percentage of the working-age population
Source: United Nations

Graph 5
Very Old Age Dependency Ratio*



* Population aged 80 or more as a percentage of the working-age population
** Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: RBA; United Nations; US Census Bureau

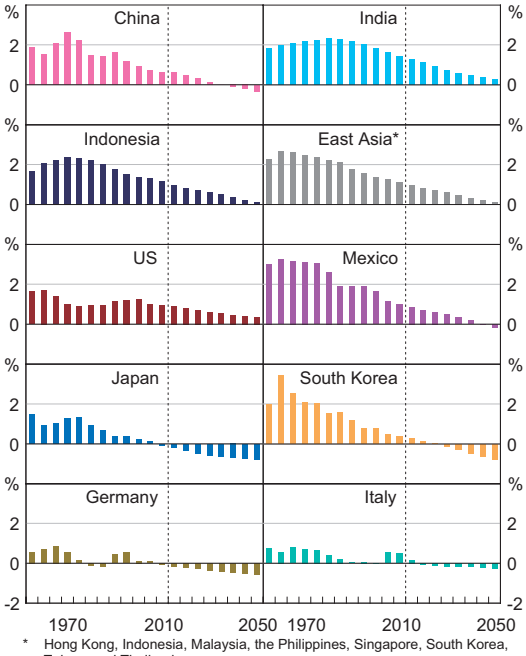
these factors, which can itself be broken down into three components:[5]

- population growth;
- growth in the working-age share of the population; and
- changes in the participation rate of those of working age.

Graph 6 illustrates that population growth is already detracting from GDP growth in Japan and Germany. In both China and Korea it is expected to begin doing so in the foreseeable future, after contributing strongly to growth in both cases for much of the latter part of the last century. For the United States, by contrast, population growth is projected to continue to contribute solidly to GDP growth, reflecting ongoing high net immigration (in part from Mexico, where net migration is correspondingly negative). In India, population growth – although gradually slowing – is forecast to exceed 0.7 per cent *per annum* on average over the next four decades, despite negligible net migration.

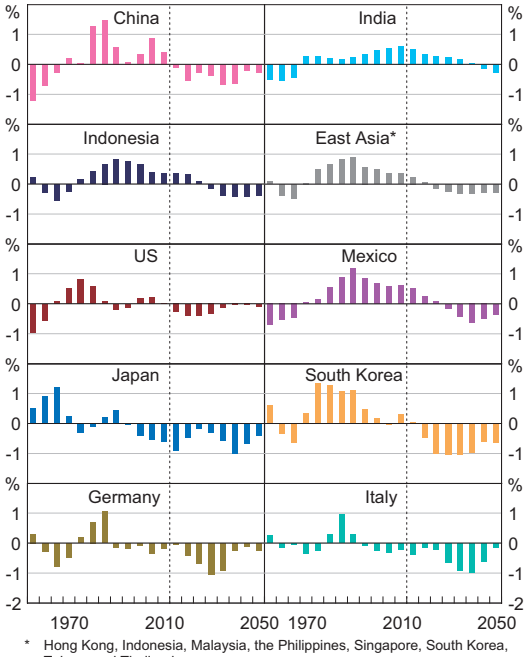
Turning to the impact on trend growth from shifts in the working-age share of the population – that is, from compositional change in population *structure* – Graph 7 illustrates that within 10 years this impact is projected to turn negative in most of the economies considered, if it has not already done so. For Korea, the change over time in this compositional effect on growth is especially striking; in the 1970s and 1980s this factor was contributing 1–1½ percentage points to annual GDP growth, whereas by the mid 2020s it is projected to be subtracting a full percentage point.

Graph 6
Population Growth
Five-year annual averages to given year



* Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: United Nations; US Census Bureau

Graph 7
Working Age Share Growth
Five-year annual averages to given year



* Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: United Nations; US Census Bureau

5 This decomposition ignores cyclical influences such as fluctuations in the unemployment rate (consistent with a focus on assessing long-run average growth). It also abstracts from trend changes in average hours worked (where the influence of demography, if any, is unclear), and from changes in the labour input of those aged under 15 or over 64 (non-working age).

Finally, these reductions in trend growth rates could be mitigated to some degree by increases in labour force participation (the third factor listed above). Comparing male and female participation rates, for most of the economies considered there may be scope for GDP to be raised by increasing female participation.[6] For example, while the female participation rate in the United States is around 60 per cent – not substantially different from the rate for males of just over 70 per cent – it is around 50 per cent in Germany, Korea and Japan, and just 40 per cent in Italy. However, since it is unclear how demographic developments might influence aggregate participation rates in different countries over coming decades, no attempt is made here to quantify the impact of this third factor on either historical or prospective annual output growth.

Quantifying the direct impact of changes in population growth and structure

It is possible to combine the impact of the first two direct effects of demographic change, population growth and growth in the working-age population share, to obtain estimates for the potential direct impact of demography on trend growth over the coming decade, relative to the recent past (Tables 1 and 2). The comparison period 1996–2005 is used because it precedes the recent major global downturn, the impact of which is still playing out, while representing a reasonable baseline period for assessing trend growth.

As Table 1 shows, demographic factors were already subtracting from growth in Japan and Germany in the decade 1996–2005, compared with a large positive annual contribution of around 1¼ percentage points in the United States. Indeed,

Table 1: Demography and Growth – Advanced Economies

	US	Japan	Germany	Italy
Baseline period 1996–2005				
Average annual real GDP growth	3.3	1.1	1.3	1.4
Total direct contribution from demography	**1.3**	**–0.3**	**–0.1**	**0.0**
Contribution from population growth	*1.1*	*0.2*	*0.1*	*0.2*
Contribution from growth in the working-age share	*0.2*	*–0.5*	*–0.2*	*–0.3*
Memo item: average growth adjusted for demographic change	2.0	1.5	1.4	1.4
Impact of demographic change 2011–2020				
Expected contribution to annual growth from demography	**0.5**	**–1.0**	**–0.4**	**–0.2**
Contribution from population growth	*0.9*	*–0.3*	*–0.2*	*0.1*
Contribution from growth in the working-age share	*–0.3*	*–0.7*	*–0.2*	*–0.3*
Change in direct demographic contribution to growth	**–0.8**	**–0.6**	**–0.3**	**–0.2**

Sources: RBA; Thomson Reuters; United Nations

6 This observation abstracts from the accounting issue of unpaid work in the home not being counted as part of GDP. National statisticians adopt this approach because of the difficulty of accurately measuring such output, and the need to set a 'production boundary' for what is and is not included in GDP. However, it almost certainly results in the impact on *measured* GDP from stay-at-home parents entering the workforce being greater than the true impact on output.

once this direct demographic effect is stripped out, the adjusted average annual growth rates of all four advanced economies, over these 10 years, were within 0.6 percentage points of each other. Excluding the United States they were even closer – within 0.1 percentage points of each other – with average growth in Japan fractionally higher than in Germany and Italy. This provides an interesting perspective on the ongoing debate about the 'lost decade' for the Japanese economy.

It is also notable that correcting for shifts in the working-age share of the population makes these adjusted growth rates much closer than simply correcting for population growth. For example, average annual growth rates for the United States and Japan over the decade 1996–2005 were closer in *per capita* terms (2.2 per cent versus 1.0 per cent) than in headline terms (3.3 per cent versus 1.1 per cent). However, they were much closer again (2.0 per cent versus 1.5 per cent) after also adjusting for changes in population structure over this period, through a working-age share correction.

For the decade ahead, changes in demography are expected to directly lower growth by the largest amount, relative to the 1996–2005 period, in the United States, where they may shave 0.8 percentage points off average annual GDP growth. In Japan, the negative impact is anticipated to be almost as large (0.6 percentage points), while in Germany and Italy it is likely to be somewhat smaller.[7]

Turning to Table 2, demographic change is projected to directly lower underlying GDP growth in China over the next decade by more than in any of the other economies considered – subtracting around 1¼ percentage points from average annual growth relative to the period 1996–2005 (with ¼ percentage points of this due to slower population growth, and 1 percentage point due to a decline in growth of the working-age share of the population). In India and Mexico the downward impact on annual trend growth from demographic change is expected to be smaller but still significant. Nevertheless, in both cases the direct contribution to growth from demography is projected to remain solidly positive over the coming decade (exceeding 1½ percentage points *per annum* in India).

As for the other east Asian economies, at an aggregate level demographic factors directly accounted for a sizeable fraction of average growth in the region over the baseline period 1996–2005, contributing almost half of the annual growth recorded over this decade. Indeed, population growth was nearly 1½ per cent for the region as a whole and exceeded 2 per cent *per annum* in Singapore, Malaysia and the Philippines; while changes in the working-age share of the population separately added around ½ percentage points to annual growth in each of the ASEAN-4 countries (and a smaller amount in the higher-income Asian economies).

Looking ahead, Table 2 shows that in Korea the ageing of the population is projected to directly reduce trend growth between 1996–2005 and 2011–2020 by around ¾ percentage points (after already subtracting a full 2 percentage points between 1976 –1985 and 1996–2005). Demographic change is also expected to have a broadly similar negative impact on trend growth in the east Asia bloc as a whole.

Finally, it is notable that the slowing in trend growth due to demographic factors is expected to be greater over the next decade in all of the economies considered in Table 2 than in either of the European countries in Table 1. This chiefly reflects that the direct contribution from demography to growth was *already* much lower in Germany and Italy, in the baseline period, than in these other economies.

7 As a result, if average growth in the GDP deflator and in labour productivity were to be the same in each country over the coming decade as over the period 1996–2005, even *nominal* GDP might be expected to decline over the next 10 years in Japan, which would complicate the task of repairing that nation's public finances.

Table 2: Demography and Growth – Other Economies

	China	India	Mexico
Baseline period 1996–2005			
Average annual real GDP growth	8.8	6.5	3.7
Total direct contribution from demography	**1.4**	**2.2**	**2.1**
Contribution from population growth	*0.8*	*1.7*	*1.4*
Contribution from growth in the working-age share	*0.6*	*0.5*	*0.6*
Memo item: average growth adjusted for demographic change	7.3	4.2	1.6
Impact of demographic change 2011–2020			
Expected contribution to annual growth from demography	**0.2**	**1.6**	**1.1**
Contribution from population growth	*0.6*	*1.2*	*0.7*
Contribution from growth in the working-age share	*–0.3*	*0.4*	*0.4*
Change in direct demographic contribution to growth	**–1.2**	**–0.6**	**–1.0**

	South Korea	Indonesia	East Asia[(a)]
Baseline period 1996–2005			
Average annual real GDP growth	4.4	2.7	4.0
Total direct contribution from demography	**0.7**	**1.9**	**1.8**
Contribution from population growth	*0.6*	*1.4*	*1.4*
Contribution from growth in the working-age share	*0.1*	*0.5*	*0.4*
Memo item: average growth adjusted for demographic change	3.6	0.8	2.2
Impact of demographic change 2011–2020			
Expected contribution to annual growth from demography	**0.0**	**1.2**	**1.0**
Contribution from population growth	*0.2*	*0.9*	*0.9*
Contribution from growth in the working-age share	*–0.2*	*0.3*	*0.1*
Change in direct demographic contribution to growth	**–0.7**	**–0.6**	**–0.7**

(a) Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: CEIC; RBA; Thomson Reuters; United Nations; US Census Bureau

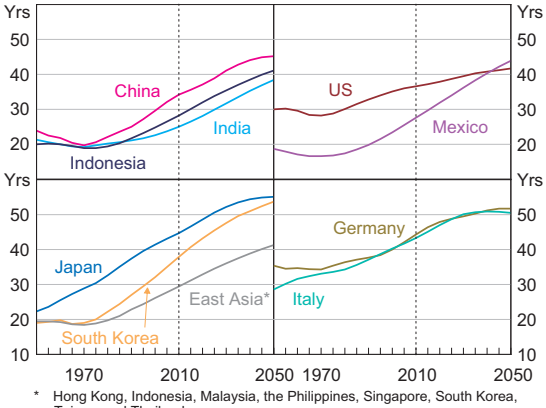
Potential indirect effects of demography on growth

There are a number of other ways in which shifts in demography or labour force participation might alter countries' trend GDP growth rates. As noted earlier, one which would boost average growth at the margin would be an increasing propensity to remain in work among those aged 65 and over. In 2005, the participation rate among this age group was only 3 per cent in Italy, compared with over 15 per cent in the United States, 20 per cent in Japan and around 30 per cent in Korea.

It is also possible that demographic change could influence growth through altering the propensity for societies to innovate and take risks. On the one hand, younger societies could be more dynamic and entrepreneurial than older ones. On average, people in their twenties or thirties may feel more

inclined than older people to start a new business or stake their savings on developing an innovative new product, given their greater time until planned retirement and lesser exposure to the challenges involved in establishing a successful business. Hence, the ongoing rise in the median age of the population in most countries could result in slower average productivity growth (Graph 8). On the other hand, by generating upward pressure on the cost of labour relative to capital due to growing scarcity of available workers, population ageing could increase the pressure for firms to innovate, as a way of controlling costs.[8]

Graph 8
Median Age



* Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
Sources: United Nations; US Census Bureau

Finally, some aspects of the interaction between demography and financial markets could also act to dampen average growth in countries with ageing populations. For example, if a country's population were projected to decline, with the share of adults of typical household-forming age also projected to fall, this might be expected over time to weigh on demand both for housing and for riskier financial products such as equities or corporate bonds relative to government bonds. If so, then to differing degrees across different asset markets, these expectations could become incorporated into both current asset prices and anticipated asset price growth, potentially depressing near-term aggregate demand and output growth through wealth effects and disincentives to invest.[9]

Conclusion

Substantial demographic shifts are under way in many countries which could have a sizeable influence on trend growth rates over coming decades. In particular:

- Many countries can expect to see a noticeable step-down in trend GDP growth in the decade 2011–2020 (measured relative to the decade 1996–2005) due to the direct impact of demographic change. This reduction in annual trend growth is projected to exceed ½ percentage points in many countries, with China expected to experience a particularly pronounced reduction of around 1¼ percentage points.
- While population ageing is most commonly associated with various European nations and Japan, a number of other east Asian economies are following similar demographic trajectories, just a decade or two later. All other things equal, the impact of slowing population growth and diminishing expansion in the working-age population share could lower trend growth in east Asia (excluding China and Japan) by almost 1 percentage point over the decade 2011–2020, relative to the period 1996–2005.[10]
- In contrast to the situation in many east Asian economies, population continues to rise rapidly in Indonesia and India, with India expected to overtake China as the world's most populous nation in around 20 years' time.

8 See Kent, Kulish and Smith (2006).

9 See RBA (2006).

10 This calculation makes allowance for the fact that the projected decline in growth in the working-age population in east Asia over the coming decade is generally more pronounced in those economies with high labour productivity than in those economies where the level of labour productivity is lower.

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Commercial Property and Financial Stability – An International Perspective

Luci Ellis and Chris Naughtin*

Commercial property and property development have historically posed a greater direct risk to financial institutions' balance sheets than have housing and mortgage markets. A number of factors contribute to this: banks' commercial property lending is concentrated in loans for construction and development, which tend to be risky; imbalances can build up further because construction lags are longer; and incentives to avoid default are weaker for borrowers in the commercial property sector than they are for home loan borrowers. Conditions in global commercial property markets have been especially challenging in the current cycle.

Introduction

In the United States, but also to some extent in other countries, housing and mortgage markets have played an important role in the most recent crisis. International experience suggests, however, that exposures to commercial property markets have usually posed greater direct risk to the balance sheets of financial institutions. Bank exposures to commercial real estate (CRE), along with other corporate lending, have historically been one of the main sources of loan losses during episodes of banking sector difficulties. This was true both for industrialised economies – for example the banking crises in Scandinavia and Japan in the early 1990s, as well as the US savings & loan crisis – and for the emerging markets most affected by the 1997–1998 Asian financial crisis. Conditions in global commercial property markets have been especially challenging in the current cycle. In most countries, with the notable exception of the United States, losses on CRE lending (including on loans to developers of residential property) currently account for a much greater share of actual and prospective loan losses than do residential mortgages to households.

This article briefly discusses recent developments in commercial property markets in a number of industrialised economies. It also draws out some of the characteristics of CRE and aspects of the way it is financed, which contribute to its greater cyclicality and capacity to threaten financial stability compared with residential mortgage lending.

Developments in Major Commercial Property Markets

In most countries, the price cycle in CRE markets has been more severe during the recent economic downturn than that in housing. Except for France, the recent decline in commercial property prices has been much greater than for residential property, even though the run-up in commercial property prices in some cases was much less marked (Table 1 and Graph 1). The difference in the sizes of commercial and residential property price cycles has been particularly stark in the United States, the United Kingdom and Ireland where, on some measures, CRE prices have fallen by between 20 and 30 percentage points more than residential property prices from the peak to the trough.

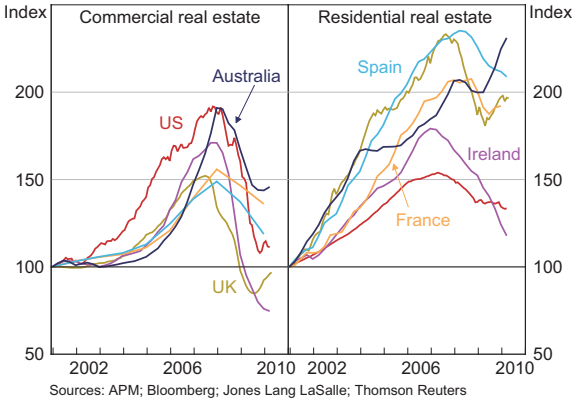
* The authors are from Financial Stability Department.

Table 1: Cumulated Changes in Property Prices
Peak to trough, per cent[(a)]

	Commercial property	Residential property
Australia[(b)]	–24.7	–3.5
France	–12.7	–9.7
Ireland	–56.3	–34.2
Spain	–20.2	–11.2
United Kingdom	–44.2	–22.5
United States[(c)]	–43.7	–13.5

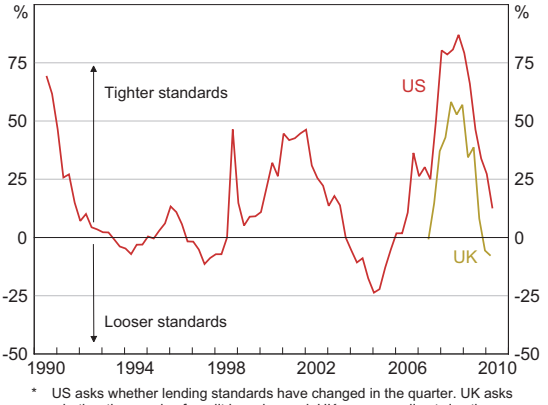
(a) Trough in price level or latest available data where prices are still falling.
(b) Commercial property price measure comprises prime office space only.
(c) FHFA measure for detached houses only; cycle in S&P measure is substantially greater.
Sources: APM; Bloomberg; Jones Lang LaSalle; Thomson Reuters

Graph 1
Property Price Indicators
31 December 2000 = 100



Sources: APM; Bloomberg; Jones Lang LaSalle; Thomson Reuters

Graph 2
Commercial Property Credit Standards*
Net percentage reporting tightening standards



* US asks whether lending standards have changed in the quarter. UK asks whether the supply of credit has changed. UK survey applies twice the weight to a 'considerably' answer relative to a 'somewhat' answer. US applies an equal weight.
Sources: Bank of England; Board of Governors of the Federal Reserve System

The downturn in the commercial property market has coincided with a contraction in credit flows to the sector; most lenders in the United States and United Kingdom have reported that lending standards have tightened over the past couple of years (Graph 2). Reported demand for CRE loans remains subdued in the United States, although there are tentative signs of stronger demand in the United Kingdom. Funding from capital markets has become more difficult and global issuance of commercial mortgage-backed securities is well below the levels of a couple of years ago.

Characteristics of Commercial Real Estate

Although housing construction contributes significantly to cyclicality in total economic output, activity in the commercial property and development sector has usually contributed more to the build-up of financial vulnerabilities in previous cycles. Fluctuations in CRE activity and prices propagate rapidly through financial institutions' balance sheets, for several reasons:

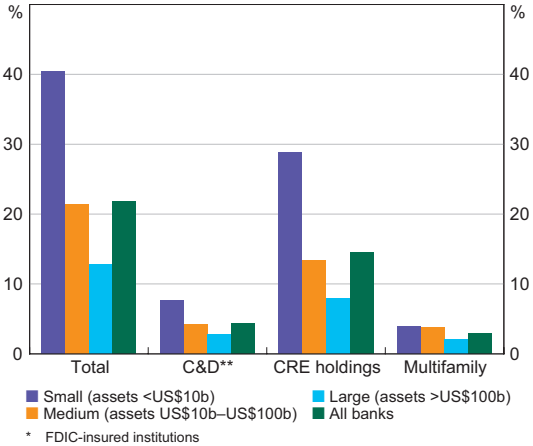
- the CRE loan book is more exposed to the construction cycle than is the housing loan book;
- imbalances can build up further because of construction lags;
- borrowers in the CRE sector do not have as much of a disincentive to default as home mortgage borrowers; and
- the typical features of CRE financing induce greater correlations in defaults on these loans.

The share of (relatively risky) construction and development loans in the banking sector's CRE portfolio is greater than for mortgage lending. CRE lending is generally taken to include construction and development (C&D) loans to corporates, as well as loans for buy-and-hold investment in non-residential property (e.g. real estate investment trusts). Owners of existing CRE, unlike household owners of residential property, are often able to access capital market funding, thereby reducing their call on bank-originated funding. In addition, some C&D projects for new residential property (housing construction) are undertaken by firms and are treated as CRE exposures. Both these market features cause banks' CRE exposures to be relatively more concentrated in financing new development than in financing buy-and-hold investors, compared with the mix of construction versus purchase loans in the housing mortgage book. Among US institutions insured by the Federal Deposit Insurance Corporation (FDIC), for example, C&D accounts for around 20 per cent of CRE loans, compared with 3 per cent for residential real estate. This mix matters because C&D loans are inherently more prone to becoming impaired in a downturn than (secured) loans for buy-and-hold investment. The value of the project is not realised until it is complete, and as discussed below, this can result in sizeable losses-given-default on the associated loans. Property developers also sometimes have undiversified business models, so they are more likely to fail in economic downturns.

Given that much CRE lending is for specific projects, and that loans are frequently syndicated, it is often an easier market for new entrants (including foreign and second-tier domestic banks) than retail mortgage lending and relationship-based commercial lending. And within the CRE lending market, the entering lenders are more likely to end up with the more marginal, less-established borrowers. This dynamic adds to the concentration of risk around CRE lending.

The United States is a good example of the consequences of these factors for the financial system. Small US deposit-taking institutions (those with assets less than US$10 billion) are relatively highly exposed to the commercial property sector. At small deposit-taking institutions, commercial property lending accounts for 40 per cent of their on-balance sheet gross loans, compared with 21 per cent for mid-sized banks and 13 per cent for large banks (Graph 3). Within this, the smaller institutions are also more exposed to loans for C&D, providing almost half of C&D loans in the United States. Similarly in Australia, much of the increase in exposures and non-performing commercial property loans has been seen among the smaller and foreign-owned banks.

Graph 3
US Banks' Commercial Real Estate Loans*
Per cent of gross loans, as at March 2010



* FDIC-insured institutions
** C&D excluding 1–4 family residential construction
Source: Federal Deposit Insurance Corporation

Construction lags are longer and construction cycles are lumpier for commercial developments than for housing construction. Dwellings – particularly detached single-family houses – can be erected more quickly than a typical commercial development such as a shopping centre, office building or apartment building. Average construction lags are therefore inherently longer in the commercial property sector than for residential property. As a result it is easier for 'hog cycles' to arise, where building work in the pipeline turns out to have been unnecessary because demand has already turned down. If the market turns down before the project is finished, the result can be an unfinished site with little residual recovery value other than the land. Depending on the remediation or completion costs, the loss to the bank can be 100 per cent of the loan or even more.

Commercial property can be more cyclical than residential real estate because its construction is lumpier. Commercial property developments are larger relative to the size of the existing stock of CRE than is the case for housing. New (CRE) developments therefore have a greater local supply effect than for residential property. Vacancy rates tend to remain high long after the economic downturn and well into the subsequent recovery, because it takes a considerable period of time for excess supply to be absorbed. For example, in the recession of 2000–2001, US office vacancy rates increased steadily from 7.7 per cent in the September quarter 2000 to a peak of 16.8 per cent three years later, and remained above 16 per cent until late 2004, long after the turnaround in GDP growth.

In the current cycle, the National Association of Realtors expects US office vacancy rates to peak at 17.4 per cent in 2011, around two years after the trough in GDP growth (Table 2). Industrial and retail vacancy rates are forecast to increase to around 14½ per cent and 13 per cent respectively this year and remain roughly steady in 2011. In contrast, the average vacancy rate on multifamily residential real estate is believed to have already peaked in 2009 and is expected to decline to around 6 per cent by 2011.

Table 2: Commercial Property Vacancy Rates[(a)]
Per cent

	2008	2009	2010[(b)]	2011[(b)]
Australia	4.2	7.8	8.7	8.7
France	4.0	6.7	10.7	10.7
Germany	9.5	11.9	13.8	14.2
Spain	6.7	10.6	12.6	12.8
United Kingdom	10.1	13.4	13.2	10.1
United States				
– Office	13.4	15.7	17.3	17.4
– Industrial	10.4	13.2	14.6	14.5
– Retail	9.7	12.0	12.7	12.7
– Multifamily	5.7	7.4	7.0	6.1

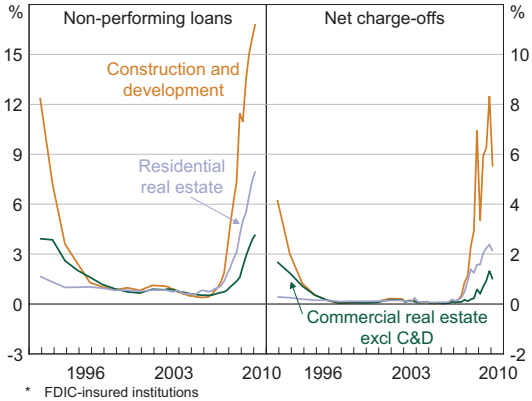
(a) For office property unless otherwise stated. Simple average of major commercial property markets in each country except for Australia and the United States. France covers Paris CBD and Paris La Defense; Germany covers Berlin, Frankfurt, Munich and Hamburg; Spain covers Madrid and Barcelona; United Kingdom covers London City and London West End.
(b) Private sector forecasts.
Sources: National Association of Realtors; Property Council of Australia members; RREEF Research

Similar trends in vacancy rates are evident in the euro area, especially for Germany. Private sector bodies forecast office vacancy rates in major German cities to peak in 2011, two years after the trough in German GDP. For the other major euro area economies, they expect vacancy rates to peak in either 2010 or 2011, consistent with the relative speeds of economic recovery, but later than the recoveries in GDP. In the United Kingdom, office vacancy rates in London are forecast to decline more rapidly than in other major markets but are expected to remain above 10 per cent in 2011.

Default probabilities are arguably more cyclically sensitive for CRE loans than for residential mortgages. Defaults on CRE lending tend to be bunched in cyclical downswings, more so than defaults on residential mortgages. The main reason for this is the cyclicality of defaults on lending for construction projects described above. In addition, defaults by buy-and-hold investors are also highly cyclical, because they are usually not owner-occupiers. They therefore face the risk of a sudden loss of rental income should the tenant move out, which is more likely in an economic downturn, when more firms are failing or otherwise shedding labour. If the value of the property has also fallen below the size of the loan, these borrowers might make themselves better off by defaulting. Owners of CRE are thus typically more likely to default in a downturn than home-owning households, who derive the same real benefit from living in their home regardless of its price. Only a small minority of home mortgage borrowers in negative equity actually default, even in the United States where lenders frequently do not pursue defaulters for any deficiency between the collateral value and the loan amount (despite the law allowing them to do so in most jurisdictions).[1]

The importance of C&D lending in making the CRE loan book riskier than home loans can be seen from the poor performance of C&D loans made by US deposit-taking institutions. Non-performing C&D (predominantly commercial property) loans were 17 per cent of gross C&D loans while net charge-offs were 6 per cent of gross loans in the March quarter 2010 (Graph 4). The level of non-performing loans for CRE excluding C&D and on residential mortgages was much lower, even though these have risen sharply as a share of gross loans during the crisis. The quality of the collateral securing the loan is crucial to the recovery on the loan following a default, and for C&D loans, the riskier nature of the collateral also leads to much higher net charge-offs for a given rate of non-performing loans.

Graph 4
US Loan Quality*
Per cent of gross loans



* FDIC-insured institutions
Source: Federal Deposit Insurance Corporation

The CRE financing model is more procyclical than mortgage lending and more liable to produce correlated defaults. In most industrialised economies, residential mortgage lending generally takes the form of long-term amortising mortgages, as is appropriate to the typical expected holding periods for the asset. By contrast, much of the banking sector's lending to CRE is in the form of shorter-term project and syndicated finance, even for existing properties, which do not have the short-term horizon of a construction project.

1 Recent Federal Reserve research indicates that only about 1 in 10 US mortgage borrowers in negative equity actually default (Foote, Gerardi and Willen 2008). In the United Kingdom and other industrialised economies, industry reports suggest that this fraction is even smaller.

CRE borrowers therefore face more refinancing risk than mortgage borrowers in most countries; when that risk does crystallise, it is generally correlated across borrowers as the credit cycle turns. During the recent housing boom in the United States, the residential mortgage market became more similar to CRE finance, shifting towards products that all but required frequent refinancing, to avoid the sharp payment increases built into the contract (Gorton 2008). It is not a coincidence that mortgage defaults became more cyclical and more correlated following that shift – that is, more like the historical pattern of defaults on CRE loans.

Several other aspects of CRE finance contribute to its procyclicality. Unlike home mortgage lending, banks often impose covenants on CRE firms' gearing over the life of the project. But because CRE resale markets are usually quite thin, price appraisals and estimates are typically used instead of market prices. CRE property values are therefore marked down when rents soften or vacancies rise in that market. Borrowers can end up breaching loan covenants even if their own project is still profitable in an income flow sense; but because the project might now be more highly geared, refinancing becomes difficult. In a downturn, distressed sales add to the difficulties for borrowers that are still performing. Along with the more frequent refinancing normally built into loan contracts, the sensitivity of CRE loan covenants to current valuations results in more defaults and distressed sales. These in turn weigh on CRE prices elsewhere, generating correlated defaults. This contrasts with home borrowers, who are generally permitted to stay in a negative equity situation for as long as they can service the loan and do not want or need to move.

Conclusion

The outlook for commercial property markets and lenders in the major countries remains challenging as vacancy rates continue to rise and prices and rents are yet to recover. It is noteworthy, though, that loan losses on commercial property in Australia during the recent period have been relatively small compared with those in the United States and in some countries in Europe.

The crisis has severely affected global commercial property markets, with large declines in asset values and a sharp deterioration in asset quality in some major markets. In the current cycle as well as in previous ones, the downturn in commercial property and development markets has generally been more severe than in housing markets. The effect on bank loan losses is also generally greater. A number of factors contribute to this: banks' CRE loans are more concentrated in construction loans than housing lending is; imbalances can build up further because construction lags are longer; and borrowers in the CRE sector do not have the same disincentives to default as home mortgage borrowers. Developments in housing markets are also important for financial stability, but banks' related loan losses have historically been more concentrated in loans to (corporate) property developers, which are captured in CRE lending, than in loans to households.

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Foote CL, K Gerardi and PS Willen (2008), 'Negative Equity and Foreclosure: Theory and Evidence', Federal Reserve Bank of Boston Public Policy Discussion Paper No 08-3.

Gorton G (2008), 'The Panic of 2007', in *Maintaining Stability in a Changing Financial System,* Jackson Hole Symposium, Federal Reserve Bank of Kansas City, Kansas City, pp 131–262.

Banking Fees in Australia

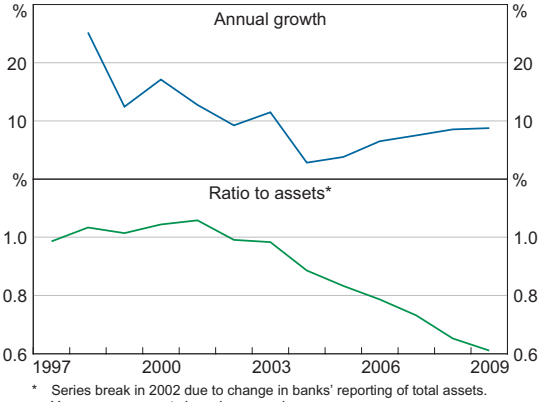
The Reserve Bank has conducted a survey on bank fees each year since 1997. In 2009 growth in fee income increased slightly from recent years though it was again slower than growth in banks' balance sheets. Growth in fee income was higher for businesses than for households. Banks reacted to the financial crisis by competing more aggressively for deposit funding which resulted in total fee income from deposit accounts falling, and repricing loan products which contributed to an increase in fee income from lending.

Fees from Banking Activities

The Reserve Bank's annual bank fee survey provides information on the fees that banks earn from their Australian operations.[1] The focus of the survey is fee income earned by banks in the process of taking deposits, making loans and providing payment services. Other forms of non-interest income, such as from funds management and insurance operations, are excluded from the survey. This article summarises the results of the latest survey, relating to banks' 2009 financial year. The survey covers 18 institutions, which together account for around 90 per cent of the total assets of the Australian banking sector.

For those banks participating in the survey, total domestic fee income grew by 9 per cent in 2009 to $12.7 billion, with fee income from businesses growing much faster than fee income from households (Table 1 and Graph 1). As has been the case since 2002, growth in fee income was slower than the growth in banks' balance sheet assets. Consequently, the ratio of fee income to assets has continued to decline. Income from exception fees,

Graph 1
Banks' Fee Income



* Series break in 2002 due to change in banks' reporting of total assets. Year-average assets have been used.
Sources: APRA; RBA

Table 1: Banks' Fee Income

	Households		Businesses		Total	
	$ billion	Growth Per cent	$ billion	Growth Per cent	$ billion	Growth Per cent
2007	4.5	8	6.2	7	10.7	8
2008	4.9	8	6.8	9	11.6	9
2009	5.0	3	7.6	13	12.7	9

Source: RBA

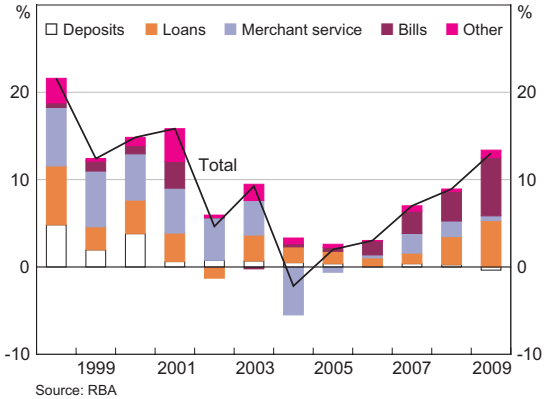
1 The survey relates to fee income earned by each participant bank over the course of their respective financial years. The data from the survey are published in the Reserve Bank's Statistical Table 'Domestic Banking Fee Income', F6.

which are charged by a bank when a customer breaches the terms of a banking product – typically by making a late payment, overdrawing a deposit account or exceeding a credit limit – were little changed at $1.2 billion (see below).

Businesses

Banks' fee income from businesses increased by 13 per cent in 2009 to $7.6 billion (Table 2 and Graph 2). As was the case in 2008, most of the growth in business fee income resulted from growth in fees from loans and bank bill facilities, while fees on business deposit accounts were little changed.

Graph 2
Growth in Business Fee Income
Contribution by product



Source: RBA

Fee income from business loans increased by 20 per cent in 2009, while fee income from bank bills (which includes charges for arranging bank bill facilities and accepting or endorsing bank bills) increased by 28 per cent. Banks' lending to the business sector was, however, little changed during the year. The increase in fees on these facilities reflects the repricing of credit and liquidity risks; in particular, fees on undrawn loan facilities appear to have risen significantly.

In contrast to the solid growth in business loan fees, business deposit fee income was broadly stable over 2009, even though business deposits increased significantly over the year. This reflects strong competition for business deposits over the period.

Exception fees paid by businesses declined by 2 per cent in 2009, with growth in exception fees on business loans being more than offset by a fall in exception fees on deposit accounts. Exception fees on business deposits are likely to decline further in the 2010 financial year as a number of banks have undertaken initiatives to lower or remove these fees. Around 16 per cent of total exception fees were levied on businesses (mostly small businesses); this share is little changed from 2008.

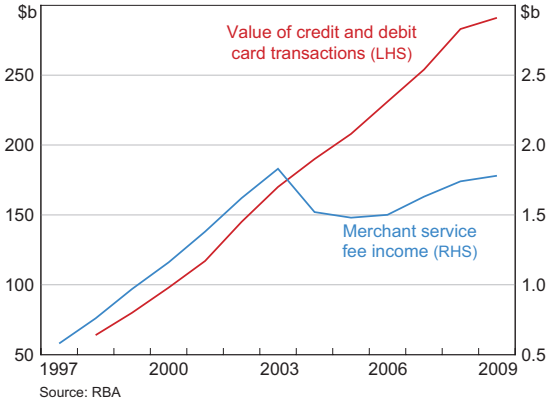
Table 2: Banks' Fee Income from Businesses
$ million

	2007	2008	2009	Growth 2009 Per cent	Average growth 2003–2008 Per cent
Deposit accounts	834	850	826	–3	2
– of which: exception fees	..	126	115	–9	..
Loans	1 638	1 838	2 197	20	7
– of which: exception fees	..	77	84	9	..
Merchant service fees	1 632	1 743	1 780	2	–1
Bank bills	1 380	1 591	2 042	28	8
Other	716	732	790	8	3
Total	**6 201**	**6 755**	**7 634**	**13**	**4**
– of which: exception fees	..	203	199	–2	..

Source: RBA

Merchant service fees – which are charged to merchants for providing credit and debit card transaction services – rose by 2 per cent in 2009 (Graph 3). Since the introduction of the Reserve Bank's credit card interchange reforms in 2003, the value of card transactions has increased by 70 per cent, while total merchant service fees remain below their peak in 2003. Small businesses continue to pay around three-quarters of all merchant service fees.

Graph 3
Merchant Service Fee Income and the Value of Purchases



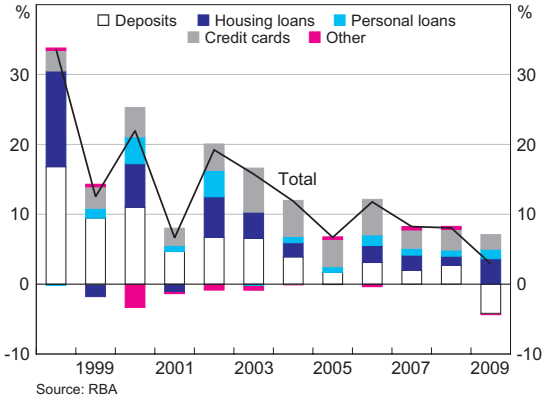
Source: RBA

Households

Banks' fee income from households rose by 3 per cent to $5.0 billion in 2009 (Table 3 and Graph 4). This is the slowest rate of growth in household fees since the survey began in 1997, with strong growth in housing loan fee income partially offset by a decline in deposit account fees.

Fee income from housing loans increased by 17 per cent in 2009, much higher than the average annual growth of 7 per cent recorded between 2003 and 2008, and broadly in line with growth

Graph 4
Growth in Household Fee Income
Contribution by product



Source: RBA

Table 3: Banks' Fee Income from Households
$ million

	2007	2008	2009	Growth 2009 Per cent	Average growth 2003–2008 Per cent
Loans:					
– Housing	997	1 057	1 235	17	7
– Personal	445	485	552	14	11
– Credit cards	1 199	1 332	1 434	8	17
Deposits	1 797	1 918	1 713	–11	6
Other fees	87	107	97	–9	9
Total	**4 525**	**4 890**	**5 032**	**3**	**9**

Source: RBA

in housing lending. The increase in housing fee income was driven by establishment and early exit fees, with the available information suggesting that break fees on fixed-rate loans accounted for a significant proportion of the overall growth in fees. These break fees are charged by banks to recover the costs associated with exiting swap transactions that banks undertake to fund borrowers' fixed-rate loans. Consequently, this component has increased as a number of bank customers chose to refinance their fixed-rate housing loans with variable-rate loans given the significant fall in the cash rate during banks' 2009 financial year. Excluding break fees on fixed-rate loans, it is estimated that housing fee income rose by around 7 per cent. Fee income from personal loans grew by 14 per cent, which is attributable to both an increase in account-servicing fees and an increase in exception fees (see below).

Credit card fee income increased by 8 per cent in 2009, well below the average annual growth of 17 per cent over recent years. Within total credit card fees, other fees (mainly exception fees) grew most strongly at 10 per cent, consistent with growth in the value of non-performing credit card loans over the year (see below). Account-servicing fees rose by 5 per cent, driven by a slight increase in the number of cards and an increase in the annual fees on no-frills cards (Table 4). Credit card transaction fees (such as cash advance fees) also grew by 4 per cent.

Table 4: Unit Fees on Credit Cards[a]

	2007	2008	2009
Annual fees ($)[b]			
– No-frills cards	48	49	52
– Standard cards	29	29	29
– Standard rewards-based cards	85	85	85
– Gold rewards-based cards	140	140	140
Cash advance fees[c]			
Own bank's ATM			
– $ charge	1.4	1.4	1.2
– Per cent of value	1.1	1.3	1.6
Other banks' ATM			
– $ charge	1.6	1.6	1.4
– Per cent of value	1.4	1.6	1.6
Overseas ATM			
– $ charge	3.6	3.6	3.6
– Per cent of value	1.4	1.6	1.7
Foreign currency conversion fee (per cent of value)	2.5	2.5	2.6
– Late payment fee ($)	31	31	31
– Over-limit fee ($)	30	30	30

(a) Simple average fees for cards with interest-free periods issued by the major banks, except for the annual fee on no-frills cards, which is based on a wider sample of banks. Note that changes in the sample affect the average fee.
(b) Includes fees for membership in rewards program where separately charged.
(c) Most banks charge the greater of a flat fee or a percentage of the cash advance.
Sources: Canstar Cannex; RBA

Fee income from household deposits declined by 11 per cent in 2009, despite a large increase in the value of household deposits. The decline in fees was driven by a fall in transaction fee income, partly reflecting the ATM fee reforms that came into effect in March 2009 (see Filipovski and Flood 2010). While the typical post-reform direct charge is unchanged from the level of the typical pre-reform foreign fee, these reforms have seen a shift in transactions towards the use of cardholders' own institutions' ATMs away from more expensive 'foreign' ATMs. In addition, the shift to charges being levied by ATM owners means that some of the fee revenue previously being received by banks is going to non-bank owners of ATMs. Account-servicing and other fees – which are mainly exception fees – also declined in value as banks began to compete more aggressively for deposit funding. In particular, a number of banks began to offer deposit products that waive account fees if the account holder makes regular deposits of funds – such as regular salary payments – above a given threshold.

Exception fee income from households was broadly unchanged at $1.0 billion (Table 5). As for the business sector, there was a shift in household exception fee income away from deposit accounts towards loans. Exception fees on credit cards continue to make up the largest share of exception fees paid by households, growing by 10 per cent over the past year. Exception fees on personal loans also grew significantly. The increase in these fees appears to reflect the rise in the number of borrowers falling into arrears on their loans, albeit from low levels. Exception fees for housing loans fell by 6 per cent.

Many institutions removed exception fees on deposit products in the latter half of 2009, though there had been some informal waivers of exception fees in early 2009 in an effort to attract deposit funding. Some of this reduction in fees is likely to have already been reflected in the exception fee income for 2009 reported here, though it is likely that the removal of exception fees by some institutions will also affect figures in the 2010 financial year.

Reference

Filipovski B and D Flood (2010), 'Reform of the ATM System – One Year On', RBA *Bulletin*, June, pp 37–45.

Table 5: Exception Fee Income from Households

	$ million		Annual growth
	2008	2009	Per cent
Deposit accounts	516	476	–8
– Transaction	503	465	–8
– Other deposits	13	11	–13
Loans	493	536	9
– Housing	45	42	–6
– Personal	21	24	13
– Credit cards	427	470	10
Total	**1 009**	**1 012**	**0.3**

Source: RBA

Reform of the ATM System – One Year On

Brendan Filipovski and Darren Flood*

The payments industry, with support from the Reserve Bank, introduced major reforms to the ATM system in March 2009. The reforms were designed to increase competition and efficiency in the ATM system. They have, by and large, been meeting their objectives. Cardholders have responded to clearer price signals by changing their pattern of ATM transactions, resulting in a reduction in total ATM fees paid. Flexibility in ATM pricing has helped to increase the number of ATMs, including in locations that might not have been financially viable in the past. At the same time, competition has driven financial institutions of all sizes to provide their cardholders with access to a wide network of ATMs free of direct charges.

Introduction

In March 2009, a package of reforms designed to improve competition and efficiency in the Australian ATM system came into effect. These reforms changed features of the system that were previously largely hidden from view of the general public and prevented active competition, hindering the industry's flexibility to respond to changing circumstances. The most visible elements of the reforms were the removal of ATM 'foreign fees' and their replacement with direct charges. Foreign fees were levied by a cardholder's financial institution for transactions at ATMs the institution did not own, while direct charges are levied by the ATM owner.

This article reviews the effects of the move to direct charging after a year of operation. While the competitive response to the reforms is still evolving, the Bank's assessment is that the key objectives of the reforms are being met. In particular, cardholders' reaction to the increased transparency of fees has resulted in a significant reduction in the fees paid in aggregate on ATM transactions. At the same time, there is evidence that pricing flexibility has resulted in more widespread availability of ATMs, including in rural and regional areas and in locations that are more difficult to service. Competition has driven financial institutions to provide their customers with access to a wide network of ATMs free of direct charges, but at this point there is less evidence of vigorous price competition between ATM owners. This may change as cardholders become more aware of differences in pricing and ATM owners compete more actively to attract transactions.

Direct Charging at ATMs

The key element of the reforms in March 2009 was a change in the way ATM owners are paid for a cash withdrawal or balance enquiry made by a customer of another financial institution (known as a 'foreign' transaction). Prior to the reforms, the cardholder's financial institution paid a fee (known as an interchange fee) to the ATM owner. Typically, the cardholder's financial institution recouped this amount (and often more than that) from the cardholder in the form of a foreign fee. The reforms abolished interchange fees and allowed ATM owners to charge customers directly for the use of an ATM at the time of the transaction. The reforms

* The authors are from Payments Policy Department.

mandated that the direct charge be displayed to customers prior to them completing the transaction, and that customers be given the opportunity to cancel the transaction without cost if they do not wish to proceed. There were several main anticipated benefits of the move to direct charging:

- Increased transparency of ATM fees: cardholders see the ATM fee at the time of the transaction, rather than when they receive their monthly or quarterly account statement. It was anticipated that this greater transparency would lead to more cardholders taking steps to avoid fees on foreign ATM transactions.
- Greater competition in the setting of ATM fees: ATM owners have the flexibility to set fees in a way that allows them to compete for ATM transactions, while customers are more conscious of the fees they are paying and are therefore more likely to respond to differences in fees.
- Increased ATM deployment: pricing of transactions can better reflect the costs of deployment, making deployment of ATMs viable in a wider range of locations than has previously been the case.

The reforms also included a number of elements that make it easier for potential competitors to access the ATM system. More information on these elements of the reforms can be found in *An Access Regime for the ATM System* (RBA 2009).

The following sections describe the effects of the ATM reforms on transparency, pricing, customer behaviour, competition and ATM deployment.

Transparency and Pricing

The move to direct charging had the potential to make ATM fees significantly more transparent to cardholders, provided that financial institutions' foreign fees were removed at the same time. Foreign fees had typically been around $2.00 per transaction prior to the reforms, both for withdrawals and balance enquiries (Table 1). The Reserve Bank made it clear in the lead-up to implementation of the reforms that it saw no case for the retention of these fees since, with the removal of interchange fees, the cost to an institution of its cardholders making foreign transactions would be little different from transactions on its own ATM network. Within a few weeks of the new arrangements, most institutions

Table 1: Pre-reform Foreign Fees – Largest Issuers
As at 2 March 2009

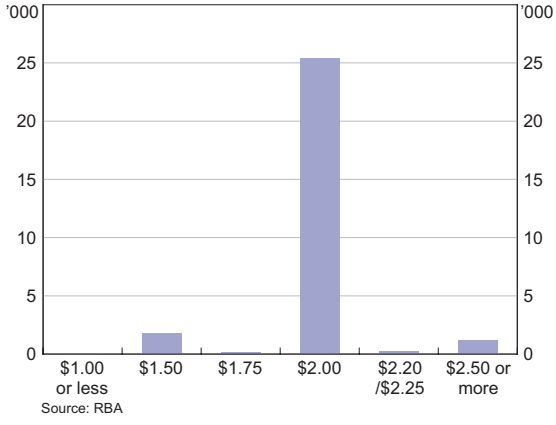
	Withdrawal	Balance enquiry
ANZ	$2.00	$2.00
Bank of Queensland	$2.00	$2.00
Bankwest	$1.95	$1.95
Bendigo Bank	$1.50	$1.50
Commonwealth Bank	$2.00	$2.00
Greater Building Society	$1.50	$1.00
IMB	$2.10	$1.60
NAB	$2.00	$2.00
Newcastle Permanent	$1.50	$1.25
St. George	$1.50–$2.00	$1.50–$2.00
Suncorp	$2.00	$2.00
Westpac	$2.00	$2.00

Source: RBA

had removed foreign fees. So, from the cardholder's perspective, foreign fees typically have been replaced by more transparent direct charges.

In most cases, the direct charges applied by ATM owners under the new regime have mirrored the typical level of foreign fees prior to the reforms (Graph 1, Table 2). Approximately 88 per cent of ATMs, including those owned by three of the major banks and most ATMs owned by three of the largest independent deployers, now apply a $2.00 direct charge for a withdrawal. Of the remainder, the largest share charge $1.50 for a withdrawal, including ATMs owned by the National Australia Bank. Around 1 000 ATMs owned by independent ATM deployers (about 4 per cent of all ATMs)

Graph 1
Direct Charges – Withdrawals
Number of ATMs as at May 2010



Source: RBA

Table 2: Direct Charges – Major Networks
As at May 2010

	Cash withdrawal	Balance enquiry
ANZ	$2.00	$2.00
Bank of Queensland	$2.00	$2.00
Bankwest	$2.00	$1.00
Bendigo Bank	$2.00	$2.00
Cashcard[a]	$1.50–$2.85[b]	$1.50–$2.85[b]
CashConnect[a]	$2.00	$1.00
Commonwealth Bank	$2.00	$2.00
Customers Limited[a]	$0–$2.50[b]	$0–$2.50[b]
iCash	$1.00–$3.00[b]	$1.00–$3.00[b]
RediATM	$1.50–$2.00[c]	$0–$1.00[c]
– NAB	$1.50	$0.50
St. George	$2.00	$2.00
Suncorp	$2.00	$0.80
Westpac	$2.00[d]	$2.00[d]

(a) Also deploys 'branded' ATMs for other institutions, which may apply different charges
(b) Predominantly $2.00
(c) At the discretion of sub-network members, but withdrawals capped at $2.00 and balance enquiries capped at $1.00
(d) $0.50 for withdrawal and $0.25 for a balance enquiry at one remote Northern Territory ATM
Source: RBA

apply a $2.50 charge for a withdrawal. A range of other charges apply at small numbers of ATMs. The Bank's liaison with ATM owners suggests that the highest charges are around $4.00 on a small number of machines in specialised venues. At the other end of the spectrum, in a small number of cases, owners of the venues in which the ATMs are placed are absorbing costs so that consumers pay no direct charge at all. Prior to the reforms, some commentators had suggested some ATM owners might vary ATM charges according to the time of day. This has not occurred to date.

Because ATM balance enquiries do not incur the costs associated with cash handling, they are cheaper to provide than ATM withdrawals. Nonetheless, balance enquiries also typically attracted foreign fees of $2.00 prior to the reforms. There is more variation in post-reform direct charges for balance enquiries than is the case for withdrawals, with around three-quarters of ATMs charging $2.00 (Graph 2). Most of the remaining ATMs charge from $0.50 to $1.00 – most commonly $1.00. Around 1 per cent of ATMs do not levy a direct charge for balance enquiries.

In summary, a typical foreign ATM transaction costs the same now as prior to the reforms. Importantly, however, cheaper foreign transactions are possible (particularly for balance enquiries) if cardholders are prepared to seek them out. At only around 4 per cent of ATMs would a typical cardholder pay a higher fee than prior to the reforms and only in a small number of cases is there likely to be no genuine alternative to using that ATM.

Graph 2
Direct Charges – Balance Enquiries
Number of ATMs as at May 2010

Source: RBA

Cardholders' Response to Increased Transparency

While the prices of most foreign ATM withdrawals are similar to those before the reforms, consumers as a whole are paying fewer ATM fees. The increased transparency of the new arrangements, combined with arrangements put in place by individual institutions to provide additional charge-free ATMs to their customers, has resulted in cardholders changing their behaviour in order to reduce the fees that they pay.

In the first year of the new regime, the number of foreign withdrawals fell by 18 per cent from the preceding year, while cardholders' withdrawals at their own financial institutions' ATMs ('own' transactions) increased by 9 per cent. As a share of all ATM transactions, foreign transactions fell from around 44 per cent to 38 per cent and this share has been relatively steady since the reforms became effective (Graph 3). This points to a distinct change in cardholder behaviour.

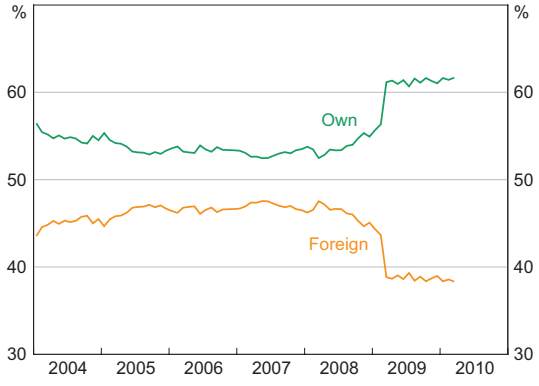
This reduction in the number of foreign transactions does not in itself, however, provide an indication of the fee savings to cardholders. To estimate this, allowance must be made for cases where foreign transactions do not incur a fee. These cases include accounts on which no foreign fees were levied by the cardholder's institution prior to the reforms and post-reform agreements that provide cardholders with charge-free access to some ATMs not owned by their financial institution (see below). Allowing for these cases, and similar arrangements between merged financial institutions, the reduction in ATM withdrawal fees paid by cardholders in the first year following the reforms is likely to have been around $120 million. Around two-thirds of all withdrawals are estimated not to attract a direct charge.

Not only have consumers responded to more transparent pricing by using their own institution's ATMs in place of foreign ATMs, they have also increased the average value of each ATM withdrawal so that they visit foreign ATMs less often. Overall, the number of ATM withdrawals fell by around 3½ per cent in the year after the reforms, even though the total value withdrawn was little changed from the preceding year (Graph 4). This effect has been concentrated in 'foreign' rather than 'own' transactions; the average value of a foreign ATM withdrawal was $156 in the year to February 2010, up from $148 in the year prior to the reforms.

The decline in the number of ATM withdrawals also reflects cardholders responding to clearer pricing. Since the reforms were implemented, cardholders have made greater use of EFTPOS cash-outs as an alternative to foreign ATMs, given that these are typically free to the customer.[1] The number of EFTPOS cash-out transactions increased sharply in March 2009 and was 9 per cent higher in the first full year of the reforms, compared with the previous year (Graph 5).

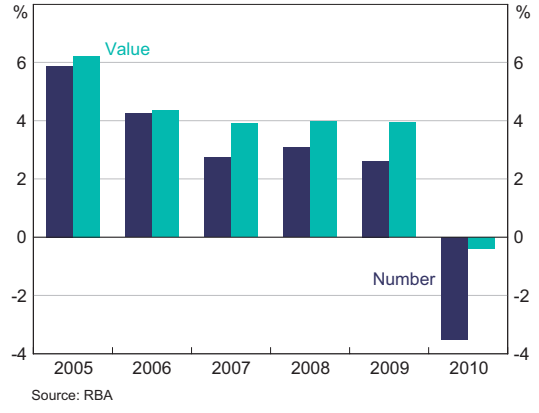
Finally, there is evidence that cardholders have reacted strongly to direct charges on ATM balance enquiries. Information provided by financial institutions and ATM owners suggests that balance enquiries fell by one-third to one-half when the reforms were introduced. This strong reaction suggests that some cardholders were not aware of the foreign fee for these transactions and have sought to limit their use now fees are transparent.

Graph 3
Composition of ATM Withdrawals
Per cent of domestic volumes



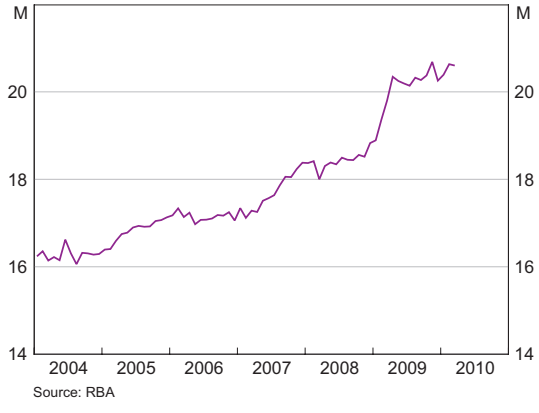
Source: RBA

Graph 4
ATM Withdrawals
Annual growth, year to February



Source: RBA

Graph 5
EFTPOS Cash-outs
Volume, seasonally adjusted



Source: RBA

1 The EFTPOS system allows cash to be withdrawn from a deposit account at an EFTPOS point-of-sale terminal. This can occur either in conjunction with a purchase or as a separate transaction.

Effects on Competition

The reforms have affected competition between different types of participants in the ATM system in different ways. For financial institutions, the priority has been ensuring that their customers have ready access to their funds free of charge via a wide network of ATMs. For independent ATM owners, on the other hand, the focus has been on generating profits from their ATM network. The pricing flexibility available to ATM owners following the reforms provides scope for them to compete for business more actively.

Competition among financial institutions

Access to deposits through a network of ATMs is an important part of the service that most financial institutions provide to their customers. Financial institutions have generally continued to provide their cardholders with free withdrawals at their own ATMs, as they did prior to the reforms, while direct charges apply to other transactions.

One concern about a direct charging model, however, is that it could potentially put smaller institutions at a disadvantage because they typically have fewer ATMs than the large banks so that their customers have fewer opportunities to make ATM withdrawals free from direct charges. Given this, and in order to promote competition, the reforms allowed for financial institutions to pay interchange or similar fees to ATM owners in limited circumstances in lieu of the owner applying a direct charge. In this way, institutions could provide their customers with access to additional 'charge-free' ATMs.

One option available to smaller institutions is to be part of an ATM sub-network, where a number of institutions effectively pool their ATMs under a common brand and allow one another's cardholders charge-free access to the network's ATMs (examples are the RediATM and FeeSmart networks). Another option is for a financial institution to enter a 'one-way' agreement with an individual ATM network owner to provide its customers with access to those ATMs either charge-free or at a reduced charge. A third option is for an institution to outsource its ATM fleet by paying the operator of an independent network to place the institution's branding on some ATMs. These ATMs would continue to be owned and operated by the independent deployer, but would have the outward appearance of being owned by the financial institution, with the institution's cardholders paying no direct charge.

Many institutions have made use of these options so that their customers have access to a large network of charge-free ATMs. Of the largest 30 financial institutions in terms of ATM usage, 28 institutions (covering 98 per cent of all ATM cardholders) are providing access to a network of at least 1 500 ATMs charge free or at reduced charges to their cardholders. The remainder tend to have a geographically concentrated base of account holders and are able to offer charge-free transactions in the local area.

In many cases, sub-networks, one-way agreements and outsourcing mean that cardholders have access to more fee-free ATMs than prior to the reforms, but there are also some cases where access to free ATMs has been reduced. Some institutions – in particular some credit unions and banks that do not have large branch networks – previously did not levy any foreign ATM fees, choosing instead to absorb all ATM costs for their customers. Under the new regime, most of those institutions have decided to meet their customers' costs only for a single foreign ATM network.

While the number of financial institutions offering unlimited free access to ATMs has been reduced, the reforms do not prevent an institution from continuing to do so by absorbing ATM direct charges on behalf of customers. At least two banks – Bankwest and ING – offer accounts that provide charge-free access, either to all ATMs or to those owned by the major banks, by rebating any direct charges incurred by their customers.

Competition among ATM owners

Under the reforms, ATM owners are freely able to set their price in a similar way to most other firms in the economy. As discussed above, there has been some variation in the direct charges applied, but the $2.00 foreign fee that applied prior to the reforms has established a benchmark. While few ATM owners have moved very far from this benchmark to date, over time some ATM owners might seek to generate additional revenue by adjusting the level of direct charges. One possibility is that owners of ATMs that are in close proximity to others will try to attract traffic by lowering charges.

While cardholders are making greater use of their own institutions' ATMs or EFTPOS cash-outs to avoid ATM charges, where they use a foreign ATM, there is little evidence that they seek out the ATM with the lowest charge. In other words, where an ATM charging $2.00 and another charging $1.50 are in close proximity, cardholders do not necessarily choose the ATM charging $1.50. It is possible that this reflects the fact that cardholders typically need to proceed some way through the transaction process at the ATM before the direct charge is displayed. This may make it difficult to compare prices, particularly where cardholders are unfamiliar with the ATMs in a particular location.

While cardholders might avoid an ATM if they see that it applies a direct charge higher than they think is reasonable, there is little incentive for ATM owners to lower fees if it is not obvious to potential customers that they have done so. As a consequence, relatively little price competition among ATM owners appears to have developed to date. An obvious response is for ATM owners with a low direct charge to advertise the charge prominently so as to attract additional throughput and higher fee revenue. There is nothing to prevent owners from doing this, although the strategy requires the general public to understand pricing sufficiently to react accordingly. To date, advertising of prices has occurred only in isolated cases, but this and other competitive strategies might develop over time as the market matures. The presence of different types of ATM owners might assist this process. Overseas, some financial institutions reduce direct charges on their ATMs so that they can attract their competitors' customers and expose them to their own advertising through the ATM.

Deployment of ATMs

The flexibility that ATM owners now have in setting ATM prices means that the payments they receive for use of their machines can better reflect the costs of deployment. These costs have been rising over time. A study by the ACCC and the Reserve Bank in 2000 estimated that the weighted-average cost of an ATM transaction at that time was 49 cents (RBA and ACCC 2000). A 2007 Reserve Bank study estimated that the weighted-average cost was 74 cents and the median 85 cents (Schwartz *et al* 2008). While the methodology of the two studies differs somewhat, the 2007 study concluded that costs had clearly risen for some inputs, including cash-handling and site rental. One of the objectives of the reforms was to provide greater flexibility in ATM pricing so that ATMs could remain financially viable, particularly in more costly locations and circumstances. Without that flexibility, there was a risk that the number of ATMs would begin to decline over time if the cost of operating existing machines rose too far relative to the interchange fee. Machines in more costly locations would be most at risk, including those in rural and regional areas and those requiring greater security.

The year-to-year volatility in provision of machines makes it difficult to draw strong conclusions about post-reform ATM deployment relative to earlier periods. Nonetheless, the evidence suggests that the reforms have been positive for the availability of ATMs. Data reported to the Reserve Bank suggest that ATM numbers have increased by about 1 500, or about 6 per cent, under the new regime. Of these, about half have been deployed by financial institutions and half by independent deployers, broadly in line with ownership of the network overall

(Table 3). Moreover, the Bank's liaison suggests that some of these ATMs have been deployed in locations that might otherwise have not been viable – including in rural, regional and remote areas. It is also becoming more common to see ATMs in relatively low-usage locations and temporary ATMs at public events. Such ATMs tend to apply above-average direct charges, but would most likely not have been available under the previous regime where owners typically received $1.00 per transaction by way of the interchange fee. That said, deployment has been uneven among networks, with at least one provider reporting a reduction in ATM numbers in response to lower transaction volumes.

Table 3: Number of ATMs – Major Networks[(a)]
As at March 2010

Customers Limited	5 617
Cashcard	4 799
Commonwealth Bank & Bankwest	3 714
Bank of Queensland	3 577
RediATM (including NAB)	3 171
Westpac & St. George	2 971
ANZ	2 652
iCash	1 156
CashConnect	1 031
Bendigo Bank	998
Suncorp	680

(a) Some figures include ATMs carrying financial institution branding, but owned by an independent deployer. These may be recorded against both the owner and the branding institution.
Source: RBA

A number of new independent deployers have also entered the market. These players are helping to generate vigorous competition for ATM locations, with one consequence reportedly being rises in rents for ATM sites. The models used by independent deployers vary. In some cases, sites are rented by the deployer, which retains the direct charge, while in others it has become common for the direct charge to be shared in some way with the site owner. The machines themselves may be owned either by the deployer or the site owner. Another recent model has been for the deployer to sell ATMs at third-party locations to investors, taking advantage of the government investment tax incentives that were in place until the end of 2009.

One issue raised by groups representing visually impaired people prior to the implementation of the reforms was a concern about the availability of audio-enabled ATMs and the potential impact of direct charges on people who are limited in the ATMs they can use. The Bank's liaison with the industry indicates that around 30 per cent of ATMs are now audio-enabled.

Conclusion

The changes introduced to the ATM system in March 2009 are, by and large, meeting their objectives. ATM fees are much more transparent and cardholders have responded to clearer price signals by changing transaction patterns in a number of ways that have allowed them to avoid or reduce ATM fees. In aggregate these changes have resulted in a reduction in ATM withdrawal fees paid of around $120 million in the first year of the new arrangements. This has occurred even though the typical post-reform direct charge is unchanged from the level of the typical pre-reform foreign fee, with significant price competition yet to develop among ATM owners. There has also been an increase in the supply of ATMs and ATMs are becoming available in locations and circumstances where they would not have been viable under the previous arrangements. Competition among financial institutions has

worked to provide the vast majority of cardholders with access to a wide network of ATMs free of direct charges.

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RBA and ACCC (Australian Competition and Consumer Commission) (2000), *Debit and Credit Card Schemes in Australia: A Study of Interchange Fees and Access,* Sydney, October.

Schwartz C, J Fabo, O Bailey and L Carter (2008), 'Payment Costs in Australia', *Payments System Review Conference,* Reserve Bank of Australia and Melbourne Business School, Sydney, April, pp 88–138.

The Financial Crisis through the Lens of Foreign Exchange Swap Markets

Crystal Ossolinski and Andrew Zurawski*

During the financial crisis, non-US banks relied increasingly on foreign exchange swap markets to fund their US dollar asset holdings. This caused the cost of borrowing US dollars via the swap market to rise above the measured cost of borrowing US dollars directly in money markets – an apparent deviation from the covered interest parity condition. Pricing in the Australian dollar foreign exchange swap market, and to a lesser degree the cross-currency swap market, also reflected the global scarcity of US dollar funding at the height of the crisis.

Introduction

A key feature of the global financial crisis was the sharp increase in counterparty and liquidity risks in core money and credit markets. The dislocation of these markets forced banks to seek alternative funding sources, with the strains most acute for institutions outside of the United States funding US dollar assets, particularly institutions based in Europe. These institutions were often forced to raise funds in other currencies and then swap these into US dollars. As a result, the cost of raising US dollar funds via the foreign exchange swap market increased significantly relative to the benchmark cost of raising US dollars directly, an apparent breach of the covered interest parity (CIP) condition. This dislocation in interbank funding markets has received considerable attention recently, and was the topic of a recent report by the Committee on the Global Financial System (CGFS 2010). This article discusses key aspects of the dislocation through the lens of developments in foreign exchange swap markets, which play a key role in linking funding markets across currencies.

The first part of the article outlines the apparent failure of CIP across US dollar funding options and the factors that contributed to it. The second part focuses on the developments in Australian dollar foreign exchange (FX) swap and cross-currency swap markets. As with other currencies, it cost more to borrow Australian dollars and swap them into US dollars in the foreign exchange market than it did to borrow directly in US dollar money markets. This premium to borrow US dollars via the foreign exchange swap market was also reflected in the cross-currency swap market.

Global Developments

Borrowers wishing to raise short-term US dollars have the option of borrowing directly in US dollar money markets or raising funds in an alternative currency and exchanging these for US dollars in the foreign exchange market. In order to hedge the exchange rate risk that arises from borrowing in one currency and investing in another, investors will typically use a foreign exchange swap to exchange currencies. Under such a swap, two parties swap currencies at the beginning of the contract at the spot exchange

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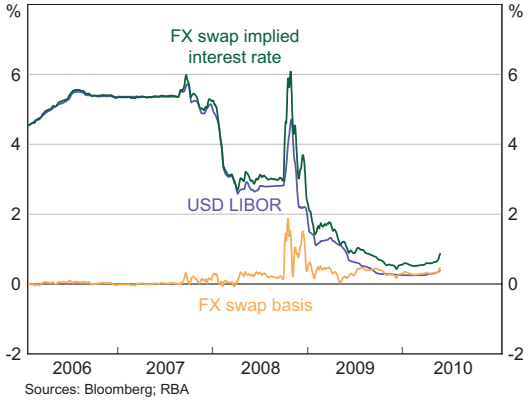
rate and agree to reverse the swap at the forward rate at the close of the contract.[1] In essence, the exchange is similar to a secured loan in the currency being received. Under normal circumstances, the forward rate is determined by the CIP condition, which states that the cost of obtaining US dollars by borrowing another currency and swapping into US dollars (the implied US dollar interest rate) should be the same as borrowing directly in the US dollar money market. A positive spread between the implied interest rate and the money market interest rate – termed the basis – implies a higher cost for obtaining US dollars via the foreign exchange market and a deviation from CIP.

Graph 1
EUR/USD FX Swap Basis
3-month maturity, 5-day-centred moving average



Sources: Bloomberg; RBA

The basis is measured by comparing the cost of borrowing via the swap market with the cost to globally active banks of raising US dollar deposits, typically proxied by US dollar LIBOR.[2] Historically, the basis measured in this way has been close to zero for most currency pairs, in line with the CIP condition. However, during the financial crisis a premium emerged to borrow US dollars via the swap market, raising costs for borrowers. For example, the basis on a 3-month EUR/USD foreign exchange swap widened to around 25 basis points following the initial signs of stress in money markets in August 2007 and then to around 200 basis points following the collapse of Lehman Brothers in September 2008 (Graph 1). The basis has since fallen in line with the dissipating tension in funding markets over 2009 and 2010, although the uncertainty generated by the Greek sovereign-debt crisis has seen the basis tick up recently. On average over the past year, the basis in the EUR/USD foreign exchange swap market has remained noticeably higher than prior to the crisis.

An increase in the premium to receive US dollars under swap indicates a shift in the relative demand for, and supply of, US dollars outside the United States. Demand for US dollar funding from non-US banks was persistently high through the crisis. At the onset of turmoil in 2007, many banks outside the United States had large US dollar asset positions that required ongoing funding. This was particularly the case in Europe, where banks had funded relatively long-term and illiquid US dollar investments using short-term funding (McGuire and von Peter 2009). The resulting maturity mismatch between assets and liabilities exposed these banks to funding (rollover) risk. Another example was in Korea, where banks had large short-term US dollar funding needs generated by domestic banks' provision of hedging products to Korean shipbuilders (CGFS 2010).

From late 2007, conditions in US money markets tightened considerably and non-US banks found it increasingly difficult to borrow US dollars directly. Large-scale redemptions from US money market funds saw these funds reduce their holdings of non-US banks' commercial paper while some central banks withdrew a portion of their US dollar foreign exchange reserves held on deposit at

1 For a detailed explanation of foreign exchange swaps and also cross-currency swaps see Baba, Packer and Nagano (2008).

2 The London Interbank Offer Rates (LIBOR) for the US dollar and a range of other currencies are reference rates based on the interest rates at which banks offer to borrow from each other on an unsecured basis in the London market. For the US dollar and the euro, 16 large globally active banks are surveyed for deposit-rate quotes at 11 am London time and then the mean of the middle eight quotes for each currency is calculated. Fifteen banks are common to the euro and US dollar panels.

non-US banks (McGuire and von Peter 2009). Following the collapse of Lehman Brothers, general counterparty concerns and a preference for greater precautionary balances meant that banks also became unwilling to lend in interbank markets, tightening the supply of US dollars (CGFS 2010). Increasingly, non-US institutions sought to borrow in alternative markets and swap the proceeds into US dollars through the foreign exchange swap market. From the perspective of US dollar lenders, foreign exchange swaps have a relatively low level of counterparty risk because they are secured by the exchange of principal at the beginning of the contract.

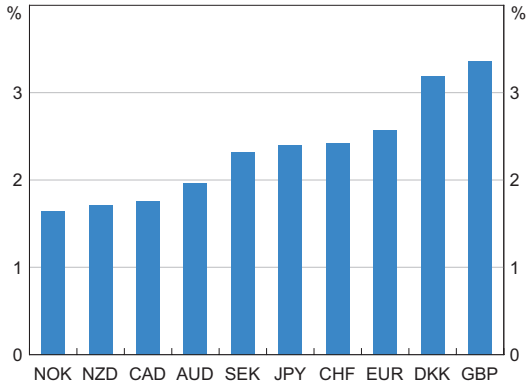
The global nature of the shortage of US dollars saw the basis increase across all US dollar crosses. The most affected were crosses against currencies from regions where banking sectors had the largest funding gaps in US dollars, including the United Kingdom and the euro area (Graph 2). Non-US banks also sought to borrow in third-currency markets in order to swap into US dollars, causing a basis to emerge even for currencies that were not associated with local banking sectors seeking to roll over short-term US dollar funding: in particular, there were reports of foreign banks raising funds in Japan, Singapore and Hong Kong for this purpose. In some instances, the additional demand for funding in these markets saw the local cost of funds rise (CGFS 2010).

Under ordinary market conditions, institutions would respond to these price differences so that deviations from CIP were very short-lived. Financial institutions would exploit the arbitrage opportunity by borrowing in US money markets and lending in the foreign exchange swap market and borrowers would shift towards raising US dollars directly in money markets. But during the financial crisis, institutions were severely restricted in their ability to exploit pricing anomalies. Concerns that counterparties would default on unsecured loans limited banks' ability to borrow US dollars directly.

Graph 2

Peak FX Swap Basis for USD Crosses

3-month maturity



Sources: Bloomberg; RBA

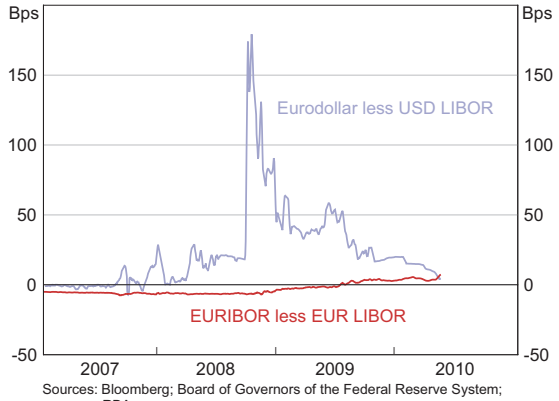
Further, balance sheet constraints, restrictions on non-essential trading activity and the preference for greater US dollar liquidity meant that institutions with access to US dollar funding cut back sharply on US dollar lending to non-US institutions even in the swap market (CGFS 2010).

An implication of this shift in risk assessment was that non-US banks appear to have paid higher risk premiums to obtain US dollar funding than for funding in other currencies. In essence, there was credit tiering specific to US dollar markets, similar to the large 'Japan premium' paid by Japanese banks during the late 1990s, such that LIBOR was not a relevant benchmark for many institutions seeking to borrow US dollars. Anecdotal reports suggest that the actual cost of US dollar funding exceeded LIBOR. One reason is that LIBOR is based on indicative (rather than contractual) borrowing rates. More significantly, however, the group of banks borrowing US dollars via the swap market is much larger and more diverse than the banks on the LIBOR panel and these banks appear to have been paying an historically large spread to LIBOR to borrow US dollars through the crisis.

An alternative benchmark of the average cost of raising offshore US dollar deposits for the wide

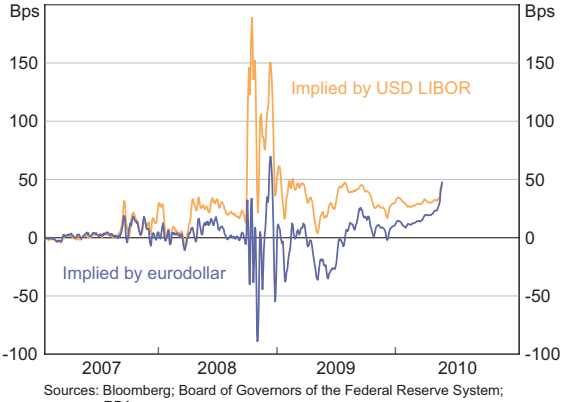
group of banks is the eurodollar rate published by the US Federal Reserve (Graph 3).[3] During the crisis, the spread of the eurodollar rate to US dollar LIBOR increased sharply, suggesting that average US dollar borrowing costs across the broader range of banks did exceed LIBOR. In contrast, the average rate to borrow euros for the wide group of banks (measured using EURIBOR) tracked the euro LIBOR rate closely throughout the crisis.[4]

Graph 3
Credit Spreads
3-month maturity, 5-day-centred moving average



Sources: Bloomberg; Board of Governors of the Federal Reserve System; RBA

Graph 4
EUR/USD FX Swap Basis
3-month maturity, 5-day-centred moving average



Sources: Bloomberg; Board of Governors of the Federal Reserve System; RBA

The conclusion that US dollar LIBOR was below the actual cost of borrowing US dollars in the market is consistent with the large measured basis in the swap market. The eurodollar spread to US dollar LIBOR corresponds closely with the premium paid to receive US dollars under swap. Calculating the basis using the eurodollar rate instead of US dollar LIBOR results in deviations from CIP that are much smaller on average, and at times imply a discount for US dollar funding through the foreign exchange swap market (Graph 4).

The widening of the eurodollar-US dollar LIBOR spread shows that credit tiering between the broad group of European banks and those on the LIBOR panel was more pronounced in US dollar funding markets than in euro funding markets. This indicated that the market was concerned about the ability of some institutions to repay US dollar debt in particular. The situation may have reflected lenders discriminating among borrowing banks on the basis of the quality and liquidity of the borrowing banks' US dollar assets, or simply general concerns about US dollar rollover risk leading lenders to discriminate against lesser-known 'names'. The spread may also reflect the fact that the broad group of banks had fewer US dollar funding options than the generally larger banks on the LIBOR panel and so competed more aggressively for US dollars in money markets.

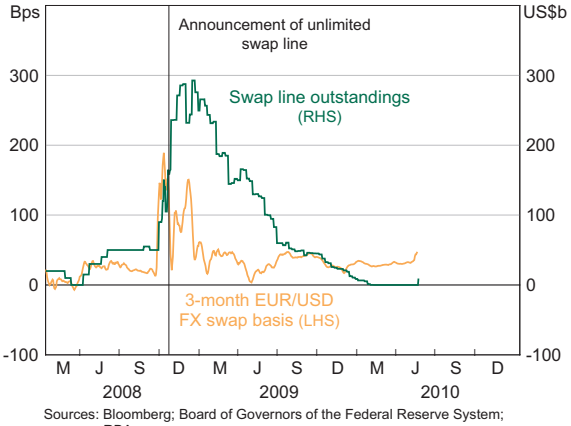
Policy initiatives by central banks helped alleviate the strains in offshore US dollar funding markets. The initial tension in the foreign exchange swap market was addressed by the introduction in 2007 of US dollar central bank swap lines and US dollar liquidity operations by non-US central banks. The extension of these swap lines over 2008, particularly

3 The eurodollar rate is calculated from the best offered rates on offshore US dollar deposits brokered by ICAP at around 9.30 am New York time. Unlike LIBOR, the eurodollar rate is based on binding market quotes.

4 The euro interbank offer rate (EURIBOR) is an indicative rate for borrowing euros on an unsecured basis within Europe. Forty two European banks are surveyed for deposit-rate quotes at 10.45 am central European time and then the mean of the middle 70 per cent of quotes is calculated.

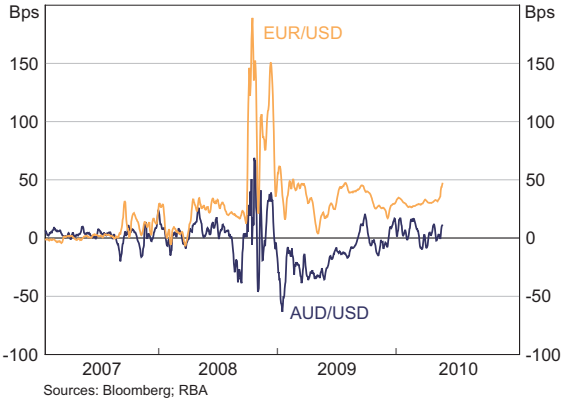
the decision to make several of the swap lines unlimited, successfully reduced the basis (Graph 5).[5] In addition, several facilities introduced within the United States to provide liquidity to US money market funds were likely to have indirectly provided liquidity to non-US banks by allowing US money market funds to resume purchasing offshore banks' commercial paper (Baba, McCauley and Ramaswamy 2009). As market conditions improved over 2009 and 2010, and the premium to borrow US dollars in the private sector decreased, use of these facilities declined significantly and the facilities themselves were largely wound up. In recent months, however, the uncertainty generated by the Greek sovereign-debt crisis has seen the friction in US dollar funding markets re-emerge and the US dollar swap lines between the Fed and central banks in Europe and Japan have been reopened.

Graph 5
ECB Swap Line and FX Swap Basis
Daily



Sources: Bloomberg; Board of Governors of the Federal Reserve System; RBA

Graph 6
FX Swap Basis
3-month maturity, 5-day-centred moving average



Sources: Bloomberg; RBA

Australian Developments

As was the case for other currencies, the global shortage of US dollars had an effect on the Australian dollar foreign exchange swap market. From close to zero prior to the crisis, a positive premium emerged to receive US dollars under swap first in August 2007 and then again in September 2008 (Graph 6). However, the premium was relatively short-lived for the AUD/USD pair compared to the EUR/USD pair, returning close to zero by the end of 2008. Indeed, US dollar funding through the foreign exchange swap market was relatively cheap in early 2009.[6]

The premium in the AUD/USD foreign exchange swap market did not reflect strong demand for US dollars from Australian banks. Australian banks are funded primarily through longer-dated bond issuance and, in contrast to European banks, have a net liability position in US dollars. Rather, the premium in the AUD/USD swap market moved in line with other markets as the Australian dollar market was also a source of funds for international banks during the crisis. Capital flows data indicate that some banks within Australia increased their lending abroad, seemingly to related offshore entities, for a brief period around the collapse of Lehman Brothers. The crisis also saw a temporary reduction in capital inflows into Australia through late 2008 and early 2009.

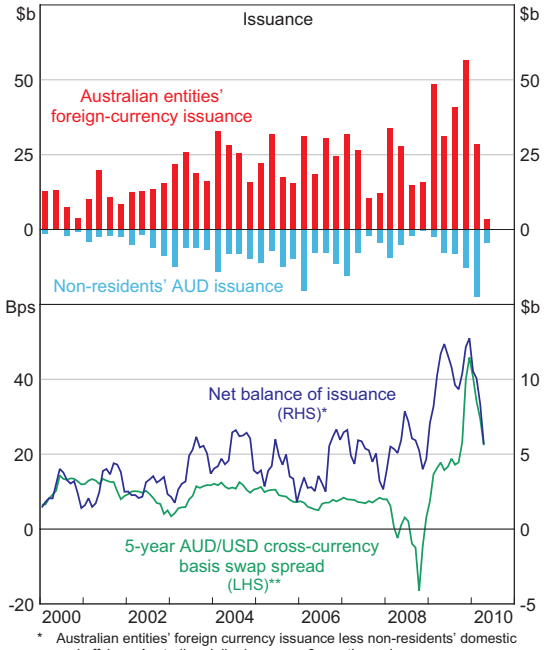
5 Several studies have assessed the effectiveness of the central bank swap lines at reducing the premium associated with borrowing US dollars via the swap market. See, for example, Baba and Packer (2009).

6 This calculation uses the bank bill swap rate (BBSW) as the benchmark interbank Australian dollar borrowing rate, which is the rate at which a prime bank could borrow Australian dollars in the Australian market at 10 am Sydney time. If measured using Australian dollar LIBOR, borrowing US dollars via the foreign exchange swap market would have appeared expensive through to mid 2009.

One effect of the dislocation in the swap market was to limit the ability of Australian non-bank financial institutions, such as fund managers, to roll over the hedges used to manage the exchange rate risk inherent in their international investment portfolios. The local banks which sell hedging products use the foreign exchange swap market to offset the risks involved in trading with their domestic customers. Uncertain about their own access to US dollars through the swap market, local banks became less willing to provide quotes to their clients (CGFS 2010).

The dislocation also affected the cost of hedging banks' own long-term foreign currency debt in the cross-currency swap market. Cross-currency swaps are used extensively by Australian banks to hedge foreign currency bond issuance at maturities of typically over three years. Although conceptually similar to a foreign exchange swap, the payments under a cross-currency swap mimic those under a floating-rate bond: the two parties exchange principal at the start of the contract, make floating-rate interest payments in the borrowed currency during the life of the contract and then reverse the exchange of principal at the close of the contract at the initial exchange rate. The cross-currency swap serves as a hedge against both interest rate risk and exchange rate risk.

Graph 7
Bond Issuance and the Cross-currency Basis Swap Spread



* Australian entities' foreign currency issuance less non-residents' domestic and offshore Australian dollar issuance; 6-month moving average
** Monthly average
Sources: Bloomberg; RBA

Historically, Australian institutions have paid a small premium over the interbank interest rate (typically the bank bill swap rate) to receive Australian dollars under a cross-currency swap. This premium, which represents the cost of hedging the foreign currency risk, is quoted directly by market participants and is also termed the basis, though it is not strictly equivalent to the basis in the foreign exchange swap market. The Australian dollar cross-currency swap market is used primarily by Australian institutions swapping the proceeds of foreign-currency bond issuance into Australian dollars and by foreigners swapping the proceeds of Australian dollar debt issuance into their domestic currency. The premium arises because of stronger relative demand to receive Australian dollars under swap; Australian institutions issue a greater value of foreign-currency bonds into international capital markets than foreigners issue Australian dollar-denominated bonds, such as Kangaroo bonds (Graph 7).[7]

During the crisis there was a marked increase in volatility in the quoted basis. In late 2008, the basis became large and negative, consistent with the premium to receive US dollars in the foreign exchange swap market. Various studies have concluded that there is a similar connection across the two swap markets for other currencies.[8] This movement in the basis occurred even though there was no sizeable change in the net balance of bond issuance through 2008; although issuance by Australian banks was lower in 2008 than prior to the crisis, this was

7 For details of this spread and its sensitivity to changes in issuance see Ryan (2007) and for a description of hedging foreign currency-denominated debt see Davies, Naughtin and Wong (2009).

8 See Baba *et al* (2008).

offset by lower Kangaroo bond issuance, so that the net balance of issuance increased only marginally.

Since early 2009, however, a premium has returned to receive Australian dollars in the cross-currency swap market consistent with the historical relationship. The premium is wider than prior to the crisis, reflecting the recent trends in net bond issuance. As conditions in financial markets improved, Australian banks have sought to lengthen the maturity of liabilities and have issued a large amount of foreign currency bonds in international capital markets (Black, Brassil and Hack 2010), whereas issuance of Kangaroo bonds has been slower to return to pre-crisis levels. There are signs that Kangaroo issuers are responding to the price discrepancy, with $20 billion of Kangaroo issuance in the March quarter 2010, and the basis has moderated from its peak.

Conclusion

The dislocation in unsecured US dollar funding markets during the financial crisis led foreign banks with large US dollar funding requirements to borrow US dollars increasingly through the secured foreign exchange swap market. At the same time, the supply of US dollars in this market was curtailed, leading to a premium to receive US dollars under swap. This apparent deviation from CIP persisted because institutions became unwilling to exploit arbitrage opportunities in an environment characterised by much higher counterparty risk. It also indicated a high degree of credit tiering in offshore US dollar funding markets.

Although Australian financial institutions did not have large US dollar asset positions to fund, at the height of the crisis the pricing of Australian dollar swaps moved broadly in line with the pricing for other currencies against the US dollar. Pricing of AUD/USD cross-currency swaps was also affected by the global US dollar shortage over 2008, but by early 2009 the historical relationship between the quoted basis and net bond issuance had re-emerged.

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The Impact of the Financial Crisis on the Bond Market

Susan Black, Anthony Brassil and Mark Hack*

The Australian bond market functioned well during the financial crisis. Changes in investor sentiment and issuer behaviour led to a slowing in issuance and an increase in the average credit quality of new issuance. While the average bond term shortened and spreads widened, these trends have since reversed somewhat as market conditions have improved.

Introduction

The bond market is a key funding tool for many Australian financial institutions and corporates. A wide range of issuers and investors participate in the market. The Australian non-government bond market can be divided into four main categories:

- bonds issued by Australian financial institutions;
- bonds issued by Australian corporates (non-financials);
- long-dated asset-backed securities (ABS) issued by Australian-domiciled vehicles; and
- Australian dollar bonds issued in Australia by non-residents, known as Kangaroo bonds.

Over the decade to 2007, the stock of non-government bonds outstanding increased from $110 billion to over $750 billion, to be over six times larger than the government bond market. The non-government bond market has continued to expand over recent years, but the growth rate slowed during the financial crisis as investor risk aversion increased and the demand for debt financing declined.

There was a clear turning point for the bond market in mid 2007 when the early stages of financial turmoil emerged in money markets. Because of this, mid 2007 is used in this article as the starting point for the financial crisis so far as it pertains to the bond market. Unlike the global experience, there were few rating downgrades and negligible bond defaults in the Australian market during the financial crisis. Credit quality of the market remained high. There were, however, substantial changes in the sectoral composition of the market. The reduction in investor appetite for credit risk during the crisis saw bond terms at issuance shorten, bond spreads widen to historical highs and an increase in the average credit quality of new issues, particularly after the introduction of the Government's Guarantee Scheme for Large Deposits and Wholesale Funding. Bond terms have subsequently lengthened as market conditions settled. While spreads also narrowed significantly, they are not expected to return to the levels seen prior to the financial crisis in the near future.

Issuance Patterns

Over the decade prior to the onset of the financial crisis, the Australian bond market grew significantly. Unsecured bond issuance by financial institutions was strong, particularly offshore, and an increasing range of corporates accessed capital market funding. Kangaroo bond issuance also increased, contributing to the depth and diversity of the domestic market.[1]

* The authors are from Domestic Markets Department.

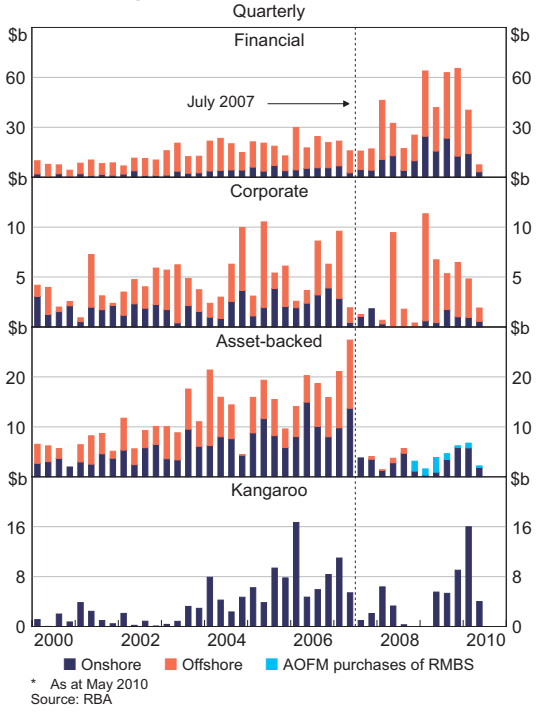
1 For a discussion of the factors that have contributed to the strong growth in Kangaroo bonds see Ryan (2007).

Growth in ABS, most of which was residential mortgage-backed securities (RMBS), was particularly strong. The rapid growth in securitisation reflected a number of factors including:

- strong demand for housing finance;
- increased competition from mortgage originators, which typically relied on securitisation for funding;
- the desire by banks to diversify their funding; and
- investor demand for high-yielding AAA-rated securities, making this a cost-effective way of raising funds for many borrowers.

By mid 2007, ABS had grown to be close to 30 per cent of the stock of bonds outstanding, financials were 40 per cent, corporates were 18 per cent and Kangaroos 13 per cent.

Graph 1
Non-government Bond Issuance*



* As at May 2010
Source: RBA

The onset of the financial crisis in the bond market in mid 2007 led to a reversal of some of these issuance patterns (Graph 1). As has been well documented elsewhere, the collapse of the US sub-prime mortgage market led to a general reappraisal of the risks involved with all structured credit markets and a widespread increase in risk aversion.[2] While these events had an impact on the entire Australian bond market, the securitisation market was most affected. Although the Australian securitisation market was not subject to the shortcomings of the US market, investor appetite dried up.[3]

In addition to the reduction in investor demand, sales of existing RMBS by distressed leveraged foreign investors contributed to the dislocation in the securitisation market; these investors were mainly structured investment vehicles (SIVs) which owned around one-third of Australian RMBS prior to the financial crisis. This overhang of supply saw RMBS spreads increase significantly to the point where issuance was not economic for most lenders and access to the market was limited. Since mid 2007, quarterly issuance of RMBS has averaged $3 billion compared with average quarterly issuance of $15 billion in the two years pre-crisis. And, in contrast to the years preceding the financial crisis – during which RMBS issuance was evenly split onshore and offshore – issuance has been entirely into the domestic market, with the Australian Office of Financial Management (AOFM) being a major investor in some issues. (Around one-quarter of the RMBS issued since the start of the crisis has been purchased by the AOFM.)

The global rise in risk and risk aversion also saw the cost of lower-rated corporate bond issuance increase sharply and, for a period, some corporates had difficulty accessing the bond market. One result of this was that many corporates turned to the banks for funding. The stock of corporate bonds outstanding fell for a short time, but as bond spreads

2 For example, RBA (2007a, 2007b).

3 See Debelle (2008) for a comparison of the Australian and US securitisation markets.

narrowed over 2009, corporates began to tap the bond market again, substituting this for borrowings from banks. Corporates also sought to reduce their leverage by raising equity to pay down bank debt.[4] While bond issuance was initially limited to larger corporates with an established presence in offshore capital markets, the range of borrowers broadened as investor demand for credit started to pick up in 2009, with a number of medium-sized entities also issuing bonds.

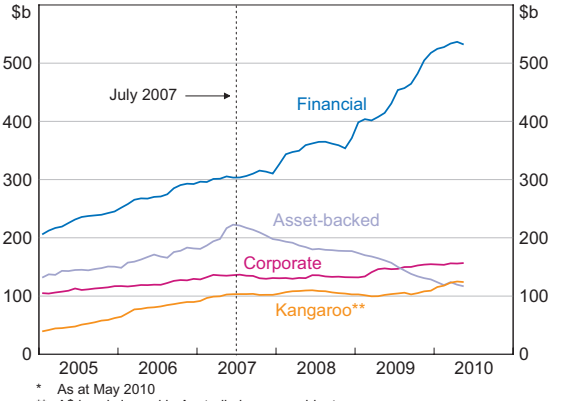
The dislocation of the securitisation market and, in the initial stage of the financial crisis, the reintermediation of the corporate sector, saw banks' balance sheets grow as they gained market share. In contrast, mortgage originators, who relied on RMBS for funding, sharply scaled back their lending to households – the share of housing loans funded by securitisation fell from almost 25 per cent in mid 2007 to around 10 per cent in early 2010. While the banks also ceased using securitisation as a form of funding, they retained good access to the bond market and issued large volumes, supported by their strong balance sheets and, at the peak of the financial crisis, the introduction of the Government's Guarantee Scheme.[5] The share of banks' funding sourced from the bond market rose by a few percentage points to almost one-quarter of funds as they sought to use more stable sources of funding.

Kangaroo bond issuance was relatively subdued during much of the crisis period with quarterly issuance averaging less than $2 billion until early 2009 compared with $7½ billion in earlier years. There were no issues between August 2008 and April 2009. Issuance returned in the second half of 2009, followed by near-record issuance in the March quarter of 2010, underpinned by strong investor demand and a very favourable cross-currency basis swap spread (which is received by Kangaroo issuers as they swap out of Australian dollars and into another currency).

In total, bond issuance slowed during the crisis. The average annual growth rate in the stock of Australian bonds outstanding slowed to 7 per cent from the rapid pace of over 20 per cent over the previous decade, though trends differed significantly across sectors. Notably, the limited RMBS issuance, along with the ongoing amortisation of principal (i.e. mortgage repayments), led to the stock of RMBS outstanding halving between mid 2007 and May 2010 (Graph 2). In contrast, the stock of financials' bonds outstanding increased sharply, with the average annual growth rate picking up to 21 per cent from 18 per cent. The stock of corporate bonds outstanding has grown modestly over this period, while the stock of Kangaroo bonds outstanding also increased a little.

Reflecting these developments, the composition of the bond market has changed significantly (Table 1). The share of bonds outstanding comprised of ABS has fallen 16 percentage points to 13 per cent, offset by an increase in financials' share (up 17 percentage points to 57 per cent). Shares of corporate and Kangaroo bonds have both remained broadly unchanged, at 17 and 13 per cent, respectively.

Graph 2
Australian Non-government Bonds Outstanding*
Onshore and offshore



* As at May 2010
** A$ bonds issued in Australia by non-residents
Source: RBA

4 For more information see Black, Kirkwood and Shah Idil (2009).

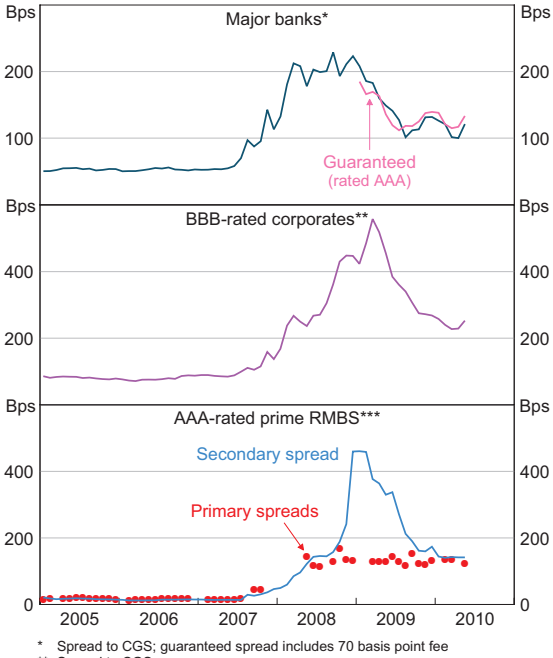
5 For more information on the Guarantee Scheme see Schwartz (2010).

Table 1: Australian Non-government Bonds Outstanding

	Outstanding $ billion		Share Per cent		Average annual growth Per cent	
	Jun 2007	May 2010	Jun 2007	May 2010	Jun 1997–Jun 2007	Jul 2007–May 2010
Financials	304	532	40	57	18	21
Asset-backed	222	117	29	13	30	–20
of which						
RMBS	176	95	23	10	33	–19
Corporates	136	157	18	17	14	5
Kangaroo[(a)]	103	124	13	13	41	6
Total	**765**	**929**	**100**	**100**	**21**	**7**

(a) A$ bonds issued domestically by non-residents
Source: RBA

Graph 3
Australian Bond Spreads
Monthly



* Spread to CGS; guaranteed spread includes 70 basis point fee
** Spread to CGS
*** Spread to bank bill swap rate
Sources: RBA; Royal Bank of Scotland; UBS AG, Australia Branch

Spreads

In the lead-up to the financial crisis, Australian bond spreads narrowed, consistent with global trends. This reversed sharply during the financial crisis as risk aversion increased, with spreads widening to historical highs.

As noted earlier, securitisation markets globally were significantly affected by investors' reassessment of risk, and accordingly, spreads on ABS increased by more than on other assets. Secondary market spreads on Australian RMBS also increased significantly – as distressed leveraged foreign investors liquidated their positions – to be well above the break-even spread at which it was economic to issue RMBS (Graph 3).

Spreads on bank and corporate bonds also rose sharply. For example, secondary market domestic spreads to Commonwealth Government securities (CGS) on 3-year major banks' unguaranteed bonds increased by around 170 basis points to peak at 225 basis points at the height of the financial crisis. Spreads on BBB-rated corporate bonds continued rising for a few more months, peaking at 560 basis points in March 2009.

As market conditions settled and investor risk aversion started to ease in 2009, spreads narrowed across all bond classes. Primary and secondary market spreads on RMBS have broadly converged, suggesting that the market has worked through most of the overhang of supply associated with sales by SIVs. Although spreads on issues in the primary market remain high by historical standards, recent issues, including those without the AOFM as a cornerstone investor, have been marginally profitable for the issuers.

Spreads on the banks' unguaranteed bonds narrowed over 2009 as investors' appetite for credit returned, with spreads now around the same level as in late 2007. While corporate bond spreads have narrowed, they are yet to return to their late 2007 levels.

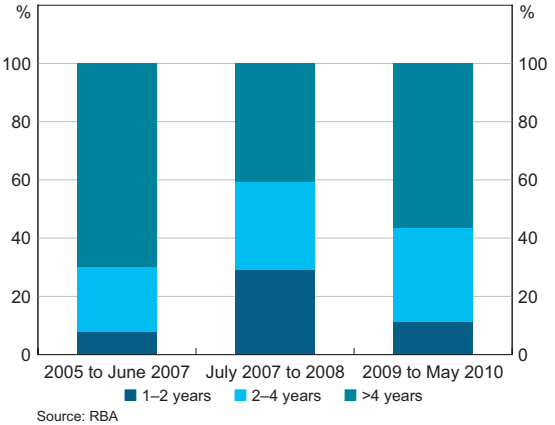
Spreads across the spectrum of bonds have narrowed significantly since the height of the dislocation in markets, but they remain above the unusually low levels observed prior to the financial crisis.

Bond Maturity

Prior to the financial crisis, the most common maturity of Australian unsecured bonds at issuance was between four and six years, with an average maturity of close to six years.[6] With the increase in risk aversion during the financial crisis, investors were more reluctant to commit their funds for long periods given the uncertain environment. As a result, the distribution of bond terms shifted toward shorter maturities, with nearly 30 per cent of bonds issued between July 2007 and end 2008 at maturities of one to two years compared with 8 per cent previously (Graph 4). The shortening of bond terms was driven by trends in banks' bond issuance, which made up the bulk of bond issuance over the period, though this trend was also consistent across the corporate and Kangaroo sectors. More recently, the distribution of bond terms has lengthened as investor risk aversion has eased and banks have increasingly issued bonds at longer terms. Since 2009, only around 10 per cent of bonds were issued at terms of one to two years and around 55 per cent has been at terms of four years or more, up from 40 per cent at the height of the financial crisis.

In contrast to unsecured bonds, the average outstanding term of Australian RMBS lengthened a little during the crisis, with some RMBS remaining outstanding longer than initially expected by investors. This was consistent with the global experience. Unlike most other bonds, RMBS do not have a 'bullet' maturity; rather than having a fixed maturity, they are repaid as the underlying mortgages are repaid, on average in around three to four years. RMBS are typically structured with an option for the issuer to redeem the RMBS before all of the underlying mortgages are repaid. This option – known as a 'clean-up call' – enables RMBS to be redeemed before the income from a declining pool of mortgages falls below the administrative costs of managing the RMBS, which protects investors from being left with a small, illiquid stock of bonds. Historically, RMBS were called at the first available opportunity – with the small value of mortgages still outstanding repackaged into new RMBS – and were priced by investors based on this assumption. However, during the financial crisis, some issuers did not exercise their first available clean-up call. In

Graph 4
Australian Non-government Bond Issuance
Tenor at issuance, by value



Source: RBA

6 Bonds are classified as securities with a maturity of at least one year.

part this reflected a change to prudential standards in January 2008, whereby Australian authorised deposit-taking institutions were no longer permitted to call their RMBS when more than 10 per cent of the pool of mortgages remained outstanding.

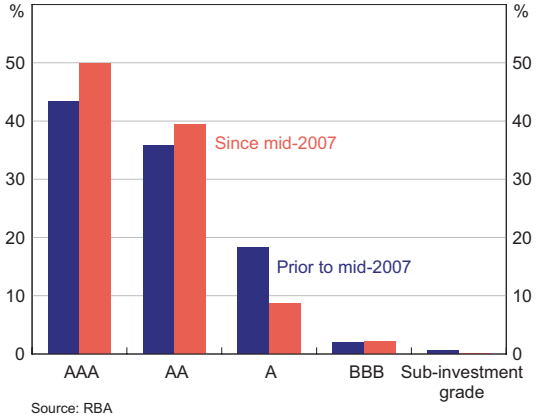
Bond Covenants

Covenants are contractual restrictions designed to align borrowers' actions with lenders' interests. In the years leading up to the financial crisis, weaker covenants were included in some new bonds (and some bank loans). In contrast, following the increase in risk aversion associated with the financial crisis, investors have demanded stronger covenants. Recently issued corporate bonds have contained covenants such as negative pledges (to prevent the issuer from issuing debt that would rank higher than the bond) and change of control provisions (the investor has a 'put option' to sell the bond back to the issuer if there is a change of control at the company that could reduce credit quality, such as a leveraged buy-out).

Graph 5

Total Bond Issuance

By credit rating, per cent



Source: RBA

Credit Quality

Australia's non-government bond market has historically been of high credit quality. Between 2000 and mid 2007, over 40 per cent of issuance was rated AAA, with a further 36 per cent rated AA and the remainder almost entirely investment grade (at least BBB–, Graph 5).[7] The high average credit quality reflected strong issuance of RMBS (most of which are rated AAA) and by the highly rated major banks (which account for the bulk of financials' bond issuance and are rated AA), as well as corporates using credit wrapping (private guarantees) to boost their ratings to AAA.[8]

Since mid 2007, issuance has continued to be concentrated among highly rated entities and, in fact, the distribution of issuance has shifted even more towards the highest-rated entities. This reflects increased investor preference for low-risk financial assets, particularly AAA-rated securities (with the exception of structured credit products). The high credit quality has also been underpinned by the sound balance sheets of Australian financial institutions and the corporate sector, the resilience of the domestic economy, and the introduction of the Government guarantee on wholesale funding. The average share of issuance since mid 2007 that was AAA-rated is 50 per cent, 7 percentage points higher than prior to the crisis, and the share rated AA has also increased a little. This largely owed to strong guaranteed and unguaranteed issuance by the major banks more than offsetting the lack of RMBS issuance.

Consistent with trends in issuance, the credit quality of the stock of Australian bonds outstanding increased in recent years (Graph 6). This largely reflected changes in issuance patterns as there have

7 The limited sub-investment grade issuance by Australian issuers has been almost entirely into offshore markets (mostly the US market). While the lack of a sub-investment grade market in Australia contributes to the high credit quality of the domestic market, it means that lower-rated companies rely on bank loans or offshore capital markets for debt funding.

8 For more information on credit wrapping see RBA (2008).

been limited rating changes for Australian bonds. This is in contrast to the international experience of relatively widespread downgrades. Australian bond issuers continue to be highly rated compared with the global average, with 85 per cent of Australian issuers rated investment grade compared with 60 per cent of global issuers.[9]

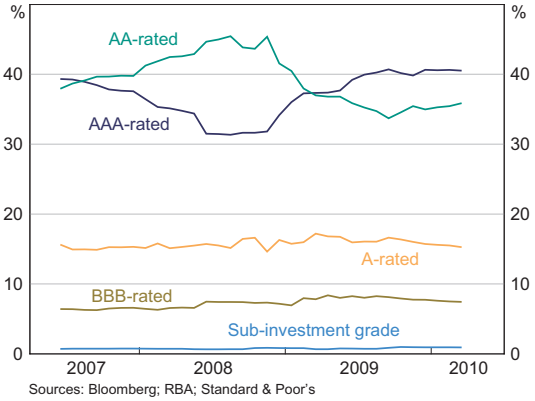
Whereas globally there were significant downgrades to structured credit instruments, the credit quality of Australian ABS outstanding has remained very high, with almost all AAA-rated RMBS tranches having retained their rating. This reflects the quality of loans securitised, which have been underpinned by the strength of the domestic economy. While there have been negligible rating downgrades, the ongoing amortisation of principal, combined with limited issuance, has nonetheless caused the outstanding value of AAA-rated RMBS to fall sharply.

Also in contrast to their global counterparts, there were only limited downgrades to the credit ratings of the Australian-owned banks during the financial crisis – the major banks all retained their AA rating and continue to be among the most highly rated banks globally.[10] In the initial stages of the financial crisis, strong bond issuance by the major banks pushed up the stock outstanding of AA-rated bonds. Then as the crisis intensified, the Australian banks issued a large volume of Government-guaranteed AAA-rated bonds in response to an increase in investor risk aversion globally. As market conditions settled over 2009 and investor appetite for credit risk increased, the banks reduced their use of the guarantee and issued an increasing volume of unguaranteed (AA-rated) bonds. AAA-rated guaranteed bonds currently make up about one-third of the stock of financial bonds outstanding.

Graph 6

Australian Bond Outstandings

Share of market, onshore and offshore, by rating



Sources: Bloomberg; RBA; Standard & Poor's

Almost all Australian corporate bonds are investment grade and most maintained their rating during the financial crisis. Credit-wrapped bonds, which account for around 10 per cent of corporate bonds, were an exception to this. Credit wrapping is a type of credit enhancement whereby a bond insurer guarantees to meet interest and principal payments as they fall due if the issuer defaults. At issuance, almost all credit-wrapped bonds had a AAA rating by virtue of the bond insurers' ratings. However, many bond insurers have suffered multiple downgrades since the beginning of 2008 and most now have ratings lower than the underlying ratings of the issuers, with several rated below investment grade. While 80 per cent of these credit-wrapped bonds have been downgraded, they are still all rated investment grade, reflecting the solid stand-alone ratings of Australian corporates – $5 billion are still rated AAA, $5 billion have been downgraded to A and $15 billion have been downgraded to BBB.

Whereas prior to the crisis, Kangaroo issuance was split evenly between AAA and AA-rated bonds, issuance has been almost entirely by AAA-rated entities since mid 2007. This partly reflects investors' greater risk aversion towards lower-rated securities

9 Of entities rated globally by S&P, 18 per cent were downgraded in 2009; in contrast, 4 per cent of rated Australian entities were downgraded.

10 While the outstanding bonds of some foreign subsidiaries operating in Australia were downgraded due to downgrades of their parents, this effect on the credit quality of financials' bonds outstanding was more than offset by the increased issuance of major banks' guaranteed and unguaranteed bonds.

and appetite for highly rated bonds. The resultant pick-up in credit quality has been partly offset by credit rating downgrades to the outstanding bonds of some foreign financial institutions during the crisis.

Defaults

The resilience of the Australian bond market throughout the financial crisis is also evident in the limited default experience, compared with the significant spike in defaults in global bond markets. No publicly rated financial or corporate bond issued by an Australian entity has defaulted during the financial crisis; the most recent publicly rated bond default by an Australian entity was 2003. In comparison – and reflective of the global bond market – the first bond defaults by Kangaroo issuers occurred in 2008 (Lehman Brothers and two Icelandic banks). Nonetheless, these make up only a small share of the Kangaroo market, accounting for around 1 per cent of the stock outstanding (and 0.1 per cent of the Australian bond market).

Unlike international RMBS, no losses have been borne by an investor in a rated tranche of an Australian RMBS. There have been a few small value defaults of other ABS, though in total these make up just 0.2 per cent of the Australian ABS market.

Conclusion

The Australian bond market was resilient during the financial crisis. Credit quality remained high and in contrast to the global experience, there have been only limited rating downgrades or defaults in the Australian market in recent years. The decrease in investor appetite for risk and changes in issuer behaviour did, however, result in slower overall issuance, an increase in the quality of new issuance, shorter bond terms, tighter bond covenants and spreads reaching historical highs. As market conditions have improved, bond terms have lengthened, and spreads have narrowed, although spreads are higher than the unusually low levels observed in the lead-up to the financial crisis.

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Economic Conditions and Prospects

Glenn Stevens, Governor

Address to the Regional Business Leaders Forum, University of Southern Queensland and Toowoomba Chamber of Commerce and Industry, Toowoomba, 23 April 2010

Thank you for the invitation to visit Toowoomba.

In my remarks today I would like to provide an update on economic conditions and prospects. This will be from a national perspective, and set in an international context.

In so doing, I am mindful that next week we will receive some important data on prices. We, and everyone else, will have an opportunity to update our thinking on the current and likely future course of inflation. So my remarks today will be subject to that caveat. The Bank will publish a detailed overall analysis of the economy early next month.

The Global Economy

The latter part of 2008 and the first few months of 2009 saw what has come to be regarded as the most serious international recession in decades.

Global growth has since resumed, but with a rather uneven pattern: it is being led, in the first instance, by the emerging world.

It's worth asking why that pattern exists. At least part of the answer lies in the nature of the downturn and in the policy responses to it.

It is frequently claimed that the downturn was the worst since the 1930s. In the financial sectors of some major countries that seems clear, but for economic activity it is actually less clear than you might think. For several important countries individually, the increase in unemployment and loss of real output was certainly equal to those in the most severe post-War recessions, but not significantly greater.

Some respected scholars of US business cycles have suggested recently that it may be a bit soon to judge whether the recent period qualifies for the term 'great recession', at least in the US case. In east Asia, in most cases, the latest episode has turned out to be far *less* traumatic than the 1997–1998 Asian financial crisis.

What *was* striking about the recent downturn was the *simultaneity* of the collapse in demand for durable goods around the world at the end of 2008. Suddenly, everyone, everywhere, felt much more risk averse – understandably so, as they watched governments have to save major financial institutions in a number of countries. This affected consumption and saving decisions, firms' investment plans, hiring intentions and so on.

But equally remarkable was the simultaneity of the policy responses. There was a degree of formal co-ordination – for example, most G10 central banks reduced their interest rates by 50 basis points on 8 October 2008. Beyond that there was a fairly consistent set of responses stemming from a common assessment of the seriousness of the potential threat. So the global downturn *could have been* much worse than it eventually was, but policy-makers everywhere supported financial systems where needed, eased monetary policy and eased fiscal policy, to support demand. The responses, by and large, were quite quick.

In the countries at the centre of the crisis, these policy efforts have borne fruit. But they have been working against the powerful headwinds of private

sector deleveraging. Hence in those cases the recovery thus far has been quite hesitant. Economic activity remains well below the peak level seen in 2007 or 2008, and in some of these economies it may not regain that level for another year or two. It is in *this* sense, actually, that the downturn in parts of the advanced world may well turn out to be the most costly in generations: the forecast slowness of the recovery implies a very large cumulative amount of lost income in some cases. In other episodes of serious recession, once conditions for recoveries were in place, they proceeded quite strongly. People are not confident of those sorts of outcomes this time (indeed many forecasters and financial markets will be seriously wrong-footed if a rapid recovery in the crisis-hit countries does occur). Observers in some countries even wonder whether their trend growth rate may have been impaired for a lengthy period by what has occurred.

But most countries did not have a bank solvency crisis. They had an acute *liquidity* crisis for a couple of months in September and October 2008 when the global financial system went into cardiac arrest, but thereafter those problems began to ease – mainly due, it must be said, to actions of governments and central banks in the major countries. Since in most countries banking systems were generally sound, the headwinds have not been blowing as strongly in Asia or Latin America as in some other regions. Accordingly, the policy stimulus applied in these countries appears to have been pretty effective in supporting demand. Once money markets and trade finance began to thaw, recovery proceeded at a very strong clip. In east Asia outside Japan and China, industrial production is now a little above its previous peak. In China, it surpassed the 2008 peak in the middle of last year and kept rising, while in India it never really fell.

Despite the slow growth of Asia's traditional export destinations – North America, Europe and Japan – trade in the region has bounced back remarkably strongly after a precipitous fall in late 2008. A large part of this rebound has been an increase in intra-region exports of final products, particularly to China. This suggests that demand within the region is playing a bigger role in this upswing, though Asian exports to the United States and Europe are recovering too.

Corresponding differences show up in other areas. Inflation in the euro area and United States is still trending downwards, and spare capacity could be expected to dampen price changes for some time yet, though rising commodity prices will work the other way. For much of Asia, on the other hand, the period of disinflation caused by the downturn may be past. Asset values also have moved up most quickly in these countries. Perhaps this is not altogether surprising given that no countries in the region have had seriously impaired banking systems, but most have had very expansionary monetary policy.

Australia and the 'Great Recession'

While several major countries have had one of their most, if not their most, serious recessions in the post-War period, Australia had arguably one of its mildest. We had a relatively sharp but very brief downturn in aggregate demand and economic activity late in 2008, and then returned to a path of expansion during the first half of 2009. As most recently estimated by the ABS, real GDP grew by 2¾ per cent through last year – a bit below average, but much higher than for most other high-income economies. This was supported by monetary and fiscal stimulus, the recovery in Asia, and a sound financial system. The sorts of things that typically accompany downturns – such as higher unemployment, increased loan losses for intermediaries, a fall in asset values – did happen to some extent. But because the downturn was brief, these deteriorations were rather mild, which meant that they did not then become part of a major feedback loop back to aggregate demand and output. That in turn meant that the economy was able to get onto the recovery path more quickly. And so on.

As a result, the rate of unemployment, at about 5¼ per cent, is more than 2 percentage points lower

than we forecast a year ago. The level of employment is 3½ per cent, or some 350 000 jobs, higher than we expected a year ago. GDP growth of 2¾ per cent through 2009 compares with our forecast a year ago of –1 per cent. That is, the level of real GDP today is nearly 4 per cent higher than had been anticipated. For 2009 as a whole, we estimate that nominal GDP was about $45 billion higher than our forecast a year ago.

Measures of business confidence and conditions in most of the surveys carried out by private organisations have for some time been at levels that are suggestive of something like average rates of economic growth.

The Reserve Bank is of course aware that the picture is not uniform across every region or industry. Moreover, the upswing is likely to have particular features that mean that differences across sectors and regions may widen. Not everyone will feel its benefits in the same way or to the same extent, though this is true of all economic cycles. But it does not in any way diminish those concerns to say that there has been a good outcome for the national economy in a difficult international environment.

Managing the Upswing

Our task now is one of trying to ensure, so far as we can, that the new economic upswing turns out to be durable and stable. There are many factors about which we can do little. The speed and composition of global economic growth for example, or the behaviour of international financial markets as they grapple with uncertainty and risk – these and other factors may turn out to our benefit or detriment. We cannot change them; we can only try to be alert to them, and maintain some capacity to respond to them.

For the time being, at least, the global economy is growing again. Forecasters expect an outcome something like trend global growth in 2010 and 2011, which is much better than 2009 but not as strong as 2006 or 2007. Those were exceptional years for growth and that pace could not have been sustained for long, even absent the crisis. In the region to which the Australian economy is closely linked, growth has been very strong over the past year. Almost certainly it will need to slow somewhat in the coming year.

Demand for natural resources has returned and prices for those products are rising. We have all read of the recent developments in contract prices for iron ore. As a result of those and other developments, Australia's terms of trade will, it now appears, probably return during 2010 to something pretty close to the 50-year peak seen in 2008. As usual with these things, we cannot know to what extent this change is permanent, as opposed to being a temporary cyclical event. However, the fact that we will have reached that level twice in the space of three years suggests there is something more than just a temporary blip at work.

Financial markets have made a pretty good recovery from their cardiac arrest 18 months ago. Despite large budget deficits in major countries, long-term rates of interest remain remarkably low. Since risk spreads for most borrowers have also declined this means that overall borrowing costs for rated borrowers, corporate and most governments, are low by the standards of the past few decades. This has to be advantageous for well-run companies and countries looking to invest.

Of course, risks to this outlook do remain. In the middle of the crisis, the international focus was on private creditworthiness. Now it is more on sovereign creditworthiness. The euro area is working on a response to the problems of Greece, but we can expect that a focus on sovereign risk will be a feature for some time yet. Periodic surges in concern are likely to be a recurring theme, and not just about the sovereigns themselves but about banks that might have exposures to them. A credible path needs to be outlined for fiscal consolidation and debt stabilisation in the North Atlantic economies over the years ahead. In the meantime, banks in the countries with weak economies are absorbing the normal sorts of losses associated with recessions.

A different challenge for countries in other regions is managing the flows of capital that result from, on the one hand, the very low interest rates in major economies and, on the other, the solid growth performance in Asia and parts of Latin America. Setting monetary policy and managing exchange rates will be no easy task. More countries in the Asian region are starting to change policy settings to be less expansionary: at last count central banks in India, Malaysia, Singapore and China had all begun this process.

Having said all that, what sort of outcome might be expected for the Australian economy?

If the outlook involves a combination of solid-to-strong growth overall among trading partners, a high level of the terms of trade pushing up national income, reasonably confident firms and households and strong population increase, we are not likely to see persistently weak economic growth. This big picture view is why we expect that, short of something serious going wrong in the global economy, Australian growth in 2010 will be a bit faster than in 2009 – at something close to trend. The reason I say 'a bit faster' is that while some factors are building up in an expansionary direction, and might be quite powerful, at the same time the impact of earlier expansionary policy measures is starting to unwind. So what happens to growth depends on the net effect of the two sets of forces.

It is noteworthy that, although measures of consumer and business confidence suggest that people are essentially quite optimistic about the future, a degree of caution still characterises consumer spending decisions. Some areas of retail sales are quite soft. In the period ahead, moreover, we might expect to see households inclined to save a higher share of current income, and perhaps to be more cautious about the amount of debt they take on, than in the preceding upswing. On the whole, taking a longer-term perspective, this is probably not a bad thing.

A similar caution is in evidence, at this stage, in some firms' investment intentions, though overall investment as a share of GDP remained fairly high through the downturn.

But of course there is also a once-in-a-century build-up in resource sector investment, which could see that investment, already high, rise by another 1–2 percentage points of GDP over the next four or five years. There are also high levels of public sector infrastructure investment planned in coming quarters and the housing needs of a rapidly growing population are likely to see demand for new dwellings remain quite strong over time.

So the outlook for demand seems likely to be driven more by investment, both private and public, and less by consumption than in some previous periods. Even before the downturn, the relative share of consumer spending in total demand was tending to diminish and that of investment spending to increase. There will presumably be corresponding shifts in the industry composition and geographical location of output and employment. Such effects could well be seen in and around Toowoomba itself, depending on the outcomes of proposed gas and coal projects in the region. The key will be, and not just in Toowoomba, to retain flexibility in the face of such changes.

Let me now make some observations about inflation and monetary policy. Inflation has fallen from its peak of 5 per cent in 2008. Measured on a CPI basis it fell to about 2 per cent in 2009, but that figure flatters us a bit as it was partly a result of some temporary factors. Underlying inflation ran at around 3¼ per cent for the year, and at an annualised pace of about 2¾ per cent in the second half of the year. Our forecast a few months ago for 2010 was that inflation, measured either in headline or underlying terms, would be in line with our 2–3 per cent target. Next week's figure will provide an insight into how things are tracking relative to that forecast.

A year ago, when we thought we might be going into a significant recession, there seemed to be the possibility that inflation could fall noticeably below the target. That doesn't seem very likely now, though, with a recovering economy, rising raw material prices, the labour market having stabilised and with some firms even beginning to worry again about skill shortages.

Given all of the above, one would not expect the setting of interest rates to be unusually low. If the economy is growing close to trend, and inflation is close to target, one would expect interest rates to be pretty close to average. The Reserve Bank has moved early to raise the cash rate to levels that deliver interest rates for borrowers and depositors more like those that have been the average experience over the past 10 to 12 years. Those interest rates are now pretty close to that average.

These increases have been fairly close together but then so were the preceding reductions. It is important to recall that the cash rate was reduced by 75 or 100 basis points at each meeting of the Board in late 2008 and early 2009, for a total of 375 basis points in five months after the Lehman failure in September. This was the biggest proportional decline in interest rates, delivering the biggest reduction in the debt-servicing burden of the household sector, seen in Australia's modern history. It was an appropriate response to the situation.

These changes were newsworthy, as interest rate changes always are. But as I have said before, while the *changes* in interest rates make the news, it is the *level* of interest rates that matters most for economic behaviour. Eighteen months ago, the Board moved quickly to establish a much lower *level* of interest rates in the face of a serious threat to economic activity. But interest rates couldn't stay at those 'emergency' lows if the threat did not materialise. The aggressive reduction in interest rates needed to be complemented by timely movement in the other direction, once the emergency had passed, to establish a general level of interest rates more in keeping with the better economic outlook. Hence the cash rate has risen by 125 basis points over seven months – which is still only about a third the pace of the earlier declines.

The Board's reasoning for those decisions has been set out in the various statements, minutes and so on. The question of what happens from here, of course, remains an open one, as it always must. The Board's focus will be on doing our part to secure a durable expansion and on achieving the medium-term target for inflation of 2–3 per cent on average.

Conclusion

Australia has survived what some have labelled 'the great recession' in the global economy. So, as it turns out, have a number of countries that are of importance to us in our region. The common ingredient seems to have been reasonably healthy financial systems accompanied by liberal doses of policy stimulus.

Our task, and theirs, is now to manage a new economic upswing. This will be just as challenging, in its own way, as managing the downturn. But it's a challenge plenty of other countries would like to have. ✠

Recent Financial Developments

Glenn Stevens, Governor

Address to ACI2010 49th World Congress, Sydney, 26 March 2010

Welcome back to Sydney.

The last time that this body met here was in 1992. At that time the Australian economy was in the early phase of a recovery from a deep recession. Pessimism about the future was deeply rooted. The financial system was under considerable strain. Unemployment was in double digits and still rising. Inflation had fallen significantly, but many people thought this was a temporary impact of the downturn. They thought that if we did get a recovery – and some despaired of that – we would return to our old bad habits of high inflation. People worried a lot about Australia's substantial current account deficit. There were relatively few optimists. You might notice some of that sort of thinking today, in some other countries.

I imagine that among the participants of that 1992 meeting one could have gotten some pretty long odds against Australia having a long upswing, with inflation averaging 'two point something', surviving the financial crisis and ensuing global downturn with one of the mildest domestic downturns we have seen, and facing the future with a fair degree of confidence. This shows how hard it is to forecast, of course. But perhaps it also demonstrates that with time, effort, discipline, good policies and a bit of luck, economies can be returned to health and their citizens to prosperity.

Financial Market Recovery

To that end, it is helpful that the global financial system is gradually recovering its poise, after a near-death experience 18 months ago. Perhaps like a patient that has suffered an acute cardiac event, there has been some lasting tissue damage, but quick intervention avoided something much worse. A period of emergency life-support has been followed by a period of recuperation, with some ongoing medication, during which the patient has been able gradually to resume normal activities.

Certainly the functioning of money markets has improved substantially. Extreme counterparty risk aversion has abated and spreads of LIBOR rates to equivalent maturity OIS rates have come down to about the lowest levels since mid 2007. The dramatic expansion in the balance sheets of central banks in major economies has largely ended, though policy interest rates remain at 50-year lows.

Australia's situation is more advanced in this regard. The expansion in the RBA's balance sheet was unwound nearly a year ago and the policy rate has been increased somewhat, reflecting the very different circumstances facing the Australian economy. But we are not the only country seeking to manage the 'return to normality'. An increasing number of countries outside those most directly affected by the crisis have begun this process – though the speed of adjustment naturally depends on national conditions.

Capital markets have also improved, with spreads to sovereign bond yields for private borrowers across most of the risk spectrum back to 'pre-Lehman' levels, and for the best rated borrowers back almost to mid-2007 levels. They are not quite back to pre-crisis levels, but then, they probably should not have been at such low levels anyway. Similarly, spreads for emerging market sovereigns are well down from their peaks. In fact overall borrowing costs for quality

corporates and emerging market sovereigns are similar to or slightly below what they were in 2006. This finer pricing is being accompanied by a gradual pick-up in debt issuance.

Appetite for risk has increased significantly since the end of 2008, albeit with some occasional setbacks. Of course we should expect that it would have increased, since September and October 2008 were characterised by sheer panic – there is no other word – and a flight from virtually any risk at all. Once the global financial system did not actually go over the precipice, there was going to be some re-appraisal. Hence, even as evidence continued to emerge in the first half of 2009 of the dramatic fall in demand for goods and services, share prices and spot commodity prices began to recover. Share prices are now about 60 per cent higher than the 'priced for disaster' low point, while commodity price indexes have increased by a third. Some individual commodity prices have risen by much more.

Similarly, we have seen a preparedness to take foreign currency risk, and flows into emerging markets involving both foreign currency and credit risk have increased. Again, risk appetite has not returned to the heady days of the mid 2000s, but nor should it. Even the flows we have seen have begun to raise concerns among policy-makers in some of the emerging countries about potential risks of asset market excesses and eventual capital flow reversal.

The Banking Sector

For major financial institutions, the picture has also improved. The general decline in risk aversion has eased funding problems, and some countries have been able to terminate or scale back their government guarantee programs as banks are increasingly able to access term funding markets under their own names. Share prices for those financial institutions that are still privately owned have generally increased by more than the broader market. A number of large American and European banks that accepted public-sector capital injections during the crisis have moved to repay them.

The challenges that remain ahead for the banking system in major countries nonetheless remain considerable. The outlook for some of the remaining government ownership stakes remains unclear. While losses coming from write-downs of securities slowed some time back, losses are still occurring in lending books as a result of the normal effects of big recessions, not least in the area of commercial property. This will continue for a while. In addition, banks, particularly large internationally active banks with big trading operations, will require additional capital over time under proposed changes to global prudential standards.

There is a considerable contrast between that picture and the one for banks in most other countries. It is important to note that the majority of countries have not had a banking crisis as such. Everyone was affected by the seizing up of markets in late 2008, but most were *not* afflicted with the sorts of asset quality and capital issues that so bedevilled large US, UK and continental European banks. This in turn meant that once the panic had subsided, the banks in most countries were able to continue to carry out their functions – albeit under more difficult circumstances and facing much more subdued demand for credit, particularly from corporations.

Australia is a good example of this, though not the only one. The lowest rate of return on equity earned among the major banks here over the past two years was about 10 per cent in underlying terms; among smaller banks the lowest was 3 per cent. When markets for securitisation closed the major banks stepped into the gap by increasing their rate of housing lending, albeit at higher prices. These banks were able to support some business customers – again at a price – that in previous cycles they might have chosen to cut. The rate of provisioning for bad loans has stopped rising for several banks, and non-performing loans are likely to peak at a considerably lower share of loans than earlier expected. This general picture, even if not the exact numbers, would, I suspect, be replicated across much of Asia.

These differences in experience are an important backdrop for the international work on regulatory reforms. There is no question that there must be some significant reform. To use the medical analogy again, the recovering patient is usually advised to consider some dietary and lifestyle changes, and perhaps to submit to some ongoing monitoring, in order to avoid further emergency procedures. These changes involve:

- removing the scope for taking on excessive leverage via regulatory arbitrage;
- making sure that adequate capital is held against risk that is being incurred;
- ensuring better management of funding liquidity;
- countering, to the extent possible, the inherent tendencies in both human nature and regulation to form assessments of risk in a procyclical way; and
- improving resolution processes to ensure orderly and rapid crisis management and to help manage the issue of 'too-big-to-fail' institutions.

These are all very important goals. The Australian authorities support them. But as we have said before, the really serious problems were generated in a relatively small number of very large, internationally active banks. They did not stem from the thousands of other banks around the world which have not needed to be 'bailed out' and whose capital resources have, in most cases, proved adequate to cover normal losses in a cyclical downswing. Hence it is important not to shackle unnecessarily the latter group in our efforts to constrain the relatively small number which caused much of the problem.

Challenges from Sovereign Debt

Turning from banks to markets more generally, a recent development has been the increasing focus on sovereign debt and creditworthiness. The initial manifestation of this was late last year when Dubai World requested a six-month standstill agreement on its debt repayments.

More recently, the focus has been on Greece, after it was revealed that the Greek Government's current borrowing requirement was much larger than had been previously disclosed. Greece is a small country – accounting for only half of 1 per cent of the world's GDP. The significance of Greece is that it is a euro area country, which means two things. First, its adjustment to its predicament cannot involve currency depreciation (unless it were to leave the single currency). The only way it can grow out of the problem is by gaining competitiveness against other European economies via domestic deflation, which will be a difficult and lengthy process. A very large fiscal consolidation is an unavoidable part of this path. Second, the euro area has an interest in this effort succeeding, which is why there has been intense discussion about whether, and in what form, European assistance might be forthcoming. Any assistance would of course have to pass the test of credibility more generally in Europe, and would need to be applicable under similar terms to other euro area countries if needed. This is obviously a difficult problem, on which the policy-makers concerned are continuing to work.

Perhaps the broader significance is that the difficulties facing Greece, while unusually stark, are a reminder of the challenges facing many governments in Europe, and for that matter the United States and Britain, over the long haul. Ratios of debt to GDP are rising quite significantly in all these cases. There are several reasons.

The first is the size of the recessions being experienced, which obviously reduces revenues and adds to some categories of spending – the so-called 'automatic stabilisers'. This effect is relatively larger in some European countries but it occurs everywhere to some extent.

The second factor is the discretionary budgetary decisions aimed at stimulating demand and injecting capital into banks. In the circumstances, the former was understandable; the latter was unavoidable.

The 'automatic stabilisers' will presumably 'automatically' move budget positions in the right direction as economies recover. The costs of stimulus and bank rescue measures, while one-off in nature, do leave debt permanently higher. But without such measures, economies might have suffered much deeper downturns and so the extent of budget deterioration could have been much greater, itself leaving an even bigger debt legacy.

If that was the end of the story, we would not want to get too worked-up over debt ratios. Unfortunately, though, there is more to the story.

For several important countries there was a trend increase in debt-to-GDP ratios going on before the crisis occurred. **For the domestic audience, let me be clear that Australia has been a conspicuous exception.** Particularly in mainland Europe, the pattern has tended to be for debt ratios to rise quickly in periods of recession, then to stabilise for some years, before rising again in the next recession. No doubt multiple factors are at work but the interaction of changing demographics and generous welfare, health and retirement systems is prominent. The same factors also work, other things equal, to lessen future potential economic growth.

It is certainly not unprecedented for countries to have debt stocks much larger than their annual GDPs. This has usually been seen when they faced the requirements of fighting wars. Those ratios subsequently came down over time. But the situation now is different. The decline in debt ratios seen after the Second World War, for example, driven by rapid growth in output as population expanded and productivity surged, will not easily be repeated in many of the major countries.

It is these more deep-seated trends, which were in place before the crisis, that are really the greater cause for concern; the crisis has brought them more sharply into focus. The demographic drivers will continue for the foreseeable future, while the unwillingness or inability to tackle the structural trends in earlier 'good times' has significantly reduced future flexibility.

So a number of advanced industrial countries face some difficult fiscal decisions over the years ahead. At some point, significant discretionary tightening will be required. Of course policy-makers need to get recoveries well entrenched, which is why many observers warn against attempting an early fiscal consolidation. But unless a credible path to fiscal sustainability can also be set out, growth could easily be stunted by rising risk premia built into interest rates as markets worry about long-run solvency. This is not happening as yet; long-term rates in many of the major advanced countries remain quite low. That provides a window within which to plan the eventual consolidation. Since markets can be fickle and things can change, governments will surely want to use the window.

Economic Recovery

In the meantime differences persist in the pace of economic recovery across regions. In the United States growth spurred by a swing in the inventory cycle is thought to have marked the turning point in the second half of 2009, but most observers still expect only moderate growth this year. In Europe, the momentum of the recovery has been less certain. In both cases the old forecasting cliché about uncertainty applies in spades.

In contrast, it is apparent that the letter 'V' is a reasonable description of the trajectory, to date, of important emerging countries like China, India, Brazil and a number of smaller east Asian countries. We should expect to see some moderation in the pace of growth of production in some of these cases this year. This is usually the case in 'V-shaped' recoveries, since the initial pace of expansion is considerably higher than the long-run sustainable growth rate.

The question of what happens to demand in these countries is of course distinct from that of what happens to production. Full employment in parts of the emerging world will probably be reached before full employment in North America or Europe. Productive capacity therefore would remain to meet further demand from the emerging world, via

imports of goods and services from the 'old world'. That is, emerging Asia and some other parts of the world could see their living standards rise a bit faster than the increase in their own productivity, for a time, if they were prepared to meet some demand through imports. Facilitating this most efficiently would of course involve, among other things, allowing exchange rates to change.

The alternative approach would be to seek to slow growth in demand in the emerging world as production there approaches full capacity, so as to maintain internal balance at a given set of exchange rates. But that would leave unused capacity in the industrial countries and emerging world living standards lower than they could be. These are polar cases – it would of course be open to policy-makers to steer some path in between.

Among Asian policy-makers many factors go into thinking about exchange rates and trade and capital flows. They have a degree of suspicion of rapid capital flows and large movements in exchange rates, which is understandable after the experiences of the late 1990s. It is also understandable that the smaller economies, some of which are extremely open, with trade shares of more than 100 per cent of GDP, do not wish to see volatile exchange rates because it is disruptive for their economies. Moreover, the issue goes well beyond just exchange rates *per se*; it involves saving and investment patterns, and national policy approaches to growth, the speed with which these can be adjusted and so on. The point, nonetheless, is that the current and prospective differences in economic circumstances between significant parts of the world are likely to put strains on the relative settings of macroeconomic policies and exchange rate arrangements. This will need careful management, by all concerned, over the next few years.

Conclusion

The stabilisation of financial markets and banking systems over the past year or more is a welcome development for all of us. There are still difficulties to overcome for financial institutions in some key countries as a result of the depth of recessions, and these will be the subject of attention over the coming year. Looking ahead, the differences in the speed of economic recovery are starting to present challenges of their own, showing up as they do in capital flows, asset valuations and exchange rates. When we add to all that the looming long-term requirement for fiscal consolidation in a number of major countries, there is plenty for markets and policy-makers alike to think about.

I'm sure your conference will take up these issues with great energy. I wish you every success in doing so.

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 have been published since 1993. The most recent titles are:

- *Reserve Bank of Australia 50th Anniversary Symposium,* forthcoming
- *Inflation in an Era of Relative Price Shocks,* May 2010
- *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:

- *Submission to the Inquiry into Access of Small Business to Finance,* March 2010
- *Submission to the 16th Series Review of the Consumer Price Index,* March 2010
- *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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The Current Economic Landscape, Philip Lowe, Assistant Governor (Economic), February 2010

The Evolving Financial Situation, Guy Debelle, Assistant Governor (Financial Markets), February 2010

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