

Bulletin

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Trends in Farm Sector Output and Exports

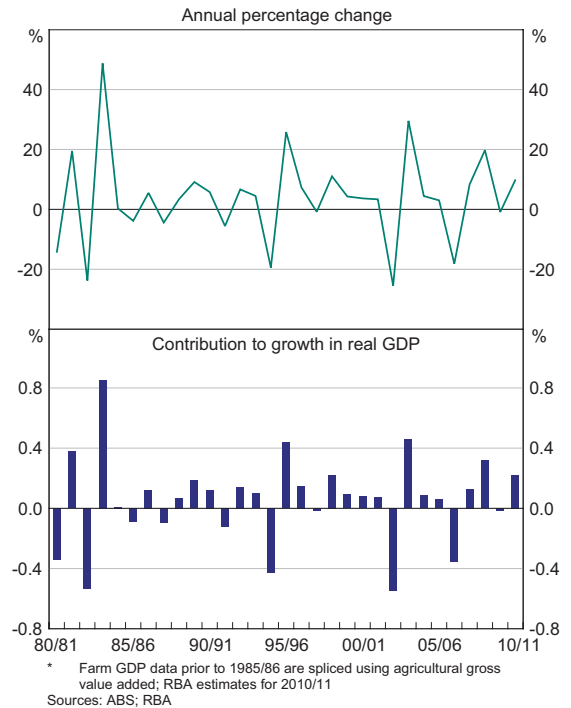
Vanessa Rayner, Nicholas Tan and Nick Ward*

Over time, the size of the farm sector has fallen relative to other sectors in the economy. However, the sector still has an important influence on the nation's pattern of economic growth and its exports. Over the last couple of decades the composition of farm production has moved towards crops and away from livestock. This has had an impact on how drought affects overall farm output, as crop production tends to fall sharply and then recover quickly when the drought breaks, while livestock production is relatively more resilient in the short term but is slower to recover.

Introduction

The farm sector has an important influence on the macroeconomy, despite accounting for around 2½ per cent of nominal GDP over the past decade. Although this is a much smaller share of GDP than in earlier decades, variation in weather conditions makes farm output volatile and this volatility can have significant effects on aggregate GDP growth from year to year (Graph 1). For example, over the past two decades it has not been uncommon for changes in farm production to add (or subtract) almost ½ percentage point to (from) annual GDP growth. In the current financial year, rainfall across many of the major cropping regions in the eastern states has been above average and it is likely that farm output will again make a positive contribution to growth in the overall economy. However, recent flooding in eastern Australia and potential damage from locusts are downside risks to the outlook for farm production. Given the importance of the farm sector, this article discusses recent trends in production and exports, including how patterns of farm production change during periods of drought.

Graph 1
Farm GDP*



* The authors are from Economic Analysis Department.

Trends in Production and Exports

In 2009/10, the value of farm production was \$23 billion, representing around 2 per cent of nominal GDP. The relative size of Australia's agricultural industry has declined over the past 50 years, with the sector's share of nominal GDP falling from 15½ per cent in 1959/60 to an average of 2½ per cent over the past decade. Employment in the farm sector has also declined relative to the rest of the economy. According to data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), 10 per cent of Australia's workforce was employed in the farm sector in the early 1960s, or around 440 000 people; this compares with around 325 000 people employed in 2009/10 (or 3 per cent of total employment). Similarly, the share of agriculture-related machinery & equipment investment has

declined from around 20 per cent in the early 1960s to an average of 5½ per cent over the past decade.¹ Nonetheless, the farm sector still accounts for a significant share of Australia's goods exports; farm goods accounted for 13 per cent of the value of total goods exports in 2009/10, down from 44 per cent in the 1970s.

Farm production can be decomposed into crops and livestock-related products. Over the past three decades, the share of farm output accounted for by crops has increased from a little under one-half of production to a little over one-half (Table 1). Underlying this increase has been a rise in the importance of crops other than grains, such as fruits, vegetables and nursery crops. Within the livestock industry, the share of meat production has increased relative to other livestock products, such as dairy and wool.

Despite the increase in farm output over the past decade – with average annual growth of around 1½ per cent – rural exports have been broadly unchanged (Graph 2). This divergence partly reflects an increase in domestic consumption of grains, in particular wheat, but also relatively weak growth in those industries that tend to have a high export share of production, namely wool and dairy. As has been the case with production, the composition of exports has shifted towards crops and away from livestock since the 1980s; while the share of rural exports accounted for by meat production has increased, this has been more than offset by a decline in the share of exports accounted for by wool (Table 2).

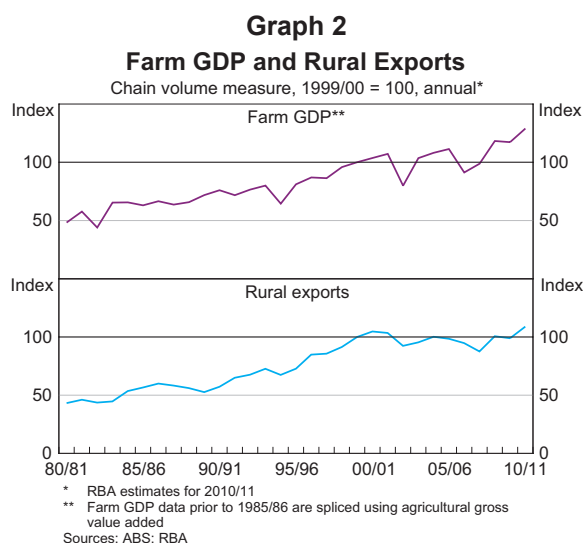


Table 1: Agricultural Output
Share of gross value of farm production; per cent

	Crops		Total	Livestock		Total
	Grains	Other		Meat production	Other ^(a)	
1980s	24	22	46	26	28	54
1990s	22	30	52	26	22	48
2000s	22	31	53	31	16	47

(a) Mostly dairy and wool
Source: ABARES

¹ Agriculture-related investment data include the agriculture, forestry and fisheries industries.

Table 2: Composition of Farm Exports
Share of total farm exports; per cent

	Crops			Livestock		
	Grains	Other	Total	Meat production	Other ^(a)	Total
1980s ^(b)	24	16	40	20	40	60
1990s	23	23	46	24	30	54
2000s	24	22	45	31	24	55

(a) Mostly dairy and wool

(b) Refers only to 1985/86–1989/90

Sources: ABARES; ABS

Crop production

The mix of crop production has changed noticeably over the past few decades. In the 1980s, the share of total crop production accounted for by grains was broadly similar to that for other crops. However, in the 1990s and 2000s, the production of other crops increased at a faster rate than for grains, driven by strong growth in the production of fruits, vegetables, nursery crops and hay. The increase in fruit production was partly due to an expansion in wine grape production, associated with a surge in wine exports.

The share of grains production that is exported has declined over the past two decades, as growth in domestic demand has outstripped modest growth in production (Table 3 and Graph 3). This decline in the export share of grains production has been

driven by wheat and is consistent with an increase in the domestic use of wheat and other grains for animal feed.

Graph 3
Grains Production
Annual*

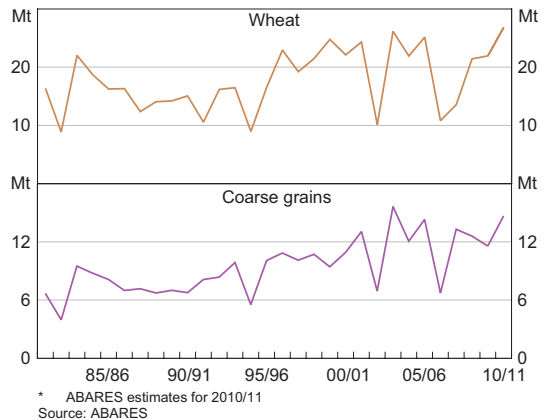


Table 3: Rural Commodity Exports
Per cent of production^(a)

	1980s	1990s	2000s
Grains ^(b)	72	64	61
– Wheat	82	76	70
– Coarse grains	52	41	45
Wool ^(c)	100	107	111
Meat ^(d)	50	58	62
– Beef	54	62	65
– Mutton	65	64	75
– Lamb	15	23	40
Dairy ^(e)	44	63	63

(a) Production data are in kilotonnes

(b) Includes wheat and coarse grains (e.g. barley, oats, sorghum, maize and triticale)

(c) 1980s data are from 1981/82 onwards. Shares are greater than 100 per cent due to large stocks being run down

(d) Includes beef, mutton and lamb

(e) Includes butter, cheese and milk powders

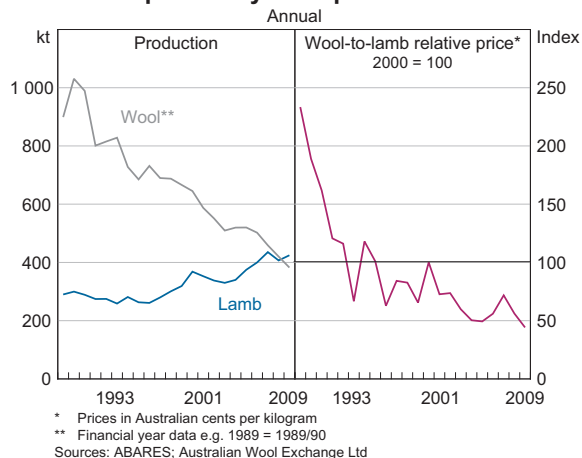
Sources: ABARES; RBA

Livestock production

Livestock production as a share of total farm output has fallen over the past three decades, with a decline in other livestock (which includes dairy and wool) more than offsetting a moderate increase in meat production. In the 1990s, other livestock accounted for just over 45 per cent of the value of livestock production, but this fell to just below 35 per cent in the 2000s. A key driver behind this decline has been a sharp fall in wool production, which was around 60 per cent lower in 2009/10 than in 1989/90. The structural decline of the wool industry has been influenced by changes in relative prices; the Australian dollar price of wool has fallen sharply over the past two decades, especially around the collapse of the reserve price wool scheme in the early 1990s, and as demand has shifted towards alternate fibres (Graph 4).

The rising share of meat production also reflects stronger external demand, most noticeably from Asia. The share of beef and veal exports to Asia rose from around 30 per cent in 1988 to a little over 60 per cent in 2008 (Table 4). This was driven by growth in exports to Japan after the removal of Japanese beef import quotas in the early 1990s as well as higher exports to Korea (Nossal, Sheng and Zhao 2008).

Graph 4
Sheep Industry – Output and Prices



Growth in beef exports to Asia has also supported the development of the Australian feedlot industry, initially in response to demand for grain-fed beef in Japan. This contributed to ongoing increases in average slaughter weights. As a result, domestic demand for grain has risen, in particular for wheat.

While much smaller than the meat production industry, the live cattle export industry has also experienced rapid growth over the past two decades. This industry is predominantly based in northern Australia, with producers mainly servicing demand

Table 4: Beef and Veal Exports by Destination

	Export volumes; kt			Share of exports; per cent		
	1988	1998	2008	1988	1998	2008
US	338	285	235	58	33	25
Asia	185	427	583	32	50	61
– Japan	136	321	364	23	38	38
– South Korea	10	34	127	2	4	13
Europe	6	54	85	1	6	9
Total	585	855	957	100	100	100

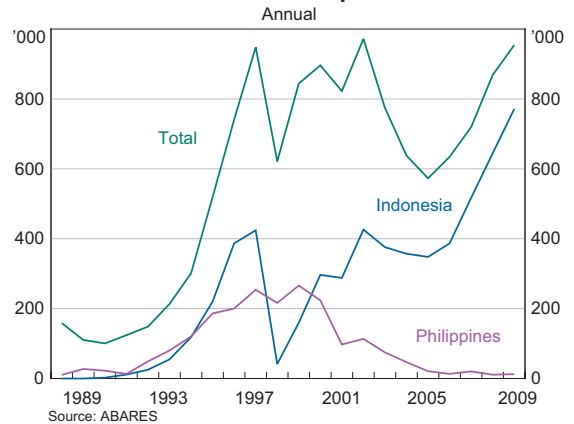
Source: ABARES

from south-east Asian markets. Demand for live cattle has been largely driven by the availability of cheap and abundant feed material in some Asian markets and, to a lesser extent, by demand from traditional 'wet' markets (markets without refrigeration, where fresh meat rather than frozen product is sold). Live exports have grown from 110 000 head of cattle in 1989 to around 950 000 cattle in 2009 (Graph 5). The majority of this growth occurred between the early 1990s and the Asian financial crisis in 1997, with demand particularly strong from Indonesia and the Philippines. However, over the past decade, live cattle exports to the Philippines have declined significantly due to a pick-up in meat imports from India and Brazil. In contrast, exports to Indonesia have continued to rise, in part due to Indonesian quarantine measures that restrict beef imports from countries that are not free of foot-and-mouth disease (Martin, Van Mellor and Hooper 2007).²

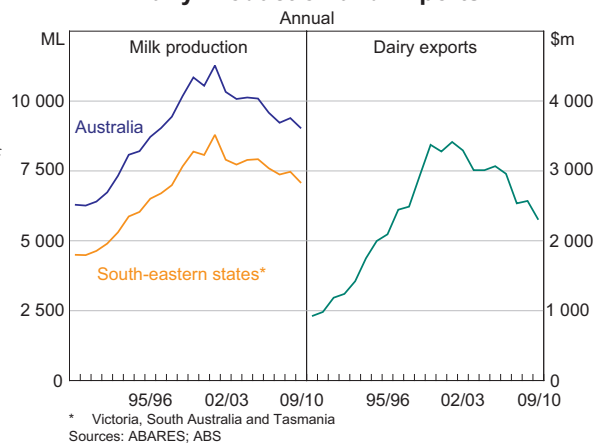
The dairy industry has increased as a share of livestock-related production over the past two decades. Milk production increased strongly from the start of the 1990s until the 2002 drought. During this period there was ongoing deregulation and consolidation within the industry, which resulted in a greater export focus, productivity gains and an increase in milk produced in the predominately export-focused south-eastern states (Graph 6). As a result of these productivity gains and increases in the dairy herd, dairy industry output grew strongly throughout the 1990s and into the 2000s. During this period, output expanded by over 60 per cent while exports more than tripled largely due to increased trade with Asia. In contrast, dairy production has fallen over the past decade as drought noticeably reduced the national herd.

² More recently, the Indonesian Government has enforced a weight limit on imported cattle and reduced import permits.

Graph 5
Live Cattle Exports



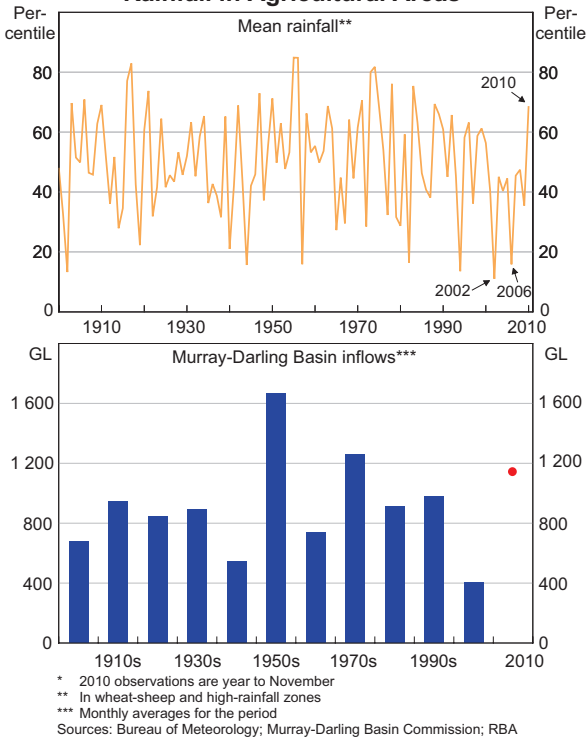
Graph 6
Dairy Production and Exports



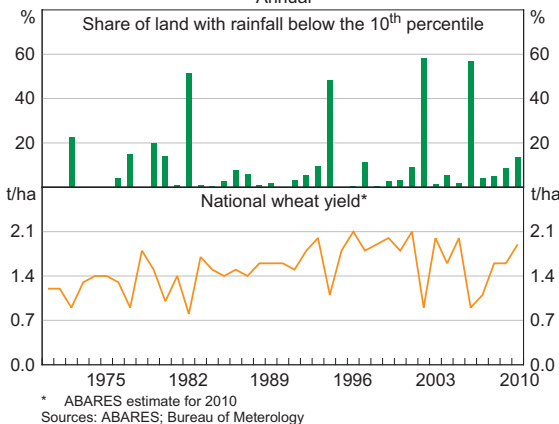
Recent Developments and the Impact of Drought

After difficult conditions over much of the past decade, aggregate farm production is expected to increase solidly in 2010/11, although there are currently significant divergences across the eastern and western parts of the country. A La Niña weather system is firmly established in the Pacific Ocean and, consistent with this, rainfall across many of the major

Graph 7
Rainfall in Agricultural Areas*



Graph 8
Drought and Wheat Yields
Annual



cropping regions in the eastern states has been above average in the second half of 2010. In recent months, inflows to the Murray-Darling basin have increased to be well above long-run average levels; this follows a decade when inflows were the lowest for a century (Graph 7).

While crop growing conditions in the eastern states had been favourable up until the end of November, recent flooding has caused harvest delays and it is possible that some crops may not be able to be harvested. The flooding will also likely reduce the quality of some crops. However, there is a large degree of uncertainty about the impact of recent adverse weather conditions and, at this stage, ABARES and other forecasters are still forecasting a large increase in the winter crop.

In contrast, most cropping regions in Western Australia have experienced very dry conditions this year and a significant fall in crop production is expected. The improvement in wheat crop yields in the eastern states, however, is expected to offset lower yields in Western Australia (Graph 8). Although potential damage from locust plagues is another downside risk to crop production in the eastern states, in previous episodes spraying of insecticides has reduced damage to crops and pasture. Meat production is expected to remain broadly flat in 2010/11, with good rainfall providing farmers with an incentive to rebuild their herds. Overall, these outcomes are expected to underpin growth in farm GDP of around 10 per cent in 2010/11, contributing around ¼ percentage point to overall GDP growth. This is one of the stronger outcomes in recent times; a larger contribution has been recorded in only five years since 1980.

Up until the end of November, developments in the farm sector were fairly typical of those when growing conditions are favourable. However, as is all too familiar in Australia, rural production is affected by drought periods, which typically see farm output fall sharply. For example, farm GDP fell by 18 per cent in 2006/07 due to drought, and increased only moderately in 2007/08 before recovering in

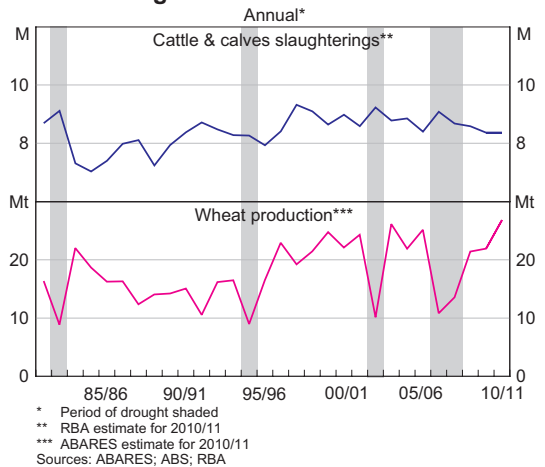
2008/09. This drought was unusually long and farm output bounced back more slowly than following the droughts of 1982, 1994 and 2002. The effect of drought on rural exports tends to be somewhat smaller than its effect on farm GDP, given the build-up of stocks in some industries after good seasonal conditions. Wheat stocks, for example, can grow to about 25 per cent of annual production after a large harvest.

The impact of a drought differs across types of rural production. In the livestock industry, a drought reduces the amount of available pasture, which in turn reduces production per animal. This effect is usually observed over more than one season, and it can be partly offset by the use of supplementary animal feed. Furthermore, as pasture dwindles, farmers tend to reduce herds and, in doing so, contribute to meat production. Livestock production therefore usually falls by less relative to other rural industries during a drought. Similarly, after a drought, the recovery in livestock production tends to be muted, as livestock farmers emerge from drought with fewer animals that are less productive.

In the cropping industry, the impact of drought on production patterns is quite different, with sharp falls and rebounds in production evident. Drought prevents some farmers from sowing seed and it also substantially reduces the volume of crops produced per hectare planted (the crop yield). Thus, production in the cropping industry tends to drop sharply in drought years. However, production can recover quickly as improved rainfall, and an increase in the nitrogen content of the soil – which results if no crop is sown during the drought – can significantly lift the yield. Farmers tend to increase the area they plant in anticipation of this improvement. Further, if the number of animals culled from the livestock industry has been significant, some additional land may be available for planting. Cash flows tend to be generated more quickly in the cropping industry, so some farmers substitute away from livestock and into cropping as seasonal conditions improve.

These differences in the way drought affects the rural sector were evident in 2006 and 2007 (Graph 9). Grain production fell sharply in 2006/07, as adverse seasonal conditions drove large falls in both the area planted and the yield. Grain production then recovered relative to other rural industries in 2007/08, albeit modestly; some positive early season rainfall and higher prices boosted the area planted, though the yield remained well below average. Production then increased more substantially in 2008/09 as seasonal conditions improved. In contrast, production in the meat industry did not fall sharply in 2006/07 and 2007/08. The use of grain as supplementary feed was higher than in previous droughts, and an increase in the number of cattle slaughtered in 2006/07 supported meat production. However, with the price of feed-grade wheat more than doubling between 2005/06 and 2007/08, the higher intensity of grain feeding weighed on farm profitability. As farmers have sought to rebuild herd numbers, the number of cattle slaughtered has declined since the drought, and growth in meat production has therefore been muted.

**Graph 9
Agricultural Production**



Conclusion

Despite declining relative to other sectors in the economy, the farm sector still plays an important role in determining the nation's pattern of economic growth. After a challenging decade, farm production is expected to increase solidly in 2010/11, with an increase in crop production offsetting a softer outlook for livestock. However, recent flooding in eastern Australia and potential damage from locusts are downside risks to the outlook for farm production. Following high rainfall, inflows to the Murray-Darling basin have increased in 2010 to above-average levels. This follows a decade when inflows were the lowest in recorded history and the nation experienced two severe droughts.

The composition of farm production has shifted somewhat towards cropping over the past two decades, with crops now accounting for over half of farm output. Moreover, there have been considerable changes within the cropping and livestock sub-industries in response to changes in relative prices, changing preferences and technological advancements. In particular, the cropping mix has shifted away from grains in favour of other crops, while the livestock-related sector has moved towards a greater focus on meat and dairy production, with wool production declining sharply over the past couple of decades.

The compositional shift in farm production towards crops and away from livestock has implications for how drought affects overall farm output. The production of crops tends to fall and recover sharply as a result of drought, as the area sown and the crop yield usually fall and rise in line with seasonal conditions. Production in the livestock industries tends to fall less sharply in drought years as farmers can use supplementary feed to support production, and tend to increase the number of animals they cull, which supports the production of meat. As drought can leave these farmers with fewer animals that are less productive, the recovery of this industry tends to be protracted. ✖

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Developments in Utilities Prices

Michael Plumb and Kathryn Davis*

Large increases in the prices of utilities have been a notable feature of consumer price inflation in Australia in recent years, and further large increases are anticipated over the next few years. The recent price rises reflect the move towards cost-based pricing, the need to replace and expand infrastructure to meet demand, and rising input costs. At times, these increases in utilities prices have had a significant effect on aggregate inflation. While international comparisons are not straightforward, the level of electricity and gas prices in Australia does not, however, appear to be particularly high compared with prices in a number of other advanced economies.

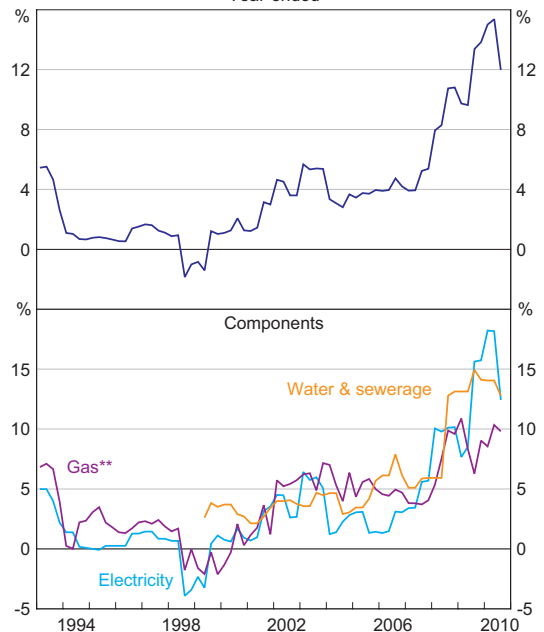
Introduction

Utilities prices have been one of the fastest growing sub-groups of the consumer price index (CPI) in recent years, and further large increases are anticipated over the next few years. This article discusses developments in utilities prices, including some aspects of market structure and pricing, and the reasons for the recent large price increases. The implications for inflation in Australia are also examined. While international comparisons are not straightforward, some attempt is made to compare the level of electricity and gas prices across a number of advanced economies.

Developments in Utilities Prices

In the CPI, utilities comprise electricity, gas & other household fuels, and water & sewerage. The prices of utilities have increased strongly in recent years, with the pace of inflation reaching 15 per cent over the year to June 2010, before moderating a little recently (Graph 1). These increases follow subdued price rises during most of the 1990s. Given that utilities have an effective weight of more than 4 per cent in the CPI, the recent pick-up in utilities price inflation has had a significant impact on aggregate inflation.

Graph 1
Utilities Price Inflation*
Year-ended



* Adjusted for the tax changes of 1999–2000
** Includes other household fuels
Sources: ABS; RBA

* The authors are from Economic Analysis Department.

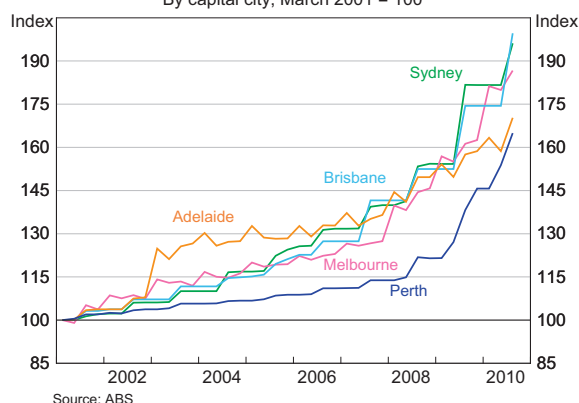
Table 1: Utilities in the Consumer Price Index
September quarter 2010; per cent

	Effective weight	Inflation over the year	Inflation over the previous five years (annualised)
Utilities	4.2	12.0	7.5
<i>of which:</i>			
Electricity	2.2	12.4	7.3
Gas ^(a)	0.9	9.8	6.1
Water & sewerage	1.1	12.8	9.1

(a) Includes other household fuels
Sources: ABS; RBA

Graph 2
Utilities Price Indices

By capital city; March 2001 = 100



The large price increases in recent years have been broadly based across the different utilities. Over the past year, electricity and water & sewerage prices in the CPI both increased by more than 12 per cent, while the price of gas & other household fuels rose by nearly 10 per cent (Table 1). By comparison, the CPI excluding utilities increased by 2½ per cent over the past year. All capital cities have recorded strong increases in utilities prices over the past decade, even though prices are generally set independently across the states, with the largest increases recorded in the east coast capital cities (Graph 2).

Market Structure and Pricing

Electricity and gas

There have been substantial changes to Australian retail energy markets over the past couple of decades.¹ Many large state-owned monopoly providers have been disaggregated, some retail assets have been privatised and most governments have introduced ‘full retail contestability’, allowing customers to choose their energy provider. In each state or territory, retail energy providers include one or more ‘host retailers’, which are generally subject to greater regulation such as being required to offer a regulated standard (or default) contract to small customers with defined terms and conditions. In addition to the host retailers, other energy providers in the market include established interstate retailers, gas retailers that have expanded into electricity provision, electricity providers that have expanded into gas provision, as well as completely new providers.

The prices paid by households are regulated, at least to some extent, in most states. In general, host retailers’ standard contracts are based on regulated pricing.² Retailers (including host retailers) can also offer a range of other contracts with

1 For a more detailed discussion of these issues, see Australian Energy Regulator (2009, 2010).

2 Standard contract prices for electricity are regulated in all states except Victoria. Standard contract prices for gas are regulated in New South Wales, South Australia and Western Australia.

varying price structures; these include contracts that are discounted relative to the standard offer, 'green' products and 'bundled' products that combine electricity and gas services. The standard contract price is generally underpinned by three components, with different regulatory arrangements applying for each:

- The *wholesale* component, which is the cost to retailers of buying energy from the wholesale market. The wholesale price paid by retailing firms is largely unregulated, with wholesale electricity prices in most states set in the National Electricity Market (NEM) and wholesale gas prices mostly set in confidential contracts between retail firms and wholesalers.³ A number of states regulate the amount that retailing firms can charge retail customers to cover these wholesale costs (prices are typically set one to three years ahead, with more frequent reviews of certain parameters, depending on the state).
- The *network* component, which is the cost of distributing the service to the end-customer via transmission and distribution networks. This component is regulated by the Australian Energy Regulator (AER) for electricity networks in most states and some gas networks, with prices typically reset every five years (in special circumstances, certain unforeseen costs can be passed through to customers during the regulatory period).⁴
- The *retail* component, which includes retail operating costs, such as meter reading, billing and marketing. In the case of electricity, this component is regulated in each state (except Victoria), with prices generally set one to three years ahead. In the case of gas, this component is only regulated in NSW, South Australia and Western Australia.

As well as recovering these costs, retailers are allowed to make a 'reasonable margin'. For example,

allowable electricity retailer margins currently range from 3 to 5 per cent across the states.

The relative contribution of each component to the final price varies across the different utilities and by state. For electricity, a typical breakdown of the final price is around one-half for the network component and 40 per cent for the wholesale component, with the retail component and margin comprising the remainder. For gas, the network component is typically around one-half of the final price, with the contribution from the other components varying across states.

Water & sewerage

Most water & sewerage services are still operated by state monopolies. Prices charged to households take into account several factors (not dissimilar to those for electricity and gas), including the cost of infrastructure replacement and building of new infrastructure (including desalination and recycling plants), bulk water costs and general operating costs.

Why Have Utilities Prices Risen so Rapidly?

There are a number of factors behind the large increases in utilities prices over recent years.⁵ While the specific factors vary across each of the utilities and from state to state, there are some common themes. These include an element of 'catch up' for the below-average price increases and under-investment in infrastructure during much of the 1990s – when in real terms, utilities prices fell by 7 per cent – as well as changes in the structure of the market, and rising investment and input costs.

Cost-based pricing

Over time, price setting has become increasingly based on costs. This has been associated with a more detailed analysis of costs in regulatory pricing decisions and giving regulatory bodies a greater mandate to set prices on the basis of costs.

³ A price cap of \$12 500 per megawatt hour exists in the NEM. Note that Western Australia and the Northern Territory are not part of the NEM.

⁴ Prices in Western Australia are regulated at the state level, rather than by the AER.

⁵ For a more detailed discussion of these issues, see Australian Energy Regulator (2009, 2010).

DEVELOPMENTS IN UTILITIES PRICES

One consequence has been the unwinding of cross-subsidies between household and business customers, which has resulted in higher prices for households in some states.⁶

Infrastructure replacement and expansion

A major factor behind the recent large increases in utilities prices has been the need to significantly increase investment in infrastructure. While the net capital stock of utilities grew at a rapid pace in the 1960s and early 1980s, it expanded at an average

annual pace of less than 1 per cent through the 1990s (Graph 3). Since 2000, growth in the net capital stock has picked up sharply, both to update ageing infrastructure and to expand capacity.

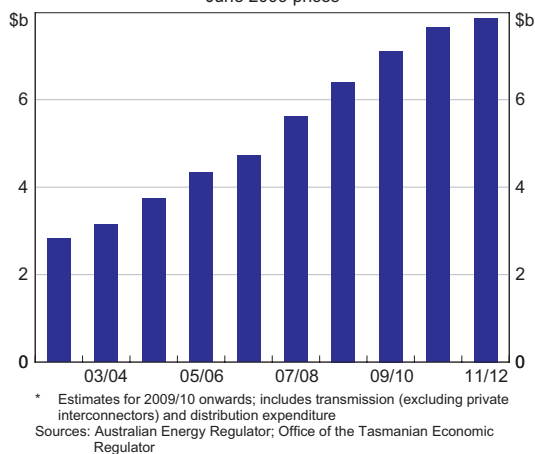
For electricity, investment in transmission and distribution networks has increased sharply in recent years and is expected to remain high for quite some time (Graph 4). This partly reflects the need to replace ageing assets, given that a sizeable proportion of the electricity network infrastructure in Australia was built between the 1950s and 1970s and is coming to the end of its technical life. Investment has also been driven by the need to expand network capacity. This is partly in order to satisfy strong growth in demand for electricity at peak times, particularly due to the greater use of air conditioners and heaters on the hottest and coldest days of the year. Network providers need to ensure they have the capacity to meet this peak demand, even though this extra capacity will be idle during non-peak periods. Moreover, growth in peak demand is expected to outpace growth in overall electricity consumption, which implies that the additional costs involved in expanding capacity will not be matched by increased sales overall, leading to higher prices per unit of electricity sold. Expansion has also been required to meet more stringent reliability standards.

Under the pricing model used by the AER, an increase in investment contributes to higher prices in the regulatory period, as network prices are set to cover an 'annual revenue requirement', which consists of 'regulatory depreciation' (through which firms recoup the cost of capital expenditure over the life of an asset), as well as a 'return on capital', operating expenditures and tax liabilities. Recently an increase in the assumed return on capital, which takes into account borrowing costs, has also contributed to utilities price increases. Most recent price determinations were made in 2009 and 2010 – during and following the financial crisis – when the cost of debt was higher than when previous regulatory decisions were made in the mid 2000s.

Graph 3
Growth in Utilities Net Capital Stock
Chain volumes, annual



Graph 4
Electricity Network Capital Expenditure*
June 2009 prices



⁶ This unwinding began in the 1990s, with larger real falls in electricity prices for businesses than for households.

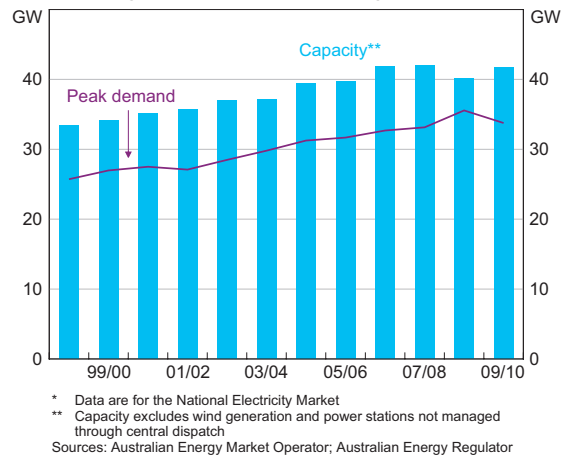
In contrast to investment in transmission and distribution networks, investment in electricity generation capacity has been more modest over the past decade. Generation capacity in the NEM (excluding wind) has increased at an annualised rate of about 1¼ per cent over the past five years, broadly keeping pace with the increase in peak demand for electricity (Graph 5). However, there will be a need for increased generation investment in coming years, with current capacity and committed capacity expansions sufficient to meet demand and reliability standards until 2013/14.⁷ If future investment in supply capacity is insufficient, this would put pressure on spot prices, and eventually household electricity prices.

A large amount of investment in gas transmission and distribution infrastructure has occurred over the 2000s, and more is expected. Investment in gas distribution networks in particular has been considerable, and has typically involved upgrading and expanding existing networks and extending networks into new areas.

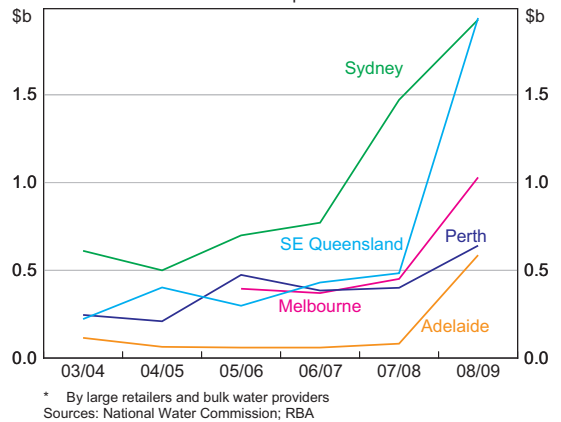
Significant investment in water infrastructure has also been undertaken and further investment is planned, to secure a more stable water supply (Graph 6). Throughout most of the 2000s, water supply was affected by drought. Water storage levels fell noticeably across most of the country, despite demand management contributing to an easing in usage per household. For example, storage levels in Melbourne fell from 80–90 per cent of capacity throughout the first half of the 1990s to around 30–40 per cent in the late 2000s. Similarly, Sydney storage levels would have fallen to less than 15 per cent of capacity in 2007 had water not been diverted from the Shoalhaven river system. Significant investment in desalination plants has been undertaken, as has investment in recycling plants and water grid infrastructure. To date, three desalination plants have been constructed, and more are expected to be completed in the next three years. Once these projects are completed,

⁷ For more information, see Australian Energy Market Operator (2010).

Graph 5
Electricity Generation Capacity and Demand*



Graph 6
Water and Sewerage Capital Expenditure*
2008/09 prices



the Water Services Association of Australia (2010) estimates that 35 per cent of capital city water needs will be supplied by desalination (based on 2008/09 consumption).

Rising input costs

The drought not only led to upward pressure on water prices, but also affected electricity prices. The drought contributed to a pick-up in wholesale electricity prices from early 2007 by reducing supply from hydro-electric generators and coal generation plants (because of a lack of water for cooling).

DEVELOPMENTS IN UTILITIES PRICES

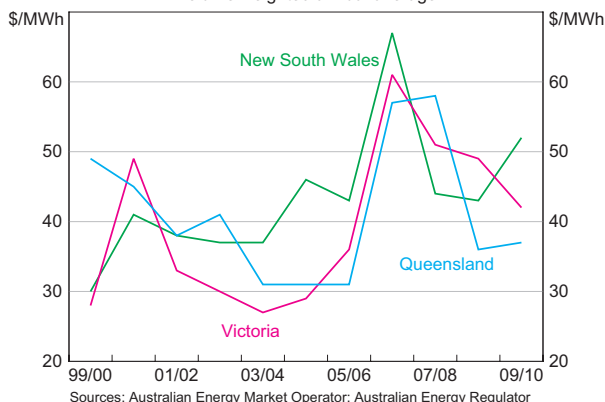
Coinciding with this, demand for electricity rose very sharply in some states due to extremely hot weather. A combination of high demand and drought-constrained supply led to an increase in wholesale electricity prices in the NEM from the decade average of around \$40 per megawatt hour to over \$50 per megawatt hour in 2006/07, contributing to the increase in household electricity prices around that time (Graph 7). Over the past few years, wholesale electricity prices have generally eased in most states.

A notable feature of the wholesale electricity market is the volatility in prices, which is masked by

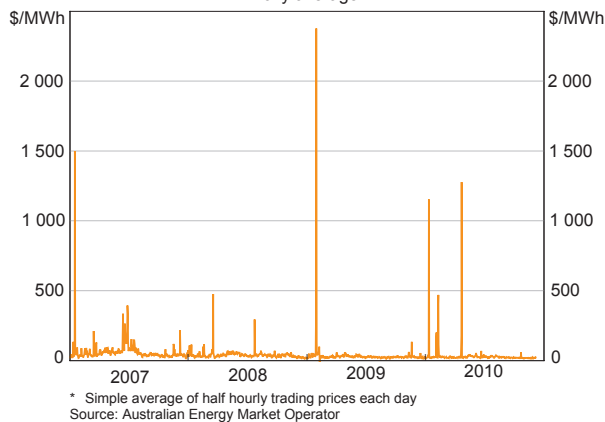
the annual averages quoted above. In Victoria, for example, average daily prices have reached more than \$2 300 per megawatt hour on certain peak days (Graph 8). At times during peak trading intervals, spot prices even occasionally reach the NEM price cap (which increased from \$10 000 per megawatt hour to \$12 500 per megawatt hour in mid 2010). Wholesale electricity providers use financial market instruments to hedge against these extreme price movements.

In some cases, utilities prices have also been affected by rising input costs for generation fuels, including gas and coal, although this is yet to lead to a broad-based increase in wholesale prices. In the case of electricity, wholesale providers have typically paid significantly less than the global commodity price for these inputs. Reasons for this include the use of long-term contracts, the use of non-exportable coal (which is lower-grade and therefore cheaper) in the generation process, and vertical integration, which allows generators in some states to source coal from their own mines. In addition, higher prices for commodities such as steel have increased the costs associated with infrastructure replacement and expansion.

Graph 7
Wholesale Electricity Prices
Volume weighted annual average



Graph 8
Victoria – Wholesale Electricity Price
Daily average*



The Impact on Inflation

Direct effect

With an effective weight of over 4 per cent in the CPI – of which electricity accounts for around half, and gas & other household fuels and water & sewerage account for roughly a quarter each – large changes in utilities prices can have a significant effect on aggregate inflation. As an example, utilities prices boosted CPI inflation by ½ percentage point over the year to June 2010 (the recent peak in utilities price inflation), relative to a counterfactual where they had grown in line with the rest of the CPI.

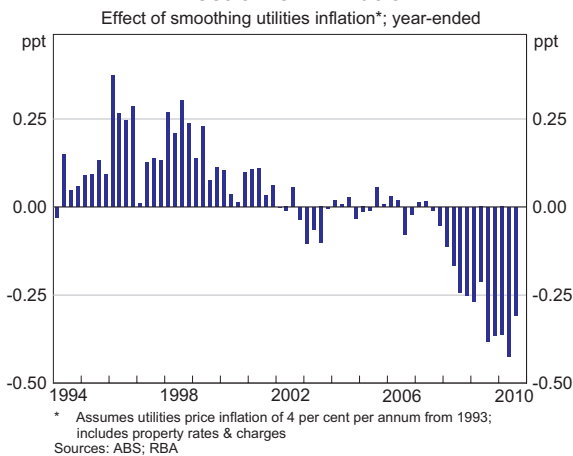
Another counterfactual is how CPI inflation would have evolved over the inflation-targeting period had the increase in utilities prices been distributed uniformly over this period, rather than concentrated

in recent years.⁸ Since 1993, the average annual increase in utilities prices has been around 4 per cent, which is higher than that observed in the 1990s, and lower than that seen in the 2000s. Assuming annual utilities price inflation of 4 per cent each year, rather than the observed outcomes, would have generated a somewhat different profile for aggregate inflation. Prior to 2000, year-ended CPI inflation would have been around 0.1 percentage points higher on average, had utilities price inflation been evenly distributed since 1993. The maximum effect would have been over the year to March 1996, when CPI inflation would have been nearly 0.4 percentage points higher (Graph 9).

Since 2000, year-ended CPI inflation would have been around 0.1 percentage points lower on average, had utilities price inflation been evenly distributed through time, with the effects most pronounced in recent years. The maximum effect would have been over the year to June 2010, when CPI inflation would have been more than 0.4 percentage points lower than the actual outcome.

The effects on *underlying* inflation of distributing utilities price inflation evenly through time are

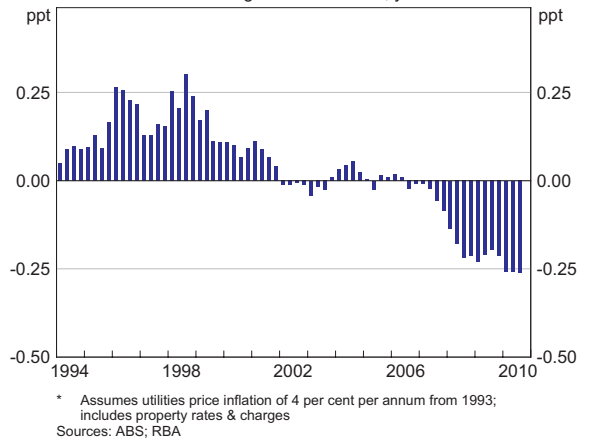
Graph 9
Effect on CPI Inflation



8 To avoid a series break in this counterfactual exercise, utilities includes property rates & charges, which were grouped with water & sewerage prior to September 1998. Series are adjusted for the tax changes of 1999–2000.

smaller, but still significant; on average over the past five years, year-ended trimmed mean inflation would have been a little over 0.1 percentage points lower, with a maximum effect of $\frac{1}{4}$ percentage point over the year to September 2010 (Graph 10).⁹

Graph 10
Effect on Trimmed Mean Inflation



Indirect effect

There is also some evidence of indirect or second-round effects of utilities prices on inflation, whereby the impact of high utilities price inflation on input costs has subsequently led to higher inflation in other goods and services. Estimates based on both econometric work and input-output tables suggest that a 10 percentage point increase in utilities price inflation is associated with a 0.3–0.4 percentage point increase in underlying inflation, over and above the direct effects. This implies that the above-average utilities price increases over the past few years could have contributed around 0.1 percentage points per year (on average) to inflation via the effect on the prices of other goods and services, in addition to the direct effects outlined above. Below-average utilities price increases during parts of the 1990s would have had the opposite effect (albeit smaller), all else equal.

9 This assumes that the rest of the price distribution was unchanged.

Cross-country Comparison of Electricity and Gas Prices

The increases in Australian household electricity and gas prices since the 1990s have been towards the upper end of the range recorded in advanced economies, and in recent years have mostly outpaced those in other advanced economies (Tables 2 and 3). Wholesale electricity and gas prices

fell noticeably in a number of advanced economies during the recent global downturn, partly due to a decline in demand from industrial customers and, in the case of gas, an increase in supply. This placed downward pressure on prices faced by households. In contrast, wholesale prices in Australia were less affected – consistent with the milder downturn in demand and other reasons discussed above – while

Table 2: CPI – Electricity

	Average annual inflation Per cent			Household electricity price ^(a) Share of income per capita
	1990–1999 ^(b)	2000–2009	Year to latest	2009
Australia ^(c)	1.6	5.0	12.4	2.8
Canada	3.3	2.5	8.1	1.9
France	na	0.8	3.1	2.8
Germany	0.7	4.5	3.3	6.3
Japan	–0.7	–0.8	3.0	5.1
United Kingdom	–2.8	6.0	–0.4	5.6
United States	0.9	4.2	0.6	2.6

(a) Price per 10 MWh, in local currency; where 2009 price level data were not available, the latest available data were extended to 2009 using CPI electricity prices; United States price includes tax

(b) Data from 1991 for Germany, and from 1996 for the United Kingdom

(c) Adjusted for the tax changes of 1999–2000

Sources: ABS; International Energy Agency; RBA; Thomson Reuters

Table 3: CPI – Natural Gas

	Average annual inflation Per cent			Household natural gas price ^(a) Share of income per capita
	1990–1999 ^(b)	2000–2009	Year to latest	2009
Australia ^(c)	2.4	5.3	9.8	1.2
Canada	4.4	2.3	10.6	0.9
France	na	5.2	13.8	1.6
Germany	0.0	6.2	0.8	1.8
Japan	1.1	1.2	4.3	3.6
United Kingdom	–1.1	9.7	–5.6	2.1
United States	1.8	5.0	1.9	1.0

(a) Price per 40 gigajoules, in local currency; where 2009 price level data were not available, the latest available data were extended to 2009 using CPI gas prices; United States price includes tax

(b) Data from 1991 for Germany, and from 1996 for the United Kingdom

(c) Inflation calculations include other household fuels and are adjusted for the tax changes of 1999–2000

Sources: ABS; Australian Gas Association; International Energy Agency; RBA; Thomson Reuters

network costs increased significantly (particularly for electricity).

Despite the large increases in Australian household electricity and gas prices, the level of these prices in Australia does not appear to be particularly high relative to other advanced economies. While it is difficult to directly compare prices across countries (for example, due to exchange rate effects), one approach is to calculate how much it costs to consume a certain amount of energy as a share of average income (measured as GDP per capita). In Australia, it is estimated that 2.8 per cent of average income was required to purchase 10 megawatt hours of electricity in 2009. While this share is more than in Canada and the United States, it is less than in Germany, the United Kingdom and Japan. In terms of gas, around 1.2 per cent of average income was required to purchase 40 gigajoules of gas in 2009 in Australia. Again, this share is more than in Canada and the United States, but less than in Japan, the United Kingdom, Germany and France. These differences in utilities price developments across countries reflect a number of factors, such as demand conditions, market structure, regulatory arrangements, resource endowments and the mix of generation technologies.

Conclusion

Large increases in the prices of utilities have been a notable feature of consumer price inflation in Australia in recent years, and further large increases are anticipated over the next few years. This follows subdued outcomes through most of the 1990s. The recent price rises reflect a range of factors, including the move towards cost-based pricing, the need to significantly increase investment to replace and expand infrastructure, and rising input costs. The direct impact of utilities price increases on aggregate inflation has been significant, and there is also some evidence of indirect effects, whereby rising utilities prices have led to higher input costs for firms, and eventually higher inflation in other goods and services. Inflation in Australian household electricity

and gas prices since the 1990s has been towards the upper end of the range recorded in advanced economies, particularly over the past couple of years. Despite these increases, the level of electricity and gas prices in Australia does not appear to be particularly high compared with prices in a number of other advanced economies. ✎

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China's Steel Industry

James Holloway, Ivan Roberts and Anthony Rush*

China's steel industry has grown rapidly in recent decades, with China now the world's largest producer and consumer of steel. This has resulted in a sharp increase in demand for iron ore and coal, Australia's two largest exports, which are key inputs for the steelmaking process. This article discusses the growth of the Chinese steel industry over the past couple of decades.

Introduction

Over the past 30 years, China's steel production has increased at a rapid pace as the economy has industrialised and urbanised. The expansion of steel production, particularly over the past decade, has been a significant driver of China's demand for raw materials, especially iron ore and coking coal. This has resulted in a considerable increase in China's imports of these commodities. This article discusses the Chinese steel industry, focusing on its structure, the geographical distribution of its steel production and recent developments.

Growth of the Chinese Steel Industry

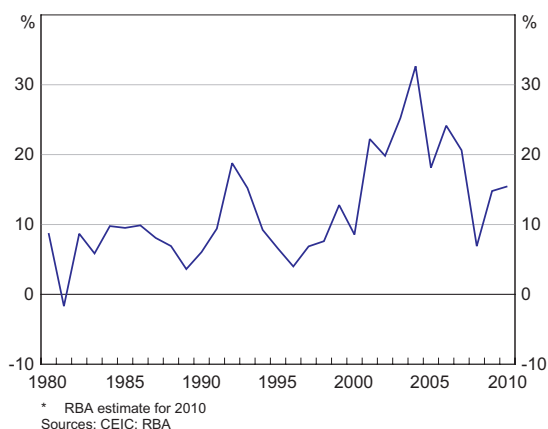
Since the introduction of market-based economic reforms in 1978, the Chinese economy has grown strongly, recording an average annual growth rate of around 10 per cent. Over this period, Chinese steel production has also expanded rapidly, growing at an average annual rate of 7 per cent during the 1980s, 10 per cent during the 1990s and close to 20 per cent in the 2000s (Graph 1).

This expansion reflects the large-scale industrialisation and urbanisation of the Chinese economy over this period, developments which have driven much of the growth of investment in infrastructure, buildings and machinery. The process of industrialisation has also been accompanied, to some extent, by market liberalisation in the steel

sector. This includes efforts to increase the autonomy of state-owned enterprises in the early 1980s that gave steel companies some independence from the government, and allowed them to invest surplus funds to improve their facilities and expand their productive capacity. Through the 1980s and 1990s, the productivity of the sector was enhanced by the opening up of China to foreign trade and investment, which gave Chinese steel producers increased access to advanced technologies.

The sustained growth in steel production has seen a pronounced rise in the 'steel intensity' of the Chinese economy (measured as steel output per unit of GDP), which is broadly similar to increases that have occurred in other countries that have industrialised

Graph 1
China – Steel Products Production Growth*

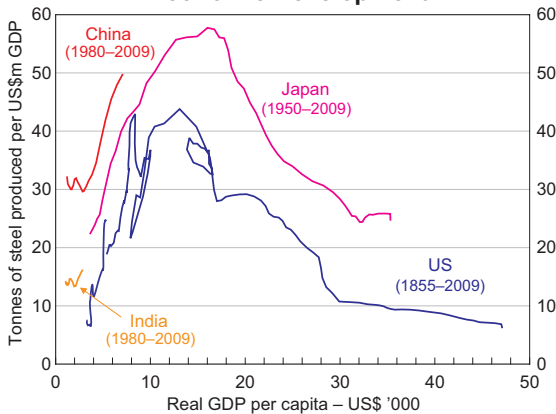


* The authors completed this work in Economic Group.

and urbanised (Graph 2). If China is to follow the same general pattern, a decline in steel intensity would be expected over time as the service sector expands, although steel intensity could stay high for another decade or so.

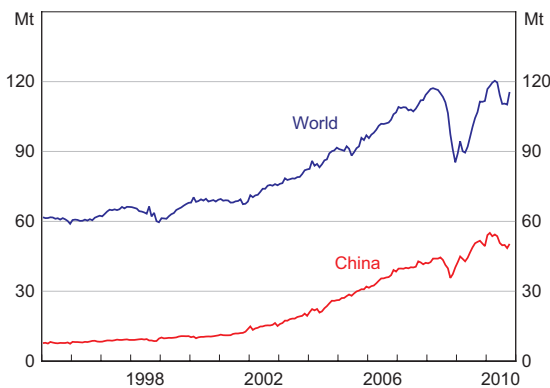
The combination of strong economic growth and rising steel intensity has resulted in a steady rise in China's share of global steel production over the past 10 years. China now accounts for around 45 per cent of global steel production, which is significantly higher than its share of 15 per cent at the start of the decade (Graph 3).

Graph 2
Steel Production Intensity and Economic Development*



* 2009 prices converted at 2005 PPP exchange rates; 5 year-moving-averages; US iron production intensity prior to 1897; Japan steel production is by fiscal year prior to 1980
Sources: Conference Board Total Economy Database (January 2010); IMF; Japan Iron and Steel Federation; Johnston and Williamson (2010); Maddison (2009); RBA; US Bureau of Mines; US Geological Survey; World Steel Association (worldsteel)

Graph 3
Crude Steel Production



Sources: RBA; World Steel Association (worldsteel)

Structure of the Chinese Steel Industry

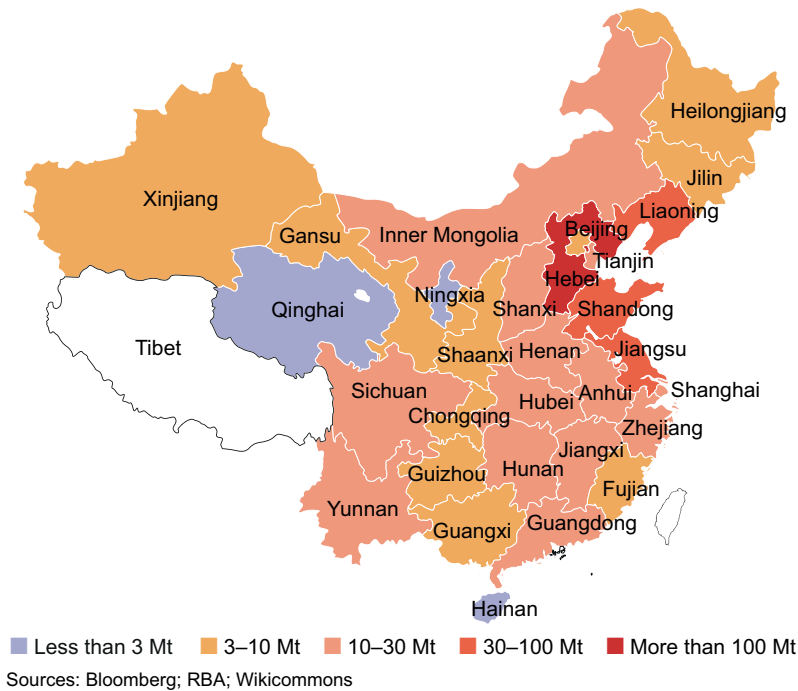
The Chinese steel industry is highly decentralised, consisting of a relatively small number of large, advanced steelmakers and a large number of small- and medium-sized firms that produce lower-value steel products. In 2008, there were more than 660 companies producing crude steel, with thousands of other firms producing finished steel and steel-related products. The top 10 producers accounted for less than 50 per cent of crude steel output, with the next 75 companies accounting for an additional 30 per cent (State Council 2009, CISA 2009). Most of the larger Chinese steel producers are state-owned, while a significant proportion of the smaller producers are private companies.

Geographically, the industry is widely dispersed. The coastal provinces account for around 65 per cent of crude steel production, with the concentration of steel production in the north-east of the country partly reflecting proximity to major iron ore mines, particularly in Hebei and Inner Mongolia (Figure 1). The north-eastern ports of Qingdao (Shandong province), Shijiazhuang (Hebei province) and Tianjin received more than half of China's iron ore imports in 2009, consistent with their proximity to major steel-producing centres (The TEX Report 2010).

The decentralised structure of the industry and the physical dispersion of steel production have raised concerns among Chinese policy-makers that the industry's lack of consolidation may be hampering its ability to exploit economies of scale. Concerns about consolidation have sometimes also been linked to perceptions of overcapacity in some parts of the industry, especially the presence of a large number of small, relatively inefficient producers. The continued use of outdated, high-polluting facilities by some smaller producers has also prompted concerns about the impact on the environment.

In July 2005, the National Development and Reform Commission issued a formal policy on steel that sought to spur consolidation by increasing the concentration of steel production among large

Figure 1
China – Crude Steel Production in 2009 by Province



producers, and to protect the environment by reducing energy consumption and eliminating obsolete production capacity. Targets for industry consolidation through mergers and acquisitions or closures of small- to medium-sized firms were outlined. In June 2010, the State Council updated these targets, announcing that the production share of the 10 largest steelmakers was to rise from 44 per cent in 2009 to 60 per cent by 2015, with a goal of cultivating three to five very large, internationally competitive iron and steel conglomerates (State Council 2010).

Steelmaking in China

Crude (or unprocessed) steel can be produced either directly from iron ore and coking coal using the blast furnace/basic oxygen converter method, or from scrap steel (and other inputs) using the electric arc furnace method. In the United States and Europe, where the electric arc furnace technology is

commonly used, between one-half and two-thirds of steel is produced using scrap. In contrast, in China more than 90 per cent of crude steel is produced by steelworks using blast furnaces and basic oxygen converters (World Steel Association 2010). This reflects difficulties with the supply of electricity in some parts of China and low domestic availability of ferrous scrap, due to relatively low household consumption of steel-intensive manufactures and limited scrap collection and processing systems. The prevalence of the converter method has important implications for resource demand: on average, each tonne of Chinese steel requires around 1.7 tonnes of iron ore and more than half a tonne of coking coal as inputs. This helps explain the significant increase in China's demand for these resources over the past decade.

The demand for raw materials is met from both domestic and foreign sources, but the majority of iron ore is sourced from abroad. China is itself a

CHINA'S STEEL INDUSTRY

major producer of iron ore and possesses extensive reserves. However, these reserves have relatively low average iron content at around 33 per cent, compared with 62 per cent in Australia and around 65 per cent in Brazil and India (Jorgenson 2010). This lower iron content makes it more expensive to process. Moreover, the bulk of iron ore reserves are located inland in the north and west of China. While steel mills in the north-east are close to major iron ore mining precincts, it is costly to transport ore to steel mills located elsewhere in the country.

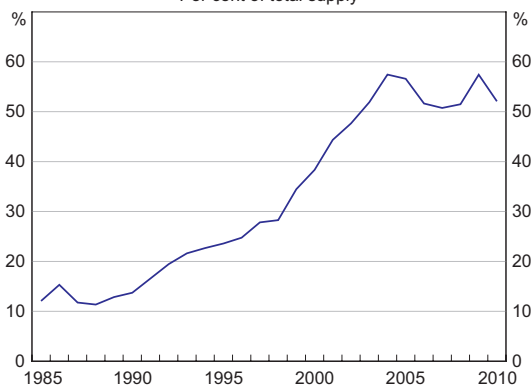
Strong demand for steel has seen the imported share of iron ore supply increase from around 10 per cent in the late 1980s to more than 50 per cent currently (Graph 4), although over the past five years China's iron ore output has generally kept pace with growth in steel production. This reflects a number of factors, including the high price of imported iron ore and the temporary downturn in steel demand associated with the global financial crisis. More recently, iron ore imports have remained at a high level, having picked up sharply as the Chinese economy recovered from the downturn in late 2008 and early 2009 aided by the substantial fiscal stimulus, although domestic production has also been strong.

In recent years, more than 80 per cent of China's iron ore imports have come from Australia, Brazil

and India. In an effort to diversify supply, Chinese policymakers have encouraged direct investment by Chinese companies in iron ore exploration and iron ore mines abroad. To date, numerous investments have been made in West Africa, South America, Central Asia, Russia, Australia and Canada, many of which are large in scale. While efforts to diversify supply may have implications for the Chinese steel industry's sourcing of raw materials in the future, the likelihood of continued high rates of economic growth suggests that China's imports of raw materials will remain high.

Until very recently, China was largely self-sufficient in coking coal, with domestic production supplying the bulk of the steel industry's needs. However, in the first half of 2009, coking coal imports surged, with a pronounced effect on Australian coking coal exports to China. This surge reflected a combination of factors, including a strong rise in steel production, a significant decline in international freight rates, and lower Chinese production of coal owing to efforts to consolidate the coal sector and mine closures or renovations for safety reasons. While China has extensive reserves of coking coal, many of its existing deposits are relatively inaccessible and therefore costly to mine. Many of these deposits are also far from major steel-producing areas (ABARE 2009, 2010).

Graph 4
China – Iron Ore Imports*
Per cent of total supply



* Assumes Chinese iron ore has 33 per cent iron content (consistent with USGS estimates), and that imported iron ore has 62 per cent iron content; 2010 estimate based on data to October
Sources: CEIC; RBA; UN Comtrade

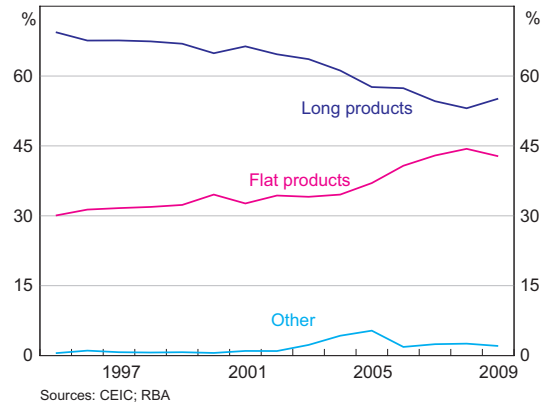
Supply and Demand

On the supply side, China's steel industry has traditionally focused on the production of 'long' products, which are widely used in residential and non-residential construction (such as bars, wires, tubes and sections). However, in recent years, higher value 'flat' products, which are used extensively in manufacturing (such as steel strips and sheets), have accounted for a rising share of production (Graph 5). Although China can satisfy most of its own steel requirements, the composition of its production has meant that over recent years around 2½ per cent of steel has been imported, especially some higher quality, technology-intensive flat products.

The main source of steel demand is investment in buildings, structures and machinery. Over the past three decades, gross fixed capital formation has risen from around 30 per cent of GDP to around 45 per cent, partly driven by reforms opening up China's internal and external markets, and a large-scale process of rural-urban migration. The construction industry is the largest direct consumer of Chinese steel products, accounting for more than one-half of steel consumption (Table 1), consistent with a product mix emphasising long products. However, at least a quarter of steel consumption can be considered broadly as 'manufacturing', including the machinery, automobile and home appliance industries.¹

Since 2006, China has been a net exporter of steel products (Graph 6). The early 2000s saw a large increase in steelmaking capacity, partly reflecting an increase in the number of small- and medium-sized firms; this growth in capacity translated into higher production, some of which flowed onto the international market. Since China's accession to the World Trade Organization in 2001, the volume of steel exports has increased noticeably; however, steel exports have not recorded sustained growth, and over the past few years have been declining as a share of total domestic production. At times when steel production has risen faster than domestic demand for steel, such as during the 2008 slowdown, China's steel exports have surged, only to decline again when domestic demand for steel has recovered, as was the case during 2009.

Graph 5
China – Steel Production by Product
Per cent of total steel production



Graph 6
China – Steel Products Supply

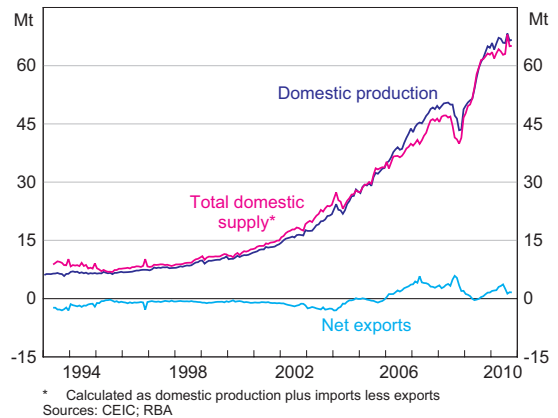


Table 1: Chinese Steel Consumption by Industry in 2008
Per cent

Industry	Share of total steel consumption
Construction	54
Machinery	18
Automobile	6
Home appliance	2
Rail, shipping and fuel ^(a)	5
Other	15

(a) 'Rail, shipping and fuel' is defined as the sum of the 'container', 'railway', 'shipbuilding' and 'petroleum' categories
Source: Wu (2009)

¹ Alternative estimates from China's official input-output tables suggest that, in value terms, manufacturing may account for a somewhat larger share of steel consumption than implied by these figures (Roberts and Rush 2010).

Recent Developments

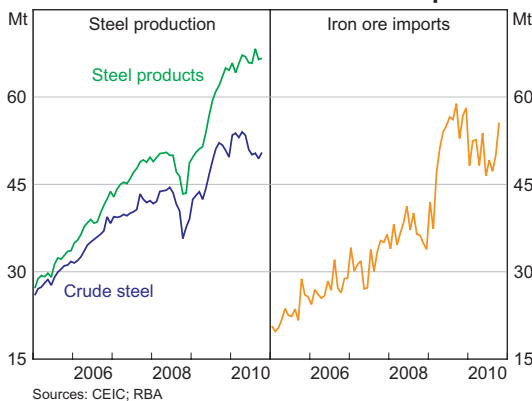
Having grown very rapidly since the start of the decade, steel output slowed sharply in 2008 as growth in the Chinese economy eased in line with the global downturn. In late 2008 the government announced a large-scale fiscal stimulus package focused on public infrastructure and housing construction, which boosted GDP growth substantially in 2009 and generated significant demand for steel. Although growth in fixed asset investment has eased over the past year, it remains

high, particularly in the manufacturing and real estate sectors, and growth in automobile production has been robust. While these indicators suggest that final demand for steel has remained solid, in 2010 to date there has been little growth in the production of finished steel products, and crude steel production has moderated (Graph 7).

This recent slowing in steel production reflects a combination of factors, including policy measures introduced by the central government in April 2010 aimed at cooling the property market, and the scrapping of export rebates for 48 steel products in July. In addition, selected steel mills received notices in September to reduce steel production by the end of 2010 in an effort to meet national five-year energy intensity targets, which form part of the government's environmental objectives. Despite the relatively subdued production of steel, China's demand for resources has been strong and this is reflected in higher prices for iron ore and coking coal, which have contributed significantly to Australia's high terms of trade (Graph 8). As the Chinese economy develops and the urbanisation process continues over the next decade or so, the production and consumption of steel are likely to rise further, underpinning strong demand for both iron ore and coking coal. ❖

Graph 7

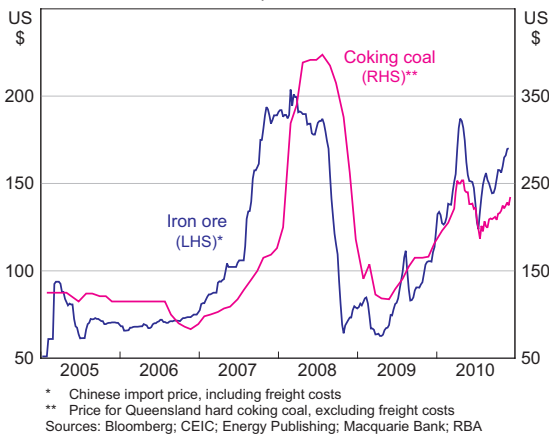
Steel Production and Iron Ore Imports



Graph 8

Spot Commodity Prices

US\$ per tonne



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The Repo Market in Australia

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Repurchase agreements (repos) are a financing instrument widely used by holders of debt securities and play an important role in assisting the smooth functioning of debt markets. Although akin to secured financing, repo rates have recently tended to trade above those on unsecured borrowings. This article outlines the structure of the Australian repo market and considers recent trends in the pricing of repos relative to other short-term interest rates.

Introduction

Repos are frequently used by holders of debt securities to fund their positions. They play an important role in assisting the smooth functioning of debt markets and are the main instrument used by the Reserve Bank to undertake its domestic market operations. This article outlines the structure of the Australian repo market based on a recent survey by the Reserve Bank and considers recent trends in pricing.

Repurchase Agreements

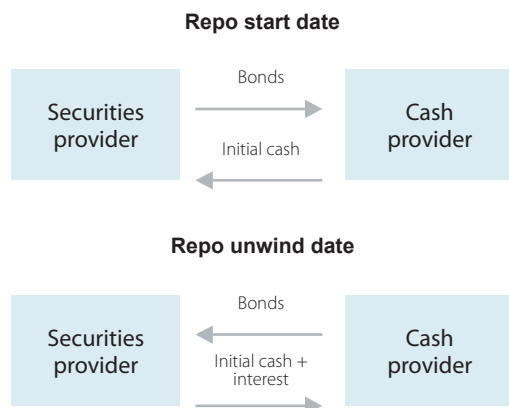
A repo is an agreement between two parties under which one party sells a security to the other, with a commitment to buy back the security at a later date for a specified price (see Figure 1).¹ The difference between the sale and repurchase price reflects the rate of interest to be earned by the cash provider.

While repos are similar to secured loans in an economic sense, a fundamental distinction is that title to the security passes to the cash provider for the duration of the repo. The standard legal documentation for repo trading, both in Australia

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1 The party that sells a security with an undertaking to repurchase it in the future is said to have contracted a repo. The counterparty (the purchaser of the security) is said to have contracted a reverse repo. The repo counterparties can be called securities providers and cash providers respectively.

Figure 1
Structure of a Repo



Source: RBA

and internationally, is a Global Master Repurchase Agreement (GMRA).

Repos can be contracted for various maturities, from overnight to longer terms.² Parties to these 'term' repos will agree on the maturity date at the inception of the transaction. In contrast, 'open' repos have no defined maturity date, with the interest rate and term being renegotiated each day until the

2 Additionally, institutions that hold Exchange Settlement (ES) accounts with the Reserve Bank are able to transact *intraday* repos with the Reserve Bank. In such a repo, both the sale and repurchase occur on the same day. Intraday repos carry no interest charge and are used to provide ES account holders with temporary funds with which to settle their real-time gross settlements (RTGS) payments.

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parties to the trade agree to let it mature. Within the Australian market, most repos are contracted on an open basis.

While repos can be negotiated against a specific security, most are contracted against a class of securities. In the domestic market, a repo against general collateral (GC) means the cash provider is willing to take any government-related security (see Table 1). In addition, throughout the term of a repo, the entity which sold the securities (the securities provider) can substitute other GC-eligible securities against those initially delivered. (The market convention allows one substitution per week, though in its dealings with the market the Reserve Bank accommodates unlimited substitutions.) Alternatively, for open repos, when one party wishes to substitute securities, the existing repo is likely to be matured and a new repo with the same party undertaken.

The convention within the Australian market is to distinguish between those government-related securities which are most liquid (Treasury bonds and semi-government benchmark bonds) and those

which are less actively traded. The former qualify as GC1 and generally trade at lower repo rates than those securities classified as GC2. In its dealings with the market, the Reserve Bank draws no distinction between the different types of government-related securities.

Since the price of the forward (or unwind) leg of a repo transaction is set in advance, the cash provider is only exposed to changes in the value of the security if the counterparty defaults on the forward transaction. To limit the potential exposure to counterparty default, the cash provider may demand a margin (or 'haircut') on the security's value. For instance, when purchasing securities under repo in its domestic market operations, the Reserve Bank discounts the value of each security by between 2 and 10 per cent, with the size of the margin depending on the credit, price and liquidity risk characteristics of the security. If, during the life of a repo, the value of the securities changes by a sufficient amount, either party may make a margin call (or, equivalently, ask for the repo to be repriced), thereby realigning the cash value of the repo with the value of the securities. Within the

Table 1: Government-related Securities Eligible for Repo in the Australian Market

	AFMA market convention		Eligible for GC repo with RBA
	GC1	GC2	
Commonwealth Government Securities (CGS)			
– Treasury notes		✓	✓
– Treasury bonds	✓		✓
– Treasury indexed bonds		✓	✓
State and territory government securities (semis)			
– Promissory notes		✓	✓
– Benchmark bonds	✓		✓
– Non-benchmark bonds		✓	✓
Supranational, foreign sovereign and Agency debt securities^(a)			
		✓	✓
Government Guaranteed Debt Securities^(a)			
		✓	✓

(a) Certain other criteria (such as credit ratings) determine the eligibility of these securities.

For details, see <<http://www.rba.gov.au/mkt-operations/tech-notes/eligible-securities.html>>.

Source: RBA

Australian market, there is no fixed convention on the trigger for making a margin call. In the case of the Reserve Bank, movements in the security's value of more than 1 per cent trigger such a call. For repos contracted on a tri-party basis, it is the responsibility of the tri-party agent to value the securities and determine whether margin is owing (see Box A).

The Structure of the Domestic Repo Market

The repo market plays a significant role within the domestic financial market. For investors managing large or varying cash balances, repos offer a lower-risk alternative to other money market instruments. By holding title to securities, the cash investor's exposure to their counterparty is significantly reduced.

Repos are the main instrument used by the Reserve Bank in its domestic market operations and, as the Bank is usually buying securities at these operations, it typically takes the role of cash provider as per Figure 1. Through these operations, the Bank alters the supply of Exchange Settlement (ES) funds so as to keep the cash rate as close as possible to the Board's target for monetary policy. Buying securities under repo provides the Bank with a low-risk instrument for market operations and allows greater flexibility than outright security purchases because repo terms may be adjusted to manage future cash flows and alter the projected supply of ES funds (Baker and Jacobs 2010).

Holders of debt securities can use repos to manage their short-term funding requirements. Selling via repo allows them to raise liquidity without having to sell assets outright, thereby maintaining their positions in the securities. Investors can also use repos as a means to enhance returns in a securities lending portfolio (see below) or as a source of leverage.

Repos also play an important role in arbitrage trades that help align securities with the derivatives that are priced against them. For example, an investor who thought that bond futures were overpriced relative to the contract's reference bonds could sell

the futures contract and purchase the bonds in the spot market, funding that purchase via a repo which matures at the time of futures expiry.

More generally, a well-functioning repo market promotes liquidity within securities markets. Those dealers who act as price-makers in the outright market for various debt instruments will use repos to manage both their 'long' and 'short' positions (see Box B).

Most repo transactions in the domestic market are collateralised with government-related securities. The Australian Financial Markets Association (AFMA) 2009/10 survey, which covered ten dealers, reported average outstanding repos in government-related securities of \$66 billion. The survey only identified \$10 billion in outstanding repos against private securities (with around half of those being contracted with the Reserve Bank).

To better gauge the structure of the repo market, the Reserve Bank surveyed 17 securities dealers on their institutions' aggregate repo positions against government-related securities as at end July. The survey also sought information on the types of counterparties with which these dealers dealt (Table 2).³

The survey results show respondent institutions had raised \$54.3 billion in cash (by providing securities to the market) in late July while simultaneously providing \$55.5 billion in cash to the market (by receiving securities). The repo positions between respondents shown in the first line of Table 2 were substantial but these figures may partly reflect the same securities being passed among the surveyed institutions.⁴

3 As of July 2010, the seventeen price-makers in government-related securities on Yieldbroker DEBTS (an electronic trading platform) were ANZ Banking Group Limited, Bank of America Merrill Lynch, Barclays Capital, BNP Paribas, Commonwealth Bank of Australia, Citigroup, Credit Suisse, Deutsche Bank, JP Morgan, Macquarie Bank, NAB, Nomura, Royal Bank of Canada, RBS PLC Australia, TD Securities, UBS and Westpac. Subsequently, in October 2010, HSBC became the eighteenth price-maker on Yieldbroker.

4 The respondents' positions are identical because the cash provided by one respondent is collateralised with stock provided by another.

Box A

Tri-party Repo

When negotiating a repo against a class of securities (such as government bonds), the two parties will generally only need to agree on the interest rate, the cash value and the maturity of the trade. Only subsequent to the deal being struck will the parties confirm the precise security (or securities) which are to be delivered in settlement of the repo and the value to be attached to them. Settlement of the security transaction can then take place.

In a tri-party repo, while the terms of the transaction are still agreed bilaterally, the two parties instruct an agent to effect settlement. The exchange of securities takes place over the books of the agent, who transfers the securities between custodial accounts held by the two parties. While the exchange of cash can also take place through accounts held with the agent, this need not be the case.

It is the responsibility of the agent to ensure that the securities meet any eligibility criteria that the cash investor has specified. As well, the agent will independently price the securities and ensure that their value remains sufficient throughout the life of the repo.

For cash investors in repo, a tri-party arrangement may offer significant administrative and operational benefits, as they are no longer handling individual securities. For securities providers, a tri-party arrangement may make it easier for those with a large number of small-denomination security holdings to fund their assets via repo. Tri-party agents may also offer collateral optimisation tools, such that an investor funding a variety of assets through multiple counterparties (each with differing eligibility criteria) can allocate their securities in the most efficient manner. For the securities provider,

these sorts of benefits can offset any increase in custody and service fees levied by the agent.

It is only recently that any repos within the Australian market have been contracted under tri-party arrangements. Going forward, it is anticipated that most tri-party activity will occur in asset classes which have not previously been funded to a great extent via repo, such as corporate bonds and equities. Potentially, the existence of a tri-party market may encourage broader use of repo as a money market instrument, including by offshore investors in Australian dollar securities.

Internationally, tri-party repo has a longer history, with most repos in the US market having been contracted on a tri-party basis for some years. However, tri-party repo in the United States had a unique design and the experience of that market during the financial crisis has prompted the Federal Reserve to recommend several changes to how the tri-party repo market operates. Formerly, all US dollar tri-party repo trades (regardless of maturity) would be ‘unwound’ each morning on the books of the agent – that is, the cash would be returned to the investor’s account and the securities to the borrower’s account. At the end of each day, the collateral would be reset. This practice gave the cash borrower considerable flexibility in trading and managing their security holdings, but made them reliant on a large amount of intraday credit from the tri-party agent. In turn, the cash investor was left with sizeable intraday credit exposure to the agent. Going forward, tri-party repo trades in the United States will only unwind at maturity, as is the case elsewhere, including for Australian tri-party repo. ✖

**Table 2: Market Value of Outstanding Repos
in Government-related Securities**
As at 28 July 2010, \$ billion

Counterparty	Cash provided to respondents	Securities provided to respondents
Respondent institutions	29.4	29.4
Onshore institutions		
– Non-respondent onshore banks	3.4	0.4
– RBA	16.6	0.4
– Other (incl nominees, funds)	1.7	17.5
Offshore institutions		
– Government/central bank	2.3	2.7
– Other (incl banks, nominees, funds)	0.9	5.1
Total repos	54.3	55.5

Source: RBA

The survey results confirm the important role of the Reserve Bank in the domestic repo market, providing \$16.6 billion of cash to survey respondents as at late July.⁵ The size of the Bank's position in GC repo can be quite variable, often moving between \$10 and \$25 billion, with the swings largely driven by the cycle of payments and receipts of the Australian Government.

The survey also highlights that onshore institutions outside the banking sector sell a considerable volume of securities under repo. The \$17.5 billion in cash received by these entities mainly reflects nominees and domestic investment funds approaching dealers to contract GC repo.⁶ These entities frequently have a mandate to reinvest the funds in higher yielding short-term instruments. To a certain extent, this activity will also reflect repo dealers approaching these entities to borrow specific securities to cover their own short positions. Offshore institutions are also shown to be net sellers of securities under repo.

While Table 2 shows the respondent institutions as a group to be net lenders of just \$1.2 billion cash, each respondent also holds a portfolio of government-related securities associated with its role as a securities dealer. These securities are also available for repo. At the time of the survey the respondents held, in aggregate, a net long position of \$22.7 billion in these securities (see Box B). In addition, as many of the respondent institutions are banks, they may also be holding government securities as liquid assets for prudential purposes. Such holdings would not ordinarily create a demand for repo funding and are distinct from the positions of their bond desks.

Combining the net long positions of the respondents' securities dealers and the net provision of \$1.2 billion cash shown in Table 2, the domestic survey respondents are shown in aggregate to be a major provider of cash against the securities available to the repo market. This is quite different to other developed repo markets where securities dealers obtain a significant proportion of their funding from repos with money market funds and other cash investors.

⁵ The Reserve Bank also had outstanding GC repos worth \$3 billion with non-respondents as at 28 July 2010.

⁶ Nominees are companies that hold securities on behalf of other investors.

Box B

Price-makers in the Government Bond Market

In recent years, there has been an expansion in the number of institutions that act as price-makers (or dealers) in the domestic bond market. Eighteen institutions now contribute prices to Yieldbroker (an electronic trading platform), principally for Commonwealth Government Securities (CGS) and the securities issued by state and territory borrowing authorities (semis).

Purchasing securities from their customers or from the issuer gives these dealers a 'long' position in those securities. Dealers are able to carry these securities as inventory on their books and finance them by selling the securities under repo. Similarly, where dealers have arranged to sell a security to a customer and it is not in their inventory, they can use a repo to borrow the security to deliver to the customer, thereby maintaining a 'short' position in the security.

To complement its repo survey, the Reserve Bank surveyed the same institutions on their aggregate positions in government-related securities, specifically those positions arising from their role as price-makers (Table B1).

The results show that, as a group, the bond dealers held significant long positions in both CGS and semis in late July. While these long positions imply a demand for funding of over \$40 billion in the repo market, covering their short positions via repo would see these institutions providing cash to the market. Thus, it is the aggregate net position (\$22.7 billion) that represents the overall demand for cash arising from the bond dealers at the time of the repo survey. ✎

Table B1: Price-makers' Positions in Government-related Securities

As at 28 July 2010, \$ billion

	Long positions	Short positions	Net positions
CGS	18.2	8.9	9.3
Semis	19.0	8.5	10.5
Other	3.6	0.7	3.0
Total	40.9	18.1	22.7

Source: RBA

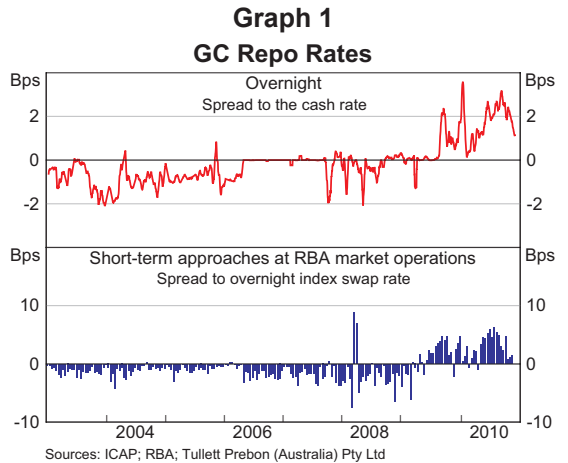
The disaggregated data from the survey suggest that around half of the cash provided by respondent institutions is used in repo with other respondents, while around half represents these institutions providing cash to their own bond desks. This 'internal funding' provides a significant source of cash that would otherwise need to be found in the broader repo market.

Recent Trends in the GC Repo Market

For most of the previous decade, short-term GC repo rates have generally traded below the cash rate, consistent with the fact that repos represent secured borrowings while the cash rate is the rate that applies to unsecured overnight borrowing. Since mid 2009, however, there has been a noticeable increase in short-term repo rates relative to unsecured rates. This is evident in both the rates on overnight repos contracted among market participants and in the approaches made to the Reserve Bank in its market operations (Graph 1).

These developments have occurred against a backdrop of greatly expanded issuance in government-related securities and an increase in the number of institutions operating as price-makers within the bond market. Frictions within these institutions appear to play a significant role in explaining the upward pressure on repo rates.

Ultimate responsibility for funding a financial institution rests with its treasury area. A bond desk is generally expected to fund its inventory via the repo market. As highlighted by the survey results, the domestic banking sector is the major source of cash provided to the repo market, both through internal transactions between the same institution's treasury and bond desks, and through external transactions with other institutions' bond desks. Moreover, within many organisations, there are often significant disincentives working against an over-reliance on internal funding. Most commonly, a high internal transfer rate (cost of funds) is imposed. These internal



funding rates, sometimes well in excess of the cash rate, can effectively create a ceiling for the rates bond desks are willing to pay for external funding.

This situation is compounded by the different timing constraints the funding areas face. Within the Australian market, repo trading (for same-day funding) begins winding down shortly after midday and indeed, some participants face internal pressure to fund on a one day-ahead basis. In contrast, trading in the unsecured cash market continues until the end of the settlement day, although an institution's ability to borrow in the unsecured market will be constrained by the credit limits its counterparties have available with them. Conscious of these limits, treasuries can often be hesitant to lend surplus funds until quite late in the day, wary of the possibility of unforeseen funding requirements. This creates a situation in which, for a given level of ES balances, the supply of funds appears to be tighter earlier in the day (when the repo market is clearing) than toward the end of the day (when the treasury areas square up via the cash market).

It is also noteworthy that the positive spread between repo and unsecured rates domestically has coincided with similar trends offshore, such as in the markets for US dollars and British pounds. In those markets, there appears to be even greater fragmentation between participants in the repo and

unsecured cash markets than exists in Australia. In the United Kingdom, many financial institutions active in the repo market do not have access to unsecured funding, either for regulatory reasons or because of their lower credit standing. In the United States, the large expansion in the supply of reserve balances has curtailed activity in the unsecured market, as the institutions that earn interest on balances held at the Federal Reserve are no longer active lenders of cash.

The Repo Market for Specific Collateral – the ‘Specials’ Market

Specific collateral (or ‘specials’) repos are used by market participants needing to borrow particular securities. In order to access a specific security via repo, the party borrowing the stock may be willing to earn a lower rate of interest on their cash investment than is available on a general collateral repo. For those who hold the stock outright in their portfolio, lower rates can act as an inducement to make the stock available for repo, as they represent a cheap source of financing.

The differential between the interest rate on general collateral and the interest rate on a specific security provides an indication of how special it is. The greater demand there is to borrow a security and/or the less willing investors are to lend it, the more the repo rate on the security will fall before the market clears and all parties are able to settle their positions.

When a party is unable to deliver a debt security in settlement of a trade, the convention within the Australian market is for settlement to be rescheduled for the next business day at an unchanged price. In this way, the party who has not received the security is effectively borrowing overnight funds from the other party at a zero interest rate. This means that zero will act as the lower bound for repo rates. This is usually sufficient disincentive for failing to deliver securities, though markets in other parts of the world

have introduced specific fails charges to ensure that the market continues to clear.⁷

In Australia, no specific fails charge is applied within the bond market. To help prevent failed trades, the Australian Office of Financial Management (AOFM), which issues Commonwealth Government Securities (CGS) on behalf of the Australian Government, introduced a securities lending facility in 2004. Through this facility, the AOFM is able to create additional amounts of each CGS, which dealers are then able to purchase via a repo with the Reserve Bank. At the same time, dealers are required to sell an equal amount of GC to the Bank in an offsetting repo. The repo rate on the GC repo is set equal to the Bank’s target for the cash rate, while the rate for the CGS repo is set 300 basis points lower. (However, when the cash rate falls to 3 per cent or less – as it did in 2009 – the rate on the CGS repo is set at 25 basis points.) While such a penalty means that dealers will only access the AOFM facility as a last resort, using the facility will always be preferable to failing. Since its inception, the facility has been successful in limiting the incidence of fails within the CGS market.⁸

The AOFM facility was most heavily utilised during 2008, when trading in the secondary market for CGS became quite illiquid. The financial crisis not only increased the demand for risk-free assets such as CGS, but also saw many securities providers retreat from the lending market because of elevated concerns

7 When interest rates are very low, the difference between the zero interest rate associated with failing and the prevailing policy rate may be so small that it is necessary to introduce a specific fails charge. This maintains sufficient disincentive for failing to deliver securities. See Treasury Market Practices Group and Securities Industry and Financial Markets Association (2009).

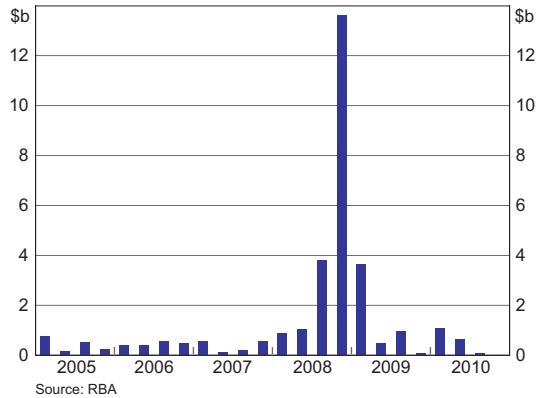
8 The AOFM facility is also available on an intraday basis. For intraday repos, no interest is payable or owing on either the CGS or the GC repo. The intraday facility is designed to resolve a chain of settlements, such as a ‘circle’, which would otherwise lead to a series of fails within the market.

about counterparty risk. As a result, repo rates on many CGS traded persistently below rates on general collateral and dealers accessed the AOFM facility with greater regularity (see Graph 2 and Graph 3). Although the AOFM facility acts to ensure that settlement of CGS trades can take place, when dealers are routinely required to cover their short positions at a 300 basis points penalty, they soon retreat from those positions. Consequently, by mid 2008, some dealers were no longer willing to make a two-way market on all CGS – that is, they were only willing to bid for, not offer, certain securities.

The increase in the supply of CGS to fund the Government’s fiscal position has improved the liquidity of the secondary market for outright trading and has also relieved the pressures within the repo market. Most lines of CGS now regularly trade as general collateral, though pressures can emerge from time to time in certain lines.

A specific collateral market also operates for other debt securities. In a similar fashion to the AOFM, the state borrowing authorities are also willing to temporarily expand the supply of semis via repo in order to assist dealers in meeting their settlement obligations. This, in turn, encourages the dealers to maintain a liquid market for investors. ✕

Graph 3
AOFM Stock Lending Facility
Face value borrowed, quarterly

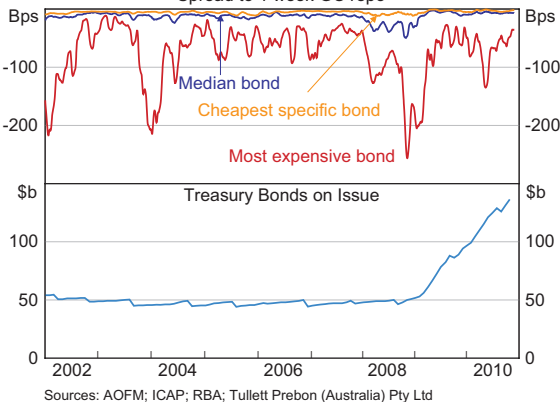


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Graph 2
Repo Rates on Specific CGS
Spread to 1 week GC repo



Domestic Market Operations and Liquidity Forecasting

Alexandra Baker and David Jacobs*

The stance of monetary policy in Australia is set in terms of a target for the cash rate. To keep the cash rate at the policy target, the Reserve Bank sets the supply of Exchange Settlement (ES) balances at a level consistent with demand. The level of ES balances changes when entities in the private banking system transact with the Reserve Bank and its clients, particularly the Australian Government. These changes need to be accurately forecast, so that they can be counterbalanced by the Reserve Bank's domestic market operations.

Introduction

The stance of monetary policy in Australia is determined by the Reserve Bank Board and is set in terms of a target for the cash rate – the interest rate on overnight, unsecured loans between financial institutions. The cash rate in turn affects the broad spectrum of interest rates in the financial system and, consequently, economic activity and inflation. This article discusses the way in which the Bank implements monetary policy and maintains the cash rate at target, including: the role of settlement balances as a source of interbank liquidity; forecasting daily flows that alter the level of liquidity; and the use of market operations to smooth and offset these fluctuations to ensure that liquidity remains at an appropriate level.

Liquidity and the Stance of Monetary Policy

The cash rate is determined in the market by the interplay of the demand for, and the supply of, Exchange Settlement (ES) balances. These are funds held on deposit with the Reserve Bank by authorised deposit-taking institutions (ADIs) and are these institutions' most immediate source of liquidity, used to settle transactions between themselves as well as with the Bank or its clients.¹

In order to keep the cash rate at the target set by the Board, each day the Reserve Bank adjusts the total supply of ES balances – referred to as 'system cash' – to a level consistent with the demand for ES balances. Individual institutions must maintain a positive ES balance at all times, and those that face the prospect of a negative balance (because of payments flows through the day, discussed further below) will seek to borrow funds overnight from institutions with excess balances. As such, if there is strong demand for ES balances relative to their overall supply, there will tend to be upward pressure on the cash rate. On the other hand, if demand for ES balances is low relative to their supply, there will tend to be downward pressure on the cash rate.

In practice, short-term movements in system cash do not tend to affect the cash rate. In part, this is due to the anchor provided by a publicly announced target and the very strong commitment by the Reserve Bank to ensure that the cash rate stays at the target rate. Another factor is the structure of the Australian cash market, which has a small number of participants, with relatively high ratings by international standards. As the cash positions of individual institutions vary substantially from day to day, an institution that is lending ES balances one day may well be borrowing the next, providing an incentive to transact at the target cash rate by convention.

* The authors are from Domestic Markets Department.

¹ In addition to ADIs, Exchange Settlement Accounts are held by several market infrastructure and special service providers.

When the Reserve Bank announces a change in the stance of monetary policy, the Bank does not adjust the level of system cash – rather, the announcement itself is sufficient to move the actual cash rate. This is because the Bank establishes a ‘corridor’ around the target cash rate, that ensures the incentives for banks to hold ES balances are unaffected by the stance of policy. The lower bound of the corridor is the rate of interest paid on ES balances, set at 25 basis points below the target cash rate, while the upper bound, 25 basis points above the target cash rate, is the rate at which institutions can access the Reserve Bank’s standing facility and obtain funds on a secured overnight basis. Because the opportunity cost of holding ES balances is not affected by changes in the cash rate, always being a constant 25 basis points, the banking system’s demand for ES balances does not shift due to a change in the cash rate.

As a result of these factors, system cash has tended to be relatively invariant with respect to the stance of policy. This is clearest in the period prior to the financial crisis (Graph 1). Between 2002 and mid 2007, the cash rate varied between 4.25 per cent and 6.25 per cent, but aggregate ES balances were consistently maintained at around \$750 million, increasing only temporarily to accommodate spikes in demand around month- and year-end. The financial crisis saw a sharp rise in banks’ demand for ES balances, due to an increased desire to hold liquid, risk-free assets. To accommodate this

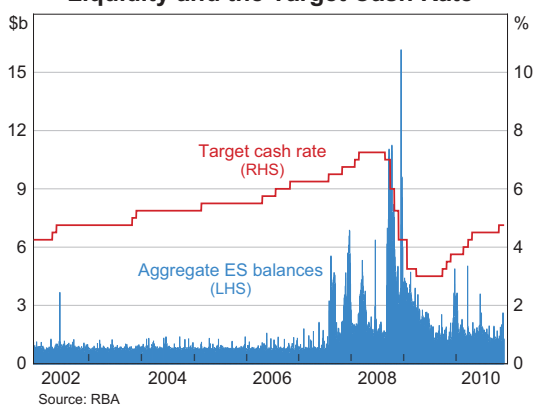
increased precautionary demand the Reserve Bank raised the supply of ES balances, with system cash frequently in the range of \$3 billion to \$12 billion.² As conditions in financial markets have normalised over the past year, the banks’ precautionary demand for ES balances has receded and the level of system cash has declined to around \$1¼ billion. Throughout this period, and notwithstanding the large swings in demand, the cash rate has remained very close to target. In 2008/09, the cash rate traded at target on every day, while in 2009/10 the cash rate deviated from target on just two days by one basis point.

Movements in System Cash

ES balances are used by financial institutions to settle transactions, both with other financial institutions and with the Reserve Bank and its clients. Payments between private financial institutions do not affect the aggregate level of system cash, but rather redistribute ES balances within the financial system. However, when a private institution makes a payment to the Reserve Bank or its clients, this reduces the pool of ES balances (‘withdraws liquidity’), while a payment from the Reserve Bank or its clients to a private institution increases the pool of ES balances (‘injects liquidity’).

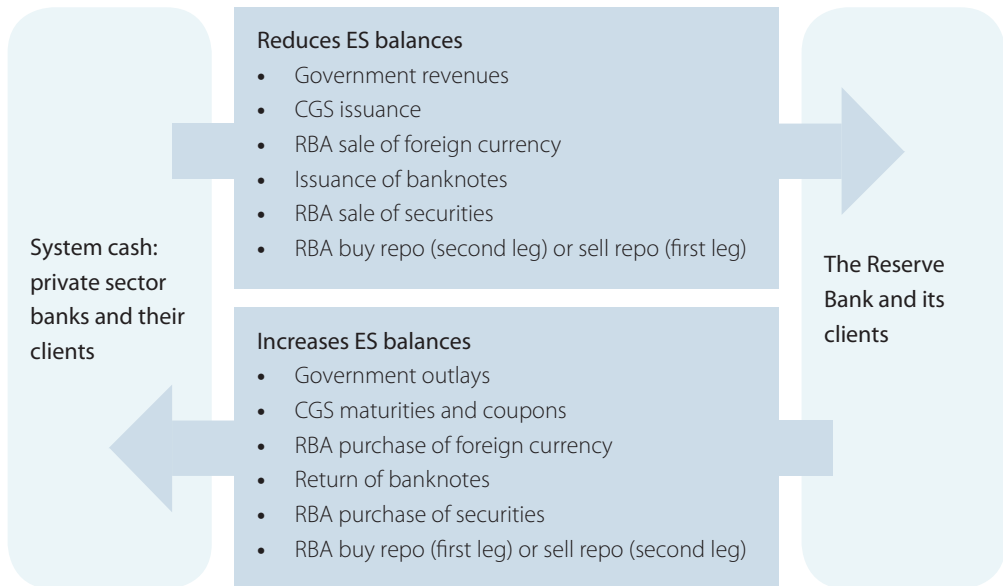
Transactions between the Reserve Bank or its clients and the private financial system fall into two groups. First, those initiated by the Bank with the express intent of affecting the level of system cash are known as *market operations*. Second, those transactions occurring for reasons other than managing liquidity are referred to as *exogenous transactions*. Exogenous transactions arise for a variety of reasons relating to the various business and policy functions of the Bank. The sources of such transactions can be seen by looking at the central bank’s balance sheet (see Appendix A). The most important transactions, as summarised in Figure 1, relate to client transactions, foreign exchange reserves management and currency note issuance.

Graph 1
Liquidity and the Target Cash Rate



² For additional information on market operations during the financial crisis see Debelle (2008a, 2008b).

Figure 1
Major Transactions Affecting System Cash



Source: RBA

Client transactions

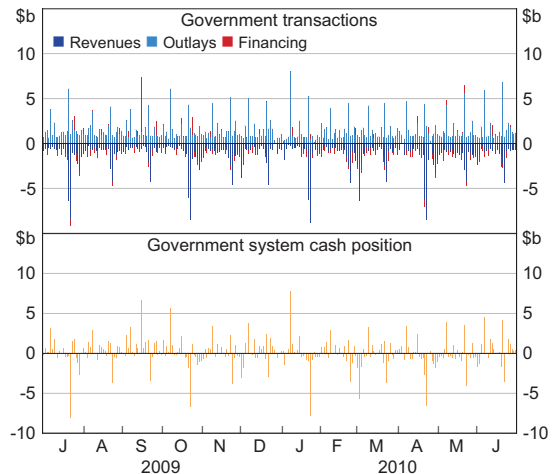
The Reserve Bank provides banking services to various clients, including many Australian Government departments and agencies, foreign central banks and other official institutions. Any transaction between a client of the Reserve Bank and an ES account holder (or, in turn, its client) will affect system cash. The largest and most significant client transactions from a liquidity standpoint are those of the Australian Government’s departments and agencies.³ In particular:

- government revenues, such as tax collections, result in funds flowing from individuals and businesses to accounts at the Reserve Bank, thereby reducing liquidity;
- government outlays, such as social security and welfare payments, result in funds flowing from accounts at the Reserve Bank to private accounts, injecting liquidity; and
- government financing, through the issuance of Commonwealth Government securities (CGS),

withdraws liquidity, while maturities and coupon payments inject liquidity.

The net impact of government transactions on system cash each day is known as the *Government system cash position* (Graph 2). This position can be very large, primarily reflecting the different timing of

Graph 2
Government System Cash Position
2009/10



Source: RBA

³ State, Territory and local governments do not bank with the Reserve Bank, and so their activities do not typically affect system liquidity.

the Government’s outlays, revenues and financing. Outlays tend to be relatively smooth through the year, although they peak twice each month with payments by the Australian Government to the states and territories.⁴ On the other hand, revenues are more lumpy, and are clustered around major due dates for GST and corporate tax collections.⁵ Financing, particularly through bond issuance, is relatively smooth over time, while maturities can result in large and irregular liquidity injections.

Other exogenous transactions

While transactions by Reserve Bank clients constitute the most significant source of exogenous transactions, there are many other transactions that may occur on a daily basis. Of particular note:

- Since the Reserve Bank manages Australia’s foreign exchange reserves, there are regular purchases (sales) of foreign currency against Australian dollars that inject (withdraw) ES balances, which are denominated in Australian dollars.
- Because the Reserve Bank is responsible for issuing Australia’s banknotes, when commercial banks purchase banknotes from the Reserve Bank, their ES balances are debited, so that funds are withdrawn from the system, and when notes are returned to the Reserve Bank, ES balances are injected.

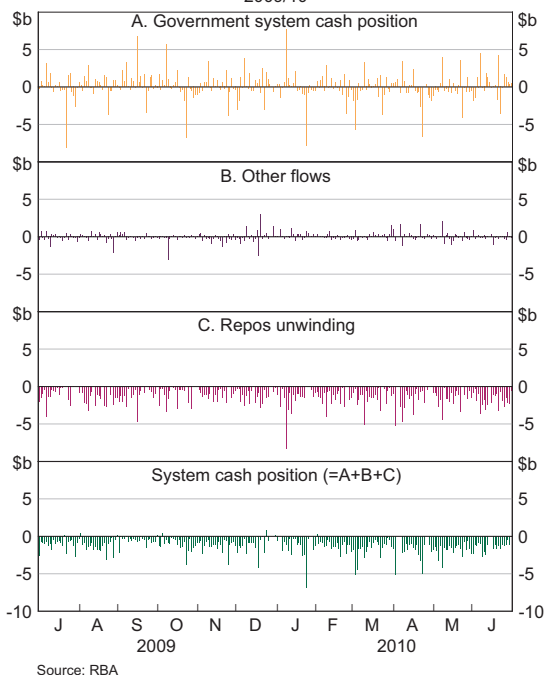
Exogenous Flows and Market Operations

The impact of government and other exogenous transactions on system cash can potentially be very large – it is not unusual for these transactions to withdraw or inject \$5 billion or more of ES balances in a day. This is generally well in excess of total ES balances, so if left unchecked they would push the cash rate away from the target rate.

As such, to maintain an appropriate level of system cash over time the Reserve Bank must counterbalance exogenous transactions with open market operations. Market operations are conducted primarily through repurchase agreements (“repos”) with counterparties who are generally ES account holders. Repos involve two legs. First, the Bank buys (sells) a security from (to) a counterparty, injecting (withdrawing) liquidity. Second, at an agreed later date, the initial purchase (sale) is reversed and the liquidity injection (withdrawal) is unwound. Repos offer a number of advantages, including a liquid market, a very high degree of protection from credit risk and a low level of interest rate risk. From time to time, market operations can also include outright securities transactions and foreign exchange swaps.⁶

Together, exogenous liquidity flows and unwinding repos comprise the *system cash position* (Graph 3).

Graph 3
System Cash Position
2009/10



4 Large outlays are typically seen on the 7th and 21st of each month, or the next business day.

5 Tax receipts peak around due dates on the 21st of each month, or the next business day, with particularly large peaks in the month after the end of each quarter.

6 For further information on open market operations see <<http://www.rba.gov.au/mkt-operations/index.html>>. The Australian repo market is discussed in Wakeling and Wilson (2010).

This is the amount by which system cash would change on a day in the absence of new market operations. A *system cash deficit* would see a fall in ES balances while a *system cash surplus* would see an increase.

On most days, the Reserve Bank looks to engineer a system cash deficit. This allows for frequent market interaction, which assists in gauging demand for ES balances and risk sentiment more broadly. This was of particular benefit during the financial crisis when, aided by the flexibility of the framework for market operations, the Bank was able to respond quickly and effectively to swings in demand for ES balances. Daily operations also provide a degree of certainty to repo market counterparties, and help smooth the redistribution of funds within the system.

In order to counterbalance a system cash deficit, the first leg of market operations usually involves the Reserve Bank injecting liquidity by buying securities under repo. With demand for ES balances fairly stable on most days, the amount of liquidity injected is generally of a similar size to the system cash deficit (Graph 4). On less frequent occasions, the Bank may also look to withdraw funds through its market operations.

In turn, the second leg of repos tends to withdraw liquidity. In order to smooth expected funds flows,

the Reserve Bank aims to have repos unwind on days where exogenous transactions are either injecting liquidity or withdrawing only a small amount. This is done by publishing 'preferred terms' each morning, which provide guidance to market counterparties as to which days the Bank is looking to unwind repos.

Liquidity Forecasting

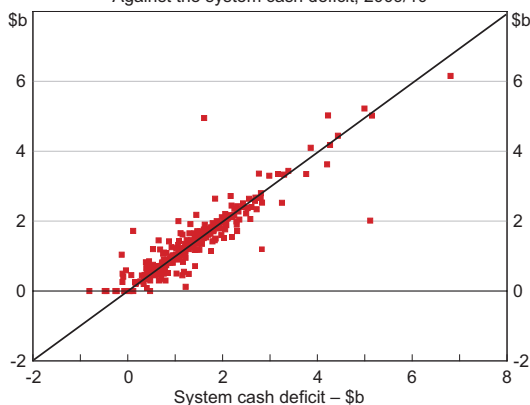
For market operations to be effective, the Reserve Bank must construct forecasts of exogenous liquidity movements. Each morning, forecasts of that day's flows are needed to guide the direction and size of market operations. Forecasts of future system cash movements are also required, to ensure appropriate preferred terms are selected so that unwinding repos smooth rather than exacerbate system cash movements.

To construct its liquidity forecasts, the Reserve Bank gathers information from a wide variety of sources. Extensive liaison is conducted with many departments and agencies within the Australian Government and other clients to ascertain the timing and size of their payments and receipts. Longer-term information is available from Australian Government Budget papers, and observed historical patterns provide important information.

A key element of liquidity forecasting is identifying the way in which different payments are settled, as this affects the timing of their impact on system cash. In particular, low-value transactions are typically settled on a 'deferred net settlement basis' and so have a liquidity impact on the business day after payment instructions are made. High-value payments are settled on a 'real-time gross settlement' basis and typically affect liquidity almost immediately after payment instructions are submitted.⁷

As with any forecasting exercise, liquidity forecasting is subject to some uncertainty. From time to time, advice on payments can be incomplete or subject

Graph 4
Liquidity Injected at Market Operations
Against the system cash deficit, 2009/10



Source: RBA

⁷ To facilitate the operation of real-time gross settlement, institutions can also access 'intraday' liquidity. For further information on the Australian payments system see <<http://www.rba.gov.au/payments-system/about.html>> and Gallagher, Gauntlett and Sunner (2010).

to change. Forecasting daily tax collections presents particular challenges – these are made by a large number of individuals and businesses, making liaison infeasible, and their size reflects a complex set of factors such as the pace and composition of economic activity. This is seen clearly for quarterly peaks in tax collections, around which daily receipts can vary significantly over time (Graph 5).

Reflecting this inherent uncertainty, exogenous transactions may differ from forecasts. For payments settled the next day (on a deferred net settlement basis), any such unexpected movements are observed prior to undertaking market operations the following morning and the amount of liquidity injected can be adjusted accordingly.⁸ However, unexpected changes in payments settled the same day (on a real-time gross settlement basis) are observed only after morning market operations and so directly affect ES balances. For example, if same-day tax collections are stronger than forecast, additional liquidity is withdrawn leaving total ES balances lower than intended. The effects of same-day deviations from forecasts are asymmetric in that a level of ES balances that is too low is more likely to

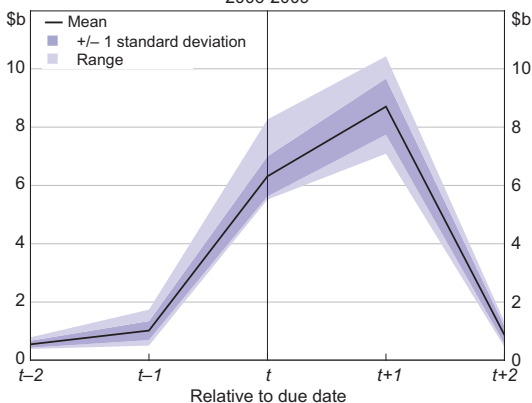
place pressure on the cash rate than a level that is too high. As such, on days when same-day flows are particularly uncertain, the Reserve Bank will look to increase ES balances to mitigate the risk of aggregate ES balances being too low. Nonetheless, if ES balances fall low enough that pressure may be placed on the cash rate, a second round of open market operations can be undertaken later in the day to inject additional ES balances. However, this has been quite rare – in 2009/10, a second round of market operations was undertaken on only two occasions, while the median difference between the forecast for the system cash position and the actual outcome was only around \$40 million.

Overall, the arrangements by which the Reserve Bank implements monetary policy have proven effective over time. The Bank has been able to maintain an appropriate level of ES balances by identifying and accommodating swings in demand, while forecasting and counterbalancing exogenous changes in supply. This has ensured that the cash rate has remained at the Reserve Bank Board’s target and supported the stability and functioning of the Australian financial system. ✎

Graph 5

Net Tax Collections – Quarterly Peaks*

2006-2009



* On a 'liquidity impact' basis, such that payments through deferred settlement streams are measured the following day
Source: RBA

8 As deferred net settlement transactions are settled at 9.00 am the following business day, they are known by the time market operations are announced at 9.30 am.

Appendix A

The source of movements in system cash can be derived formally from looking at the Reserve Bank's balance sheet – a stylised version of which is presented in Table A1. The Bank's main assets are gold and foreign exchange reserves and domestic securities (either held outright or under repurchase agreement). The main liabilities are currency notes, ES balances and client deposits and, as with any financial institution, the Bank has a capital base.

Starting with the identity that assets equal liabilities and focussing on ES balances yields the following identity:

$$ES = DOM + (GFE - C - DEP + OA - OL - K) \quad (A1)$$

It is convenient to consider this relationship in first differences:

$$\begin{aligned} \Delta ES &= \Delta DOM + \Delta (GFE - C - DEP + OA - OL - K) \\ &= \text{Domestic market operations} \\ &\quad + \text{Exogenous transactions} \end{aligned} \quad (A2)$$

This illustrates that movements in aggregate ES balances result from either *domestic market operations* or *exogenous transactions*. Market operations, as noted in the body of the article, primarily include transactions in domestic securities, particularly under repo. These are initiated by the Reserve Bank with the express intent of influencing the level of Australian dollar liquidity. Exogenous

transactions include all other transactions, and relate to various assets and liabilities on the Reserve Bank balance sheet. In particular, these include:

- movements in client deposits, notably those of Australian Government departments and agencies;
- movements in foreign exchange reserves – note that only transactions in foreign exchange affect ES balances, as valuation gains and losses are balanced by an offsetting movement in the Reserve Bank's capital;⁹ and
- changes in Australian currency notes on issue, due to the issuance or return of notes.

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Table A1: Reserve Bank Balance Sheet

Assets	Liabilities
Gold and foreign exchange (<i>GFE</i>)	Australian currency notes on issue (<i>C</i>)
Domestic securities (<i>DOM</i>)	Exchange Settlement balances (<i>ES</i>)
– Outright	Deposits of clients (<i>DEP</i>)
– Under repurchase agreement	Other liabilities (<i>OL</i>)
Other assets (<i>OA</i>)	Capital and Reserve Bank Reserve Fund (<i>K</i>)

Source: RBA

⁹ On occasion, foreign exchange swaps are used to augment domestic market operations.

Activity in Global Foreign Exchange Markets

Samual Nightingale, Crystal Ossolinski and Andrew Zurawski*

According to a recent BIS survey, turnover in foreign exchange markets continued to increase between April 2007 and April 2010. Growth was slower than in earlier years, consistent with a slowdown in the underlying demand for foreign exchange owing to the impact of the global financial crisis on international trade and investment. In an exception to this trend, spot turnover increased significantly, driven in part by the ongoing expansion of high-frequency trading.

Introduction

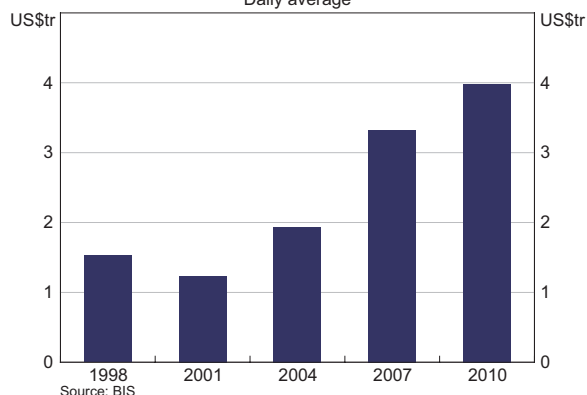
The foreign exchange market weathered the global financial crisis better than many other financial markets, with turnover increasing by 20 per cent between 2007 and 2010 to US\$4 trillion per day. However, the significant impact of the crisis on international trade and cross-border investment flows contributed to growth in foreign exchange turnover slowing from the rapid pace seen prior to 2007, particularly in the foreign exchange swap market. An exception is the continued strong growth in spot turnover, which has been driven by growth in relatively new market segments – such as high-frequency trading – associated with the ongoing development of new technologies. Drawing on the 2010 BIS Triennial Survey of Foreign Exchange and Derivatives Markets, this article explores activity in the global foreign exchange markets over the past three years and discusses the impact of the financial crisis. It then describes some of the key structural changes that have been influential over the past few years and some distinctive features of the Australian foreign exchange market.

Global Turnover

Global foreign exchange turnover grew by 20 per cent over the three years to April 2010 to reach

almost US\$4 trillion per day (Graph 1, Table 1).¹ This rate of growth was slower than the rapid 72 per cent increase observed over the previous three years and was similar across regions, with no change in the ranking of the major foreign exchange markets. The United Kingdom remains the largest market by location, accounting for over one-third of global turnover in all currencies, followed by the United States and Japan. All three major markets

Graph 1
Global Foreign Exchange Market Turnover
Daily average



¹ These figures are based on current exchange rates. Growth in turnover at constant exchange rates was slightly slower, at 18 per cent. Unless otherwise stated, global turnover figures are adjusted for inter-dealer double-counting at both the local and cross-border level. Australian figures are adjusted for inter-dealer double-counting at the local level only.

* The authors are from International Department.

Table 1: Global Foreign Exchange Turnover

	Change over 2004–2007 Per cent	Change over 2007–2010 Per cent	Daily average in April 2010 US\$b
Total	72	20	3 981
Instrument			
Spot	59	48	1 490
Outright forwards	73	31	475
Foreign exchange swaps	80	3	1 765
Cross-currency swaps	48	39	43
OTC options	78	–2	207
Counterparty			
Reporting dealers	37	11	1 548
Other financial institutions	111	42	1 900
Non-financial institutions	115	–10	533
Currencies			
USD/EUR	65	24	1 101
USD/JPY	34	29	568
USD/GBP	48	–6	360
USD/AUD	73	34	249
Other crosses	104	19	1 703

Source: BIS

experienced growth of between 20 and 25 per cent over the past three years and their share of global turnover by location increased by 3 percentage points to 61 per cent. Australia remains the seventh largest geographical market, accounting for around 4 per cent of global turnover. The share of cross-border transactions (i.e. where the counterparties are in different jurisdictions) has continued to increase, reaching 65 per cent of global turnover in 2010, up from 62 per cent in 2007.

Turnover continues to be dominated by the four major currencies. The US dollar makes up one leg in 85 per cent of transactions, the euro is used in close to 40 per cent of transactions and the Japanese yen is used in around 20 per cent of transactions. The British pound is exchanged in around 13 per cent of

deals, with the share of turnover conducted in the British pound continuing to fall. The Australian dollar is now the fifth most traded currency, up from sixth in the previous survey, and the share of Australian dollar transactions conducted offshore continued to increase. By currency pair, growth in turnover of the EUR/USD pair eased to 24 per cent, with total turnover in the EUR/USD market accounting for more than one-quarter of global turnover. The AUD/USD cross remains the fourth most traded currency pair.

The pattern of growth across instruments differed from the previous three-year period. Spot turnover increased by 48 per cent over the three years to April 2010, following a 59 per cent increase over the previous three years. In contrast, turnover in foreign

exchange swaps increased by only 3 per cent, compared with an 80 per cent rise between 2004 and 2007. As a result, the share of spot transactions in total turnover has increased to 37 per cent from 30 per cent, while the share of turnover accounted for by foreign exchange swaps fell to 44 per cent from 52 per cent (Graph 2). Turnover in the other instruments – forwards, cross-currency swaps, and OTC options – continues to be much lower on average than for spot and foreign exchange swaps.²

Continuing the trend from previous surveys, growth in turnover was driven by demand from ‘other financial institutions’ such as pension funds and hedge funds, particularly for spot foreign exchange.³ As a result, for the first time in the history of the survey, turnover between dealers and other financial institutions was higher than turnover within the interdealer market. In contrast, turnover with non-financial institutions fell, driven by a marked decrease in their use of foreign exchange swaps.

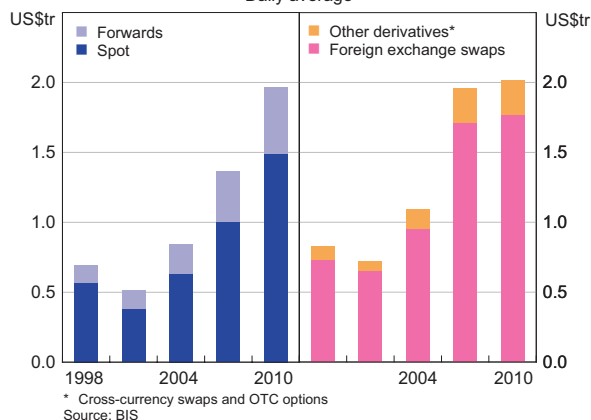
Turnover in the foreign exchange market is driven by a range of factors. There is underlying demand from customers for foreign exchange resulting from international trade and cross-border investment. In addition, turnover may be influenced by new technology or changes in the trading behaviour of the market participants. Over the past three years, both economic and structural factors have been at play in driving developments in turnover.

The global financial crisis and its effect on economic activity have contributed to the slower rate of growth in overall turnover than over the

2 Foreign exchange swaps involve an exchange of principal at the start of the contract at the spot rate, and a reverse exchange at the end of the contract at the pre-agreed forward rate. Cross-currency swaps involve an exchange of principal at the beginning and end of the contract at the initial spot rate, and an exchange of interest payments in the borrowed currencies through the life of the swap.

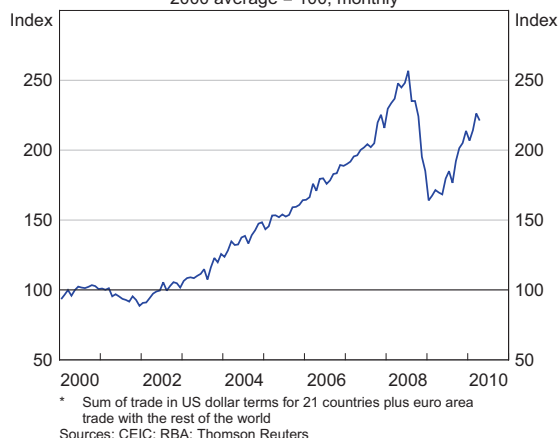
3 There are three types of counterparty recorded in the BIS Triennial Survey of Foreign Exchange and Derivatives Markets. ‘Reporting dealers’ include commercial and investment banks, securities houses and other entities that are active dealers and report turnover to the survey. Trading between these entities makes up the interdealer market. ‘Other financial institutions’ include the smaller non-reporting banks and all hedge funds, pension funds and other non-bank financial institutions that are customers of the dealers. ‘Non-financial institutions’ consist mostly of exporters and importers.

Graph 2
Global Foreign Exchange Market Turnover
Daily average



previous three years. Global trade is an important driver of spot and forward turnover, especially for non-financial institutions such as importers and exporters, because for most transactions at least one party must exchange its domestic currency for the invoice currency. There is also some additional turnover generated by dealers who manage the risk created by these customer transactions by laying off positions in the interdealer market. Measured over the three years to April 2010 (to match the period of the Triennial Survey), global trade increased by 15 per cent, compared to growth of almost 50 per cent over the previous three years (Graph 3). Slower trade growth is consistent with slower growth

Graph 3
International Trade*
2000 average = 100, monthly



in turnover by non-financial institutions, at least partially explaining the 10 per cent fall in turnover between dealers and non-financial customers observed between 2007 and 2010.

The global financial crisis has also had a significant effect on the willingness of investors to engage in cross-border investment, a second key driver of demand for foreign exchange. Purchases of foreign equities, for example, typically generate demand for foreign exchange as investors convert their domestic currency into foreign currency in order to make their initial purchase. In most cases, investors also hedge a portion of the foreign exchange risk that results from holding assets in a foreign currency. This activity generates ongoing demand for foreign exchange derivatives as hedge positions are set up and then maintained by rolling the hedging instruments over time. In addition, banks use instruments such as foreign exchange swaps and cross-currency swaps to facilitate cross-currency borrowing and lending.

In the first quarter of 2010, the level of international capital flows remained well below that seen in early 2007, around the time of the previous Triennial Survey. The reduction in cross-border capital flows and the lower level of international investment in 2010 relative to 2007 can account for some of the slowing in growth in foreign exchange turnover, particularly turnover of foreign exchange swaps.

Despite the relatively soft growth in economic drivers, turnover in the spot market has continued to grow strongly. This reflects ongoing technological development that has resulted in electronic trading becoming standard in both the customer and interdealer spot markets and has driven growth in alternative market segments such as high-frequency trading and retail foreign exchange.⁴ New technology has also changed the way banks manage risks associated with market-making, affecting the distribution of turnover across market participants.

⁴ Data collected for Australia suggest that the majority of spot transactions are now executed electronically, although the proportion remains lower for other instruments.

High-frequency trading

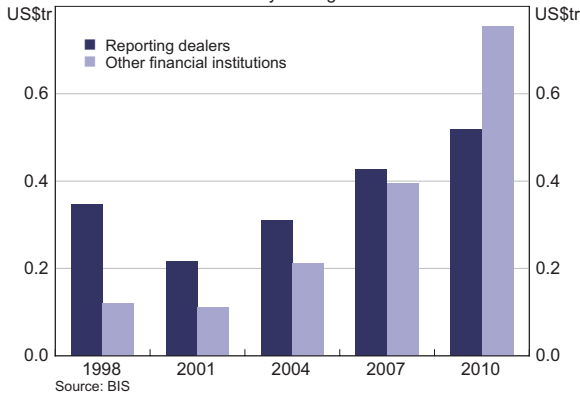
Over the past few years the bulk of turnover in the spot market has shifted to electronic platforms. On the whole, these platforms offer immediacy and transparency, as market participants deliver prices continuously to potential clients, who can request execution of trades at those prices in real time via the same platform.

The growth in electronic trading has also enabled high-frequency traders to become increasingly active in the foreign exchange market. High-frequency trading has spread from equity markets, where this type of trading is well established, to take advantage of the large volumes and low transactions costs in the foreign exchange market. These traders employ a broad range of strategies. One type of strategy relies on identifying and exploiting statistical patterns in pricing, of which momentum and correlation strategies are two examples. Another type of strategy takes advantage of pricing differences that may arise for only microseconds, for example, when the price of a currency pair differs very briefly across two platforms. Regardless of the strategy, developing high-speed trade identification and execution technology is key to earning the return, as a delay of even microseconds may mean that the price has moved, eradicating the small expected profit on the trade.⁵

The increasing presence of high-frequency traders in the foreign exchange market has seen spot turnover between dealers and other financial institutions grow rapidly; between 2007 and 2010, spot turnover with other financial institutions almost doubled, overtaking spot turnover between dealers (Graph 4). However, while high-frequency traders have contributed significantly to the growth in turnover, there are no data confirming their share of the foreign exchange market; market reports

⁵ High-frequency traders invest vast amounts of capital in building systems that can identify and execute trades within microseconds, so-called low-latency systems. Latency refers to the speed at which one computer program can communicate with another.

Graph 4
Global Spot Market Turnover
Daily average



suggest that high-frequency trading may currently account for between 10 and 25 per cent of turnover. This is a much lower share than in equity markets, where it is estimated that high-frequency trades account for more than one-half of turnover (CFTC and SEC 2010, p 48).

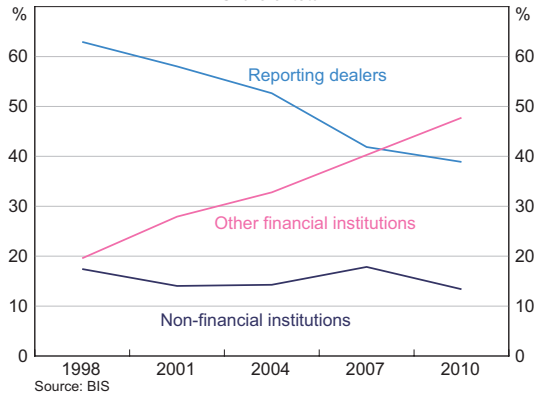
The interdealer market

New technology also continues to generate efficiencies in the way traditional liquidity providers manage the risks associated with market making. Market makers provide liquidity by quoting two-way prices and taking the opposite side of customer transactions, earning a spread but acquiring an open position that exposes the market maker to exchange rate risk. The market maker must either 'warehouse' this risk or offset it through trades with other customers or, as is often the case, with another liquidity provider.⁶ As a result, an increase in the volume of customer trades has in the past been associated with a roughly proportionate increase in the volume of interdealer trades.

⁶ This is the traditional definition of a market maker. Today the term is often used to refer to all institutions posting at least a bid or ask price on any electronic platform, regardless of their preference for warehousing any currency risk or providing constant liquidity to the market.

However, over time, the turnover in the interdealer market generated by each customer trade has fallen, mostly because of a process termed 'internalisation of flow'. New information technology is now enabling larger liquidity providers to manage risk at the institutional level, rather than each trader managing their own position. For those institutions that have sufficient market share, aggregating positions across the institution allows for increased internal position squaring and for better real-time evaluation of the overall risks associated with market making. This reduces the need for the large dealers to manage risk by trading in the interdealer market. The increased efficiency in risk management contributes to slower growth in aggregate turnover and also to a decline in the share of transactions conducted between dealers, especially in the spot and forward markets where the majority of electronic customer trading occurs (Graph 5).

Graph 5
Global Foreign Exchange Turnover
Share of total



Turnover in Australia

Many of the global trends discussed above have also been at play in the Australian market over the past three years. Growth in aggregate turnover in Australia also slowed relative to the previous three-year period; turnover increased by 12 per cent between April 2007 and April 2010 compared with growth of 60 per cent between April 2004 and April

Table 2: Australian Foreign Exchange Turnover

	Change over 2004–2007 Per cent	Change over 2007–2010 Per cent	Daily average in April 2010 US\$b
Total	60	12	192
Instrument			
Spot	25	35	60
Outright forwards	123	–35	8
Foreign exchange swaps	76	10	118
Cross-currency swaps	100	83	4
OTC options	24	–60	2
Counterparty			
Reporting dealers	na	16	118
Other financial institutions	na	10	61
Non-financial institutions	na	–6	13
Currencies			
USD/EUR	38	60	38
USD/JPY	1	39	19
USD/GBP	na	41	14
USD/AUD	66	–2	75
Other crosses ^(a)	54	–1	46

(a) Other crosses includes USD/GBP in 2004

Source: RBA

2007 (Table 2). Growth was driven by spot turnover, which increased by 35 per cent, while growth in turnover of foreign exchange swaps slowed from the previous three years to 10 per cent.

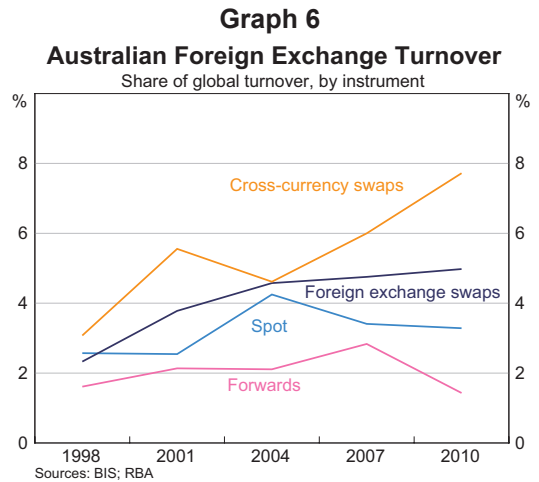
Several developments in the Australian market, however, differ from those seen at the global level. The first is that the primary driver of growth was the turnover between dealers, which increased by 16 per cent. Foreign exchange turnover with other financial institutions grew by a relatively modest 10 per cent and, as was the case at the global level, turnover with non-financial institutions fell. Within the non-financial institution segment, the fall is accounted for by lower turnover of both forwards and foreign exchange swaps; spot turnover for this segment increased strongly, in line with continued

strong growth in Australian cross-border trade over the same period.

Second, growth in spot turnover was somewhat slower than for the world as a whole, with Australia's share of global spot turnover falling (Graph 6). One potential factor contributing to slower growth is that much of the turnover generated by high-frequency trading is likely to occur in New York or London. This is because the systems executing the trades need to be located close to the electronic systems of market makers to minimise execution delays, in the same way that high-frequency equity trading systems are set up as close as possible to stock exchanges. The strong growth in high-frequency trading is therefore unlikely to be proportionately distributed across existing financial centres.

Third, growth in cross-currency swaps was considerably stronger in Australia than at the global level. Turnover in Australia now accounts for around 8 per cent of global turnover in cross-currency swaps, up from around 6 per cent in April 2007, which is considerably higher than its share of turnover for other instruments. Both the level and the trend are related to the use of foreign currency borrowing by Australian banks. When issuing long-term foreign currency debt, Australian financial institutions use cross-currency swaps to exchange the proceeds back into Australian dollars and to hedge the exchange rate risk on their debt repayments. ABS data indicate that Australian banks hedge close to all of their foreign currency debt liabilities using derivatives (as well as over one-half of their foreign currency debt assets)⁷. In 2009 and early 2010, Australian banks lengthened the maturity of their balance sheets and issued A\$28 billion of bonds, around 60 per cent more than was issued in early 2007. With issuance by banks in the rest of the world remaining subdued, this lifted Australia's share of global bond issuance and by extension Australia's share of cross-currency swap turnover.

The latest BIS data also show that the share of foreign exchange swaps continues to be high in the Australian market compared with that for the world as a whole. There are a number of factors that contribute to this. First, the Australian financial industry has a relatively large pension fund and insurance sector, which uses foreign exchange swaps to hedge the foreign exchange risk on its sizeable overseas asset portfolios. These hedges are typically rebalanced monthly or quarterly. Second, offshore bond issuance by domestic banks can also generate turnover in foreign exchange swaps. Although an Australian bank hedges the foreign exchange risk from foreign currency bond issuance using a cross-currency swap with another bank, this intermediating bank then either squares their position against an offsetting cross-currency swap with another customer (such as an issuer of Kangaroo bonds) or hedges it by using a stream of



foreign exchange swaps of shorter maturity. Lastly, the Australian dollar remains a popular currency for carry trades and investors employing this strategy typically roll their open carry positions using foreign exchange swaps.

Summary

Despite the ongoing impact of the global financial crisis on the economic drivers of foreign exchange turnover, the foreign exchange market continued to grow over the past three years. In particular, spot turnover has increased strongly, most likely reflecting the growth of high-frequency trading in foreign exchange markets. Technological advancements have also allowed liquidity providers to continue to improve their risk management practices, reducing the share of trades conducted in the interdealer market. ✕

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⁷ See D'Arcy, Shah Idil and Davis (2009) for more details.

Developments in Emerging Equity Markets

Owen Bailey*

The size of equity markets in emerging economies increased very significantly over the past decade both in absolute terms and as a share of global equity markets. Emerging equity markets also account for a rising share of global equity issuance. In large part, this growth has been spurred by strong economic growth and financial development within these economies. During the global financial crisis, as risk aversion increased, emerging equity markets' share of global market capitalisation fell sharply, though it has since more than recovered.

Introduction

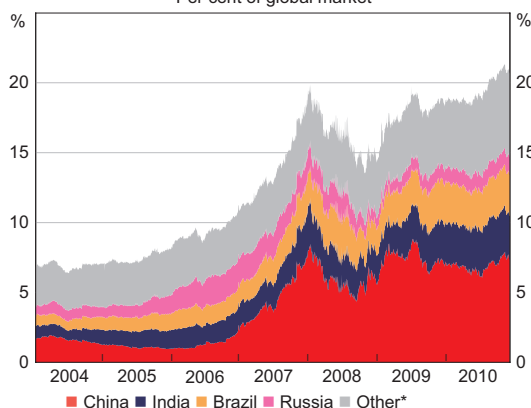
This article discusses the rapid growth in emerging equity markets, with a focus on those in Brazil, Russia, India and China (together known as the BRICs). While there is significant variation across countries, equity market capitalisation in many emerging economies has increased substantially since the late 1990s. As a result, emerging equity markets now account for more than one-fifth of global equity market capitalisation, roughly triple the share in the mid 2000s (Graph 1). Equity markets in Brazil, China and

India have accounted for a significant part of this increase and currently comprise around one-seventh of global equity market capitalisation.

Why Have Emerging Equity Markets Grown?

The increased share of emerging markets in global equity market capitalisation is, in part, due to the rising importance of emerging economies in global economic activity. Emerging economies now account for around one-third of world GDP (at market exchange rates) compared with around one-fifth in the late 1990s. In addition, ongoing financial deepening in many of these countries has seen the size of their equity markets generally grow faster than economic activity (Graph 2). Despite sharp falls in equity prices in late 2008, emerging market capitalisation as a ratio to GDP is generally higher than it was in 2004. The exception is Russia, where market capitalisation remains substantially below its pre-crisis peak owing to the significant influence of energy prices on Russian equities (energy companies make up around half of the market index). India's market capitalisation is now equivalent to around 100 per cent of GDP, comparable to a number of advanced economies (including the United States and Australia).

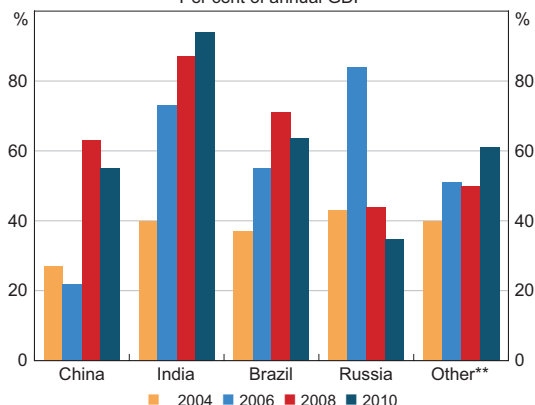
Graph 1
Emerging Market Equity Market Capitalisation
Per cent of global market



* Includes Argentina, Chile, Colombia, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, Turkey, Vietnam
Sources: Bloomberg; RBA

* The author is from International Department.

Graph 2
Emerging Market Equity Capitalisation*
 Per cent of annual GDP



* Average over period; 2010 data are average over year to date
 ** Includes Argentina, Chile, Colombia, Indonesia, Malaysia, Mexico, the Philippines, South Africa, Thailand, Turkey, Vietnam
 Sources: Bloomberg; IMF; RBA

The increased size of emerging equity markets appears to have been supported by a growing domestic investor base, including domestic institutional investors, and increased financial integration with the rest of the world.

The domestic institutional investor base in emerging markets includes pension funds and mutual funds, although these institutional investors are generally small relative to those in advanced economies. While private pension funds' assets in Brazil and India were the equivalent of 17 per cent and 5 per cent of GDP, respectively, in 2007 (the latest available data), they are substantially less than the equivalent

OECD-weighted average of 111 per cent of GDP.¹ Brazilian pension funds are permitted to invest up to 50 per cent of their assets in listed stocks, while Indian private pension funds have been permitted to invest a portion of their assets in listed equities only since 2005. In China and Russia, private pension funds appear to be in an even earlier stage of development. However, these countries have public pension funds, with assets equivalent to 5 per cent and 3 per cent of GDP, respectively, in 2007. China's public pension fund, the National Social Security Fund, was permitted to start investing in equities in 2005 and is currently allowed to invest up to 30 per cent of its assets in listed renminbi-denominated 'A shares'.²

The size of mutual funds also varies considerably across emerging markets. Notably, Brazil has one of the largest mutual fund industries in emerging markets, although the funds are predominantly fixed income rather than equities. The mutual fund industry in China and India has continued to develop in recent years although remains small.

The foreign investor base is significant in some emerging equity markets and reflects increased global financial integration over recent decades. Since the mid 2000s, foreign holdings of emerging market equities have generally increased in absolute terms but typically not as a share of market capitalisation (Table 1). Foreign investors

Table 1: Total Foreign Holdings of Equity^(a)

	Per cent of GDP			Per cent of market capitalisation		
	2004	2007	2009	2004	2007	2009
China	2.2	3.8	3.6	9.7	2.9	5.3
India	6.5	9.2	7.6	11.2	5.6	7.2
Brazil	11.6	26.6	23.9	24.3	26.0	28.1
Russia	15.1	23.9	14.1	34.5	31.0	36.8

(a) Foreign holdings of equity are based on international investment position data
 Sources: Bloomberg; IMF; Thomson Reuters

1 See OECD (2009) for details.

2 China 'A shares' are traded in renminbi and are available only to residents and Qualified Foreign Institutional Investors. China 'B shares', listed on the Shanghai (traded in US dollars) and Shenzhen (traded in Hong Kong dollars) exchanges, are available to both foreign investors and residents with a foreign currency deposit account held with a domestic commercial bank.

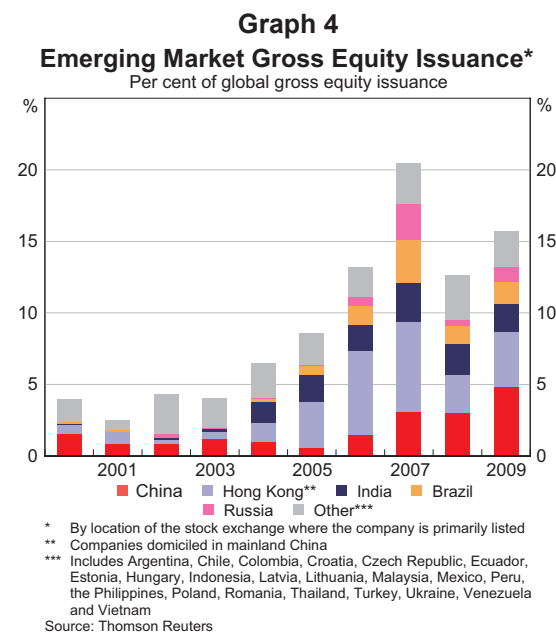
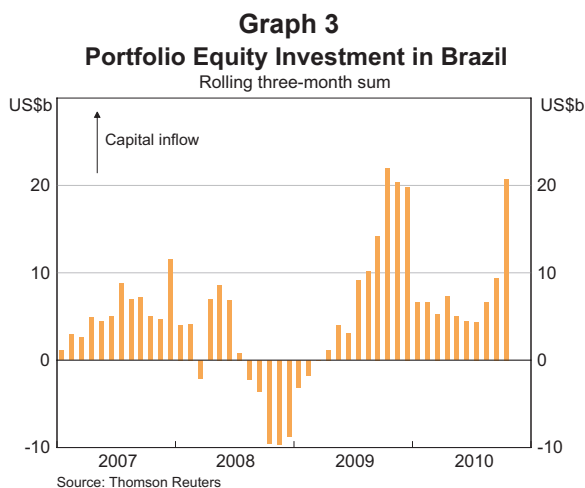
are notable participants in the Brazilian and Russian equity markets, with these equity markets generally more receptive to foreign equity investment. Foreign ownership as a share of market capitalisation remains less significant in China and India than in Brazil and Russia, reflecting restrictions on foreign ownership of equities.

While most of the larger emerging equity markets have restrictions on foreign ownership of equities, these restrictions were generally eased a little in the years leading up to the financial crisis. However, some countries such as Brazil have more recently expressed concerns over significant foreign investment creating overvalued stock markets and currencies. In October 2009, concerns about capital inflows led Brazilian authorities to introduce a 2 per cent tax on foreigners' purchases of locally issued Brazilian bonds and equities. This was extended in November 2009 by placing a 1.5 per cent tax on purchases of foreign-issued Brazilian equities.³ The available evidence suggests that portfolio equity inflows fell quite sharply following the extension of the tax to offshore equity issuance (Graph 3).

Of the larger emerging equity markets, China has the most restrictive foreign ownership regulations, with only delegated Qualified Foreign Institutional Investors (QFIs) permitted to purchase renminbi-denominated 'A shares'. Using a quota system, QFIs are permitted to make investments in equities and other approved financial instruments up to their respective investment quota, with the 103 QFIs currently having a combined investment quota of US\$30 billion, although less than US\$20 billion of that quota was in use towards the end of 2010.

India's foreign ownership regulations are gradually being loosened, with 'foreign investment ceilings' rising in recent years to as much as 100 per cent of a listed company's outstanding shares, effectively allowing full foreign ownership of some Indian companies. Some industries, however, still have ownership restrictions.

Consistent with the increased domestic and foreign investor bases, gross equity issuance in emerging economies has increased since the early 2000s (Graph 4). Issuance did, however, fall temporarily as a share of global issuance in 2008. This was particularly true in Brazil and Russia, likely reflecting uncertainty over commodity prices.



3 The tax on bonds now stands at 6 per cent.

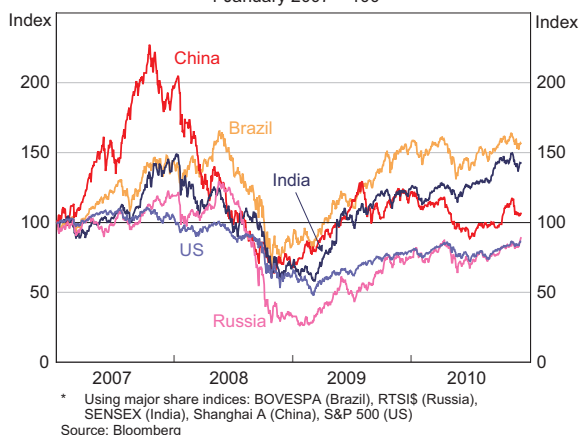
DEVELOPMENTS IN EMERGING EQUITY MARKETS

Equity issuance by Chinese companies has accounted for a large part of the increase in emerging market equity issuance in recent years. In the mid 2000s, Chinese companies started issuing a substantial amount of equity in Hong Kong. Early on, these issues were predominantly initial public offerings (IPOs), but secondary equity offerings have recently accounted for a significant share. In the late 2000s, issuance by Chinese companies increasingly occurred through stock exchanges in mainland China, with issuance fairly evenly split between IPOs and secondary equity offerings.

Performance of Emerging Market Equities

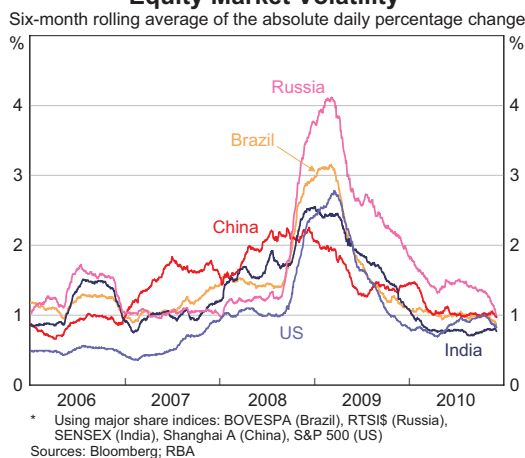
Emerging market equity prices have experienced much larger swings over recent years than equity prices in advanced economies: pre-crisis growth was stronger; peak-to-trough falls were larger (and those troughs typically occurred earlier); and the recoveries from those troughs have been sharper (Graph 5). These swings have been particularly pronounced in China, where prices more than doubled in the first 10 months of 2007 before falling by around 70 per cent over the following year. Despite a strong rise in Chinese equity prices over the subsequent period, they remain more than 50 per cent below their peak in October 2007.

Graph 5
Share Price Indices*
1 January 2007 = 100



Daily movements in emerging market equity prices have also tended to be relatively volatile (Graph 6). In 2007 and most of 2008, daily volatility in Chinese equity prices was especially high relative to most other markets, partly owing to the uncertainty over the pace of policy tightening in China. Russian equity prices have been particularly volatile in the period since, including a significant spike in late 2008 following the collapse of Lehman Brothers.⁴ This largely reflects the relative importance of commodity-related sectors and the significant falls in Russian financial institution equity prices (see below). More recently, volatility in emerging market equity prices has generally moderated as investor confidence has recovered.

Graph 6
Equity Market Volatility*



The volatility of daily movements in emerging market equities is in part related to the sectoral composition of these markets. In contrast to stock markets in the United States and Western Europe, equity market capitalisation in the large emerging markets is concentrated in a few sectors. This concentration means that idiosyncratic shocks can lead to significant volatility in the daily movements in broad market indices.

⁴ Owing to the magnitude of price declines, trading of equities was halted on Russian exchanges numerous times in the months following the collapse of Lehman Brothers in mid September 2008.

Many emerging market equity indices have relatively large shares in the energy, materials and industrial sectors, in part because of the relatively high shares of industry in many emerging economies (Table 2). In particular, the major equity price indices in Brazil and Russia have very large weights in commodity-related sectors, reflecting the natural resource endowments of these countries. In Brazil, the materials sector, including base metals production, accounts for around 30 per cent of the main equity index. The energy sector in Brazil also represents a large share of market capitalisation at around 15 per cent. In Russia, energy companies account for around half of the major equity price indices. China and, to some extent, India also have relatively large weights in commodities sectors.

In China and India, the financial sector has the largest market capitalisation. In part, this can be explained by the stage of development of these economies, with corporates still relatively dependent on the banking sector for external financing. Interestingly, movements in financials' equity prices in China have little correlation with financials' equity prices in advanced economies and largely reflect domestic developments.

Correlation with Advanced Equity Markets

Emerging market equity prices have tended to be weakly correlated with US equity markets, with the notable exception of Brazil (Graph 7). The high correlation for Brazil partly reflects base metals production being correlated with the growth of industrial production globally (and in the United States). The role of foreign investors in Brazilian equities is also likely to be another factor – as global equity markets fell in late 2008, foreign investors repatriated their investments in Brazilian equities;

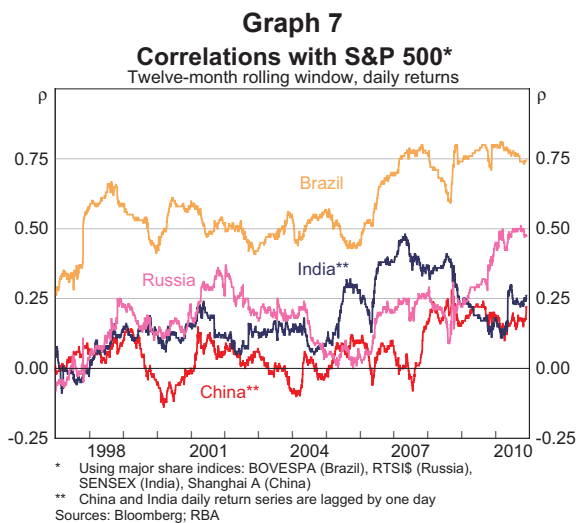


Table 2: Major Equity Indices^(a)
As at December 2010

Index	China		India		Brazil		Russia		United States	
	No of firms	Share Per cent	No of firms	Share Per cent	No of firms	Share Per cent	No of firms	Share Per cent	No of firms	Share Per cent
	844	100	30	100	68	100	42	100	500	100
Energy	26	20	2	15	5	16	9	48	39	12
Materials	152	10	4	8	13	30	13	21	30	4
Industrials	220	17	4	13	7	6	1	0	58	11
Financials	89	34	5	26	6	16	4	20	81	16
Information technology	57	2	3	15	2	3	0	0	75	19
Other ^(b)	300	16	12	23	35	29	15	10	217	39

(a) Using major share indices: BOVESPA (Brazil), RTSIS (Russia), SENSEX (India), Shanghai A (China), S&P 500 (US)

(b) Consumer discretionary, consumer staples, health care, telecommunication services and utilities

Source: Bloomberg

DEVELOPMENTS IN EMERGING EQUITY MARKETS

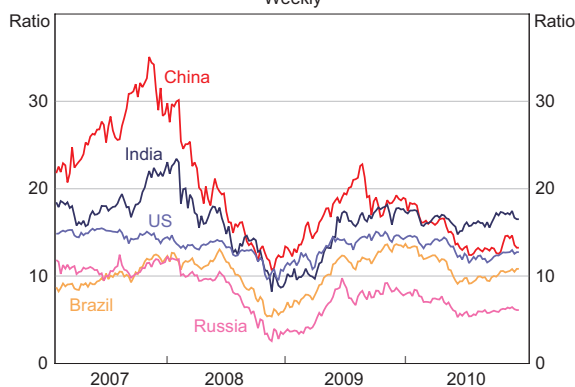
similarly, as global equity markets rose over 2009, foreign investors increased their investments in Brazilian equities.

The lower correlation between Chinese and Indian equity prices and those in the United States is partly attributable to the lower level of capital market integration with advanced economies, reflected in the relatively low share of foreign ownership in these equity markets (see above). The lower correlation is also to some extent attributable to the differences between these economies' business cycles and those in advanced economies. More broadly, share markets in China and India appear to be more responsive to developments in domestic financial and economic conditions than global developments.

Valuation of Emerging Market Equities

Based on forward price-earnings (P/E) ratios, the larger emerging equity markets have shown much bigger swings in valuation than have major markets such as the United States (Graph 8).⁵ In each of the

Graph 8
Forward P/E Ratios*
Weekly

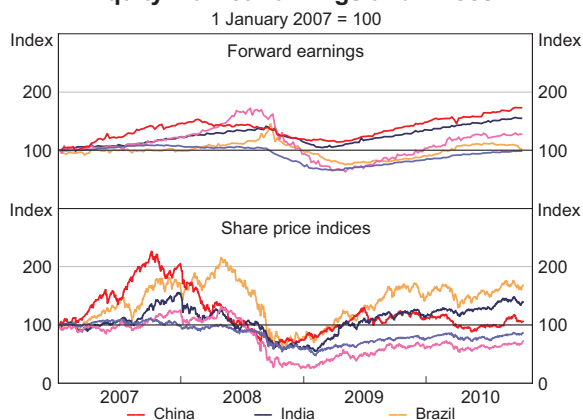


* Using share indices: MSCI Brazil, MSCI India, MSCI Russia, Shanghai A (China), S&P 500 (US)
Sources: RBA, Thomson Reuters

⁵ Forward P/E ratios are calculated using estimated earnings for the next 12 months sourced from IBES. While these data include a large number of analyst estimates for emerging markets, these may not be as comprehensive as the IBES US data. For example, the S&P 500 forward earnings series is calculated from an average of 7 500 different analyst estimates, while the Shanghai A forward earnings series is calculated from an average of around 1 000 different analyst estimates. Furthermore, IBES forward earnings are earnings excluding extraordinary items.

major emerging markets, equity prices peaked and troughed before the respective turning points in forward earnings estimates (Graph 9).

Graph 9
Equity Market Earnings and Prices*



* Using share indices: MSCI Brazil, MSCI India, MSCI Russia, Shanghai A (China), S&P 500 (US)
Sources: Bloomberg, Thomson Reuters

Reflecting the higher growth opportunities that are usually available to businesses in emerging economies, corporate earnings in emerging markets are typically expected to increase faster than in major markets. However, these growth opportunities are often associated with greater risks. The faster expected growth rate is supportive of a higher P/E ratio for emerging market equities than advanced economy equity markets, while the higher risk works in the opposite direction.

Over the past decade, the forward P/E ratio for equities in emerging Asia has typically been higher than in other emerging regions, in part due to the faster rate of economic expansion in emerging Asia. In line with this, Chinese and Indian equities have generally had a higher forward P/E ratio than Brazilian and Russian equities. In recent years, Chinese equities have tended to have the highest forward P/E ratio among these markets. Russian equities, conversely, have had the lowest forward P/E ratio among the larger emerging equity markets, partly reflecting the higher perceived risk of Russian equities.

Forward earnings estimates in China grew by over 50 per cent in 2007, yet this was still well below the pace of growth in Chinese equity prices. This saw China's forward P/E ratio triple between late 2006 and late 2007 to reach particularly high levels. However, China's forward P/E ratio fell over late 2007 and 2008, in part reflecting the realisation that the earnings growth required to justify the relatively high P/E ratio had become unrealistic. Since peaking in late 2007, Chinese equity prices have more than halved. Over the same period, forward earnings estimates have risen by over 20 per cent (although they declined over 2008 and early 2009 before more than retracing this fall). As a result, the forward P/E ratio has now fallen below its long-run average.

Over 2007, forward earnings estimates for Brazilian corporations were largely unchanged, yet equity prices increased by around 50 per cent. As a result, the forward P/E ratio for the Brazilian market rose to be significantly above its long-run average. Since late 2007 equity prices have remained largely unchanged in net terms (they declined sharply over 2008 before more than retracing this fall). Similarly, forward earnings estimates have remained largely unchanged (they also saw large swings). As a result, the Brazilian forward P/E ratio remains above its long-run average.

Looking Forward

Emerging markets' share of global equity market capitalisation has increased in recent decades. Given the ongoing economic convergence of emerging economies with advanced economies anticipated over the coming decades, and the likely further financial deepening in emerging markets, it is widely expected that the emerging market share of global capitalisation will increase further over the longer term. Nonetheless, there may still be large swings in emerging markets' equity prices and share of global capitalisation. ✖

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OECD (Organisation for Economic Co-operation and Development) (2009), *OECD Private Pensions Outlook 2008*, OECD, Paris.

The Financial Position of Australian Unlisted Businesses

Tom Bilston and Melissa Watson*

Using a variety of information sources, the financial position of unlisted firms in recent years is examined and compared with that of the broader business sector. Despite some downward pressure on profits in 2009, ongoing profitability of firms in the unlisted sector has provided a flow of internal funds that has helped the sector to reduce gearing. Among other similarities, median gearing of unlisted businesses appears to be broadly comparable to that of listed firms.

Introduction

The financial health of the business sector has implications for the economy and financial system. Most disaggregated analyses have focused on companies listed on the Australian Securities Exchange (ASX), as stringent public disclosure requirements for listed companies make available a wider range of more frequent data than is typically the case for unlisted businesses. This article draws on a variety of information sources, including a commercial dataset, to examine some characteristics of unlisted firms, including their profitability, funding and gearing.

Unlisted Firms: Data and Characteristics

Aggregate data for Australian businesses are available from a number of sources and on a number of different bases. One distinction, and the one focused on in this article, is the separation between unlisted businesses and ASX-listed companies.¹ ABS data show that in mid 2009 there were just over 2 million businesses in Australia (Table 1). At this time only around 2 000 companies were listed

on the ASX. Therefore, the unlisted business sector, which includes both unincorporated businesses (for example, sole proprietorships and partnerships) and incorporated businesses, represents the bulk of total businesses by number. Unlisted businesses tend to be smaller than those on the ASX. Around 99 per cent of businesses satisfied the ABS definition of small and medium businesses by having fewer than 200 employees, while less than two-thirds of ASX-listed companies met this criterion.

One source of disaggregated data on unlisted businesses is credit bureaus – companies that conduct credit checks on behalf of creditors. This article draws on a sample of data from Dun & Bradstreet (Australia) covering approximately 5 000 to 7 000 unlisted firms each year from 2005 to 2009.² These data are available only with a lag, largely reflecting the general lag after a reporting period for businesses to finalise financial reports, and the time it takes for these data to be compiled. The share of firms in the sample that are incorporated is higher than implied by ABS data on the full set of businesses (at around 93 per cent compared with around 67 per cent).

* The authors are from Financial Stability Department.

1 In this article, listed and unlisted firms are domestically domiciled non-financial and real estate businesses; however, ABS data comprise all businesses operating in Australia.

2 Firms within the sample are anonymous, but are uniquely identified.

Table 1: Australian Businesses
2009

	Number ('000s)
By state/territory	
Australian Capital Territory	24.4
New South Wales	680.3
Northern Territory	13.9
Queensland	420.2
South Australia	144.7
Tasmania	37.8
Victoria	515.5
Western Australia	213.2
By industry	
Agriculture	203.6
Construction, transport & other	519.6
Manufacturing	91.4
Mining	7.7
Rental, hiring & real estate services	216.9
Utilities	5.6
Wholesale & retail trade	215.4
Other services	633.7
All^(a)	2 051.1

(a) Excludes foreign-owned businesses operating in Australia, and businesses not yet coded to main state operations
Source: ABS

Unlisted businesses in the credit bureau sample tend to be small compared with ASX-listed companies: the median unlisted business had around \$14 million in assets and 16 employees, compared with a median of \$18 million in assets and around 65 employees for listed companies. Firms in this sample have been grouped by state, industry and size.³ By state, the sample proportions were stable over the observed period, and broadly similar to that of aggregate ABS data. The industry

breakdown in the credit bureau sample, however, does not match the ABS distribution of Australian businesses particularly closely, possibly reflecting the higher number of incorporated entities in the sample. As a result, some industries (such as manufacturing) are over-represented, while others (such as rental, hiring & real estate services) are under-represented.

Profits

In line with strength in the overall economy over the past decade or so, a range of measures show that total business profits increased in most years (Graph 1). However, in late 2008 and the first half of 2009 total profits declined, largely reflecting a fall in profits for incorporated businesses, as shown by the sharp fall in gross operating surplus (GOS), before rebounding in the latter part of 2009. These fluctuations appear to have been largely driven

³ In this article we have aggregated the industries in the ANZSIC 2006 classification into eight industry groups: agriculture (agriculture, forestry & fishing); construction, transport & other (construction, transport, postal & warehousing and other); manufacturing; mining; rental, hiring & real estate services; utilities (electricity, gas, water & waste services); wholesale & retail trade (wholesale trade and retail trade); and other services (accommodation & food services, professional, scientific & technical services, information, media & telecommunications, administrative & support services, education & training, health care & social assistance, arts & recreation services, and other services). Financial & insurance services and public administration & safety are excluded.

by listed companies, given the magnitude of the movement in listed sector earnings before interest, taxation, depreciation and amortisation (EBITDA). Profits of listed resource companies heavily influenced the overall movement, with their recent strength underpinned by elevated commodity prices.

The national accounts measure of profits for the unincorporated sector was more stable, showing a similar although less pronounced movement as profits of the incorporated sector. This is also reflected in more partial measures, such as the PwC Private Business Barometer, which suggested average profit growth rates of private businesses (of which all are unlisted) halved over 2008 and 2009 (Graph 2). Since then, the survey reports that both actual and expected profit growth have recovered to be above levels prevailing prior to the financial crisis.

Credit bureau data offer a further view on the effect of the downturn in conditions on the unlisted sector. In 2009, the median return on assets (ROA) of all firms in the sample declined slightly to 5 per cent, as the median ROA fell across most industries (Graph 3). Unlisted firms' ROAs were widely dispersed: the top 25 per cent of firms had a ROA of around 15 per cent in each year of the sample, while the ROA of firms at the 25th percentile were only slightly positive. By industry, the highest median ROA was for construction at an average of 12 per cent each year. The lowest median ROAs were below 3 per cent and were recorded for firms in the agriculture and other services industries.

Similarly, the proportion of unlisted businesses in the sample making net losses after tax rose from 19 per cent in 2005 to 24 per cent in 2009 (Table 2). Losses were most prevalent among smaller firms (assets under \$1 million), where the proportion of loss-makers rose from 24 per cent in 2005 to 34 per cent in 2009. The industries with the largest shares of loss-makers were mining and agriculture. The mining industry is characterised by more speculative, exploratory ventures that involve a large upfront investment with a long lead time in

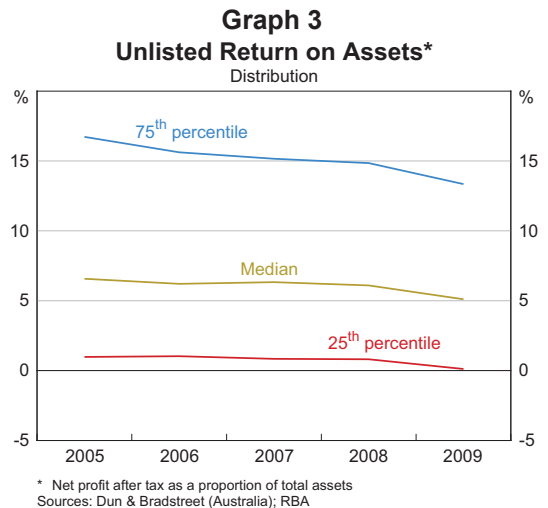
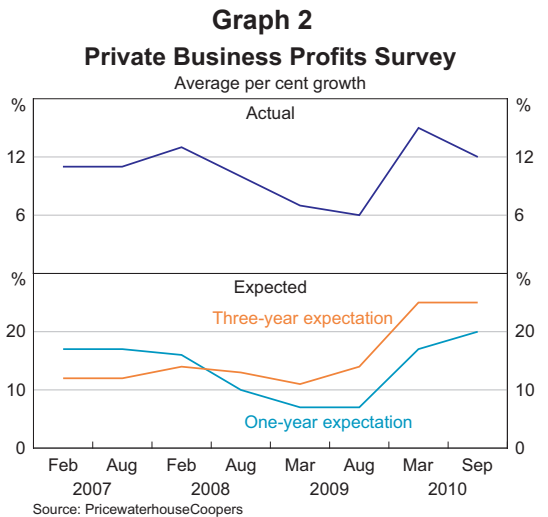
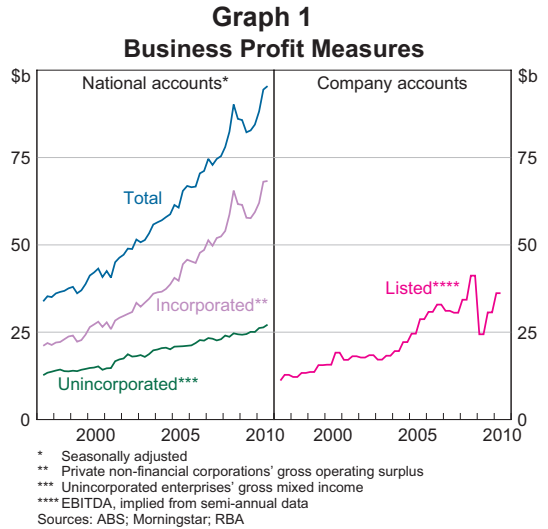


Table 2: Unlisted Loss-makers^(a)
Per cent

	2005	2006	2007	2008	2009
By size (total assets)					
Less than \$1 million	24	26	27	26	34
\$1 million to \$9 million	19	19	21	22	25
\$10 million to \$99 million	17	18	18	17	21
\$100 million or greater	16	19	18	17	22
By industry					
Agriculture	26	33	30	32	31
Construction, transport & other	15	11	12	10	16
Manufacturing	17	19	20	18	24
Mining	41	40	41	45	41
Rental, hiring & real estate services	22	21	23	23	31
Utilities	20	22	24	19	26
Wholesale & retail trade	15	15	15	13	17
Other services	22	23	23	25	28
Total	19	20	20	20	24

(a) Share of firms with negative net profit after tax in the year
Sources: Dun & Bradstreet (Australia); RBA

payoffs, while drought conditions in some regions may have played a role in results for the agriculture industry. The share of loss-makers in these industries remained relatively stable over the observed period, but rose for all other industry groups between 2008 and 2009. The upward trend in the proportion of businesses making losses over 2008 and 2009 was also evident in all States.

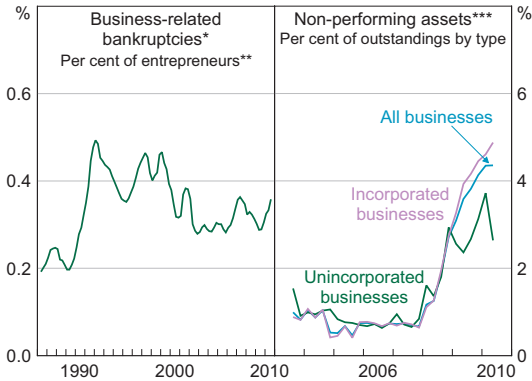
Some of these characteristics are also evident among ASX-listed companies. Listed companies recording losses tended to be reasonably small, and highly concentrated in the resources sector. Over the sample period, on average only one in five listed resource companies were profitable. Resource companies make up nearly half of the listed sector by number, so the overall proportion of loss-makers by number is higher than it is for the sample of unlisted businesses (only around 4 per cent of the unlisted sample are mining companies). Aggregate ABS data on loss-makers (both listed and unlisted) suggest

that around a quarter of all businesses incurred net losses over the same period.

The more subdued profit performance in 2009 is reflected in a pick-up in measures of unlisted firms' financial difficulty. Business-related bankruptcies have risen since March 2009, but remain only slightly above their long-run average and are still substantially below the levels seen in the early 1990s. Total non-performance rates of banks' domestic business assets have increased in each quarter since mid 2008, though since March 2009 these have been driven by loans to incorporated businesses, where the non-performance rate reached 4.9 per cent in the June quarter 2010. In contrast, the non-performance rate on unincorporated businesses has improved so far in 2010 and is currently over half the rate for incorporated businesses of 2.6 per cent (Graph 4).

Graph 4

Unincorporated Business Indicators



* Four-quarter rolling sum
 ** Average number of employers and self-employed persons
 *** Banks' domestic lending; includes 'impaired' loans and 90+ days past-due items that are well secured; includes bill acceptances and debt securities
 Sources: ABS; APRA; Insolvency and Trustee Service Australia (ITSA); RBA

Funding

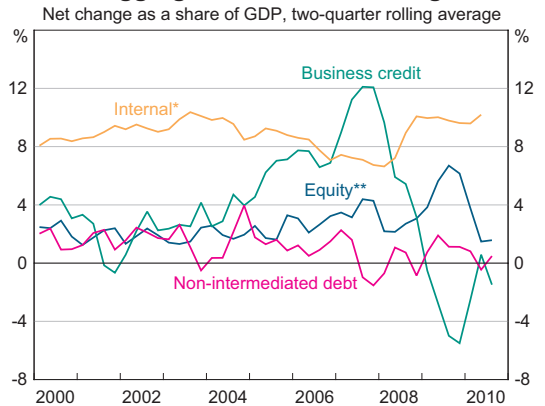
Businesses typically use a combination of internally generated funds and funds obtained through external sources to finance their operations (Graph 5). However, the range of potential sources of external funds is generally narrower for unlisted businesses than for listed companies. Non-intermediated debt instruments, such as bonds and commercial paper, that are available for some larger listed companies are less accessible to smaller businesses. And while listed firms can access public equity markets, equity finance for unlisted businesses (particularly for unincorporated businesses) is commonly limited to the personal capital of the owners, reflecting the limited secondary market and potentially higher cost of these forms of finance. Some unlisted businesses have access to venture capital markets, although this market remains small. Industry estimates suggest Australian venture capital funds under management were only about \$2.5 billion or 0.2 per cent of GDP as at September 2010.

For external funding, unlisted businesses are typically large users of intermediated credit, with this creating important links between these businesses and lending institutions. It is difficult to identify loans made to the unlisted sector, although some indications can be obtained from other sources.

Loans to unincorporated businesses accounted for around 16 per cent of Australian intermediated business credit as at October 2010 (Graph 6). The major banks provided just under 80 per cent of this, although unincorporated lending was only 6 per cent of their total loans. Other Australian and foreign-owned banks each accounted for around 10 per cent of bank loans to unincorporated businesses. To the extent that unlisted businesses are likely to make greater use of smaller loans, lending by loan size (business loans above and below \$2 million) is a further source of information.

Graph 5

Aggregate Business Funding

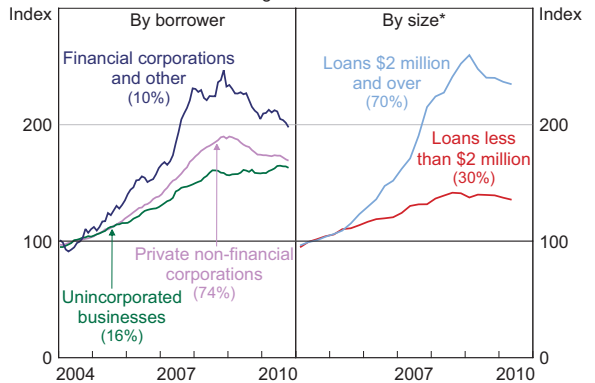


* Excludes unincorporated businesses, includes public non-financial corporations
 ** Includes listed companies only
 Sources: ABS; ASX; Austraclear Limited; RBA

Graph 6

Business Credit

Average 2004 = 100



* Includes bank lending only
 Sources: APRA; RBA

In June 2010, loans below \$2 million constituted around 30 per cent of bank lending, and around 80 per cent of these loans were provided by the major banks.⁴

Business credit has fallen since early 2009, while lending to unincorporated businesses and loans below \$2 million have remained broadly steady, suggesting the share of business credit extended to unlisted businesses may have been rising. Consistent with this, listed companies have reduced their use of debt financing in each reporting period since the peak of around \$413 billion at end 2008, as they increased their use of equity financing.⁵

Another source of funding for the unlisted sector is trade credit – the financing of the purchase of goods or services by their supplier. This type of credit establishes important financial links between non-lending Australian businesses. For the median firms in the credit bureau sample, trade credit averaged half of liabilities from 2005 to 2009.⁶ The wholesale & retail trade and construction industries were the highest users of trade credit: the median share of trade credit averaged over

60 per cent of these industries’ liabilities. Consistent with the listed sector, the sample suggests smaller firms tended to use more trade credit. The use of trade credit by businesses in the credit bureau sample is higher than suggested by aggregate ABS data, which imply that trade credit represented no more than 10 per cent of Australian business’ liabilities in any year from 2005 to 2009.

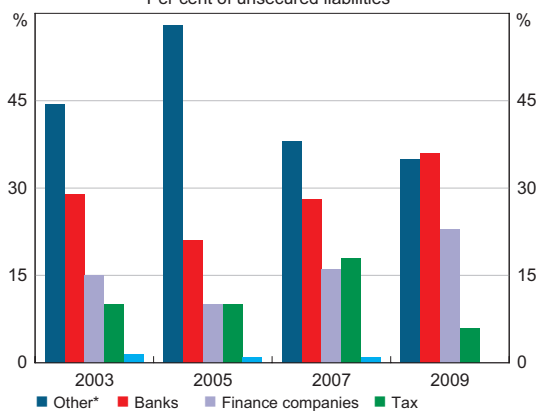
Trade credit may be one of the riskier forms of credit, reflecting its typically unsecured nature and the high cost of monitoring related exposures. Insolvency and Trustee Service Australia (ITSA) data suggest that trade creditors bear a significant share of losses from bankruptcies (Graph 7). The largest share of unsecured liabilities is in the ‘other’ category (which includes trade creditors), with this being generally higher than the exposures of other key creditors such as banks and finance companies.

Gearing

Unlisted businesses’ gearing declined across a range of measures from 2005 to 2009, reflecting an increase in equity that was likely to have been associated with the sector’s broad profitability. A common gearing measure – the debt-to-equity ratio – can be estimated from the credit bureau database, where debt is estimated as total liabilities minus trade credit. Under this approach, the median debt-to-equity ratio of unlisted firms fell from 52 per cent in 2005 to 41 per cent in 2009 (Graph 8). However, the median gearing ratio masks large variations across the sample. Over the sample period, more than a quarter of firms had an estimated debt-to-equity ratio of above 100 per cent, while around a quarter had a ratio below 15 per cent.

The median debt-to-equity ratio for ASX-listed companies was around 35 per cent, on average, from 2005 to 2009. On the evidence from the credit bureau sample, the distributions of gearing ratios in the unlisted and listed sectors share many

Graph 7
Bankrupts’ Liabilities by Creditor
Per cent of unsecured liabilities*



* Includes trade creditors, store accounts, professional fees, medical bills, school fees, family loans, housing authorities and utilities
Sources: ITSA; RBA

4 For further information, see RBA (2010).

5 See, for example, Black, Kirkwood and Shah Idil (2009).

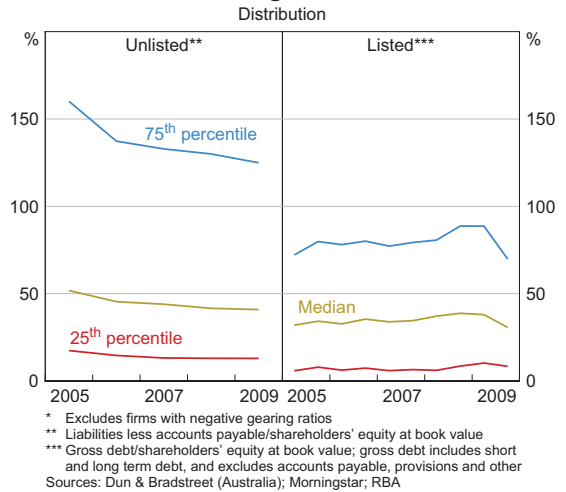
6 Trade credit data are reported as accounts payable.

similarities. One key difference was that while the unlisted sector exhibited a stable deleveraging trend from 2005 to 2009, listed firms increased their gearing until end 2008 before a period of significant deleveraging. This was mostly accounted for by larger firms: the firm at the 90th percentile of the 250 largest listed companies had an average debt-to-equity ratio of 244 per cent at end 2008, which fell to 194 per cent by the end of 2009. Another difference is that unlisted businesses in the sample relied more on trade credit than their listed counterparts. If trade credit is not removed from liabilities, the median ratio of total liabilities-to-equity averaged 111 per cent for the sample of unlisted businesses, over four times higher than the equivalent ratio for all listed companies.

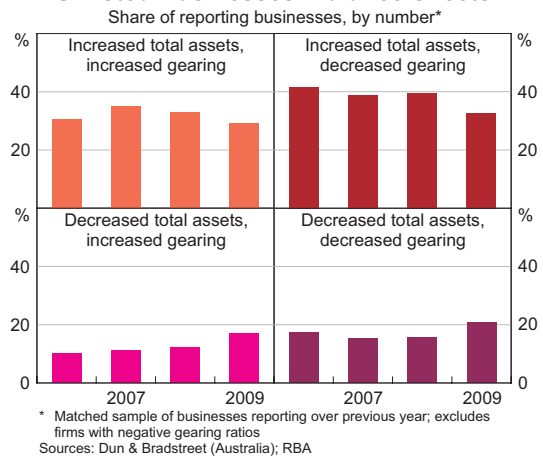
In any given year, more than half the unlisted firms in the credit bureau sample reduced their debt-to-equity ratios. Despite this, most unlisted firms were still expanding their balance sheets (Graph 9). Firms expanding their balance sheets accounted for just over 70 per cent of the sample each year until 2008, before falling as pressure increased on profits.

By industry, gearing ratios were highest for unlisted businesses in the utilities, and rental, hiring & real estate services industries, with median debt-to-equity ratios for both industries consistently above 75 per cent (Graph 10). The mining industry relies less on debt funding than other industries: median debt-to-equity among unlisted mining firms averaged around 17 per cent over the sample period. Listed companies display similar industry trends: gearing was highest in the infrastructure and real estate industries, with median debt-to-equity ratios averaging 172 per cent and 88 per cent each from 2005 to 2009, while the median ratio among resource companies averaged just 11 per cent.

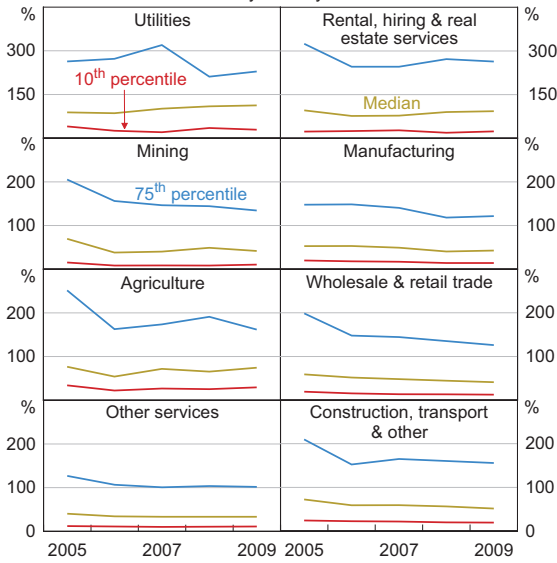
Graph 8
Gearing Ratios*



Graph 9
Unlisted Businesses' Balance Sheets



Graph 10
Unlisted Businesses' Gearing Ratios*
 By industry



* Unlisted non-financial businesses' liabilities less accounts payable/shareholders' equity at book value; excludes firms with negative gearing ratios
 Sources: Dun & Bradstreet (Australia); RBA

The aggregate interest-servicing ratio – a measure of interest expense as a proportion of earnings – increased for listed companies from 2005 to mid 2008 before declining, reflecting falling interest rates and gearing. The credit bureau database does not contain interest-servicing data; however, applying average interest rates to outstanding debt levels suggests interest-servicing ratios among unlisted businesses are broadly comparable to those of listed companies. In line with the listed infrastructure and real estate industries, the unlisted utilities industry appears consistently to have the highest interest-servicing ratios, followed by the rental, hiring & real estate services industry. In contrast, resources and mining firms consistently have the lowest ratios in both sectors.

Conclusion

Unlisted businesses are an important part of the business sector, with strong financial links to lending institutions (through intermediated credit) and other firms (through trade credit). Aggregate data suggest that the unincorporated sector, which makes up a large part of unlisted businesses, has had a more stable profit performance than the incorporated or listed sectors in recent years, and non-performance rates on bank exposures to the unincorporated sector have remained lower as a result. Available disaggregated data suggest that unlisted businesses have similar gearing ratios to the listed sector, and that gearing has been more stable in recent years than for the listed sector. ❖

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The Challenge of Prosperity

Glenn Stevens, Governor

Address to the Committee for Economic Development of Australia (CEDA) Annual Dinner, Melbourne, 29 November 2010

Thank you for the invitation to play a part in marking the 50th anniversary of CEDA. It is particularly significant for me to be here because 2010 also marks 50 years since the commencement of central banking operations by the Reserve Bank of Australia. There were in fact a number of significant beginnings in 1960.

It was a time of rising prosperity after a long period of difficulty. Between the depression of the 1890s and the end of World War II, real GDP per capita in Australia had risen by about 35 per cent – or around half a percentage point per year. But in the 15-year period from the end of the war to 1960, it expanded by about 25 per cent – or about 1½ per cent a year.

The long post-war boom would eventually see growing excesses from the late 1960s, which ended in the disastrous instability of the 1970s. But in 1960, the boom still had a long way to run.¹

So 1960 was a time of optimism. There have been many ups and downs for the Australian economy since then. CEDA has played its role in informing discussion and debate along the way.

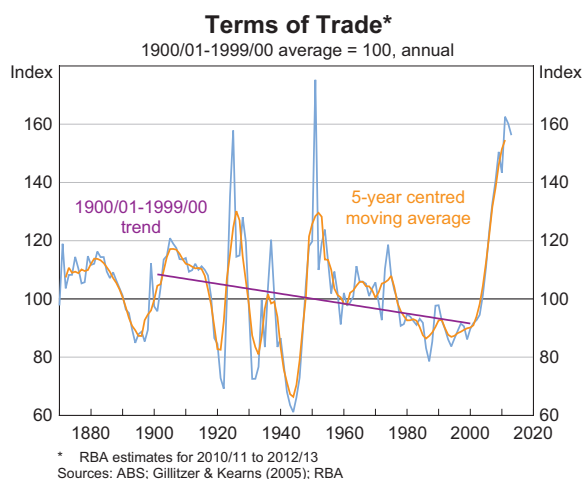
Two years ago, when I last addressed this group, optimism was anything but the order of the day (Stevens 2008). The global financial system was in serious disarray and the global economy was heading into recession. It was obvious Australia would be affected but I suggested that there were good reasons for quiet confidence then about the long-run future of Australia. There still are, two years later.

But we have to turn that confidence into lasting prosperity. So I would like to offer a few observations about some of the things we need to be thinking about. I do not have definitive solutions, but offer these observations as a modest contribution to the discussion.

In so doing, I am not trying to convey anything about recent or prospective monetary policy decisions. Tonight, at an event marking the 50th anniversary of a body devoted to Australia's economic development, it is more useful to lift our gaze beyond the next interest rate decision to look at a broader canvas.

¹ In 1960, some saw that care was needed. In the *Economic Record* in August of that year, there appeared the following statement: 'In July 1960 the Australian economy is producing more, and expanding its production faster ... than at any earlier date. ... One outstanding economic problem seems to remain, and it has been frequently discussed academically and in public debate: can the boom be sustained without a dangerous degree of inflation?' (Bowen 1960).

I have one picture to show.



This is a very long-run chart of Australia's terms of trade. You may have noticed the Reserve Bank saying a lot about the terms of trade in the past few years. Before I describe the chart, why is it important?

Our terms of trade have a big bearing on national income. In economic commentary, there is typically a very strong focus on GDP – the value of production – as a summary of national material progress. There is also quite rightly an emphasis on lifting productivity – real GDP per hour worked – as the source of our growth of material living standards.

For open economies, though, our standard of living is affected not just by the physical output we can obtain from our resources of labour and capital, but also by the purchasing power of that output over things we want to have from the rest of the world. This is what the terms of trade is measuring. It is the relative price of our export basket in terms of imports. At the extreme, if the economy were open to the extent that we exported all our production and imported all our consumption, then the price of exports relative to imports would determine our living standards entirely, for any given level of productivity per hour worked. As it is, Australia is not *that* open, and not as open as many smaller economies, but it is considerably more open than

the really large economies like the United States, the euro area or Japan. So the terms of trade matter.

When the terms of trade are high, the international purchasing power of our exports is high. To put it in very (over-) simplified terms, five years ago, a ship load of iron ore was worth about the same as about 2 200 flatscreen television sets. Today it is worth about 22 000 flat-screen TV sets – partly due to TV prices falling but more due to the price of iron ore rising by a factor of six. This is of course a trivialised example – we do not want to use the proceeds of exports entirely to purchase TV sets. But the general point is that high terms of trade, all other things equal, will raise living standards, while low terms of trade will reduce them.

Returning to the chart, to my eye there are three key features.

The first is the degree of variability in the terms of trade through the middle parts of the 20th century, from about World War I to the aftermath of the Korean War. This was, of course, a period of considerable instability in the global economy, with the attempt to return to the Gold Standard after the 'Great War', followed by the 1930s depression, the Second World War, the post-war expansion and then the Korean War. I might add that, in those days, with the attempt to maintain a fixed exchange rate, these swings were very disruptive to the economy. Typically, a rise in export incomes would result in a rise in money and credit, a boom in economic activity and a rise in inflation. Then the terms of trade would fall back and the whole process would go into a rather painful reverse. The advent of the flexible exchange rate in the early 1980s made a great difference in managing these episodes.

The second feature is the downward trend in the terms of trade, particularly noticeable from the early 1950s to about the mid 1980s.² This was the period of resource price pessimism, the 'Prebisch-Singer hypothesis' and so on, which held that

² In fact, fitting a trend to the data for the 20th century shows a statistically significant downward trend of about 0.2 per cent per annum on average.

primary products would tend to decline in price relative to manufactured products (Prebisch 1950, Singer 1950). The latter part of this period was the one in which the realisation became widespread that the (apparently) easy gains in living standards of the post-war boom were gone, and in which pessimism about Australia's economic future was probably at its most intense. It was also the period when, under strong political leadership backed by a highly capable bureaucracy and an economically literate media, our determination to press on with various productivity-increasing reforms was greatest. That these two phenomena occurred together was probably not entirely a coincidence.

The third feature is the current level of the terms of trade relative to everything but the all-time peaks over the past century. Measured on a five-year moving average basis, and assuming (as we do) some decline in the terms of trade over the next few years from this year's forecast peak, the terms of trade are as high as anything we have seen since Federation.

To give some perspective on how important this is, let me offer one back-of-the-envelope calculation. The export sector is about one-fifth of the economy. The terms of trade are at present about 60 per cent higher than their average level for the 20th century, and about 80 per cent higher than the outcome would have been had they been on the 100-year trend line. This means that about 12–15 per cent of GDP in additional income is available to this country's producers and/or consumers, each year, compared with what would have occurred under the average or trend set of relative prices over the preceding 100 years (all other things equal). That will continue each year, while the terms of trade remain at this level.

Of course, part of this income accrues to those foreign investors who own substantial stakes in the mineral sector. In this sense, the current boom is a little different from the early 1950s one where most of the income went first to Australian farmers.

Nonetheless, a good proportion accrues to local shareholders and employees, and to governments via various taxes. A non-trivial part of it is available to consumers as higher purchasing power over imports, as a result of the high exchange rate.

It does not take much imagination to see that an event of this magnitude is expansionary. Incomes are higher – in some cases a lot higher – and, absent some offsetting force, some of that will be spent. So it has always proved in the past. Moreover, if, as seems very likely, these prices prompt a build-up in investment to supply more of the commodities concerned, there are further expansionary effects. Even applying significant discounts to stated investment intentions, as the Reserve Bank staff have done in their forecasts, there is likely to be a further significant rise in business investment over the next few years, from a level that is already reasonably high as a share of GDP. On all the indications available, we are living through an event that occurs maybe once or twice in a century.

So a very important question for us is: how do we handle all this?

We obviously have to be wary of overheating. The Bank has given its views on this point before and I will say no more about that tonight.

But in fact the issues are broader than that. They extend to how we use the additional income, and how soon, and to questions of structural adjustment.

One difficulty is that it matters a great deal whether the rise in the terms of trade is likely to be permanent or only temporary. Unfortunately, we cannot really answer that question. It is obvious from my chart that past episodes tended not to be permanent, but they sometimes lasted several years and certainly long enough to be very disruptive.

If the rise in income is only temporary, it would be desirable not to raise national consumption by very much. Instead, it would make sense to allow the income gain to flow into a higher stock of saving, which would then be available to fund

future consumption (including through periods of temporarily weak terms of trade, which undoubtedly will occur in the future). Moreover, it would probably not make sense for there to be a big increase in investment in resource extraction if that investment could be profitable only at temporarily very high prices (and which could come at the cost of reduced investment in other areas).

If the change is likely to be persistent, then income is likely to be seen as permanently higher. Households and most likely governments will probably see their way clear to lift their consumption permanently, both of traded and non-traded goods and services. Structural economic adjustment will also occur as the sectors whose output prices have risen, now being more profitable, will seek to expand, in the process attracting productive resources – labour and capital – away from other sectors whose output will decline as a share of GDP. Australia's floating exchange rate, which tends to rise in line with the increase in the terms of trade, helps the reallocation of labour and capital by giving price signals to the production sector. The higher exchange rate also speeds the spread of the income gains from the terms of trade rise to sectors other than the resources sector, by directly increasing their purchasing power over imports. The resulting rise in imports spills demand for tradable goods and services abroad, which helps to reduce domestic inflation.

So the shift in the terms of trade will, unless clearly quite temporary, drive shifts in the structure of the economy. It is easy, of course, to speak in the abstract of 'reallocation of productive resources'; but this means that some businesses and incomes become relatively smaller; jobs growth in some areas slows even as in others it picks up. Some regions struggle more than others. Some sources of government revenue are adversely affected even as other sources see an improvement. This process will be seen, not unreasonably, as costly by those adversely affected, even though the overall outcome is that the country as a whole is considerably better off. (It is also

obvious that, if the terms of trade change really is only temporary, it may not be worth paying these adjustment costs from the perspective of the overall economy.) The policy challenge for governments will be whether to help these sectors resist change, or to help them adapt to it.

We can carry out the thought experiment of imagining that, as a society, we wanted to resist these changes completely and seek to preserve the existing structure of the economy. Let me be clear I do not advocate this. But consider what would be involved. We would need, *inter alia*, to prevent the resources sector from responding to changed prices (preventing any increase in its size). That would probably involve taxing away completely any additional national income resulting from higher prices, and maybe also preventing any additional exploration or capacity expansion to take advantage of strong demand that could be met profitably even at after-tax prices. We would probably need to re-cycle any funds raised overseas, in the process holding down the exchange rate. It is important to note, by the way, that such funds could not be spent at home without adding to aggregate demand and hence risking the inflation we would still be seeking to avoid in this scenario. In the scenario where we want as much as possible to be unchanged, the additional income handed to us by the change in global relative prices all has to be used offshore, one way or another.

If all the above could be achieved – a very big if, when one considers the logistics of what would be required – then the economy's structure could, perhaps, remain as it was. This course would mean forgoing the potential for higher export income by investing more in resource extraction; either those gains would go instead to other resource-supplying countries or, in commodities where Australia is a major producer, our lack of supply response would result in further upward pressure on prices. So we would avoid the disruption of structural change, but overall would be poorer than otherwise would

have been the case, as would, perhaps, our trading partners. It is hard to believe such an outcome could be achieved and no less difficult to imagine it being thought desirable.

Realistically, we won't be able to hold the economic structure static in that fashion if there is a major, persistent change in relative prices. Nor, I would argue, should we try. Had we had that approach through our history, we would still be trying to employ 25 per cent of our labour in agriculture and still be trying to ride 'on the sheep's back' in chase of a world economy that had moved on to place a much higher value on many things other than wool. We would not have the highly developed services sector that we have today, nor the standard of living we currently enjoy. So if the terms of trade do remain fairly high for a lengthy period, the task is going to be to facilitate structural adjustment so as to make it occur in as low cost a way as possible. But that ought to be feasible given that overall income is considerably higher.

Of course we cannot know whether the terms of trade *will* be high for a long period. History certainly would counsel caution in this respect. We do know that supply of various resources is set to increase significantly over the years ahead and not just from Australian sources. It is for this reason that we assume some fall in commodity prices over the next several years. The assumption underlying the Bank's forecasts published a few weeks ago is that iron ore prices fall by up to about 30 per cent over the next several years. Even if they do, the terms of trade will remain quite high by the standards of the past 100 years in the near term, as the chart showed.

Is that assumed fall realistic? There is no way of knowing. Larger falls have happened before. In fact they have been the norm. On the other hand, experienced people seem to be saying that something very important – unprecedented even – is occurring in the emergence of very large countries like China and India. If the steel intensity of China's GDP stays where it is already, and China's growth

rate remains at 7 or 8 per cent for some years to come, which appears to be the intention of Chinese policy-makers, then the demand for iron ore and metallurgical coal will rise a long way over the next couple of decades. If India's steel intensity goes the same way as most other countries have, that will add further. Even with allowance for supply responses by other producers and considerably lower prices than we see today, that seems to point to a prominent role for the resources sector, broadly defined, over a longish horizon.

So the most prudent assumption to make might be that the terms of trade will be persistently higher than they used to be, by enough that we will need to accommodate structural change in the economy, but not by so much that we shouldn't seek to save the bulk of the surge in national income occurring in the next year or two, at least until it becomes clearer what the long-run prospects for national income might be.

As it happens, there does seem to be a good deal of saving going on, thus far, in the private sector. A little-noticed recent statistical release was the annual national income accounts for the year 2009/10. In that release, the Australian Statistician has made some major revisions to the estimates for household saving (which of course is a residual arising from other major aggregates). The revision lifted estimated household saving by \$45 billion, or about 5 percentage points of income, from the previous estimates. The net saving rate is now seen at some 9–10 per cent of income over the past year or two, up from about –1 per cent five years ago.

In all the circumstances, considering what has happened around the world in recent years, more cautious behaviour by households is not surprising. Nor, I would argue, is it unwelcome. With the stimulus from the terms of trade and the likely investment build-up, the economy can cope with more saving by households for a time. On the other hand, to expect it to absorb a major surge in consumption at the same time as an historic increase in investment is

also occurring would be rather ambitious. In fact, we probably need private saving to remain on a higher trajectory, and we will also need public saving to rise, as scheduled.

In the longer term, the economy's increased exposure to large emerging economies like China and India (these two now accounting for over a quarter of exports) – assuming that continues – may also pose important questions. If these and other emerging economies continue to grow strongly on average, but also, as with every other country, still have business cycles, the result may be the Australian export sector, and therefore the Australian economy, having a potential path of expansion characterised by faster average growth in income, but with more variability. That possibility has been noted by some observers. It is worth recording that such concentration would hardly be unprecedented – think about the dominance of Japan in Australia's trade in the 1970s and 1980s, or the dominance of the United Kingdom in an earlier era. Nonetheless, the degree of concentration could be higher than we have seen in the past decade or more, which was a time of considerable stability for the Australian economy overall.

We can't know whether this scenario of higher but more variable income growth will come to pass. But if it did, how should we respond?

We could simply accept higher variability, if that comes, as the price of higher average income growth. That would see higher variability in demand in the economy, which would have its own implications, not least that it could make it harder for macroeconomic policies to foster stability.

Another approach would be to reflect the higher income variability in our saving and portfolio behaviour rather than our spending behaviour. We could seek to smooth our consumption – responding less to rises or falls in income with changes in spending and allowing the effects to be reflected in fluctuations in saving. In the most ambitious version of this approach, we could seek to hold those

savings in assets that provided some sort of natural hedge against the variability of trading partners, or whose returns were at least were uncorrelated with them. Of course, such assets might be hard to find – the international choice of quality assets with reasonable returns these days is a good deal more limited than it used to be.

It is possible that this behaviour might be managed through the decisions of private savers. There might also be a case for some of it occurring through the public finances. That would mean accepting considerably larger cyclical variation in the budget position, and especially considerably larger surpluses in the upswings of future cycles, than those to which we have been accustomed in the past. There would also be issues of governance and management of any net asset positions accumulated by the government as part of such an approach, including whether it should be, as some have suggested, in a stabilisation fund of some sort. These are pretty big questions and addressing them would not be straightforward, so I am not going to attempt that tonight. The point simply is that, in the face of what appears to be a very big event in our terms of trade, these issues are deserving of consideration – perhaps by CEDA, among others, as you enter your sixth decade.

Conclusion

As I said at the outset, we have grounds for confidence in the future of our country, just as at CEDA's beginning 50 years ago. Recent performance, not to mention the economic opportunities in our time zone, has helped to strengthen our confidence.

But it would be a mistake to rest on recent achievements, as significant as they have been, and to fail to press on in our efforts to do better. Past periods of apparently easy affluence, conferred by favourable international conditions, probably lessened the sharpness of our focus on the other element of raising living standards, namely productivity. It was subsequently a long and difficult grind when we realised that international conditions

had become less favourable. So while I have not talked about productivity this evening, I do not wish my focus on the terms of trade to be interpreted as implying that lifting productivity is unimportant. On the contrary, while our terms of trade are handed to us, for better or worse, by international relative prices, the efficiency with which we work is a variable we can actually do something about.

A prudent approach might be to use the current period of exceptionally favourable international prices to raise our saving, while maintaining a disciplined approach to ensuring there are no impediments to lifting productivity. Consumption deferred – private or public – can easily be enjoyed in the future; consumption we get used to today is harder to wind back in the future if circumstances change. These issues, and the associated structural adjustment issues, no doubt will pose a challenge. But that's the challenge of prosperity – and not a bad challenge to have.

It is sometimes said that Australia manages adversity well but prosperity badly. There will never be a better opportunity than now to show otherwise. ✖

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Cross-currents in the Global Economy

Glenn Stevens, Governor

Address to the Australian Industry Group Annual National Forum, Canberra, 25 October 2010

Introduction

The topic the AIG had proposed for this session was 'The Australian Economy to 2020'. That would of course involve forecasting up to 10 years ahead. That's a rather risky proposition because forecasts are very hard to make. It might be safer, especially for a central banker, not to look forward at all!

The way I want to start is by looking back 10 years. This may serve as something of an admonition to be circumspect in making forecasts. But identifying some big trends in the Australian economy over the intervening period – one or two of which were quite unexpected a decade ago – may contain some indications of issues for us to be aware of in the next decade. A couple of the trends that are readily observable also point to some current challenges in global economics and finance, and it is these to which I shall turn in the second part of these remarks.

2000 – the year that was ...

A decade ago, Sydney had just hosted the 2000 Olympic Games. The city of Melbourne had hosted a meeting of the World Economic Forum (WEF). There were some wonderful sporting moments for Australians in the Games, though the Games are perhaps remembered for their logistical success as much as for the medal tally. The WEF meeting is perhaps most remembered for the protests, which turned ugly.¹

¹ A Google search seems to turn up numerous references to the various protests and protest groups, but not all that much in the way of what was actually said at the Forum. Whether that reflects an ephemeral discussion or the nature of news reporting is difficult to gauge.

But these events should also be remembered as occurring at the height of the dot-com mania and its obsession with the 'new economy'. Australians were told by more than one prominent visitor that year that we lived in an 'old economy', with the implication that we needed to shift towards the production of IT goods. Blue-sky valuations were being applied to companies that had not, at that point, earned a single dollar of profit (and many never would). The Australian dollar was slumping.

The Economist magazine remarked that:

'... As Sydney was presenting the new face of modern Australia to the world, the currency markets were giving a different verdict. At the end of the games' first week, the Australian dollar fell to a record low of 53.63 cents against its American namesake. ... The Australian dollar's fall is partly explained by the greenback's remarkable strength ... But it also reflects a continuing belief among financiers and potential investors that Australia has yet to complete the transition from being an old economy, based on natural resources, to a new economy fired by information and other technology.'²

Other examples could be given.

As we now know, the dot-com bubble had actually started to deflate by the time those words were printed. The NASDAQ share index had already fallen by about 25 per cent from its early 2000 peak. By early in 2001 the US Federal Reserve would be cutting interest rates as the US economy went into recession. The new economy – the latest (but not the last) in a long line of new paradigms – still had

² 'Australia's game still to win', 28 September 2000.

a business cycle after all. The Australian dollar would fall further in 2001, reaching a low point of about US48 cents in early April. Some felt that it might fall as far as US30 cents. More than any other single economic indicator, this particular price was often taken as a summary statistic for economic health.

In 2000, some people were making the point that, in the old versus new economy stakes, it was probably in the *use* of information technology, rather than in the production of IT goods, that the gains would be greatest. On that score Australia ranked highly.³ Or they made the point that Australia would probably do best, in its production structure, to stick to its comparative advantages in minerals or agriculture or various services.⁴ But it was hard going trying to make sensible points against the barrage of market and media commentary.

Ten years on, though, it does not seem to have been to Australia's disadvantage not to have built a massive IT production sector. On the contrary, the terms of trade are at a 60-year high, the currency just about equals its American counterpart in value and we face an investment build-up in the resources sector that is already larger than that seen in the late 1960s and that will very likely get larger yet. In the area of information technology, meanwhile, the pace of change continues to be rapid: prices continue to fall, profits have proved very hard to come by and a number of prominent names from 2000 have disappeared. It is still better, it seems, to be a user than a producer of IT.

The point of saying all this is not to poke fun at those whose prognostications a decade ago turned out to be wide of the mark. Anyone who *has* to forecast for a living has, from me, a degree of sympathy. The point is simply that forecasting is very hard and that the latest conventional wisdom often turns out to be just a passing fashion. We might add that market

pricing, at some points in time, may not be much better than that, even though markets tend to get it roughly right on average.

Long-term Trends

Having given that caution, it is worth recounting just a few of the trends we can observe over the past decade or longer. The increased borrowing of the household sector was one such notable trend. It had already been under way for nearly a decade by 2000, but kept going for the best part of another decade after then. I have said before that this probably won't be a feature of the next decade. We are seeing more caution in borrowing, and the rate of household saving from current income, while still low, has risen over recent years. It follows that some personal and business strategies that did well in the earlier period of households gearing up probably won't do as well in the future.

Other trends have been a continuation of developments that had already been under way for a long time. For example, as a share of the economy, services have continued to rise, while manufacturing and agriculture have declined. Those sorts of trends, in broad terms, are pretty common to advanced economies.

Mining's share of output had changed little since the mid 1980s, but has picked up noticeably over recent years. This seems likely to continue in the near term at least, so we are seeing a faster pace of change in the relative sizes of industries than we had seen for a number of years. Formal metrics of the extent of structural change in the industry composition of GDP have increased but do not, at this point, show it to be outside the range of previous experience.⁵ That could well change, though, given the size of the resources sector build-up that appears to be under way.

Looking at the trade accounts, we can see that the share of resources in exports has risen very

3 See Macfarlane I, 'Talk to World Economic Forum Asia Pacific Summit Melbourne', 11 September 2000 and *The Australian Financial Review*, 'Whither the new economy?', 6 March 2000, p 18.

4 See Harcourt T, 'Should we worry about the IT deficit?' <<http://www.austrade.gov.au/Should-we-worry-about-the-IT-deficit-/default.aspx>>, 16 October 2000.

5 Connolly E and C Lewis (2010), 'Structural Change in the Australian Economy', *RBA Bulletin*, September, pp 1–9.

significantly over the past decade while those of the manufacturing, agricultural and services components have declined. This is not to say that the absolute values of exports for the latter sectors have fallen since 2000 – indeed services exports have grown quite strongly – but the rise in resource exports has well and truly outpaced everything else, as a result of both volume and price rises.

It is in the destinations of exports, however, that we see perhaps the most striking changes over the space of a decade. As it happens, the weights in the Reserve Bank's trade-weighted measure of the value of the Australian dollar were updated just a few weeks ago. In the most recent year, the overall weight on the Chinese currency rose by 4 percentage points. That was quite a large

movement in a single year but it is just the latest manifestation of a profound trend. Stepping back, it is apparent that there has been a striking further orientation in trade towards the Asian region since 2000.⁶ The table below tells the story.

A decade ago, Japan was far and away the largest export destination for Australian goods. The United States was second, South Korea and Europe tied for third and China came sixth after New Zealand. Today, Australia's top goods export destinations are, in order, China, Japan, Korea and India – accounting for some 58 per cent – followed at some distance by the United States, New Zealand and the euro area, all closely bunched, accounting for a further 13 per cent or so between them.

Australia's Merchandise Exports by Destination

Per cent share of total, financial years

Destination	1999/2000	2009/2010
China	5.1	23.2
Japan	19.3	18.5
South Korea	7.8	8.2
India	1.6	8.1
United States	9.9	4.8
New Zealand	6.9	4.0
Euro area	7.7	4.0
United Kingdom	4.3	3.6
Taiwan	4.8	3.4
Singapore	5.0	2.5
Thailand	1.8	2.3
Indonesia	2.5	2.2
Malaysia	2.2	1.6
Hong Kong	3.3	1.4
United Arab Emirates	0.9	1.0
Papua New Guinea	1.0	1.0
South Africa	1.1	0.9
Saudi Arabia	1.4	0.8

Sources: ABS; RBA

⁶ The data show shares based on exports of goods. The text also refers to trade in goods unless otherwise stated.

Given the ongoing shift in the world economy's centre of gravity towards Asia, the direction of this change is not at all surprising. Many countries would be seeing the weight of their trade shifting in the same direction as ours. One of the reasons for the strong performance of the German economy this year, for example, has been the strength of demand for high-end manufactured products in Asia. For Australia, though, it is a powerful phenomenon.

Now this is just the exports side. When we consider both imports and exports – and indeed when we include trade in services – the United States and Europe remain important for Australia (though less so than China these days).

The United States and Europe – along with New Zealand – also continue to account for a large proportion of Australian investment abroad and are the source of the vast bulk of foreign investment into Australia. In fact, the share of outward Australian investment going to Asia has actually fallen slightly since 2000. Moreover, financial developments in the major economies, and especially the United States, are still very important drivers of capital flows, and of shifts in financial and business sentiment.

So there are still important links to the major economies. I am not arguing for 'de-coupling', if by that idea is meant that somehow the north Atlantic countries have ceased to have a significant impact on the global economy, or no longer matter to us. Everything is connected, and economic events in the north Atlantic countries still matter greatly.

But trends in those countries are leavened to no small degree by developments in the Asia-Pacific region, which is progressively becoming both larger and more capable of exerting a degree of independent influence over its own economic performance. It used to be said that when the United States sneezed, Asia caught a cold. Recently it seems that the United States has contracted pneumonia, while Asia sneezed and caught a bad cold, but then recovered pretty quickly. Even in the financial field, the size of offshore investments by Asian official

holders has become quite important, including for the Australian dollar. And while the stock of cross border investment between Asia and Australia remains small compared with that between Australia and the United States or Europe, that is surely in the process of changing.

The point of all this is not to say that somehow Australia has been, or will be, 'saved' by China or Asia. The emergence of Asia is to our advantage, if we respond to it correctly. But there is no free ride from the global or regional economy and there never will be. Nor is it to deny that a country's own policies, for better or worse, and followed over a long period, also make a significant difference to its economic outcomes. There is no escaping responsibility to keep our own house in order.

The point, rather, is that we ought to take more than a passing interest in events in our region, and in the conduct of economic policies in our region, and not just those in the countries that once completely dominated the global economy, but no longer do.

This brings me to the issue foreshadowed in my title.

Cross-currents in the Global Economy

At the risk of over-using a clichéd term, the global recovery has been very much a two-speed one. The United States, the United Kingdom, Japan and some continental European economies saw deep downturns in output, and have to date experienced only weak recoveries that have left the level of output well below its previous trend and unemployment much higher than normal. In the United States in particular there is a very troubling increase in the duration of unemployment, which, with its likely atrophy of skills, does not bode well for future growth.

In Asia outside of Japan and in Latin America, economies have traced out the more classic 'V-shaped' path. In east Asia excluding Japan, the level of real GDP is well above its previous peak. It follows that most of these economies are likely to

experience some moderation in the pace of growth, from something well above trend, to something more like trend. This is normal after a rapid recovery.

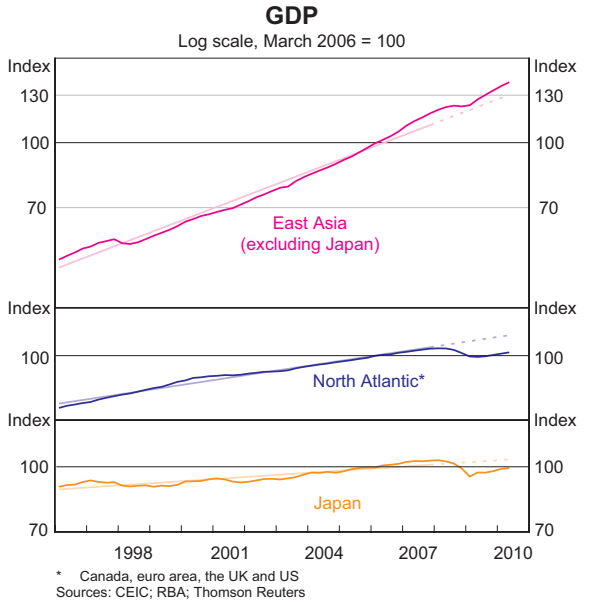
This difference in performance between large parts of the emerging world and the core of what we could call the ‘established’ world of industrialised economies leaves the global economy poised at a critical juncture. In Asia, capacity utilisation has more or less recovered and growth will moderate. Many of the old industrial countries, in contrast, still have large volumes of idle capacity and are searching, with increasing urgency, for ways to *increase* their growth. But they are having trouble increasing their own demand. So we face a slowdown of some degree in global growth at a time when substantial spare capacity remains in the global economy. The ‘global imbalances’, so called, have persisted, and have a new dimension: there is an imbalance in the location of spare capacity in the world.

What could be done to foster a better outcome for everyone?

There has been an increasing focus on exchange rates of late, with talk of ‘currency wars’ and so on. My view is that more flexibility of exchange rates in key emerging countries in Asia – including China, but not only China – would be part of a more balanced outcome.

But exchange rate flexibility alone isn’t enough. Changes in exchange rates don’t themselves create global growth, they only re-distribute it. Unless the exchange rate changes were accompanied by more expansion in demand globally, we would not have solved the problem of excess capacity, we would only have relocated it. The additional step needed is stronger domestic demand, compared with what would otherwise have occurred, in the countries whose currencies would appreciate in such circumstances.

Of course there should be room for this given that the higher exchange rate would, other things equal, help to dampen inflation. In principle, at least,



this looks like a potential ‘win-win’ outcome. The appreciating countries could enjoy faster growth in living standards than otherwise, while the weaker countries whose currencies were moving lower would get some stimulus to aid their recovery.

There are, however, some complications. A number of Asian countries have been experiencing worrying increases in property prices. Low interest rates and easy financial conditions have contributed to this. Arguably domestic financial conditions in these cases need to be tighter, not looser. So it is not clear that monetary policy would be the best option to boost domestic demand. That said, allowing exchange rates to appreciate more quickly would probably help to dampen increases in asset prices.

What about more expansionary fiscal policies as the way of increasing domestic demand? Many, though not all, Asian countries would have some scope for that, given the long record of fiscal prudence and low public debt levels. But these countries are very unlikely to do things that would seriously impair their fiscal position in the long run. Hence my suspicion is that fiscal action, if it came, would be only modest.

Some argue that structural changes are needed to lower national saving rates in countries like China. Such changes could involve a shift in the distribution of national income away from state enterprises to households, who are thought more likely to spend it, a better developed social safety net, and so on. In all likelihood these sorts of changes will occur over time. But structural change is rarely a rapid process.

So I think we should be realistic about how much difference exchange rate flexibility would make to the unbalanced nature of growth in the global economy, at least over a time horizon of just a few years. It is definitely part of the answer (and it is surely in the interests of the countries with closely managed rates to accept more flexibility), but it is no panacea.

A full resolution of the imbalances will take time. It will involve more far-reaching changes to very deep-seated attitudes to saving, which remain very different across the regions of the world. As incomes in Asia continue to rise, saving rates will probably decline over time, but only gradually. Meanwhile, aggregate saving rates in America and Europe will have to rise over time, given the extent to which financial obligations have grown relative to likely future income, particularly on the public side. The key question is whether these two trends, in opposite directions, will occur at the same pace, or not.

Good policies can certainly help the world get to a better solution than might otherwise occur. But even with good policies, it is likely to be a slow grind out of the current difficulties for some countries. We probably have to accept that global growth was unsustainably fast in the few years prior to the crisis, that too much capacity of certain types was built up in the wrong places, that spending in some countries ran too far ahead of permanent income and that a period of adjustment and structural change cannot be avoided, even under ideal policy settings. If that is so, then, in all countries, an emphasis on accepting the need for adjustment generally – not just in exchange rates but in economic policies and structures across the board – is key.

Conclusion

Economies are not static machines. They are a complex and dynamic combination of actors, all continually seeking to adapt to changing conditions. That is one reason that economic outcomes are very hard to predict, and why I am circumspect about predicting 'Australia to 2020'.

Looking to the long run, we probably can make a few very general observations, but not much more. Real income per head has generally been on an upward trend in industrial economies for the past 250 years, with occasional setbacks. Most likely that will continue (albeit that some major countries will take some time to recover their income levels of three years ago). As a broad observation, and definitely not as a precise forecast, we might expect that a decade from now Australia's per capita GDP will probably be roughly 15 per cent higher in real terms than it is now, give or take a few percentage points. The economic policy arguments, by the way, will all be about what policies might gain or lose those few percentage points.

In 2020, there will probably be, at a rough guess, an extra couple of million people working, compared with today's 11.3 million. But exactly how all those people working will earn their living and go about their work is considerably less predictable. A good proportion of those 13 million-plus jobs will be in firms that don't yet exist. Some will be in industries or occupations that barely exist as yet. And no one can give you a blueprint for which areas will succeed and which will not, any more than the pundits a decade ago, at the height of the 'new economy' fad, could foresee the shape of Australia's economy today.

Succeeding in the future won't ultimately be a result of forecasting. It will be a result of adapting to the way the world is changing and giving constant attention to the fundamentals of improving productivity. That adaptability is as important as ever, in the uncertain times that we face. ✨

Monetary Policy and the Regions

Glenn Stevens, Governor

Address to Foodbowl Unlimited Forum Business Luncheon, Shepparton, 20 September 2010

Thank you for the invitation to come to Shepparton. No one knew, when the invitation was issued almost a year ago, that you would be battling floodwaters just a couple of weeks prior to today. It is good to see the recovery already well advanced.

In the global economy, recovery from the effects of a different kind of deluge – a man-made one – has been under way for a while. Progress has been quite varied, however, and the outlook is uncertain just now. I will give an update on those matters today.

It also seems a fitting occasion to talk about ‘monetary policy and the regions’, since a question we are often asked is how we take account of differing economic conditions across the country in the setting of monetary policy. I will offer some perspectives on the issues that arise when we have one policy instrument for a fairly diverse economy. The essential message here is that such diversity matters, but is often not as pronounced as people assume, because all the parts of the economy are ultimately connected. Things that affect one sector tend to have spillover effects elsewhere. Furthermore, economies have a certain capacity to adjust to differing conditions. In Australia this works reasonably well.

Current Economic Conditions

The global economy continues to present a mixed picture. In the Asian region, most countries have well and truly recovered from a downturn that occurred in late 2008 and the first few months of 2009. The main exception is Japan. In the bulk of cases, economies are much closer to their potential

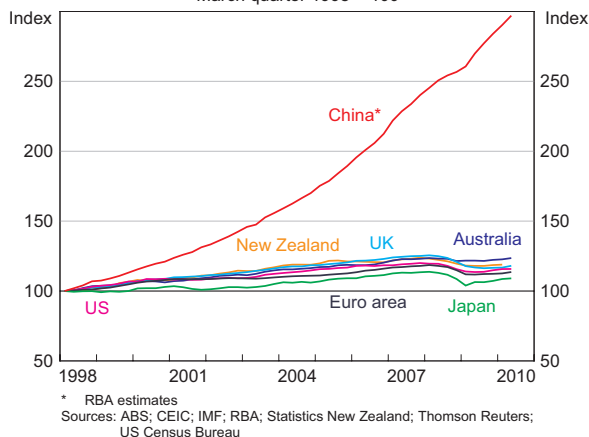
output paths now than they were a year ago and policies are moving to less expansionary settings. As a result, over the year ahead the growth in the Asian region is unlikely to be as rapid as over the year to mid 2010, when the ‘v-shaped’ recovery was in full swing. Similar comments could probably be made about Latin America.

In Europe, the German economy has been powering ahead this year, reaping the benefits of many years of attention to containing costs and building productivity. But other continental economies are not as strong, and some are in the grip of a very painful adjustment to a world of constricted private credit and limits to budgetary flexibility. In the United States an expansion has been under way for some time, but seems lately to have been losing a bit of steam and growth has recently not been robust enough to reduce high unemployment.

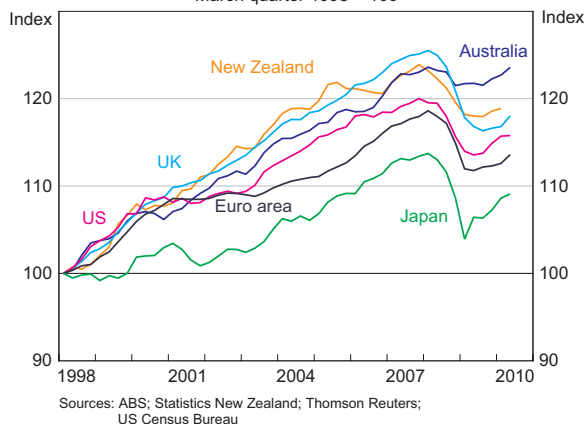
In Australia, growth has been quite solid over the past year, unemployment is relatively low, and inflation has, for the moment, declined. In fact, growth trends have been favourable over several years now in comparison with many other economies.

The charts below, comparing trends in Australia’s real GDP per capita with that of several countries, are illustrative. Of course we cannot match the extent of growth in China – a country where living standards are rapidly increasing in a process of ‘catch up’ to the higher levels of high-income countries (Graph 1). But it is clear that compared with the US or Europe, or Japan, Australia’s per capita output and income has done pretty well over the past several years (Graph 2).

Graph 1
Real GDP per Capita
 March quarter 1998 = 100



Graph 2
Real GDP per Capita
 March quarter 1998 = 100



The task ahead, then, is to seek as far as possible to continue a solid trend like this, through various challenges which lie ahead. The future is of course unknowable, and economic forecasts unfortunately are not very reliable. But we have no option but to try to form a view of how things will probably unfold.

We think the global economy will record reasonable growth over the coming year, though not as strong as the past year (a strength that, incidentally, surprised most observers). We think Australia's terms of trade, after reaching a 60-year high in the current quarter, will probably decline a bit, but remain high.

We expect that this high level of relative export prices will add to incomes and spending, even as the stimulative effects of earlier low interest rates and budgetary measures continue to unwind. We expect, and indications from businesses are that they do as well, that resource sector investment will rise further – as we experience the largest minerals and energy boom since the late 19th century. Even with continued caution by households, that probably means that overall growth, which has been at about trend over the past year, will increase in 2011 to something above trend. We think that means that the fall in inflation over the past two years won't go much further.

Of course that central forecast could turn out to be wrong. Something could turn up – internationally or at home – that produces some other outcome. We spend a fair bit of time thinking about what such things could be. Possible candidates might be a return to economic contraction in the United States, or a bigger than expected slowdown in China, or the resumption of financial turmoil that abruptly curtails access to capital markets for banks around the world and damages confidence generally. But if downside possibilities do not materialise, the task ahead is likely to be one of managing a fairly robust upswing. Part of that task will, clearly, fall to monetary policy.

The Objectives of Monetary Policy

What then are the objectives of monetary policy? Put simply, our job is to preserve the value of money over time and to try, so far as possible, to keep the economy near its full employment potential. Over the long run, these are mutually reinforcing goals, not conflicting ones. For the past 17 years the way we have pursued these goals has been to operate a medium-term target for CPI inflation of 2–3 per cent, on average. The 'on average' specification allows us to accept short-term fluctuations in inflation – as long as they *are* only short-term – and so avoid the risk of attempting to over-control inflation and in the process de-stabilising the economy. But the specification still requires us to limit inflation in the

medium term. Over the 17-year period, CPI inflation has averaged 2.5 per cent (excluding the one-time impact of the GST in 2000), and the economy generally has exhibited more stability, with real GDP mostly a little closer to trend than it had been in the preceding couple of decades.

How Does Monetary Policy Work?

The Reserve Bank has very effective control over one interest rate – namely the rate that applies when one financial institution lends cash overnight to another (hence the label the ‘cash rate’). This rate has a major impact – though not to the exclusion of other forces – on a range of short-term market rates. Since the bulk of financing activity in Australia is contracted on variable interest rates that are axiomatically affected by changes in short-term rates, the rates paid by borrowers are usually closely affected by cash rate decisions – though other factors can impinge as well from time to time. Through this device the Bank can affect the relative incentives for saving versus borrowing, and so have an impact on spending on goods and services and on financial and ‘real’ assets. Because the relative rates of return on Australian assets compared with foreign assets are altered when we change interest rates here, the exchange rate also moves in response to monetary policy changes (although most of the time it is moving in response to a host of other factors as well).

Often, the expectation of what will happen to the cash rate in the future is just as important as, or even more important than, the level of the cash rate today. For this reason what the Bank says – or what people think we have said – can be very influential on markets and behaviour. It is for this reason that central bankers are usually so guarded in public comments.

The Effects of Monetary Policy in a Diverse Economy

It is obvious even from the above highly condensed description that monetary policy will affect different

groups in different ways. For a start, changing interest rates shifts the distribution of income between savers and borrowers. The larger the size of one’s balance sheet – either assets or debt – the more likely one is to be affected by a change in rates of interest. Someone with no debt and no savings will probably feel little impact – if they feel anything at all – of a change in interest rates, at least directly.

In addition, we only have one set of interest rates for the whole Australian economy; we do not have different interest rates for certain regions or industries. We set policy for the average Australian conditions. A given region or industry may not fully feel the strength or weakness in the overall economy to which the Bank is responding with monetary policy. In fact no region or industry may be having exactly the ‘average’ experience. It is this phenomenon that people presumably have in mind when they refer to monetary policy being a ‘blunt instrument’.

The issue is that it is not possible to have different monetary policies by region or by industry within the country, at least not while we are all using one currency and funds are free to flow around. Either each area that wanted its own interest rate would also have to have its own currency, or there would need to be a draconian set of regulations to prevent savings in one region flowing to another to be loaned out – a sort of local and regional equivalent to the pervasive capital controls which once existed on international capital movements. Quite possibly both of the above might be needed for a comprehensive tailoring of interest rates to each set of local conditions. Obviously that is unlikely to be practical.

Moreover there would be costs for a region having its own currency. It would have to establish its own Reserve Bank for a start, and would have to accept additional transactions costs for cross-border transactions with other regions, which would probably inhibit trade and investment flows with other regions in its own country. Very small currency areas have also often got into trouble over the years. These are reasons why many very

small countries often peg their currency to that of a larger neighbour or simply adopt that currency outright. Perceived gains from being part of a larger monetary union have continued to attract small European countries to the euro, even though the membership conditions are fairly demanding, as we have recently seen.

There is a field of economics that thinks about this set of issues. Apart from the obvious criteria like language, culture and political unity, a suitable case for a single currency is thought to be stronger when:

- the forces ('shocks') that affect a group of regions or countries are fairly similar and the way in which the regional economies respond is similar;
- there is a lot of trade between the regions (as there usually is within a single country);
- factors of production (labour and capital) flow fairly easily between the regions in response to differences in conditions; and/or
- when other means for responding to differences in experience (particularly fiscal transfers) are available.

That framework suggests several questions we might ask for Australia and its regions:

- How different are the shocks by region?
- How flexibly does the economy respond to such differences?
- What other policy mechanisms are at work to respond?
- And finally, how different, ultimately, are the experiences after these responses have occurred?

Differences Across the Country

It is worth observing that not all 'shocks' that hit the economy have markedly different effects by region or industry. Some of them are fairly widespread in their effect.

Take the sudden intensification of financial turmoil in September 2008. Confidence slumped and

people began to 'batten down the hatches' – in just about every industry and every region around the world – more or less simultaneously. Banks became more cautious in lending – most particularly to the property sector, but generally to almost all borrowers – in every country.

Other shocks are more particular. The one most people would think likely to have a differential impact across regions would be the big rise in mining prices and associated build-up in investment that we saw a few years ago, and which has returned over the past year and a half. Since the mineral resources are not found in abundance in every region, some areas would be expected to receive more of a boost than others. For example in Western Australia, mining accounts for a quarter of production; it is only 2 per cent of production in Victoria. So it would seem obvious that the impact of an event that increases the demand for minerals is likely to see, in time, the output of WA given more of a boost than that of Victoria.

But as usual, the picture gets more complicated when we think further. The headquarters of some major mining companies are in Melbourne. Those companies will be putting additional demand on various service providers around the nation – from air travel to consultants, from geologists to manufacturers, and so on. The effects of the engineering and construction build up for some of the minerals investment will be felt in other regions around the country (and indeed also by overseas suppliers). The higher incomes generated from the mineral boom will be felt by employees, shareholders (some of whom are overseas) and by governments (via various taxes). Depending on how these entities respond to these gains in income, there will be subsequent effects on economic activity around the country. It may well still be the case that the effects are most obvious and most pronounced in WA, but there will be substantial spillovers as the economy responds. Incidentally, most data suggest that until quite recently economic activity was growing faster in Victoria than in WA.

So to the second question, how about the mobility of factors of production? A remarkable feature of some of the remote area mining operations is the way the labour operates on a ‘fly-in, fly-out’ basis. Any user of Perth airport can easily attest to this but the ‘commutes’ also occur from the eastern states. More generally, population shifts have long been occurring between the south-eastern states and the resource-rich states. While moving is costly, in most analyses I have seen the mobility of the Australian workforce is pretty good – people shift in response to opportunity. Capital is of course highly mobile, at least at the margin.

As for other policy mechanisms at work, there are substantial fiscal transfers. The ‘automatic stabilisers’ will take more taxes from regions that are doing well, since incomes will be rising relatively quickly, and transfer it to areas doing less well in the form of welfare payments. Governments can also use discretionary spending or other policies as part of this. Moreover there are structures in place that are deliberately designed to lessen systematically the differences in outcomes which might otherwise occur.

Opinions will differ about how effective these have been, and about how effective they should be – as recent political events have probably demonstrated. But the general point is that in a political federation such as Australia, there are various fiscal transfer mechanisms that act to diminish the divergences that might result from differences in initial conditions and exposure to economic events. This is likely to be less so in an area which is a monetary union but not a political federation. Indeed some economists have long pointed to this as a potential difficulty for the euro area in some sets of circumstances, like the ones that exist in Europe at present. That said, we are seeing, albeit on a somewhat ad hoc basis, more intra-European transfer mechanisms being developed.

So for Australia, the effects of a ‘shock’, even if concentrated initially, will tend to be felt more generally across the economy over time. The way

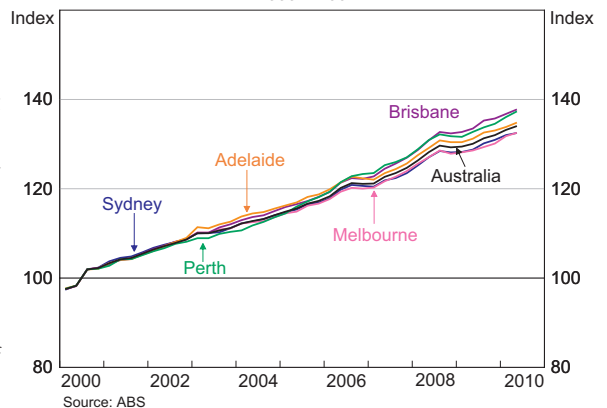
the economy works will naturally tend to help this occur, as will various other policy devices. That is what is supposed to happen in a well-functioning, integrated national economy.

The next question, then, is how different outcomes turn out to be after all these mechanisms have responded to the various impacts. Of course differences will remain at the industry level – ultimately, it looks likely that the mining sector and the areas that supply it will grow, and some other industries will, relatively, get smaller. And at this point, much of the impact of the recent resource price changes is yet to be seen. Nonetheless it is still worth examining just how different key trends have been to date across regions.

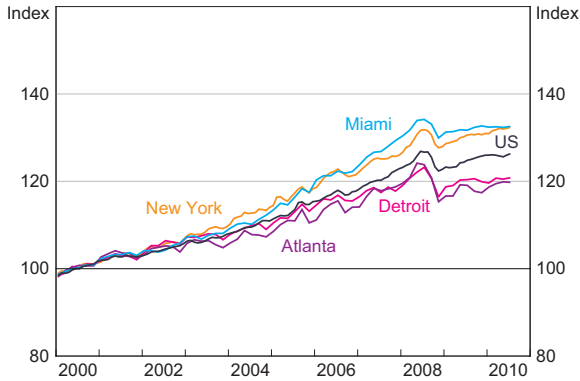
There are various indicators at a state level and even a regional level. These are of varying reliability – sample sizes get pretty small in some cases. Two of the more reliable data sets are likely to be the consumer price index and the unemployment rate. It is these, of course, that people are probably most interested in as well.

The CPI is available only for capital cities. Consumer prices in the capital cities have tracked remarkably closely (Graph 3) – at least as much as in other single

Graph 3
Australia – Consumer Price Index
2000 = 100

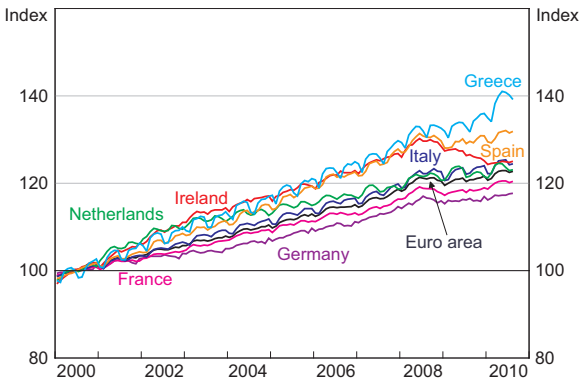


Graph 4
United States – Consumer Price Index
 2000 = 100



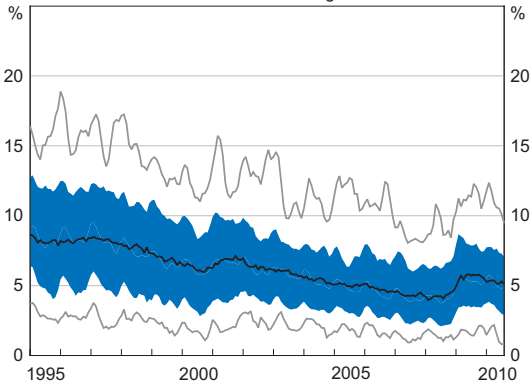
Source: Thomson Reuters

Graph 5
Euro Area – Consumer Price Index
 2000 = 100



Source: Thomson Reuters

Graph 6
Australia – Unemployment Rate
 Distribution across regions*



* Blue area represents 80 per cent of the interpolated population-weighted distribution; grey lines represent the range; black line is the national unemployment rate. Ranges are three-month moving averages of non-seasonally adjusted data
 Sources: ABS; RBA

currency areas like the United States or the euro area (Graphs 4 and 5).

In the case of unemployment rates, a fair bit of disaggregated data is available. Graph 6 below shows the national unemployment rate and the range across the statistical regions measured by the ABS for which there are reasonably reliable continuous time series.¹ If we weight these unemployment rates by population, the shaded area is where 80 per cent of the weighted observations lie. Recent rates of unemployment have been between almost zero in the Hunter region (outside of Newcastle) of New South Wales and about 9 per cent in the far north of Queensland. Eighty per cent of the population face unemployment rates between 3 and 7 per cent.

Also shown is the dispersion at a state level (Graph 7), which enables a comparison with the 50 states of the United States, and the 16 countries of the euro area (Graphs 8 and 9).

These comparisons are affected just now by the fact that the US and Europe have had deep recessions and are only in an early stage of recovery, whereas Australia had only a mild downturn and unemployment has been falling for about a year now. As the charts show, dispersion of unemployment rates does tend to have a cyclical dimension.

Nonetheless I think it is reasonable, based on the history shown here, to conclude that, while some events can lead to a divergence in economic conditions across Australia, overall these differences have not been especially large in recent times compared with those seen in other entities with whom we might compare ourselves. That is not to say the differences are unimportant or immaterial

¹ In general, the most disaggregated data available have been used. However, the 'Northern, Far West-North Western and Central West' statistical region in NSW has not been disaggregated, as there have been instances in the past when the ABS did not publish data for one of its sub-regions. The number of regions varies with data availability, with two breaks in the series when the number of regions changed. From November 2007, there are 68 statistical regions.

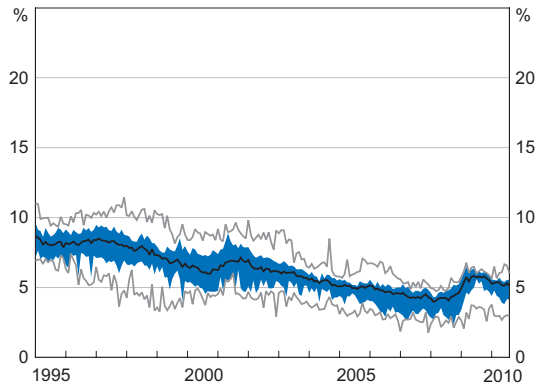
to people's lives, nor that they could not get larger. Nonetheless some perspective as to how large they actually have been is useful.

How Does the Reserve Bank Keep Track of Different Economic Performances?

That having been said, it is important to add that the Reserve Bank makes considerable efforts to look below the level of national data in its pursuit of a full understanding of what is happening on the ground. Over the past decade or so we have put substantial resources into a comprehensive liaison program with firms, industry groups and state and regional government entities. Officers based in every mainland state capital spend much of their time talking to people about what is going on. Every month they talk to up to 100 organisations around the country. I know that some of our staff visited Shepparton last month and some of you may have met them.

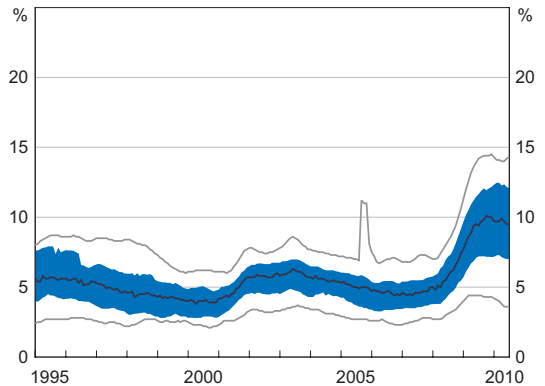
The purpose of this is to help us understand what is happening 'at the coal face' – the conditions that businesses are actually experiencing and the things that concern them. This helps give a richer and often more timely understanding of what is going on than the higher-level aggregate data alone might provide. Talking to businesses about their plans for the future helps inform our forecasts, and has been especially useful recently for building a profile of conditions in different sectors, such as expected investment in the mining sector over the coming years. This is important for our analysis of capacity in, for instance, the mining sector, which affects how we see commodity prices, the terms of trade, the exchange rate and exports.

Graph 7
Australia – Unemployment Rate
Distribution across states*



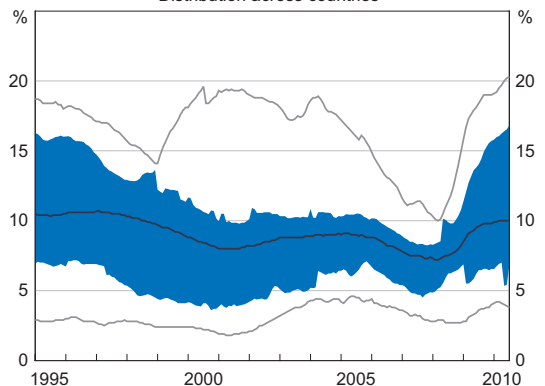
* Blue area represents 80 per cent of the interpolated population-weighted distribution; grey lines represent the range; black line is the national unemployment rate
Sources: ABS; RBA

Graph 8
United States – Unemployment Rate
Distribution across states*



* Blue area represents 80 per cent of the interpolated population-weighted distribution; grey lines represent the range; black line is the national unemployment rate
Sources: RBA; Thomson Reuters

Graph 9
Euro Area – Unemployment Rate
Distribution across countries*



* Blue area represents 80 per cent of the interpolated population-weighted distribution; grey lines represent the range; black line is the euro area unemployment rate
Sources: RBA; Thomson Reuters

Conclusion

As a physically large country, with quite a diverse set of industries, and our largest population centres separated by long distances and even living in different climates, Australia is always likely to see some differences in economic experience by region. What is remarkable, in fact, is that the differences are not, in the end, larger. That they are not is testimony to the degree of flexibility within our national economy that has been built up over time, and to the design of national policies that aim to lessen the more stark differences that might otherwise occur. Those structures have grown up in the context of a system of a national money.

Monetary policy is, by design, appropriately a national policy. In conducting it, the Reserve Bank devotes considerable attention to finding out and

understanding what is happening at the regional and industry level. That helps us to maintain an overall set of financial conditions that are appropriate for the national economy. But we know that there will always be some differences in how changes to monetary policy are felt (though it is not always to be assumed that these impacts are necessarily greatest in country areas).

Monetary policy can't make those differences disappear. In the end, however, if monetary policy can help to deliver reasonable macroeconomic stability, that will offer the best chance for any industry, any region, any business or any individual to succeed on their merits. The Reserve Bank, taking account of all the conditions across the various sectors, remains committed to that goal. ✖

Economic Developments

Ric Battellino, Deputy Governor

Address to Committee for Economic Development of Australia (CEDA), Perth, 18 November 2010

Introduction

After having held official interest rates steady for five months, the Reserve Bank earlier this month tightened monetary policy a little further. The background to that decision and the reasons for it are set out in the quarterly *Statement on Monetary Policy* and the monetary policy minutes of the Board meeting that have subsequently been released. My talk today will focus on that material and outline some of the issues that are likely to shape economic developments over the next few years.

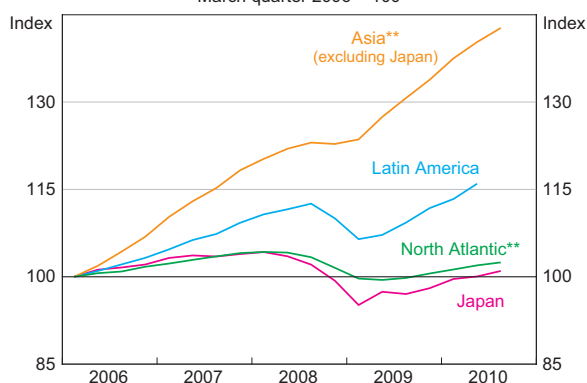
Global Economy

I will start with the global economy because, as always, this forms an important backdrop to understanding developments here in Australia.

The world economy is quite divided at present. The United States, Europe and Japan are struggling to recover from the effects of the financial crisis, while emerging Asian economies, and to a lesser extent Latin America, are growing strongly (Graph 1).

The US economy clearly lost momentum around the middle of the year, with GDP growth slowing to an annual rate of about 2 per cent over the June and September quarters. This is below potential. Our reading of more recent data is that they have been a bit stronger, but nonetheless consumer confidence remains low, the housing and labour markets remain weak, and the repair of household balance sheets still has quite a way to run.

Graph 1
World Output*
March quarter 2006 = 100



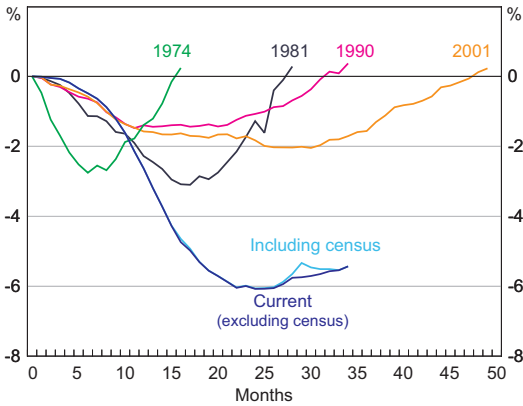
* Aggregated using PPP exchange rates
** RBA estimates for September quarter 2010; North Atlantic economies are Canada, euro area, the UK and US
Sources: CEIC; IMF; RBA; Thomson Reuters

Basically, the US household sector is in very poor shape.

One of the features of the US economy that has changed over the past 50 years or so is that households are now bearing more of the brunt of recessions than used to be the case, and businesses are bearing less. After each downturn, it has taken progressively longer for employment to regain its peak (Graph 2).

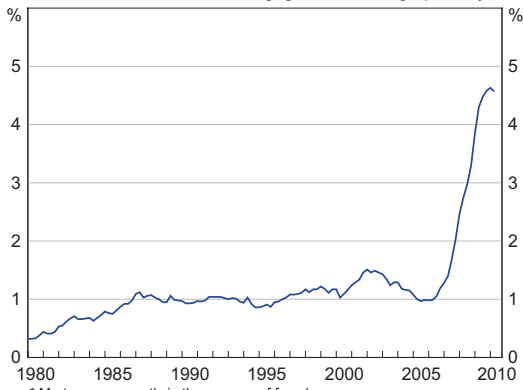
Even after the 2001 downturn, which was relatively mild in terms of GDP, it took about four years for employment to recover to its earlier peak. The current downturn has been much more severe, with employment falling by 6 per cent from peak to

Graph 2
United States – Non-farm Payrolls
 Cumulative percentage change from peak month



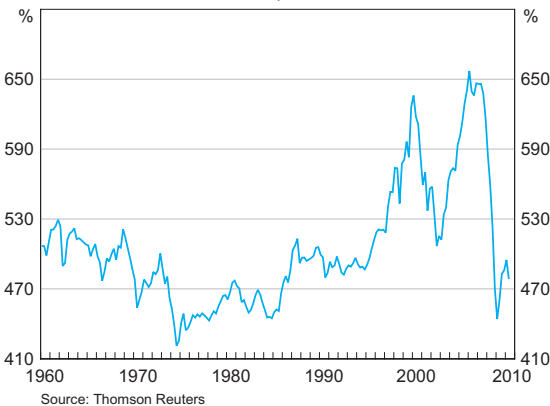
Source: Thomson Reuters

Graph 3
United States – Mortgage Foreclosures*
 Share of the number of mortgages outstanding, quarterly



* Mortgages currently in the process of foreclosure
 Source: Thomson Reuters

Graph 4
United States – Household Net Wealth
 Per cent of disposable income



Source: Thomson Reuters

trough and the recovery in jobs so far being quite tepid. It is therefore clearly going to be some time yet before employment regains its pre-crisis levels.

Weak labour market outcomes, of course, mean subdued growth in household income, and the combination of job losses and low income growth has led to a big rise in mortgage foreclosures. Almost one in twenty houses that are mortgaged in the United States is in foreclosure. This is a very high figure (Graph 3).

Household wealth has fallen sharply. Measured relative to household income, it is back to the levels of the late 1980s, so a large amount of wealth has been wiped out (Graph 4).

At the same time, household gearing has risen sharply, with housing debt now equal to about 55 per cent of the value of the US housing stock.

Understandably, the reaction of households to all this has been to stop borrowing, cut back on spending and increase savings, all of which means that US households are not going to be the driving force of the global economy that they were for much of the period since the mid 1990s.

The US corporate sector, on the other hand, is in pretty good shape.

Profits have recovered strongly and the arrears rate on loans to US corporates has peaked at a level that is quite moderate by historical standards; it is no higher than in the 2001 recession, which, as I have noted, was quite mild (Graphs 5 and 6).

Also, holdings of cash by US corporations are at record levels – almost US\$1½ trillion or equivalent to over 20 per cent of corporate debt (Graph 7). This means that US corporations are in a strong position to increase investment when confidence returns.

The US Federal Reserve has been maintaining official interest rates close to zero since late 2008 but, despite this, the economy has remained sluggish. The Fed has therefore tried to use other instruments to stimulate economic activity.

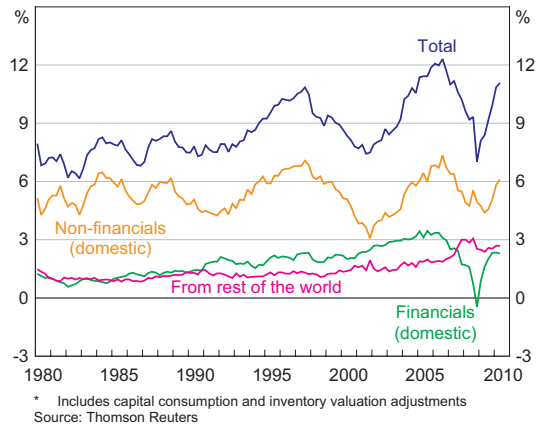
These measures generally fall under the heading of ‘quantitative easing’. They involve expanding the Fed’s balance sheet through the purchase of securities, with payment for those securities being made by giving banks extra deposits at the Fed. The Fed has roughly tripled the size of its balance sheet since the financial crisis began, to over US\$2 000 billion. Earlier this month, it foreshadowed it would be prepared to purchase another US\$600 billion of Treasury securities by next June, if circumstances warranted it (Graph 8).

The objectives of these operations are to put downward pressure on market interest rates, so as to encourage households and businesses to borrow, and to provide banks with extra liquidity, so as to encourage them to lend. As noted, however, US households have little appetite for debt at present, US corporations are flush with cash and have little need to borrow, and banks appear to be quite happy to leave their extra liquidity on deposit at the Fed, rather than lend it. US banks are currently holding about 8 per cent of their assets on deposit with the Fed, while their loans to households and businesses are falling (Graph 9).

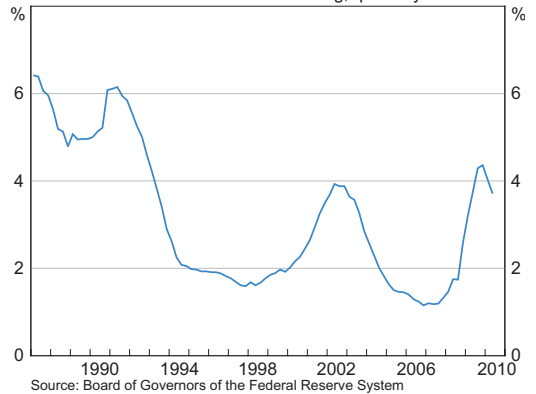
These outcomes are typical of what happens in the wake of a financial crisis, as it takes a long time for households, businesses and banks to repair the damage done to their balance sheets and regain confidence to borrow or lend again. This often means a prolonged period of sub-par growth.

In Europe, growth on average has been around trend over the past year, but there is a wide divergence in the performance of countries. Germany is doing well, benefiting from earlier economic reforms and Chinese demand for German capital goods, but, at the other extreme, Greece and Ireland are experiencing very deep recessions. Economic tensions have been building within the euro area, driven by earlier widening differentials in competitiveness. Unit labour costs in Greece, for example, have risen by about 25 per cent relative to those in Germany since the euro came into existence.

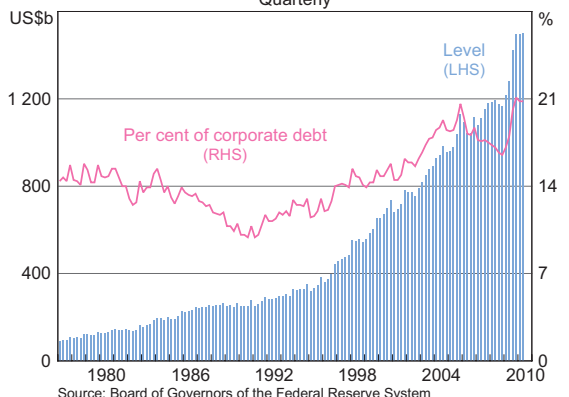
Graph 5
United States – Corporate Profits*
Per cent of GDP



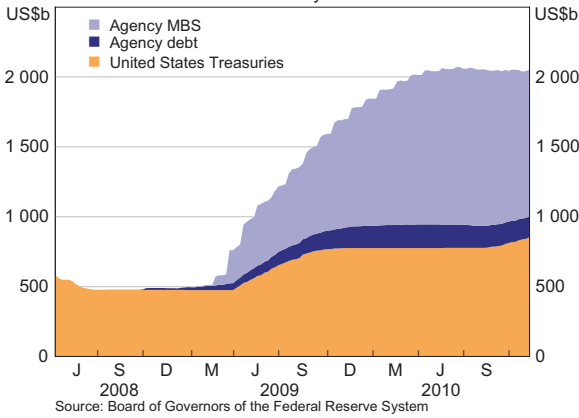
Graph 6
United States – Commercial & Industrial Loans 30+ Days Delinquent
Per cent of loans outstanding, quarterly



Graph 7
Cash & Money Market Fund Holdings of US Non-financial Corporates
Quarterly

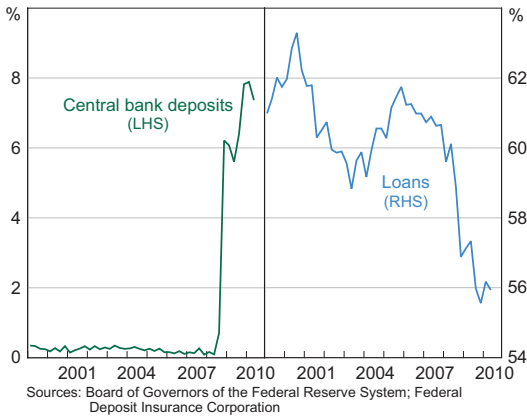


Graph 8
United States – Federal Reserve
Holdings of Securities
 Weekly



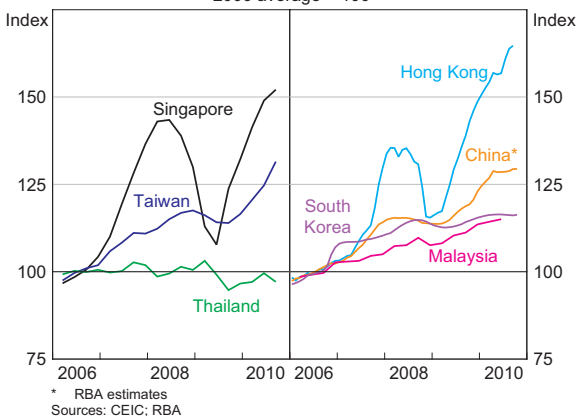
Source: Board of Governors of the Federal Reserve System

Graph 9
United States – Financial Institution Assets
 Per cent of financial institution assets



Sources: Board of Governors of the Federal Reserve System; Federal Deposit Insurance Corporation

Graph 10
East Asia – Residential Property Prices
 2006 average = 100



* RBA estimates
 Sources: CEIC; RBA

Government debt problems are also probably at their most acute in Europe. The facility set up by European governments in May this year to provide financing to smaller European countries seemed for a time to lessen market concerns about sovereign debt levels. However, the situation has deteriorated noticeably again in recent weeks, as markets again question the capacity of some countries to sustain their current debt levels.

On the other hand, as I mentioned, Asia is a bright spot in the global economy. The region bounced back very strongly from the global financial crisis and economic activity in all emerging Asian economies has substantially surpassed pre-crisis levels. Several central banks in the region have recently been tightening policy settings, but generally policy settings in Asia are still quite expansionary. Some commentators are concerned that the recent tightening might lead to excessive slowing in economic growth, particularly in China, but this seems unlikely while ever policy settings are still on the expansionary side. In fact, economic activity in China recently appears to have picked up again.

Inflation could become a significant policy issue in Asia if growth remains strong. There are already early signs of rising inflationary pressures, particularly in food prices. Some Asian economies are also experiencing very strong rises in house prices, reflecting the favourable economic and financial climate (Graph 10).

Overall, the outcome for global economic growth over the past year has been strong. When the figures for 2010 come in, they are likely to show that the world economy grew by around 4¼ per cent, a rate that is noticeably above trend (Graph 11). Most forecasters are expecting that the growth of the global economy over the next couple of years will be slower than in 2010, though probably at a pace that is close to trend.

There are, of course, risks to these outcomes arising from some of the issues I have mentioned. In the developed economies, the concerns are mainly about downside risks. What is worrying people is that

the capacity of the authorities in most developed economies to deal with any renewed economic slowdown would be limited, due to the fact that policy settings are already at extremes. In Asia, on the other hand, it is easier to see risks of overheating.

Commodity Prices

The growth of the world economy that has occurred over the past year has resulted in a significant lift in the prices of commodities. The prices of the two commodities of most importance to Australia – iron ore and coal – have been especially strong, and have again risen in recent weeks (Graph 12).

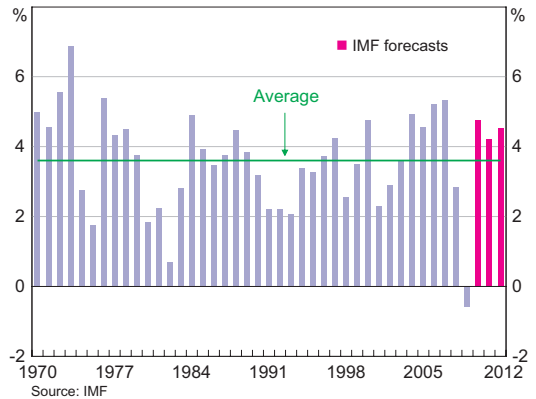
As a consequence, Australia’s terms of trade – the ratio of export prices to import prices – have surpassed the 2008 peak, and are pretty much at unparalleled levels. The increase in the terms of trade over the past year has added around \$25 billion to the Australian economy.

The question is: how long will this last? At the Reserve Bank, we have for some time been forecasting a gradual decline in the terms of trade over the next couple of years, on the assumption that the supply of commodities will increase and that demand will slow a little, in line with the assumed slowing in the global economy. This continues to be our projection, though recent commodity price outcomes have caused us to revise up our forecasts.

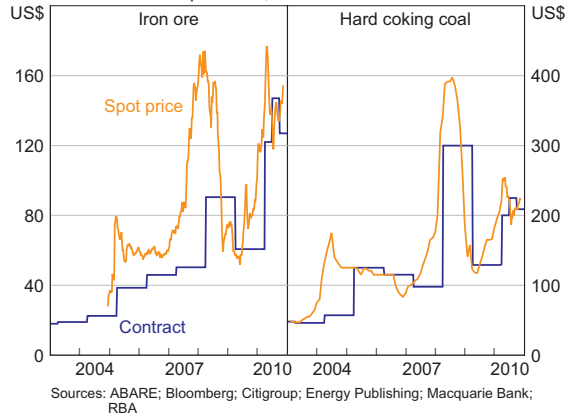
Beyond the next couple of years, it is hard to predict what will happen. Both China and India, however, are going through a phase of their development that is very intensive in the use of steel. In the past, other countries have taken up to 20 years to move through this phase (Graph 13). It is likely that China, and more particularly India, will have strong demand for steel for quite some time yet.

This, of course, would be a very favourable global environment for the Australian economy.

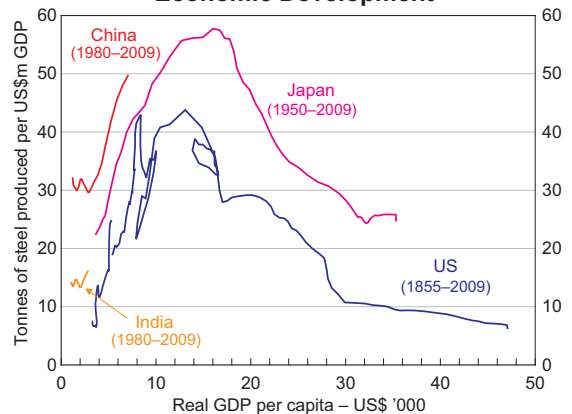
Graph 11
World GDP Growth
Year-average, PPP-weighted



Graph 12
Bulk Commodity Prices
US\$ per tonne, free on board basis

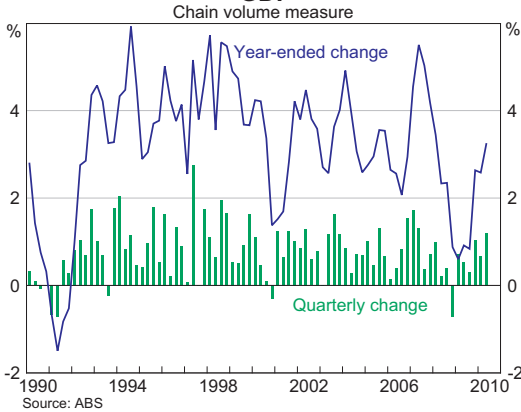


Graph 13
Steel Production Intensity and Economic Development*

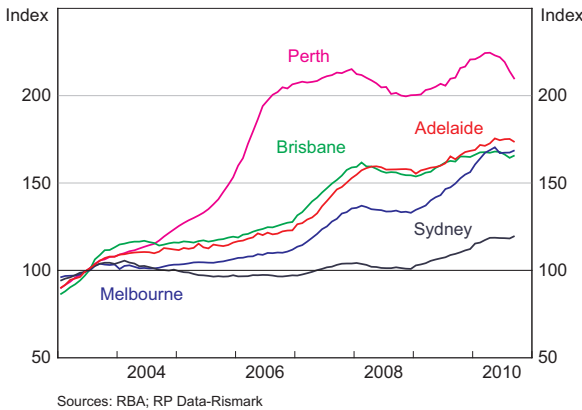


* 2009 prices converted at 2005 PPP exchange rates; 5 year-moving-averages; US iron production intensity prior to 1897; Japan steel production is by fiscal year prior to 1980
Sources: Conference Board Total Economy Database (January 2010); IMF; Japan Iron and Steel Federation; Johnston and Williamson (2010); Maddison (2009); RBA; US Bureau of Mines; US Geological Survey; World Steel Association (worldsteel)

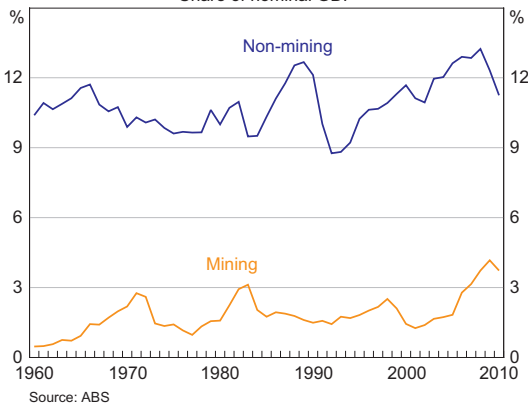
Graph 14
GDP



Graph 15
Dwelling Prices
2003 = 100



Graph 16
Business Investment
Share of nominal GDP



The Australian Economy

Let me now turn to the Australian economy.

As you know, our economy recovered relatively quickly from what was a shallow downturn following the global financial crisis, and over the past year has grown around its trend rate of 3¼ per cent (Graph 14).

Domestic demand has grown substantially faster than this – about 5¼ per cent – due importantly to growth in public spending, though this is moderating now.

Consumer spending has grown by a little below trend over the past year. It seems that even though consumer confidence is high, consumers remain cautious in their spending. The household saving ratio has picked up noticeably from the low levels it fell to earlier this decade. As we have said before, a period of consolidation by Australian households, after 10–15 years of fairly robust increases in spending and gearing, is probably no bad thing.

Investment in new dwellings has increased over the past year, though growth in the number of dwellings is still falling short of growth of the population. As a result, rental markets are tightening, with vacancy rates falling and rents rising at a solid pace. At the same time, however, households now seem to be less inclined to increase their gearing in order to trade up to better housing. Auction clearance rates have fallen back to around long-run average levels and house prices have been relatively flat over recent months (Graph 15). This is in keeping with the more financially conservative approach that Australian households have taken recently. These trends are probably most pronounced here in Perth, which is going through a period of adjustment after the euphoria of 2006 and 2007.

Business conditions are generally around average levels, although there are clear differences across sectors. Business investment is at a high level, particularly in the mining sector, and information published by the Australian Bureau of Statistics, as well as our own liaison with companies suggest that it will pick up sharply further over the next couple of years (Graph 16). In this regard, I would like to

acknowledge the vital role played by our office here in Perth, led by Virginia Christie, in helping us understand what is going on in the mining industry. And, of course, I would like to thank those many businesses that regularly make time available to talk to Virginia and her team.

One segment of business investment that remains weak, however, is non-residential building. Following large increases in gearing and commercial property prices in 2006 and 2007, the commercial property market has since deleveraged and prices have fallen. The bulk of that adjustment is probably now over, though the availability of finance for commercial property development remains very tight.

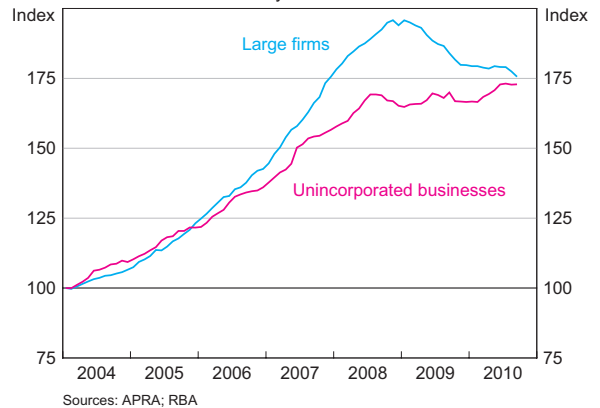
Employment has grown strongly over the past year and the unemployment rate has fallen back to a range of 5–5½ per cent, which historically has indicated a degree of tightness in the labour market. Other indicators, however, suggest that the overall labour market may not be as tight as suggested by the unemployment rate.

The financial side of the economy remains subdued. Household credit is growing at a moderate pace while business credit remains soft. That softness is largely in relation to large borrowers; lending to small businesses has increased at an annual rate of about 5 per cent over the first nine months of 2010 (Graph 17).

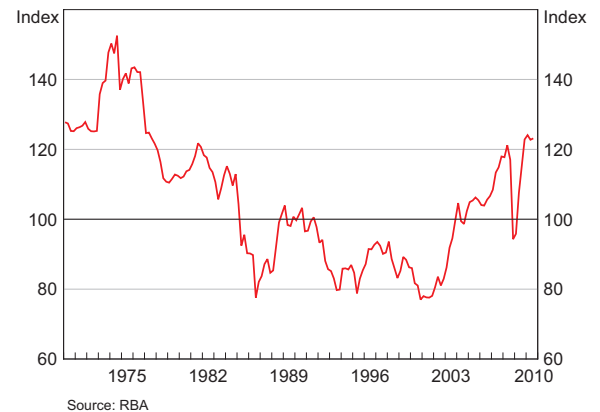
We have spent a fair amount of time at the Bank looking at the question of why business credit is so soft. It is clear that banks had tightened lending standards sharply following the onset of the global financial crisis, which no doubt contributed to the slowdown in business lending. This has been most acute in the area of commercial property, where there has been a sharp cutting back, particularly by foreign-owned banks.

More recently, there are signs that banks are becoming more willing to lend, at least in areas other than commercial property, but demand for loans, in aggregate, is not very strong. It seems that the investment that is taking place in Australia,

Graph 17
Business Credit by Type of Borrower
January 2004 = 100



Graph 18
Real TWI
1989/90 = 100



particularly in the case of the mining sector, is largely being financed outside the banking sector, either from retained earnings, direct investment from overseas or capital market raisings.

The exchange rate is also clearly having an impact on business conditions. It has risen to post-float highs recently, although the real effective exchange rate remains below the levels recorded in the resources boom of the early 1970s (Graph 18).

ECONOMIC DEVELOPMENTS

A rise in the exchange rate is a natural consequence of a resources boom and, at the aggregate level, is helpful in allowing the economy to adjust. Nonetheless, some sectors of the economy are adversely affected. A notable example at present is the tourism industry, where there has been a sharp increase in the number of Australians travelling abroad rather than taking holidays domestically. This is having a severe effect on traditional holiday destinations in Queensland, areas which are also suffering from overbuilding in the pre-crisis years. Given this double impact, it is not surprising that these areas are currently experiencing among the highest rates of unemployment in the country. The Bank is monitoring developments in these areas closely.

The Outlook

While there are differences between sectors and between regions, the Australian economy overall is doing well. We expect that the economy will continue to grow at a solid pace over the next couple of years, with growth picking up to an above-trend rate towards the end of this period. This will be accompanied by further increases in jobs and falls in unemployment.

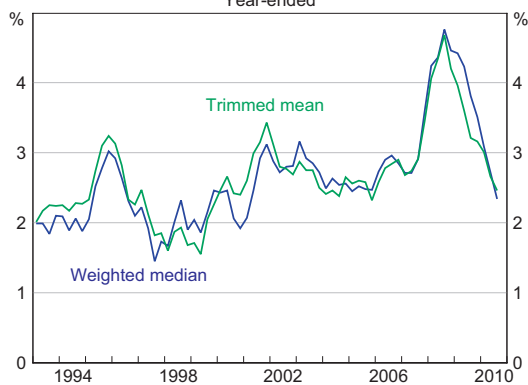
With the economy now having grown more or less without interruption for about 20 years, it is

understandable that spare capacity is limited. This means that the economy cannot grow much above its potential rate without causing a rise in inflation. With a large amount of money continuing to flow into the country over the next couple of years as a result of the resources boom, the challenge will be to manage the economy in a way that keeps economic growth on a sustainable path, with inflation contained. This is what the Bank is trying to do.

At present, inflation is broadly in the middle of the target range (Graph 19). Over the medium term, though, as growth of the economy picks up, the pressures on inflation are more likely to be upward than downward. This is reflected in the forecasts the Bank recently published, which see inflation tending to rise after a period of near-term stability.

For this reason, the Board of the Reserve Bank decided at its meeting earlier this month that it would be prudent to make an early, modest tightening to guard against such an outcome. This is consistent with the forward-looking approach to monetary policy that the Bank has been following for close to 20 years now, and which on balance has helped to keep the economy on a sustainable path. ❖

Graph 19
Underlying Inflation*
Year-ended



* Excluding interest charges prior to the September quarter 1998 and adjusted for the tax changes of 1999–2000

Sources: ABS; RBA

Financial Developments

Ric Battellino, Deputy Governor*

Address to Property Council of Australia, Queensland Division, Downtown Luncheon, Brisbane, 8 October 2010

Introduction

The Reserve Bank has put out a considerable amount of material on the economy in recent weeks, so today I will keep my comments on economic developments relatively short. Rather, I will spend most of my time today talking about finance.

As you know, there are concerns at present about the availability of finance, particularly for the property sector, so I think it is worth spending some time examining what is going on.

Recent Economic Developments

Before I talk about financing, however, let me set the scene with a few brief words on the economy.

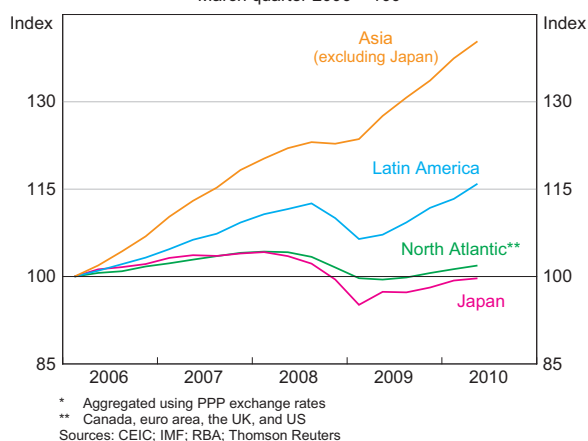
The global economy started to recover about a year ago from what was a very severe recession. That recovery is continuing, but the pace of growth differs significantly across the various regions of the world (Graph 1).

Asian growth had been exceptionally strong late in 2009 and earlier this year and central banks in the region have begun to tighten monetary policy settings. Many commentators worry that the tightening might result in excessive slowing in these economies, but our reading of recent data suggests that growth is returning to around a trend rate.

Latin America is also generally performing well.

* I would like to thank Patrick D'Arcy of the Bank's Domestic Markets Department for his assistance in preparing this talk.

Graph 1
World Output*
March quarter 2006 = 100



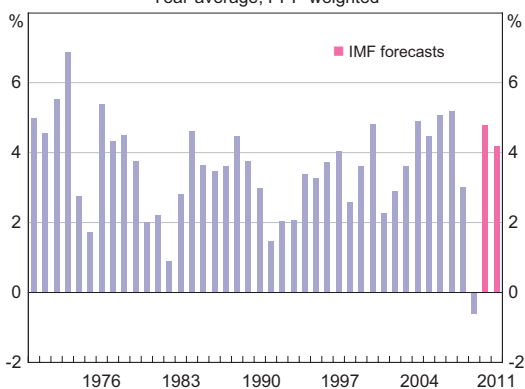
Growth in the US economy, however, has been lacklustre. It is continuing to grow, but momentum has clearly slowed. While recent data have been a bit better than over the previous couple of months, risks still look tilted to the downside. Consumer confidence remains low, the housing and labour markets remain weak, and the repair of household balance sheets still has quite a way to run. One bright spot in the United States is that business balance sheets are in good shape and equipment investment is recovering.

In Europe, there is a large disparity in growth across countries. Germany remains the clear front-runner, benefiting from earlier economic reforms and Chinese demand for German capital goods. German unemployment has fallen to its lowest rate since the

early 1990s. Other large countries such as France and Italy are growing but probably still below trend, while some small countries, such as Greece and Ireland, are still experiencing very deep recessions.

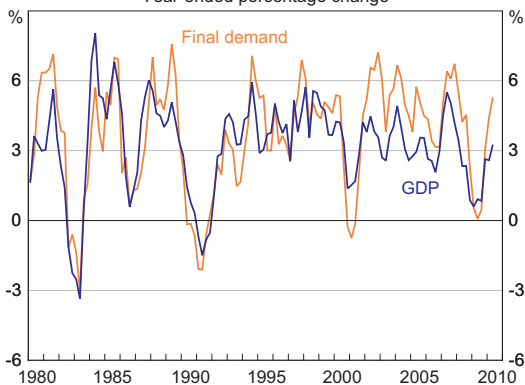
Overall, recent data have been consistent with around trend growth in the global economy. Our central scenario is for growth to continue at around this pace over the next year or so. This view is broadly similar to that of the IMF and other forecasters (Graph 2).

Graph 2
World GDP Growth
Year-average, PPP-weighted



Source: IMF

Graph 3
Demand and Output
Year-ended percentage change



Source: ABS

From Australia's perspective, this would represent a favourable outcome, resulting in commodity prices remaining at relatively high levels compared with earlier decades, even if, as we forecast, they decline somewhat from their current elevated levels.

In the Australian economy, growth is around trend and underlying inflation is in the target range. This is a comfortable position to be in, but the challenge is to keep the economy there over the next few years. The challenge will not be easy. First, the economy has been growing continuously for almost 20 years, having experienced only relatively mild downturns during that period, and is therefore approaching full capacity; and second, the resources boom that began about 2005, and which abated for a time during the global financial crisis, is re-emerging, adding to the pressure on capacity.

Over the next couple of years, we expect economic growth in Australia to pick up from its current rate of 3¼ per cent, to closer to 4 per cent. Domestic spending is expected to drive this pick-up. Over the past year, final demand grew by about 5 per cent, partly due to government spending (Graph 3). This is in the process of being scaled back, but indications are that private spending will pick up noticeably in the period ahead. This is especially the case for business investment. Income growth will add to spending capacity; over the past year, reflecting the rise in the terms of trade, nominal GDP in Australia rose by 10 per cent.

If, as expected, growth in Australia increases to an above-trend pace, it is likely that in due course underlying inflation will pick up from its current level of 2¾ per cent. We are currently forecasting it to rise to around 3 per cent by the first half of 2012 (Graph 4).

As you know, earlier this year the Reserve Bank Board returned official interest rates to a level that is consistent with lending interest rates being close to their average levels. Having done so, we have been comfortable to leave official interest rates

unchanged in recent months. However, as noted in the statement issued after the Board meeting earlier this week, if economic conditions evolve as currently expected, it will be likely that higher interest rates will be required at some point to ensure that inflation remains consistent with the medium-term target.

Overall Financing Activity

I will turn now to financing activity.

Since the global financial crisis, the availability of credit has tightened significantly around the globe. The rate of growth of credit in most advanced economies is currently close to zero, or even negative (Graph 5).

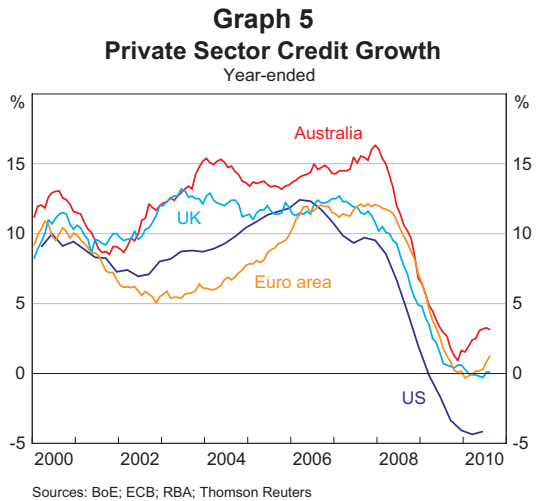
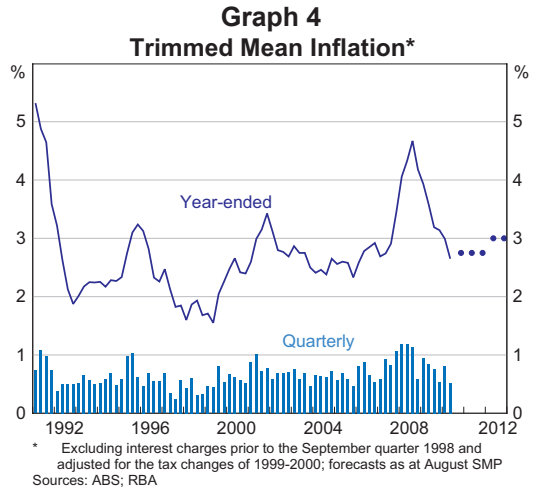
Australia has not been immune from these developments, though credit growth has held up better here than in other countries.

We should not be surprised that credit growth has slowed, as this is typically what happens after a financial crisis.

In the boom years that precede a crisis, credit expands very strongly as businesses or households (or both) gear up, either to fund spending or asset acquisition. Some of the decisions that people make during those periods are based on unrealistic expectations about future economic conditions or asset prices. As such, they turn out not to be financially viable.

A process of de-leveraging therefore follows. Businesses and households become more cautious, increasing saving, selling assets and reducing debt. Lenders also become more cautious, both because they see the weaker economic circumstances as increasing the risk on loans, particularly as collateral values decline, and because they typically begin to experience a noticeable increase in bad loans. The result is that both the demand for, and the supply of, credit tend to decline.

The authorities typically take steps to counter these forces, through tightening in the upswing and then



easier economic policies in the downswing, and sometimes through direct fiscal assistance to lenders to help them sustain the supply of credit.

However, it would be unrealistic to expect that these measures can entirely smooth out the credit cycle, just as it would be unrealistic to expect that the authorities can eliminate the cycle in equity markets. These cycles are inherent in human behaviour. History shows that it takes time for households, businesses and lenders to regain confidence after a financial crisis, and there are limits on the extent to which economic policy measures can accelerate the process.

FINANCIAL DEVELOPMENTS

This is a very significant issue in many developed countries at present. Here in Australia, the credit cycle was mild compared with overseas experience, but nonetheless there was a cycle. Credit, particularly to businesses, increased relatively quickly for a number of years, and now the downside of that cycle is currently being played out.

In the period since the mid 1980s, there have been three broad expansion phases in credit in Australia: two related to business credit and one to household credit. The first of the cycles in business credit began in the mid 1980s when financial deregulation led to a strong expansion in credit to businesses. The annual growth in business credit exceeded

30 per cent for a time. The subsequent economic downturn saw many business failures, large losses by the banks and a prolonged period of deleveraging by business (Graph 6).

Following that episode, it took almost four years for credit growth to return to a relatively normal rate.

The next phase of credit growth was driven by the household sector. This began in the mid 1990s. Up until then, Australian households had relatively little debt by international standards, with debt outstanding equal to about 50 per cent of household disposable income. The fall in interest rates in the early 1990s, the switch in financial innovation from products directed to businesses to those directed to households and the general prosperity of the economy saw households substantially increase their debt over the subsequent 10–15 years, to about 1½ times income (Graph 7). This ratio is broadly in line with debt levels of households in other developed economies.

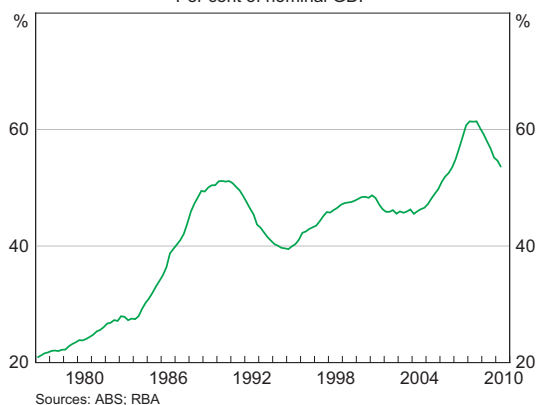
Most of this increase in debt was for the purchase of housing, and was mirrored in a corresponding rise in house prices.

Since about 2005, the pace of growth of household credit has slowed, and on average has been broadly equal to the rate of growth of household income. As the Bank has noted before, this is a reassuring development since continued increases in the gearing of the household sector would eventually have exposed the sector to substantial risk.

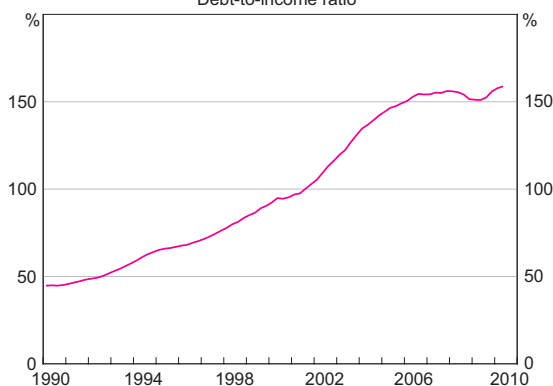
Growth in household credit continues to be moderate. Over the past year or so, household credit has increased by around 7 per cent. Most of this has been due to housing loans, while other forms of household debt, such as credit card debt, margin loans and personal loans have been relatively flat.

All this is consistent with households taking a more cautious approach to their finances, as evidenced also by the increase in the household saving rate relative to that seen in the early and middle parts of the past decade.

Graph 6
Business Credit
Per cent of nominal GDP



Graph 7
Household Debt
Debt-to-income ratio*



* Household sector excludes unincorporated enterprises and is before the deduction of interest payments

For households, therefore, the current picture is one where borrowing for housing is broadly growing in line with income, house prices are stable and there is little appetite for other forms of debt. From the Reserve Bank's perspective, this seems to be a satisfactory state of affairs.

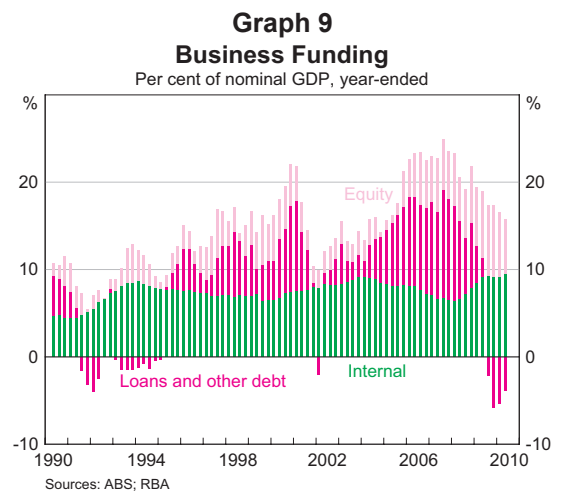
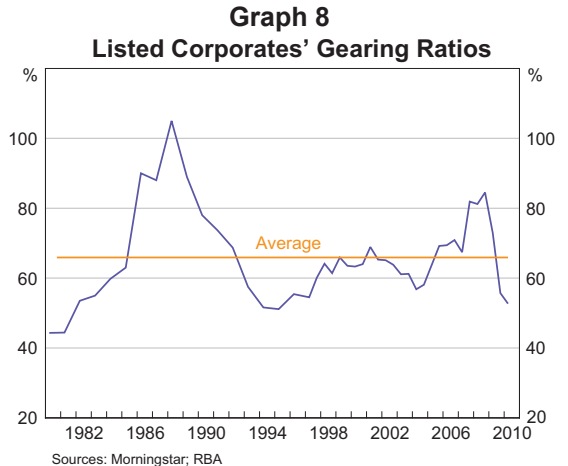
The third episode I want to talk about is the pick-up in business credit that began in 2005. This cycle was not as pronounced as that in the 1980s but, nonetheless, for a time business credit grew by about 20 per cent per year.

Part of this debt was to fund investment which, as you know, has been very strong, but a significant part was also for financial activity. There was a general increase in gearing in the corporate sector, as boards worried that they could be seen as having lazy balance sheets, making them takeover targets for private equity. Over the four years to 2008, the gearing ratio of the corporate sector rose from around 60 per cent to over 80 per cent (Graph 8).

The global financial crisis brought a change in thinking by both businesses and their lenders, and there has been a sharp slowing in business credit. Over the past year, business credit has fallen by about 4 per cent.

This has not translated to a sharp weakening in economic activity, as was the case in the early 1990s, because a shift is taking place in the way businesses are funding themselves. Helped by the pool of funds that has been built up through the superannuation system, businesses were able to raise substantial amounts of equity when debt markets dried up during the financial crisis. Most importantly, however, internally generated funding from profits has also been very strong. As such, the total availability of funds to businesses has continued to increase at around its long-run average rate (Graph 9).

These shifts in funding patterns mean that movements in credit, by themselves, may not give

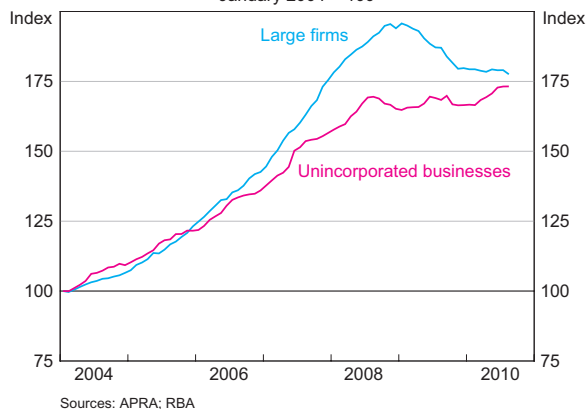


an accurate picture of the overall availability of funds to businesses.

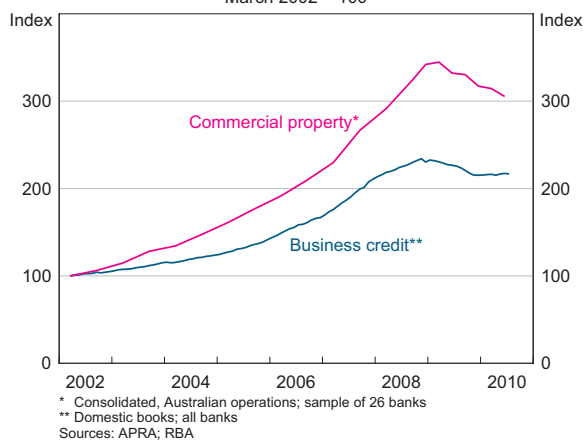
The trends that we have observed recently are not evenly spread through the business sector. The mining sector has made heavy use of internal funds while the property and infrastructure sectors have relied much more on debt. I will say more about these sectoral issues later.

While the small business sector is often the focus when people worry about the availability of credit, the recent cycle in credit to small business has not

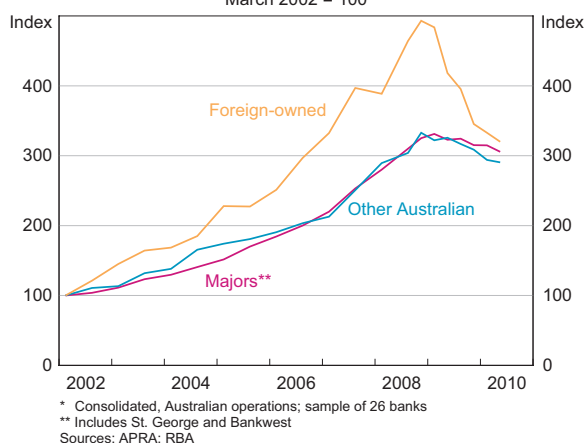
Graph 10
Business Credit by Type of Borrower
 January 2004 = 100



Graph 11
Banks' Commercial Property and Business Credit
 March 2002 = 100



Graph 12
Banks' Commercial Property Exposures*
 March 2002 = 100



been as severe as that in credit to large business (Graph 10). Growth in credit to the small business sector through the boom years was more restrained than the run-up in credit to the large business sector, and credit outstanding has held up better since. Over the past six months or so, credit to small business has grown at an annual rate of about 8 per cent.

Property Financing

Given the obvious interests of this group, let me end by looking in more detail at property financing.

Property-related lending accounts for a very significant share of the business lending undertaken by banks and other lenders. It also tends to be among the most cyclical components of lending, rising strongly during boom periods and then contracting sharply. It is also a component of lending on which defaults can rise quickly.

The Reserve Bank monitors lending to the property sector very closely, because it has important implications for both the performance of the economy and the stability of the financial system.

Lending to the commercial property sector began to pick up noticeably from around 2004 onwards, and at its peak just before the global financial crisis was growing by 27 per cent per year (Graph 11). Foreign-owned banks were the lenders with the fastest growth through this period (Graph 12).

With lending for commercial property growing significantly faster than other business lending, its share of total business lending increased from about one-quarter to around one-third. For the regional banks and foreign-owned banks, the ratio was considerably higher, in some cases close to half.

Given this rise in the proportion of lending going to the property sector, it is perhaps not surprising that many banks now feel they are overweight to that sector and are reluctant to make new loans, while some are seeking to cut back.

Since the peak in early 2009, commercial property lending has decreased by about 10 per cent. Foreign banks have led the contraction, reducing their exposures by a cumulative 35 per cent since the peak. Loan limits have fallen more than outstandings, so that usage of lending facilities has increased to about 90 per cent.

At the same time, funding through non-bank sources has also tightened. Commercial mortgage-backed securities, which at the peak in 2007 accounted for around 5 per cent of total commercial property funding, have contracted by about two-thirds since then. The contraction in mortgage trusts and some other funds, entities that were substantial investors in these securities, helped to drive the decline.

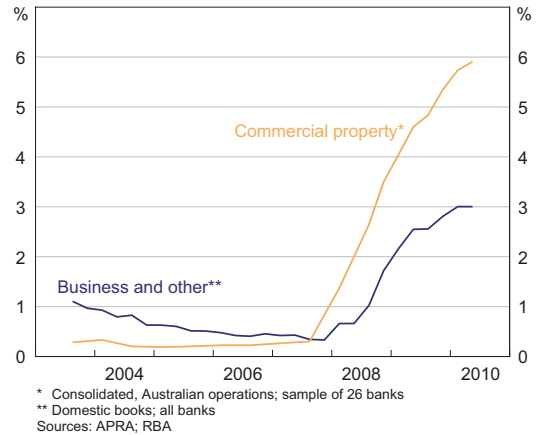
Adding to the cyclical nature in commercial property lending is the fact that these loans have tended to be among the most risky of bank loans. That was the case in the early 1990s and it has again been the case recently.

The proportion of commercial property loans that are impaired has risen sharply since 2007, from less than 0.5 per cent to around 6 per cent. This is much higher than the impairment rate for business loans in general, which has only risen to around 3 per cent (Graph 13). The impairment rate has risen particularly sharply for loans to the retail and residential segments of the commercial property sector.

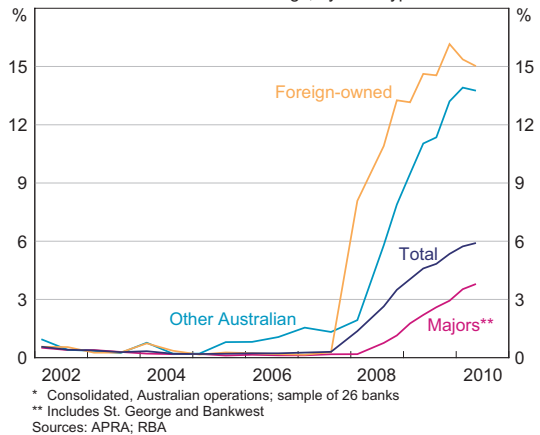
The banks that expanded their lending the fastest through the boom have since experienced the sharpest increase in impaired loans. For foreign-owned banks, about 15 per cent of commercial property loans are impaired, compared with around 4 per cent for the major Australian banks (Graph 14).

The property sector is vulnerable to changes in the availability of credit because it operates with a

Graph 13
Banks' Impaired Loans
Per cent of outstandings



Graph 14
Australian Commercial Property Impaired Assets
Per cent of outstandings, by bank type*

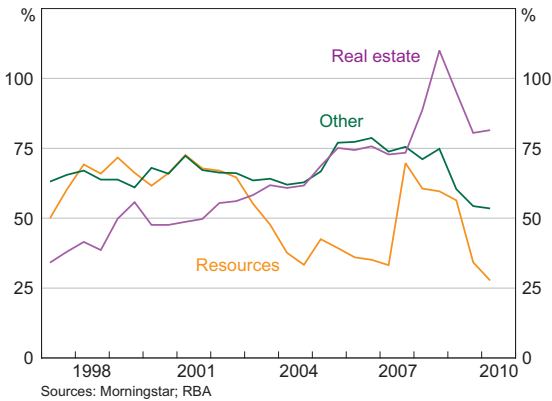


relatively high level of gearing and low holdings of cash. Gearing of listed real estate companies has risen substantially over the past decade. It used to be the case that the sector had substantially lower gearing than the corporate sector in general, but the run-up in debt, followed by the fall in asset values, resulted in gearing of the sector reaching a peak

of over 100 per cent by late 2008, well above the corporate sector average (Graph 15).

Similarly, cash holdings of corporations in the real estate sector are low compared with other corporates (Graph 16). Through the boom years,

Graph 15
Listed Corporates' Gearing Ratios



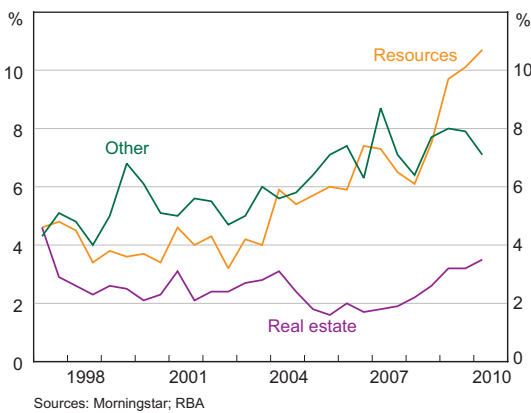
cash holdings of listed real estate companies fell to less than 2 per cent of assets, compared with 6–8 per cent elsewhere in the corporate sector.

In short, it is difficult not to conclude that the financing of the property sector became over-extended during the boom years, and that a period of adjustment was largely unavoidable. In saying this, I don't want to downplay the difficulties that some firms are now experiencing as that adjustment takes place, or the impact it is having on property development. The Reserve Bank is very much aware of both these issues. But cycles like the one we are going through seem to be endemic to the property sector and raise the question of whether, over the longer term, the financing model of the sector should shift towards more equity and less debt.

Conclusion

Let me end, however, on a more positive note by making the observation that the adjustment process has been underway for some time now and substantial progress has been made. The equity raisings that have taken place have made an important contribution to reducing gearing levels, and the run-up in arrears on property loans may be coming to an end. More generally, the expected improvement in the economy over the next couple of years will be reflected in the commercial property market also. I think there are already some signs of this. That in turn should boost lenders' willingness to make loans to the sector, though I don't think it would be in anybody's interest to return to the free-flowing credit of a few years ago. ✖

Graph 16
Listed Corporates' Cash-to-Assets Ratios



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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*

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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.

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

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- *Inflation in an Era of Relative Price Shocks*, May 2010

- *Lessons from the Financial Turmoil of 2007 and 2008*, October 2008
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