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Insights from the Household Expenditure Survey

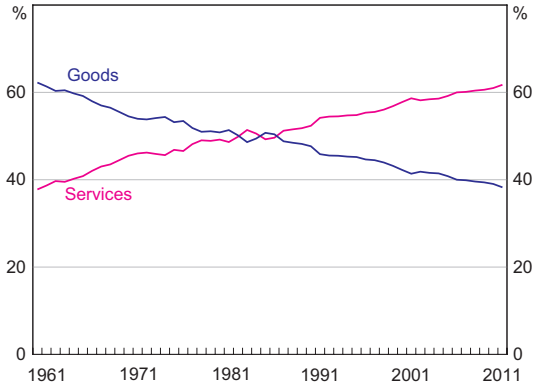
Jarkko Jääskelä and Callan Windsor*

This article uses information from the latest Household Expenditure Survey to examine recent expenditure patterns. The period between 2003/04 and 2009/10 was characterised by strong real household income growth and falling relative prices of goods due to the appreciating exchange rate. These developments have provided extra resources to households for spending on discretionary services, which are taking a larger share of household spending over time. There was also an increase in expenditure on housing, which was associated with rising dwelling prices and higher levels of debt.

Introduction

There have been significant changes in the composition of consumer spending over recent decades, with the most prominent being the gradual shift in expenditure away from goods towards services. At the beginning of the 1960s the share of expenditure on services was around 40 per cent; today this share is around 60 per cent (Graph 1).

Graph 1
Nominal Expenditure Shares*
Per cent of total expenditure, annual



* Excludes rents and other dwelling costs
Sources: ABS; RBA

* The authors are from Economic Analysis Department.

Detailed information on expenditure patterns comes primarily from the Household Expenditure Survey (HES) conducted by the Australian Bureau of Statistics (ABS) about twice a decade, with the latest survey undertaken in 2009/10. This article uses this survey to examine changes in expenditure patterns over time as well as across households at given points in time.

Data

The 2009/10 HES data are based on a nationally representative sample of adults in around 10 000 households. The survey collects information on how households allocate resources across a selection of around 600 goods and services and surveys a range of socio-demographic characteristics for each household.

The ABS uses two methods to collect expenditure data: the 'diary' method; and the 'recall' method. The diary method is used for regular expenditures; households are issued with an 'expenditure diary' and asked to record all their expenditures over a fortnight. For items that are expensive or infrequently purchased, such as cars and washing machines, the recall method is used with households asked to remember how much they spent on these items.

Recall periods vary for different items and are generally longer for more expensive/infrequently purchased items where households are more likely to remember the amount spent. For example, the recall period for furniture and appliances is over the previous three months while for the purchase of a dwelling it is over the previous three years.

The HES is a particularly rich data source. Because household-specific factors – such as demographic and social characteristics – are unobservable in aggregate statistics, their relevance can only be assessed with household-level data.

The HES is also used to update expenditure weights in the consumer price index (CPI). Absent any reweighting, items with relative price falls would have declining weights in the CPI. Among other things, the reweighting accounts for the response of households to price falls; households typically consume more of items which have experienced relative price declines.[1]

For this article the 600 plus expenditure items are mapped into five categories: non-durable goods; durable goods; essential services; discretionary services; and dwelling costs (Appendix A provides details of the composition of each expenditure type). The article examines the change in expenditure shares over 2003/04 to 2009/10 across different demographic characteristics and with reference to changes in relative prices. The variation in expenditure among households at given points in time is then used to classify all of the expenditure items as either 'superior', 'normal' or, in very rare cases, 'inferior' goods or services.

Changes in Consumer Expenditure Patterns

Since 2003/04 there has been a pattern of expenditure being reallocated away from goods towards discretionary services and housing.

Graph 2 shows the changes in expenditure share for each of the five categories described above (which taken together sum to zero) and the biggest contributors to this change within each category. Increases in the share of expenditure on discretionary services and housing have coincided with a decline in the expenditure share on both durable and non-durable goods, while the share of essential services has been broadly unchanged. Within the expenditure categories, there has been a decline in the expenditure share allocated to durable and non-durable goods such as vehicles, furniture, food & drink and tobacco. Within the discretionary services category, there have been particularly large increases in expenditure on sports participation, holiday travel and restaurant meals.

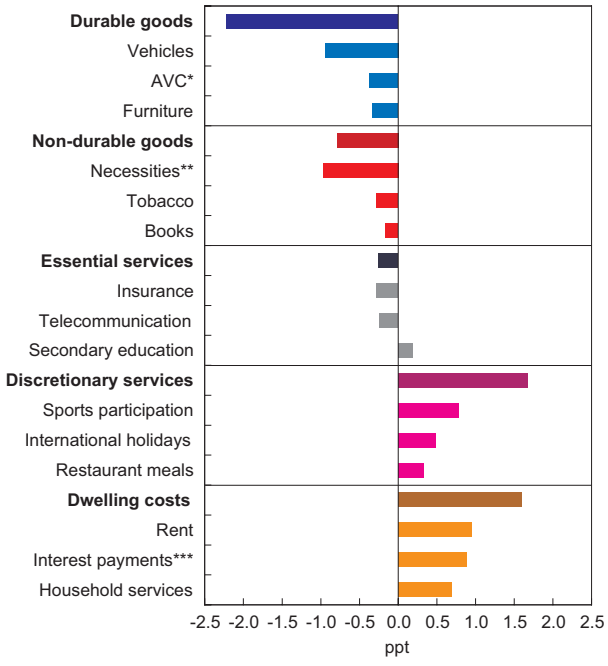
Rising real household income is likely to have been a factor affecting the shift towards discretionary services. For instance, the increased expenditure share of restaurant meals and broader 'catering services' is related to a higher propensity for both males and females to be participating in the workforce; as more household members participate in the workforce the demand for catering services, which includes meals eaten out and school tuckshop lunches, is likely to rise.

This reallocation of expenditure away from both durable and non-durable goods towards services is widespread across income groups and education groups.[2] While higher-income households have higher expenditure shares on discretionary services, across all groups there have been rises in the share of expenditure on discretionary services (Graph 3). However, the largest increases have been for higher-income households. For example, households in the highest income group boosted their expenditure share on discretionary services from around 13 per cent to 16 per cent from 2003/04 to 2009/10, an increase around twice as large as for middle-income households, whose expenditure share rose from 10 per cent to 11.5 per cent over this period.

1 For more information on the CPI reweighting, see RBA (2011).

2 For the purpose of classifying households, disposable income has been adjusted for the number of people in the household and has been aged-matched to limit the effect of life-cycle factors. Education is defined as the highest education level of the person most likely to be making financial decisions for the household.

Graph 2
Change in Expenditure Shares
2003/04 to 2009/10



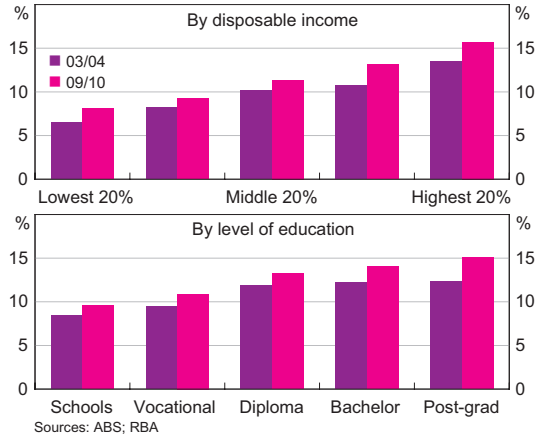
* Audio, visual & computing equipment
** Food & non-alcoholic drinks
*** All dwellings
Sources: ABS; RBA

The Effects of Relative Price Changes

This shift in expenditure shares has taken place alongside a fairly large movement in relative prices over recent years. In particular, the prices of tradables (typically goods) have fallen significantly relative to non-tradables (typically services). While over long periods of time the prices of goods tend to increase less quickly than the prices of services due to faster productivity growth in the production of goods, the difference has been bigger than usual over the past decade. In large part, this reflects the appreciation of the Australian dollar which has reduced the prices of many imported manufactured goods (Graph 4).

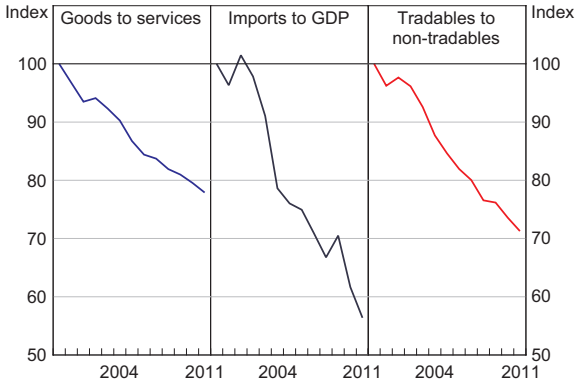
These changes in relative prices have had an impact on expenditure patterns, with consumers tending to substitute away from goods and services where relative prices have increased and towards those where relative prices have declined (although the extent of substitution varies significantly across goods and services). These effects can be seen when expenditure shares are broken down into price and quantities by combining consumer prices data with

Graph 3
Share of Discretionary Services Expenditure



Sources: ABS; RBA

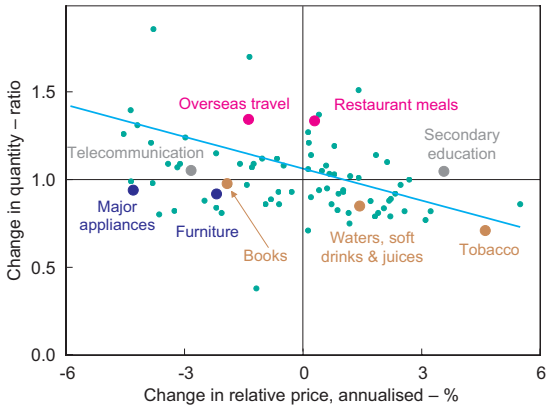
Graph 4
Relative Prices*
June 1999 = 100



* Ratio of implicit price deflators; services expenditure excludes rents and other dwelling costs; tradables excludes food and auto fuel
Sources: ABS; RBA

the HES. Graph 5 shows the change in relative prices and quantities demanded for a broad set of goods and services.[3] There is a clear negative correlation between these variables, with the regression line showing the relationship between price increases and quantities demanded.

Graph 5
Price and Quantity Changes*
June 2005 to June 2011, correlation coefficient = –0.5



* Some outliers have been excluded; for example, audio, visual, computing and software equipment does not appear for which relative annualised prices declined by 16 per cent and quantity demanded increased by 2.8 times.
Sources: ABS; RBA

The Effect of Growth in Incomes

Change in incomes can also have a significant effect on spending patterns. Real per capita income grew by around 2.7 per cent per annum between the HES in 2003/04 and 2009/10. This growth in incomes allowed considerable additional spending on discretionary services and housing. For example, purchases of restaurant meals and personal services (such as haircuts) increased more than for other goods and services despite an increase in their relative price.

Further insights into the role of rising incomes can be obtained by examining how spending on different goods and services changes with income or overall spending in a cross-section of households. In particular, the way that demand for any particular good or service changes across households can be analysed by estimating 'Engel curves' from the HES survey. The Engel curve describes how households' purchases of goods and services vary with differences in their total resources such as income or total expenditures.[4]

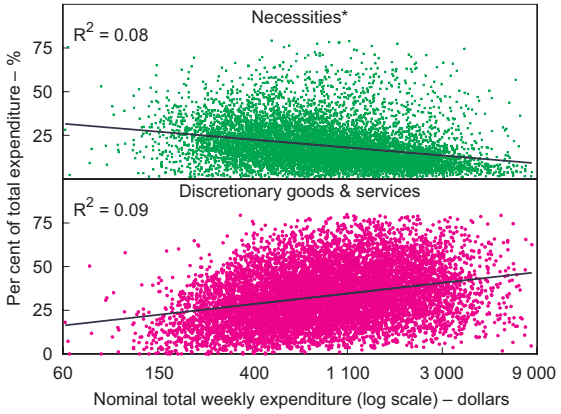
Graph 6 illustrates this relationship with data for two broad groups of spending based on the expenditure patterns of around 10 000 households in the 2009/10 HES. The top panel shows the share of total expenditure on food and non-alcoholic drinks expenditure (i.e. necessary expenditures) while the bottom shows the share spent on discretionary goods and services. The share of expenditure on necessities decreases as households' spending capacity increases while for discretionary items the opposite is the case. This relationship is known as Engel's law: the share of expenditure on necessities, such as food, decreases with increasing spending capacity (see, for instance, Lewbel (2008)). The corollary of this law is that the share of expenditure on discretionary items (which includes things like the theatre and sports lessons) rises with increasing spending capacity.

Households' spending capacity can, however, explain only a small proportion of the variation in spending on these items across individual households. For example, fitting a regression line through the share of spending on these categories and total expenditure for each household explains

3 For goods and services in the CPI, the vertical axis of Graph 5 shows the ratio of quantities purchased in June 2005 to June 2011 after controlling for the change in prices between these periods. The dates refer to the introduction of the 15th and 16th series of the CPI that provided new expenditure share weights; the new weights are, however, based on the HES.

4 In textbook treatments, income is usually used when referring to households' total resources. This article, however, uses total expenditures instead of income to proxy households' total resources. Focusing on total expenditure allows one to separate the problem of allocating total consumption to various expenditure categories from the decision of how much to save out of current income. This is common practice in the relevant literature. See, for example, Banks, Blundell and Lewbel (1997) and Deaton and Muellbauer (1980).

Graph 6
Engel Plots
Relationship between spending patterns and households' resources



* Includes all food and non-alcoholic drinks
Sources: ABS; RBA

only 8–9 per cent of the variation in expenditure shares between households. However, controlling for some observed differences between households increases the amount of variation that can be explained to around 20 per cent for both categories. This occurs when age, the number of people in the household, tenure type (i.e. whether the household is renting, paying off a mortgage or owns its dwelling outright), whether the household lives in a capital city, and employment status are taken into account.

Engel curves can also be used to better understand the demand for goods and services at a much more detailed level. In particular, the estimated relationship between demand and total expenditure can be used to derive expenditure elasticities of demand for individual goods and services. These elasticities describe the percentage change in the quantity purchased of any given good or service that results from a 1 per cent change in total expenditures on goods and services. In other words, the elasticity measure shows how sensitive average expenditure on a particular good or service is relative to households' total expenditure.

Estimates of expenditure elasticity are obtained from estimating the following equation:

$$S_i^g = a + b_1\, ln(E_i) + \sum_{k=1}^{K} c_{i,k}\, D_i + u_i \qquad (1)$$

where S_i^g is household *i*'s expenditure share on goods or services category *g*, E_i is total expenditure and D_i captures various demographic variables (such as age of the household head and the number of people in the household). The expenditure elasticity is given by:

$$\frac{b_1}{\overline{S^g}} + 1, \qquad (2)$$

where $\overline{S^g}$ is the median expenditure share on goods or services category *g*.

The resulting expenditure elasticities of demand can be used to classify goods and services into different categories. Goods and services with elasticities that are positive but less than unity are considered to be normal; as households' total expenditure on all goods and services increases, expenditure on normal goods and services increases, though the budget share does not rise. Goods and services with elasticities above unity are classified as superior, with households' expenditure on these goods and services increasing more than proportionately with any increase in total expenditure. Inferior goods and services are seldom observed and are those which have a negative elasticity; the level of expenditure on inferior goods declines as households' spending capacity increases.

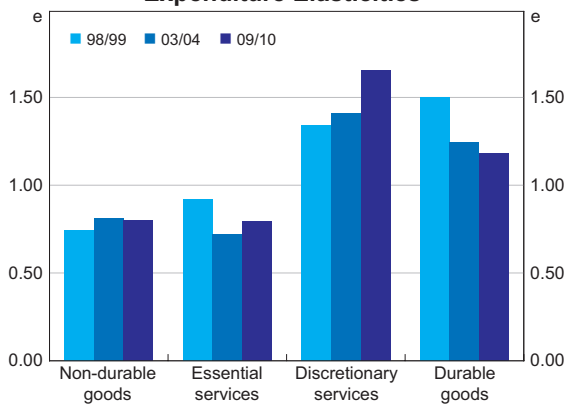
Based on estimates for the approximately 600 goods and services from the 2009/10 HES, just over half of household spending was on normal goods and services. Food and drink items tend to be normal goods with the exception of alcoholic beverages which are superior. Many durable goods and most essential services are also estimated to be normal goods.

Almost all of the remainder of spending in 2009/10 was on goods and services that are estimated to be superior. For example, almost all the service items classified as discretionary services in Appendix A are estimated to be superior (with the exception of takeaway and fast foods). In addition, there are a wide range of durable goods estimated to be superior goods. For example, among the numerous expenditure items which map into the 23 durable goods shown in Appendix A, boats, camping equipment, jewellery, photographic equipment and audio equipment are superior goods.

Less than 1 per cent of total spending was on goods and services that were estimated to be inferior goods in 2009/10. Given that many of these have elasticities only slightly less than zero, it is difficult to be definitive. However, based on the data from the 2003/04 and 2009/10 HES, examples of goods which may be classified as inferior goods are powdered milk, TV rental and tobacco other than cigarettes.

The information about elasticities can be aggregated across the four main expenditure categories – comprising non-durable goods, durable goods, discretionary services and essential services – over the past three HES surveys (Graph 7).[5] Over a decade ago, durable goods had the characteristics of superior goods. However, as incomes have risen and relative prices of these goods have declined, durables now have characteristics closer to normal goods. In contrast, discretionary services have become more superior, which helps explain why households are spending an increasing share of their resources on them as real incomes have grown strongly. Moreover, regressions suggest that services classified as superior in the 2003/04 HES tended to experience increased demand by households over the 2003/04 to 2009/10 period. This relationship did not, however, hold for durable goods, with the degree of superiority having no explanatory power for the change in demand between 2003/04 and 2009/10. One explanation would be that for some households, there has been a satiation in demand for durable goods.

Graph 7
Expenditure Elasticities*



* Elasticities (e) greater than unity represent a 'superior'category; elasticities between zero and unity represent a 'normal' expenditure category
Sources: ABS; RBA

Expenditure on Housing

There was a significant increase in the share of spending on the broad housing category between the 2003/04 and 2009/10 HES Surveys.[6] The increase largely reflects the rise in interest payments on mortgage debt and rising rents (Graph 2). These increases were, however, offset to some extent by a falling expenditure share on new dwelling purchases by owner-occupiers; the decline is consistent with the fall in the number of private dwelling completions over the same period.

The increase in the share of expenditure on mortgage interest payments reflects the rise in housing prices and the associated increase in mortgage debt of the household sector.[7] Nationwide, dwelling prices

5 When estimating elasticities for the four categories the method of Least Absolute Deviations (LAD) is used. This regression technique is more robust to the presence of outliers than OLS regression because the coefficients are estimated by minimising the sum of the absolute deviations rather than the sum of the squared deviations. The coefficients are then interpreted for the median household. While the 2003/04 and 2009/10 data are identical, for the 1998/99 Survey each category is proxied by a smaller subset of items.

6 Dwelling costs not only include rents and interest payments but other items associated with servicing a dwelling. These other items are included in the CPI category for dwellings. The coverage of the HES data has not been expanded to include expenditure on new dwellings (excluding land) by owner-occupiers.

7 Interest rates were broadly unchanged between the two surveys, with banks' average outstanding rate on housing credit averaging 6½ per cent in 2003/04 and 6¼ per cent in 2009/10.

increased by around 19 per cent relative to the CPI over this period with the aggregate housing debt-to-income ratio (which conceptually averages over all households including those without mortgage debt) increasing from 79 per cent in 2003/04 to 98 per cent in 2009/10.[8] This increase partly reflects a rise in the share of the population with mortgages over this period. This change has largely been driven by the increased propensity for older households to remain in debt for longer and an increase in the number of households with investment properties, which has resulted in a decline in the share of those households who own their dwelling outright (Table 1).

Reflecting the increase in real housing prices and in mortgage debt, the expenditure share on housing has risen for households with a mortgage. There has been an increase across all groups in the housing debt-to-income ratio for households with a mortgage. The largest increase has been for younger households (those under 39 years of age). This is consistent with young households (who have mortgages) increasing their expenditure share on housing by the most (Table 2).

There has also been an increase in rents as a share of total household expenditure reflecting an increase in the proportion of the population renting as well

Table 1: Population Shares[(a)]

2009/10 Per cent			Change: 2003/04 to 2009/10 Percentage points		
Renters	Has mortgage	Owns outright	Renters	Has mortgage	Owns outright
29.3	37.2	33.5	1.1	1.2	–2.3

(a) Share of all renters, households with mortgage debt and outright owners
Sources: ABS; RBA

Table 2: Housing Expenditure Shares and Mortgage Debt

Age of household head[(a)]	Expenditure shares[(b)]				Median housing debt-to-income	
	2009/10 Per cent		Change from 2003/04 to 2009/10 Percentage points		2009/10 Ratio	Change from 2003/04 to 2009/10 Per cent
	Renters	Has mortgage	Renters	Has mortgage	Has mortgage	Has mortgage
15 to 39	27.8	29.3	3.1	4.2	333	29
40 to 59	29.5	21.2	2.1	2.0	211	14
60 and over	34.4	18.4	–0.3	0.6	159	20

(a) The household head is the person most likely to be making financial decisions for the household
(b) Across all tenure types and ages, the median (mean) share of dwelling costs was 21½ per cent (24½ per cent); since 2003/04 median (mean) dwelling costs increased by 1.9 percentage points (1.6 percentage points); outright owners have been omitted from this table as they do not pay rent or interest on a dwelling
Sources: ABS; RBA

8 Dwelling prices have stabilised and fallen slightly since 2009/10. Over 2003/04 to 2009/10 the nationwide dwelling price-to-income ratio was unchanged.

as the cost of rent rising in real terms between 2003/04 and 2009/10 (the ABS measure suggests an annual real increase in all rents of around 2 per cent for the stock of public and privately owned rental properties, while the REIA measure suggests an increase of 5 per cent for newly negotiated rents). The share of housing in total expenditure is typically higher for renters than for households with mortgages across the age distribution, with the largest increase in the expenditure share on housing having been for young households. Accordingly, consistent with Richards (2008), the increase in the cost of housing has affected younger households, whether renters or purchasers, more than other age groups.

Conclusion

The HES is a useful source of information on the expenditure of Australian households at the micro level. This article has used the data obtained from the HES over three consecutive waves to examine household-level changes in expenditure shares and the heterogeneity of spending patterns by household characteristics. The growth of services spending has substantially outpaced that of spending on both durable and non-durable goods. This observation holds across the various breakdowns of households examined. Over a decade ago, durable goods had the characteristics of superior goods. However, as incomes have risen and relative prices of these goods have declined, durables now have characteristics closer to normal goods. In contrast, discretionary services have become more superior, partly explaining why households are spending an increasing share of their resources on them. Expenditure on housing has risen, with the youngest households increasing their housing expenditure share by the most.

Appendix A

Table A1: Expenditure Shares[(a)]
(*continued next page*)

Expenditure item	Mean expenditure share: 2009/10 Per cent	Change in shares: 2003/04 to 2009/10 Percentage points	Elasticities: 2009/10	Classification
Non-durables	**27.45**	**–0.81**		
Bread	1.07	–0.10	0.83	Normal
Cakes & biscuits	1.19	–0.02	0.84	Normal
Breakfast cereals	0.44	–0.02	0.45	Normal
Other cereal products	0.21	0.01	0.43	Normal
Beef & veal	0.80	–0.08	0.69	Normal
Pork	0.75	–0.08	0.65	Normal
Lamb & goat	0.59	–0.05	0.71	Normal
Poultry	0.80	–0.03	0.64	Normal
Other meats	1.33	–0.05	0.88	Normal
Fish & other seafood	0.42	–0.03	0.70	Normal
Milk	0.61	–0.13	0.33	Normal
Cheese	0.37	0.01	0.59	Normal
Ice cream & other dairy products	0.99	0.06	0.92	Normal
Fruit	1.43	–0.08	0.85	Normal
Vegetables	1.66	–0.07	0.76	Normal
Eggs	0.13	–0.01	0.47	Normal
Jams, honey & spreads	0.18	–0.02	0.50	Normal
Food additives & condiments	0.36	–0.01	0.59	Normal
Oils & fats	0.24	–0.01	0.48	Normal
Snacks & confectionery	1.15	–0.11	0.60	Normal
Other food products	1.01	–0.03	0.80	Normal
Coffee, tea & cocoa	0.34	0.00	0.59	Normal
Waters, soft drinks & juices	0.89	–0.12	0.63	Normal
Spirits	0.71	0.01	1.38	Superior
Wine	0.90	0.04	1.56	Superior
Beer	1.31	0.02	1.10	Superior
Tobacco	1.22	–0.28	0.19	Normal
Garments for men	1.52	0.20	1.71	Superior
Garments for women	2.06	0.25	1.60	Superior
Garments for infants & children	0.76	0.09	1.52	Superior

Table A1: Expenditure Shares[a]

(*continued next page*)

Expenditure item	Mean expenditure share: 2009/10 Per cent	Change in shares: 2003/04 to 2009/10 Percentage points	Elasticities: 2009/10	Classification
Footwear for men	0.25	0.01	1.55	Superior
Footwear for women	0.33	0.00	1.47	Superior
Footwear for infants & children	0.22	0.06	1.47	Superior
Cleaning, repair & hire of clothing & footwear	0.31	–0.05	1.25	Superior
Books	0.81	–0.17	0.82	Normal
Newspapers, magazines & stationery	0.09	–0.02	1.45	Superior
Durables	**23.55**	**–2.22**		
Furniture	1.12	–0.33	1.64	Superior
Carpets & other floor coverings	0.23	–0.14	1.78	Superior
Household textiles	0.53	–0.03	1.71	Superior
Major household appliances	0.72	–0.10	1.27	Superior
Small electric household appliances	0.23	–0.02	1.29	Superior
Glassware, tableware & household utensils	0.59	–0.01	1.25	Superior
Tools & equipment for house & garden	0.51	–0.08	1.40	Superior
Cleaning & maintenance products	0.36	–0.04	0.64	Normal
Personal care products	1.08	–0.11	0.80	Normal
Other non-durable household products	1.95	0.05	1.10	Superior
Therapeutic appliances & equipment	0.21	–0.02	1.46	Superior
Motor vehicles	2.40	–0.94	2.14	Superior
Spare parts & accessories for motor vehicles	0.73	–0.01	1.20	Superior
Automotive fuel	3.51	–0.17	0.79	Normal
Maintenance & repair of motor vehicles	1.00	–0.13	1.90	Superior

Table A1: Expenditure Shares[(a)]

(*continued next page*)

Expenditure item	Mean expenditure share: 2009/10 Per cent	Change in shares: 2003/04 to 2009/10 Percentage points	Elasticities: 2009/10	Classification
Other services in respect of motor vehicles	1.62	–0.03	0.83	Normal
Audio, visual & computing equipment	1.58	–0.37	1.26	Superior
Audio, visual & computing media & services	1.02	–0.02	0.86	Normal
Equipment for sports, camping & open-air recreation	0.54	0.01	2.03	Superior
Games, toys & hobbies	1.20	0.09	1.31	Superior
Pharmaceutical products	0.49	0.03	1.60	Superior
Accessories	1.38	0.13	0.77	Normal
Pets & related products	0.55	0.02	0.52	Normal
Essential services	**13.31**	**–0.24**		
Child care	0.36	0.07	1.14	Superior
Medical & hospital services	2.83	–0.06	1.19	Superior
Dental services	0.50	–0.05	1.16	Superior
Urban transport fares	0.56	–0.02	0.71	Normal
Postal services	0.14	–0.01	0.86	Normal
Telecommunication equipment & services	3.59	–0.24	0.54	Normal
Preschool & primary education	0.45	0.14	1.45	Superior
Secondary education	0.68	0.19	1.63	Superior
Tertiary education	0.64	0.02	1.66	Superior
Insurance	3.56	–0.28	0.71	Normal
Discretionary services	**11.46**	**1.65**		
Domestic holiday travel & accommodation	1.90	0.06	1.76	Superior
International holiday travel & accommodation	1.75	0.49	1.78	Superior
Veterinary & other services for pets	0.35	–0.02	1.40	Superior
Sports participation	1.51	0.78	1.92	Superior
Other recreational, sporting & cultural services	0.88	–0.02	1.43	Superior

Table A1: Expenditure Shares[(a)]
(*continued*)

Expenditure item	Mean expenditure share: 2009/10 Per cent	Change in shares: 2003/04 to 2009/10 Percentage points	Elasticities: 2009/10	Classification
Restaurant meals	2.04	0.33	1.49	Superior
Take away & fast foods	2.25	–0.05	0.90	Normal
Hairdressing salons & personal grooming services	0.78	0.08	1.21	Superior
Dwelling costs	**24.27**	**1.61**		
Rents	7.71	0.95	0.17	Normal
Interest payments (all dwellings)	5.36	0.89	1.33	Superior
New dwelling purchase by owner-occupiers	2.15	–0.64	2.27	Superior
Maintenance & repair of the dwelling	1.71	–0.32	1.51	Superior
Property rates & charges	1.85	0.07	0.41	Normal
Water & sewerage	0.80	0.01	0.38	Normal
Electricity	2.40	0.05	0.26	Normal
Other household services (e.g. gardening services)	1.52	0.70	1.74	Superior
Gas & other household fuels	0.77	–0.10	0.31	Normal
Total	**100**	**0.00**		

(a) For the elasticities of the aggregated components see Graph 7; while there are no inferior goods in this larger grouping, looking at 600 individual goods and services there are a small number of inferior goods, including, for instance, tobacco other than cigarettes

Sources: ABS; RBA

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Business Surveys and Economic Activity

Anna Park*

The Reserve Bank makes extensive use of business surveys as a source of information on the current state of the economy. In particular, survey data provide a timely read on domestic demand as well as information about how the economy is expected to evolve. Surveys also provide information on aspects of the economy that are difficult to capture using official statistics. It is important, however, to interpret survey information with care, being mindful of the influence of survey design.

Introduction

There are numerous Australian private business surveys in which companies are asked a range of largely qualitative questions about conditions in their own business and the broader economy. This article provides an overview of the main business surveys in Australia and discusses how the surveys can be used. These surveys provide timely information about the current state of the economy, via questions on sales, profits, hiring and prices.[1] In addition, they provide indicators of sentiment and expectations, as well as details on plans for hiring and capital spending. Business surveys also provide coverage of sectors for which official data are less frequent and provide insights into issues such as capacity utilisation and access to finance.

Private Sector Business Surveys in Australia

Table 1 summarises the features of eight business surveys that measure nationwide economic activity which are regularly monitored by the Bank.[2] Coverage differs across surveys: some cover just a few sectors, while others aim to cover the entire private sector, though the volatile farm and/or mining sectors are often excluded or under-represented. The surveys attempt to measure nationwide conditions, either using representative samples, or weighting firms' responses according to their industry, with weights based on output or the number of businesses. For some sectors, notably the mining sector, this latter choice is very important; for example, matching the ABS count of Australian businesses would place a weight of less than 1 per cent on the mining sector, whereas mining accounted for around 9½ per cent of gross value added in 2010/11.

Most of the surveys monitored by the Bank provide information on current business conditions, including information on sales, profitability, employment, capital expenditure and selling prices. Some also provide forward-looking information, and information on capacity utilisation, new orders, input costs, inventories and exports. There is typically some variation in the way questions are phrased. Firms may be asked about the change in a variable over time or the level of a variable relative to normal. Some surveys ask respondents to abstract from normal seasonal changes, while others make a comparison with the corresponding period a year ago; for other surveys, indices are seasonally adjusted.

* The author is from Economic Analysis Department.

1 Earlier research by the Bank found that survey measures can provide useful information about growth in output, employment and selling prices. See Aylmer and Gill (2003) and Roberts and Simon (2001).

2 Other surveys are also monitored by the Bank, including surveys for particular regions and those with specific focuses, such as the farm sector and commercial property.

Table 1: Characteristics of Selected Nationwide Business Surveys

	Frequency	Sample size (approx)	Coverage	Commenced
ACCI Business Expectations Survey	Quarterly	2 000	All major sectors (includes farm and mining)	Nov 1994
ACCI-Westpac Survey of Industrial Trends	Quarterly	200–300	Manufacturing	Sep 1961
AIG-PwC Performance of Manufacturing Index	Quarterly/ Monthly	900/ 200	Manufacturing	Sep 1992/ May 2001
AIG-HIA Performance of Construction Index	Monthly	150	Construction	Sep 2005
AIG-CBA Performance of Services Index	Monthly	200	Services	Feb 2003
Dun & Bradstreet National Business Expectations Survey	Monthly	1 200	Manufacturing, retail and wholesale	Dec 1987
NAB Quarterly Business Survey / NAB Monthly Business Survey	Quarterly/ Monthly	900/ 400–500	Non-farm sector	Sep 1989/ Mar 1997
Sensis Business Index	Quarterly	1 800	Small and medium firms in most major sectors (excludes farm and mining sectors)	Aug 1993

Sources: ACCI; AIG; CBA; Dun & Bradstreet; HIA; NAB; PwC; Sensis; Westpac

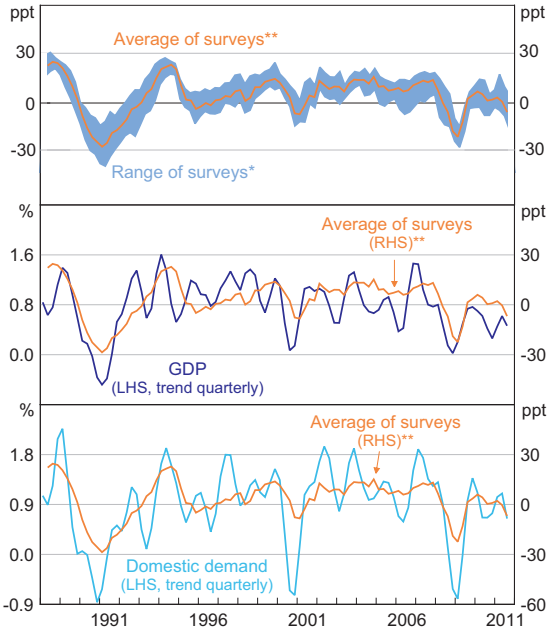
Surveys as Timely Indicators of Economic Activity

Many business surveys include questions on variables such as sales, employment and prices, which can be used to provide a timely read on current economic conditions and are released in advance of comparable official statistics. Monthly surveys of business conditions are available as early as the first week of the following month, and quarterly surveys are typically available within four weeks of the end of the quarter. In contrast, national accounts data on GDP growth are not released until around nine weeks after the end of the quarter.

Most surveys include measures of current business conditions, often aggregated from questions about variables such as current sales, profitability and employment. Since these survey measures have different average levels and variances, the Bank often presents these in standardised form, adjusted to have a common mean and standard deviation. On this basis, the different survey measures tend to move broadly in line with one another (Graph 1) despite differences in both the nature of questions and the coverage of surveys. Moreover, when plotted against quarterly growth in trend GDP published by the ABS, the weighted average of the selected survey measures captures the major cyclical movements in GDP, including the early 1990s recession and the downturns in 2000/01 and 2008/09.

Survey-based measures of business conditions tend to be considerably less volatile than estimates of both seasonally adjusted and trend growth in GDP. While industry-specific developments can have a pronounced effect on GDP growth in a particular quarter, survey measures appear to be less affected by

Graph 1
Business Conditions and Output Growth*



* Survey measures scaled to common mean and standard deviation and expressed as a deviation from average since 1989
** Based on the first principal component from 1994 and average of available surveys prior to that
Sources: ABS; ACCI; AIG; Dun & Bradstreet; NAB; RBA; Sensis; Westpac

such developments. The divergence between survey measures of business conditions and trend GDP in early 2011 provides an example. During that period, GDP growth fell sharply, driven by a significant fall in coal and iron ore exports, while survey measures – which often exclude or place less weight on mining firms – remained around average levels.

Notwithstanding the volatility in quarterly estimates of trend GDP growth, the correlation coefficients between survey-based measures of business conditions and GDP growth are generally positive at around 0.4 for the survey average since 1994, and around 0.5 for the NAB Quarterly Business Survey which commenced in 1989 (Table 2). The correlation between business surveys and domestic demand growth tends to be noticeably higher at 0.7. This suggests that responses to questions about businesses' sales, profitability and employment are more closely aligned to domestic spending than to domestic production as measured by GDP. This partly reflects the fact that most surveys either exclude or underweight (in terms of their share of output) the volatile farm and mining sectors.

Interestingly, measures of business conditions are also slightly more correlated with growth in nominal domestic demand than real domestic demand. This is consistent with research in the United Kingdom for the Confederation of British Industry (CBI), which showed that around two-thirds of firms typically use revenues as a proxy for volumes when answering questions about the volume of output.

A test of whether survey measures of business confidence provide information about growth in output can be conducted by adding survey measures to simple autoregressive models of quarterly growth in GDP and domestic demand.[3] The results of these tests show that the business surveys contain useful information about quarterly GDP growth (seasonally adjusted), although the information content is relatively small. These results partly reflect the inevitable noise in quarterly estimates of GDP, which in part comes from developments in the farm and mining sectors. Once again, the information content in surveys regarding quarterly growth in both real and nominal domestic demand is significantly larger than for GDP. This confirms that surveys are better viewed as providing timely information about domestic demand rather than GDP.

Surveys as Forward-looking Indicators of Economic Activity

Business confidence

Many surveys include questions about businesses' expectations of future conditions in their industry and/or the economy as a whole, referred to here as 'business confidence'. If businesses revise down their expectations of future conditions, then they are also likely to revise down production plans, scale back planned investment or hire less labour, leading to

3 These autoregressive models use seasonally adjusted measures of GDP and domestic demand, while trend measures are shown on graphs and used to calculate reported correlation coefficients because they are smoother.

Table 2: Current Business Conditions and Output Growth

	Survey average[a]	NAB Quarterly Business Survey
Start of sample period	September 1994	September 1989
Contemporaneous correlation between survey measure and quarterly growth		
Trend real GDP	0.36	0.48
Trend real domestic demand	0.71	0.67
Trend nominal domestic demand	0.74	0.72
Explanatory power in an autoregressive model of quarterly growth (adjusted R^2)[b]		
Seasonally adjusted real GDP		
Baseline model (lags of GDP growth)	0.00	0.01
Including survey variable	0.04	0.09
Seasonally adjusted real domestic demand		
Baseline model (lags of domestic demand growth)	0.06	0.06
Including survey variable	0.33	0.25
Seasonally adjusted nominal domestic demand		
Baseline model (lags of domestic demand growth)	0.02	0.02
Including survey variable	0.36	0.34

(a) The survey average is based on the first principal component of general business conditions from the ACCI Business Expectations Survey, the composite index of actual activity from the ACCI-Westpac Survey of Industrial Trends, the AIG-PwC Performance of Manufacturing Index, the average of actual sales, employees and profits from the Dun & Bradstreet National Business Expectations Survey, actual business conditions index from the NAB Quarterly Business Survey and the average of sales, profits and employment from the Sensis Business Index

(b) For example, the following model is estimated for GDP: $\Delta GDP_t = \alpha_0 + \sum_{i=1}^{2} \alpha_i \Delta GDP_{t-i} + \beta conditions_t + u_t$, where ΔGDP refers to quarterly GDP growth and *conditions* refers to the level of the business conditions survey

Sources: ABS; ACCI; AIG; Dun & Bradstreet; NAB; PwC; RBA; Sensis; Westpac

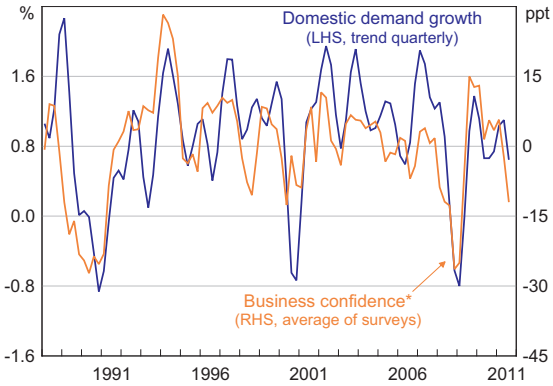
lower output growth. As shown in Graph 2, survey measures of business confidence move broadly in line with quarterly domestic demand growth, particularly in periods where there are very large swings in output, such as the early 1990s recession and the 2009 downturn.[4] In a similar fashion to measures of business conditions, business confidence measures contain some information on near-term demand growth.

Hiring intentions

Several business surveys provide a timely source of information on firms' hiring intentions, such as questions on whether firms expect employment levels to increase or decrease in the forthcoming quarter. As shown in Graph 3, survey measures of hiring intentions have generally been highly correlated with movements in employment growth, with correlation coefficients for hiring intentions and trend quarterly employment growth generally around 0.7 to 0.9 (Table 3). As for business confidence, these questions are forward-looking, and for most measures there is also a strong positive correlation with employment growth in the subsequent period. Survey measures of hiring intentions can also be used

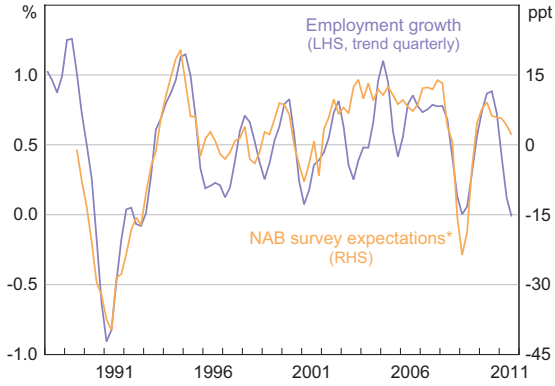
4 The survey average is based on the first principal component of expected business confidence in the next quarter from the NAB Quarterly Business Survey, the general business situation in the next six months from the ACCI-Westpac Survey of Industrial Trends and perceptions of the economy in the next 12 months from the Sensis Business Index.

Graph 2
Business Confidence and Domestic Demand



* Based on the first principal component from 1993 and average of available surveys prior to that; expressed as a deviation from average since 1989
Sources: ABS; ACCI; NAB; RBA; Sensis; Westpac

Graph 3
Hiring Intentions and Employment Growth



* Net balance; deviation from average since 1989
Sources: ABS; NAB

Table 3: Hiring Intentions and Employment Growth

	Survey average[(a)]	NAB Quarterly Business Survey
Start of sample period	June 1993	September 1989
Correlation between survey measure and trend quarterly employment growth		
Current quarter	0.71	0.85
Next quarter	0.65	0.86
Explanatory power in an autoregressive model of seasonally adjusted employment growth (adjusted R^2)		
Current period employment growth[(b)]		
Baseline model (lags of employment growth)	0.20	0.35
Including survey variable	0.33	0.51
Next period employment growth[(c)]		
Baseline model (lags of employment growth)	0.04	0.19
Including survey variable	0.34	0.50

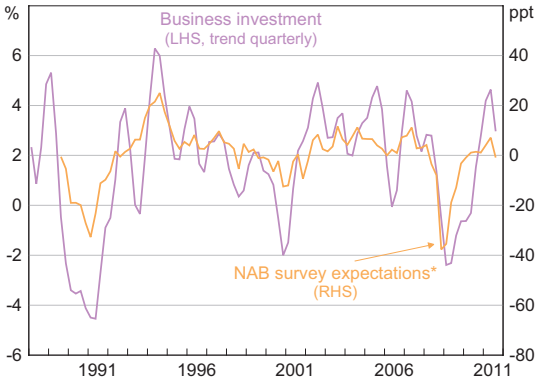
(a) The survey average is based on the first principal component for: expected employment or hiring series from the NAB Quarterly Business Survey, the ACCI-Westpac Survey of Industrial Trends and the Sensis Business Index
(b) The following model is estimated: $\Delta employment_t = \alpha_0 + \sum_{i=1}^{4} \alpha_i \, \Delta employment_{t-i} + \beta hiring_t + u_t$, where *employment* refers to quarterly employment growth and *hiring* is the level of the expected employment or hiring series
(c) The following model is estimated: $\Delta employment_t = \alpha_0 + \sum_{i=2}^{4} \alpha_i \, \Delta employment_{t-i} + \beta hiring_{t-1} + u_t$
Sources: ABS; ACCI; NAB; RBA; Sensis; Westpac

to inform forecasts of employment growth: adding survey variables to simple models of employment growth increases the explanatory power of these models considerably, both for the current quarter and the next quarter.

Capital spending plans

Several surveys also provide a timely source of information on whether firms are planning to increase or decrease their investment spending in the near term. For example, participants in the NAB, ACCI-Westpac and Sensis surveys are asked what they expect to happen to capital expenditure (capex) over the next 12 months, while the Sensis, Dun & Bradstreet and AIG surveys focus on firms' capex at shorter horizons. Correlation coefficients for investment intentions and trend quarterly investment growth are generally positive and range from 0.7 to 0.8, indicating that there is a strong positive association between the two variables (Table 4; Graph 4). Statistical tests also indicate that these investment intentions provide some information about actual changes in investment: the explanatory power of simple autoregressive models of current and future investment growth increases significantly when survey variables are included. That said, survey measures do not weight the firms in the sample by the value of their investment, which means that large investment projects, which tend to be in the mining and transport sectors, are likely to be underweighted.

Graph 4
Capex Intentions and Investment Growth



* Net balance; deviation from average since 1989
Sources: ABS; NAB

Table 4: Capital Expenditure Expectations and Business Investment

	Survey average[a]	NAB Quarterly Business Survey
Start of sample period	December 1994	September 1989
Correlation between survey measure and trend quarterly investment growth		
Current quarter	0.74	0.82
Next quarter	0.73	0.80
Explanatory power in an autoregressive model of current period investment growth (adjusted R^2)		
Current period investment growth[b]		
Baseline model (lags of investment growth)	0.02	0.09
Including survey variable	0.28	0.35
Next period investment growth[c]		
Baseline model (lags of investment growth)	0.03	0.08
Including survey variable	0.18	0.31

(a) The survey average is based on the first principal component for: expected capital expenditure series from the NAB Business Survey, the ACCI-Westpac Survey of Industrial Trends and the Sensis Business Index
(b) The following model is estimated: $\Delta investment_t = \alpha_0 + \sum_{i=1}^{2} \alpha_i \, \Delta investment_{t-i} + \beta capex_t + u_t$, where *investment* refers to quarterly real private business investment growth (adjusted for second hand asset sales) and *capex* is the level of the expected investment series
(c) To mirror the data available when survey data are first released, the following model is estimated: $\Delta investment_t = \alpha_0 + \alpha_1 \, \Delta investment_{t-2} + \beta capex_{t-1} + u_t$; that is, investment in the next quarter is being forecast without knowing investment in the current quarter
Sources: ABS; ACCI; NAB; RBA; Sensis; Westpac

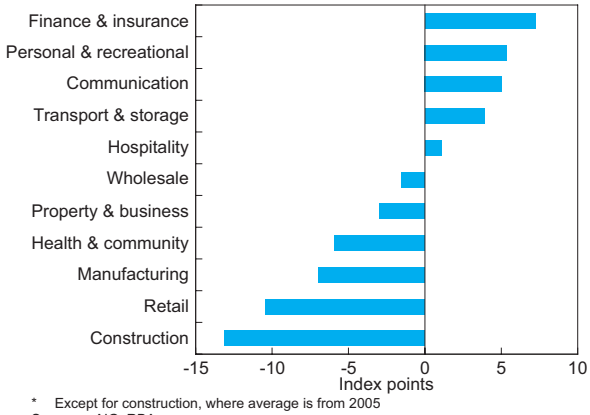
The Role of Surveys in Supplementing Official Data

Services sector output

Some surveys provide industry breakdowns that can be used to provide insights into parts of the economy that are not covered well by official data. While monthly data are available for retail sales, building activity, and exports and imports, most of these largely relate to the production and distribution of goods. In contrast, household and business services firms account for around 40 per cent of GDP, but official estimates of activity in the services sector are only available from the ABS at a quarterly frequency.[5]

To take a recent example, business conditions data from the NAB and AIG surveys show that activity in the retail and construction sectors has been weak, in line with other sources of data (Graph 5). The same survey measures also show that conditions in the services sector were around long-run average levels. In fact, conditions have been above average in personal & recreational services and hospitality, consistent with household consumption data showing that household spending on discretionary services has been growing stronger than spending on goods. Accordingly, too much emphasis on goods-focused official indicators through this period would have produced an overly pessimistic picture of economic activity.

Graph 5
Business Conditions by Industry
September quarter 2011, deviation from average since 2003*

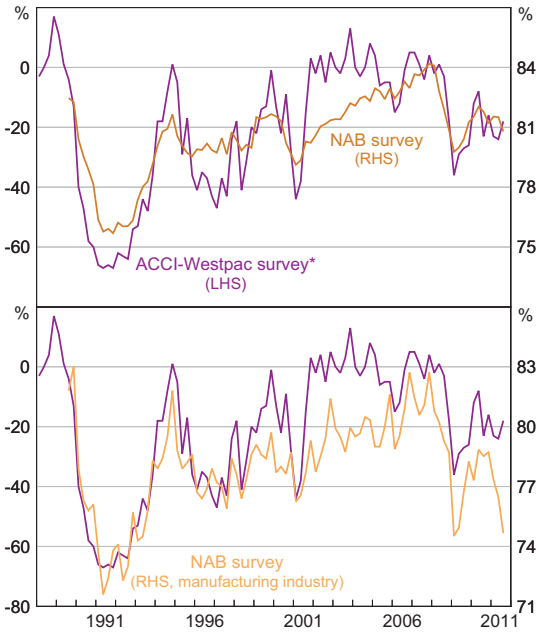


* Except for construction, where average is from 2005
Sources: AIG; RBA

Capacity utilisation

An important variable in assessing developments in the economy is the level of capacity utilisation. There is, however, no simple measure of capacity utilisation and it is not directly observed. Business surveys are one source of information with both the NAB quarterly business survey and the ACCI-Westpac Survey of Industrial Trends asking longstanding questions on the degree of capacity utilisation (Graph 6).[6]

Graph 6
Survey Measures of Capacity Utilisation



* Net balance
Sources: ACCI; NAB; Westpac

5 Services are defined to include accommodation & food services, information, media & telecommunications, finance & insurance, rental, hiring & real estate, professional, scientific & technical, administrative & support, health care & social assistance, education, arts & recreation and other services, but exclude goods distribution industries such as wholesale and retail trade. If these are included, the services sector accounts for closer to 50 per cent of GDP.

6 Measures of capacity utilisation are also available in the AIG surveys; for the construction sector, the MBA National Survey of Building and Construction and the HIA Trades Survey provide capacity utilisation measures.

These measures suggest that there were high levels of spare capacity in the economy following the 1990s recession, which were gradually eroded by the mid 2000s. Capacity utilisation fell sharply over 2009, and remains below its average levels over the past decade.

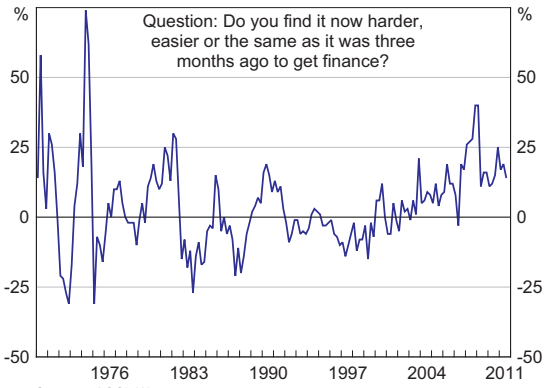
In the case of the manufacturing sector, it appears that there has been a more significant divergence between the ACCI-Westpac and NAB measures of capacity utilisation in the 2000s than had been the case in the 1990s. One possibility is that this divergence reflects differences in the way that the question is asked in the two surveys. In the NAB survey, firms are asked to indicate the level of output relative to full capacity (within certain numerical ranges), with full capacity defined as the maximum level of output using existing labour and capital. In contrast, the ACCI-Westpac survey asks manufacturing firms to compare their capacity utilisation to a 'normal' level. If perceptions of the 'normal' level of activity had increased over the 2000s – a period of extended economic growth – this could explain why the NAB survey shows an increase in capacity utilisation while the ACCI-Westpac shows it remaining at a high level. This would not be surprising in light of evidence from the UK for the CBI survey which showed that when asked to compare a variable such as 'order books' to its 'normal' level, some firms compared their current order books to budget paths while 60 per cent of firms compared their current order book levels with a past level or historical average, with three-quarters of these reporting that this 'normal' changed over time (see Bush (2008)). This research highlights the importance of considering survey design – in this case, the exact wording of the question – in interpreting survey data.

Availability of credit

Another example of how survey data can be used to supplement official data is in assessments of credit availability. While aggregate credit data can reflect changes in both demand for credit from borrowers and banks' willingness to lend, survey questions on availability of finance can provide information on supply-side constraints faced by businesses wanting to borrow. During the global financial crisis, credit growth slowed sharply, with survey data suggesting that this was partly due to a tightening in supply. Taking the ACCI-Westpac survey as an example, difficulties in obtaining finance rose sharply in late 2008, as credit risk increased and lenders tightened lending terms and conditions, and remained high into 2011 (Graph 7). Some surveys also ask about the availability of credit relative to other constraints on business. While more firms reported difficulties accessing credit in 2009, the Sensis Business Index and ACCI Survey of Investor Confidence suggested that credit constraints were less of a concern than other factors such as the slowing in economic activity.

Credit availability is another example of a situation where it is not clear whether firms are responding to the survey in the manner intended. Given the phrasing of the survey question, read literally, Graph 7 suggests that access to finance has been becoming progressively more difficult – the series is above zero – even in 2011, which is in contrast to a range of other information, including reports from the Bank's liaison program. Again, the UK evidence is that a substantial number of firms answer questions about changes in a variable in terms of the level

Graph 7
Difficulty Obtaining Finance
Net balance



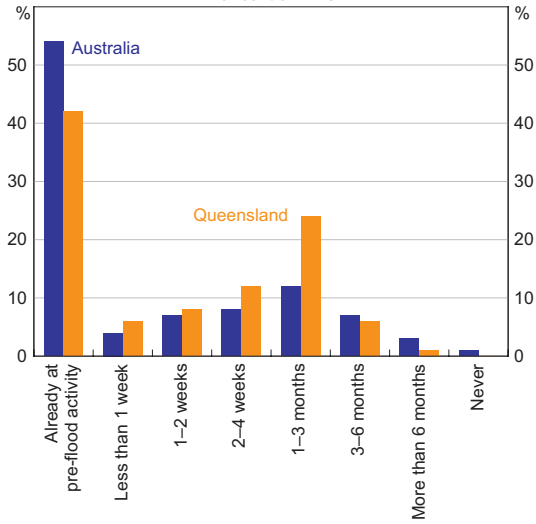
Sources: ACCI; Westpac

of that variable. If Australian firms are answering questions about credit availability in terms of the level of credit availability, the series may be indicating that it is still more difficult to access credit than before the financial crisis, rather than indicating that credit conditions have tightened continuously for about four years.

Topical events

Many Australian business surveys also include ad hoc questions on topical issues. For example, with floods and storms weighing on business sentiment in early 2011, a sequence of supplementary questions were included in the NAB Monthly Business Survey conducted in late January, well before any official economic data relating to this period were released. Of particular interest was a question about the expected return to normal activity: this suggested that business activity had returned to pre-flood levels by late January for 40 per cent of the affected firms in Queensland, while more than 90 per cent of firms expected that their activity would have fully recovered within three months of the survey's date (Graph 8). Such data were used to inform early estimates of the impact of extreme weather on economic activity (RBA 2011).

Graph 8
How Long Before Back to Pre-flood Activity Levels?
Per cent of firms



Source: NAB

Conclusion

While it is important to interpret survey information with care, being mindful of the influence of survey design, business surveys provide useful information about current and future economic activity, and also provide information on parts of the economy not otherwise readily available. Survey responses that are published on a more timely basis than official data can be used to provide an early read on economic activity, particularly on growth in domestic demand. In addition, forward-looking survey measures such as business confidence and hiring and investment intentions assist in forecasting domestic demand, employment and investment growth. Finally, survey measures of capacity utilisation and availability of finance, and detailed sectoral data, are a useful complement to official data.

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Australia's Tourism Industry

Karen Hooper and Marileze van Zyl*

This article examines developments in Australia's tourism industry over the past decade. It focuses on the increased tendency for Australians to holiday overseas and the compositional changes in the inbound visitor market, which together have contributed to subdued growth in parts of the tourism industry in recent years.

Introduction

The tourism industry makes a significant contribution to the overall level of economic activity and employment in Australia. This article discusses this contribution and how it has changed over time, drawing on both publicly available data and insights from the Bank's liaison program. In particular, the article examines trends in two broad categories of tourism expenditure: spending by Australian residents within Australia (domestic tourism expenditure) and spending by overseas visitors to Australia (tourism exports).

Measuring Australia's Tourism Industry

Industries are normally classified according to their production. However, tourism is unique among industries. Its output is determined by consumption spending – in this case, the spending of tourists and other visitors. Measuring tourism spending requires identifying visitors and their expenditure patterns. This is a challenging task, and so measures of the economic significance of tourism have traditionally been limited. However, since 2000 the Australian Bureau of Statistics (ABS) has published Australia's Tourism Satellite Account (TSA) which provides considerable detail on the tourism industry.[1] Specifically, the annual TSA measures the direct contribution of tourism to the economy by aggregating the output of each industry that is consumed by 'visitors'. In this way, tourism output is brought into the national accounts framework as a composite of the output of conventionally defined industries.

In order to measure the size of the tourism industry, spending by 'visitors' must be clearly distinguished from that of regular residents in a particular region. The definition of visitors adopted in the TSA, consistent with international standards, defines a visitor to include any person travelling to a region for a period of less than one year that is outside of their normal geographic environment. Notably, measures of tourism output are not just restricted to spending on leisure activity but also include spending on travel for business, education, visiting friends and relatives (VFR), training and other personal reasons.[2] (In addition to the TSA, higher frequency data on the characteristics and travel patterns of domestic

* The authors are from Economic Analysis Department.

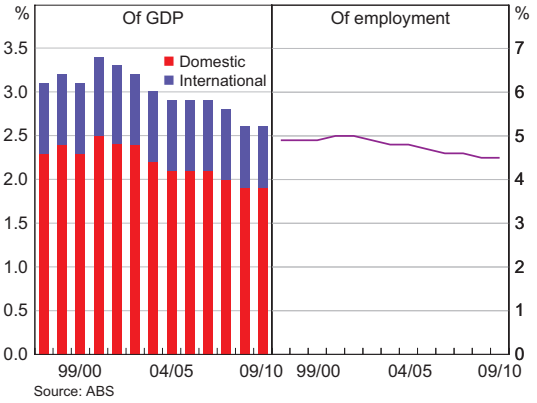
1 Publication of the TSA represents recognition of the economic importance of tourism, the demand for greater information on the industry and developments in establishing appropriate international statistical standards. The Australian TSA is based on international standards developed by an Inter-Secretariat Working Group on Tourism Statistics, which includes the Organisation for Economic Co-operation and Development (OECD).

2 There are some exclusions. Students, including those from overseas, are counted only as visitors if their course is for less than one year; trips associated with employment and routine travel are excluded; day trips are only counted where they involve a round-trip distance of at least 50 kilometres from home; and overnight trips must involve a stay at least 40 kilometres from home. For further details, see ABS (2010).

and international visitors are available from the *National Visitor Survey* and *International Visitor Survey*, which are published quarterly by Tourism Research Australia (TRA). The ABS also publishes monthly data on overseas arrivals and departures.)

The TSA data show that tourism output was around $34 billion in 2009/10, or 2.6 per cent of Australia's GDP (Graph 1).[3] This share has steadily declined since its peak of 3.4 per cent at the time of the Sydney Olympics in 2000/01, with the decline since then largely accounted for by a fall in the contribution of domestic tourism.

Graph 1
Tourism Share



Source: ABS

In 2009/10, the tourism industry employed around half a million workers, representing 4.5 per cent of Australia's total employment (Graph 1). While the industry's contribution to employment has fallen somewhat over the past decade, the tourism industry remains a significant employer, particularly in regions that have a high dependency on tourism expenditure. The higher employment share of the tourism industry relative to its output share reflects the labour-intensive nature of parts of the industry. For instance, retail trade and food services comprise 45 per cent of tourism employment, but around one-quarter of tourism output (Table 1).

New South Wales, Queensland and Victoria (in that order) account for the largest shares of Australia's tourism industry, together representing around 80 per cent of the industry's output (Graph 2). However, the significance of tourism to the overall level of activity in each state and territory varies, with tourism accounting for the largest share of total output and employment in the Northern Territory, Tasmania and Queensland (Graph 3). Tourism is especially important to Australia's regional economy (areas outside the capital cities), with around 45 per cent of total tourism expenditure in 2010/11 undertaken in regional areas.

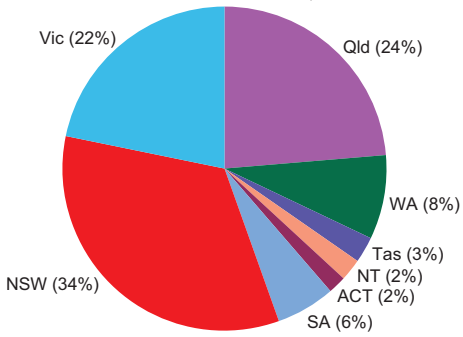
Table 1: Composition of Tourism Output and Employment
Selected industries, per cent, 2009/10

Industry	Share of tourism output[(a)]	Share of tourism employment
Accommodation	17	14
Air, water and other transport	15	7
Retail trade	13	19
Cafes, restaurants and takeaway food services	11	26
Education and training	8	7
Travel agency and tour operator services	5	6

(a) Measured by gross value added
Source: ABS

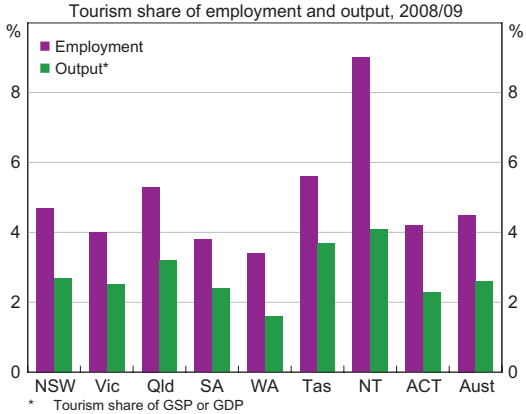
3 In 2009/10, tourism contributed 2.6 per cent of total industry gross value added (a measure of output which excludes taxes). For purposes of comparison, agriculture and mining recorded output shares of 2.3 per cent and 8.4 per cent.

Graph 2
Tourism GDP by State/Territory
Per cent of total tourism GDP, 2008/09



Source: The Centre for Economics and Policy (2011)

Graph 3
Importance of Tourism by State/Territory
Tourism share of employment and output, 2008/09



* Tourism share of GSP or GDP
Source: The Centre for Economics and Policy (2011)

Domestic Tourism Expenditure by Australians

As is the case in most developed economies, Australia's tourism industry is heavily oriented towards domestic spending by Australian residents.[4] Domestic tourism accounts for three-quarters of tourism expenditure in Australia, with the balance accounted for by the spending of international tourists. Households account for most of this spending, with the business travel market representing just 15 per cent of domestic tourism expenditure (Table 2). Nearly three-quarters of total expenditure incurred on domestic travel is associated with trips involving at least one night away, mostly taken for holiday purposes. The largest states are the most popular destinations for domestic visitors, accounting for nearly 80 per cent of all visitor nights in 2010/11 (Graph 4). The majority of domestic travel is to regional destinations (outside capital cities), with the Gold Coast ranking as Australia's leading regional destination in terms of both nights and expenditure. Despite the impact of recent natural disasters, Queensland received the highest share of interstate visitor nights in 2010/11.

Domestic tourism forms an important component of household consumption expenditure, with Australian households spending around 3¼ per cent of their total consumption spending on domestic

Table 2: Domestic Tourism Expenditure[(a)]
2010/11

Reason for travel	Day visitors	Overnight visitors	Total	Share of total expenditure
	$ billion	$ billion	$ billion	Per cent
Holiday	8	24	33	57
Visiting friends and relatives	3	9	12	21
Business	1	7	9	15
Other[(b)]	2	2	4	7
Total	**15**	**43**	**58**	**100**

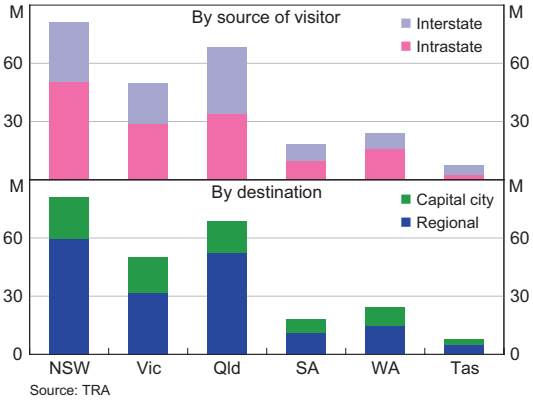
(a) Australian residents aged 15 years and over only
(b) Includes education and health-related travel
Source: TRA

4 See OECD (2010) for international comparisons.

overnight holiday travel. Nonetheless, over the past decade there has been a notable decline in both the propensity for Australians to holiday domestically (as given by the number of overnight trips per person) and the proportion of total household spending on overnight domestic holiday travel (Graph 5).

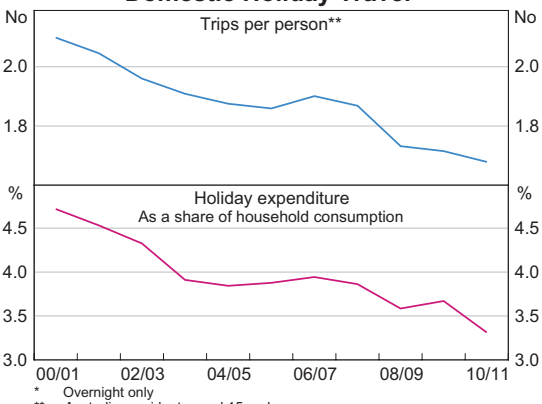
This decline in domestic holiday spending has been driven by a marked change in the travel behaviour of Australians, notably a shift away from domestic travel towards overseas travel. While the number of nights Australians spend holidaying domestically has declined, there has been a sharp rise in the number of trips and nights Australians spend holidaying overseas (Graph 6). The propensity for Australians to travel overseas for a holiday has picked up markedly since late 2003, rising from around 8 per cent of the resident Australian population annually to be just under 20 per cent of the population in recent years (although some of these trips reflect multiple visits by individuals). Travelling overseas for the purpose of a holiday has been the fastest growing component of outbound travel, with more moderate growth in overseas trips for business, employment and education (Graph 7).

Graph 4
Visitor Nights by State
2010/11



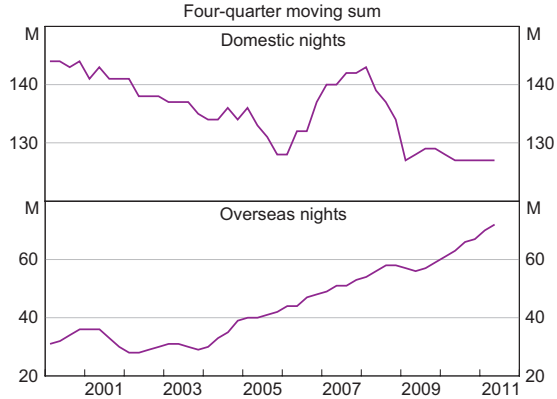
Source: TRA

Graph 5
Domestic Holiday Travel*



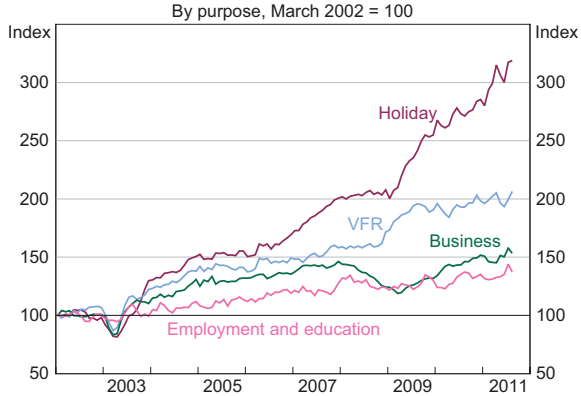
* Overnight only
** Australian residents aged 15 and over
Sources: ABS; RBA; TRA

Graph 6
Holiday Travel Patterns of Australians*
Four-quarter moving sum



* Australian residents aged 15 and over
Source: TRA

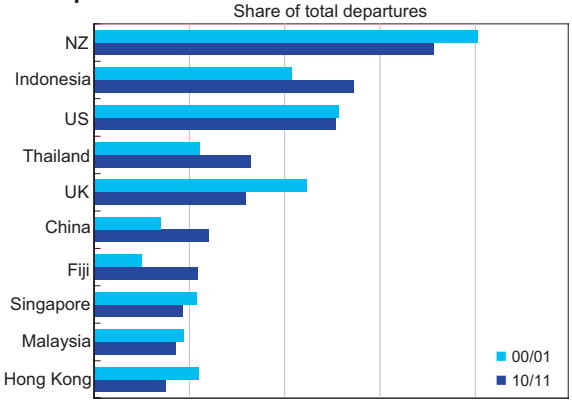
Graph 7
Short-term Overseas Departures*
By purpose, March 2002 = 100



* Rolling three-month sum; seasonally adjusted
Source: ABS

New Zealand continues to attract the largest share of Australian residents travelling offshore, although increased air capacity and lower airfares have facilitated strong growth in outbound travel to short-haul holiday destinations in the region, such as Indonesia (especially Bali), Thailand and Fiji (Graph 8). Liaison confirms that these destinations – which represent a growing proportion of Australia's outbound travel – compete directly with many of Australia's beach holiday destinations, particularly those in Queensland.

Graph 8
Top 10 Destinations for Australian Residents
Share of total departures



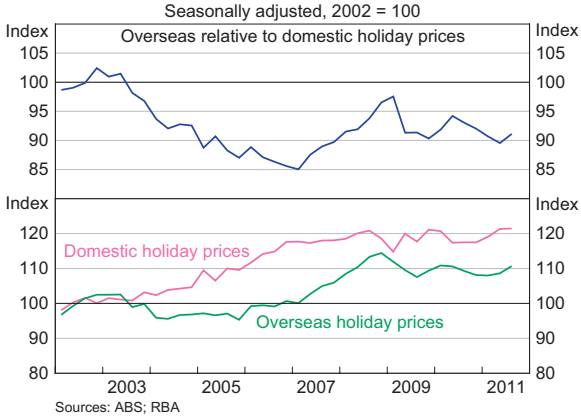
Source: ABS

While overseas trips are undertaken less frequently, they tend to be more expensive than domestic trips, reflecting both the cost of airfares and a longer average length of stay. While some of this spending on goods and services occurs domestically – on items such as airfares,[5] luggage, clothing and travel agency services – the majority of expenditure by Australian residents on outbound trips is spent outside Australia. The increase in demand for overseas holidays has seen spending by Australians on overseas travel increase at an average annual rate of 7.5 per cent (in nominal terms) over the 10 years to 2009/10, much higher than the average annual rise in domestic tourism expenditure of 3.2 per cent. This divergence in growth is expected to persist.[6]

The decline in spending on domestic relative to overseas travel by Australian residents is being driven by a range of factors, including changes in the relative price of domestic and overseas travel, and the rise in household income. With regard to the former, the higher exchange rate – combined with increasing and cheaper air access to overseas destinations – has encouraged more Australians to holiday offshore rather than domestically. Consumer price data indicate that prices of overseas holidays relative to domestic holidays are lower in 2011 than they were in the early 2000s (Graph 9). In addition, the development of new internet and media technology has made it easier for Australians to research and compare the cost and quality of competing destinations.

Leisure tourism demand is also affected by rises in household incomes. A recent study by TRA showed that demand for overseas travel is income elastic and that households increase the share of their total tourism spending on overseas holiday travel as their incomes increase.[7] Consistent with

Graph 9
Tourism Prices
Seasonally adjusted, 2002 = 100



Sources: ABS; RBA

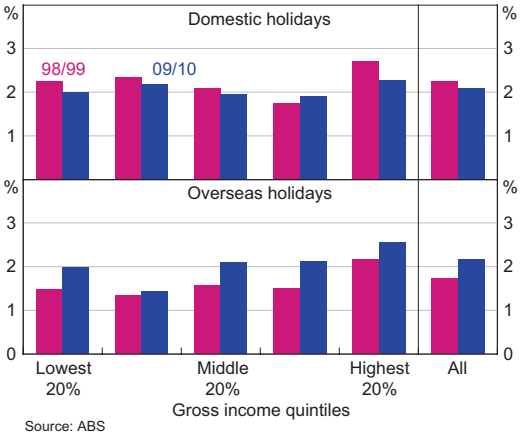
5 International airfares purchased by Australian residents from domestic carriers, such as Qantas, are measured as domestic tourism consumption by the ABS.

6 See TFC (2011) for the latest forecasts of domestic, inbound and outbound tourism.

7 TRA (2011b); see also Eugenio-Martin and Campos-Soria (2011).

this, the ABS Household Expenditure Survey shows that the share of household expenditure on overseas holidays increases with income levels (Graph 10). Moreover, while the share of household expenditure on overseas holidays has risen over the past 10 years or so across all income groups, spending on domestic holidays has declined for the majority of households. While there has been strong growth in household incomes over the past decade, the appreciation of the exchange rate is likely to have been the primary driver of the stronger growth in outbound travel by Australians over the past few years. In this regard, liaison also identifies the level of the exchange rate as a primary concern of businesses within the tourism industry.

Graph 10
Share of Household Spending on Holidays



Source: ABS

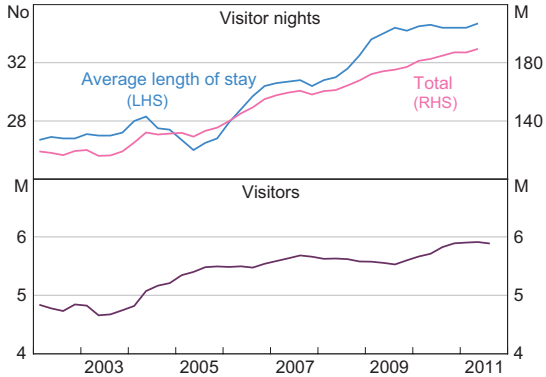
Tourism Expenditure by Overseas Visitors

Spending by overseas visitors to Australia represents around 25 per cent of total tourism spending. In 2010/11, expenditure by overseas visitors was $32 billion,[8] representing around 11 per cent of Australia's total export revenue. The share of tourism in Australia's total exports has grown markedly since the late 1970s, but is broadly unchanged over the past decade (Graph 11). While the number of overseas visitor arrivals to Australia has increased fairly modestly – rising by 1½ per cent per annum over the past decade – there has been stronger growth in international visitor nights in Australia reflecting an increase in the average length of stay by overseas visitors (Graph 12). Reflecting these trends, Australia ranked as the world's eighth largest tourism exporter in 2010, attracting 3.3 per cent of global spending on travel by international visitors.[9]

Graph 11
Australia's Tourism Exports*
Current prices, share of export revenue

* Travel services exports
Source: ABS

Graph 12
International Visitors to Australia*



* Four-quarter moving sum
Sources: ABS; RBA; TRA

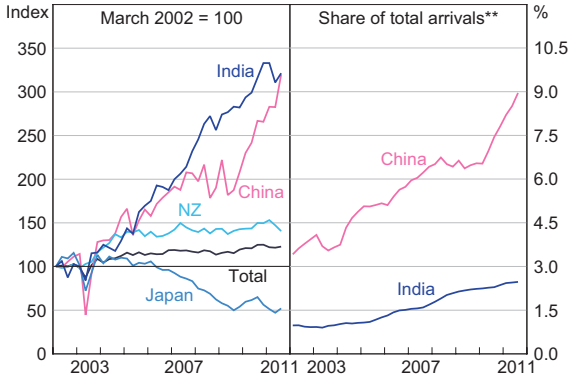
8 Defined as travel services exports in the ABS Balance of Payments statistics.

9 See TRA (2011a). Nonetheless, Australia's share of the global tourism market has declined since its peak in 1996, with overseas arrivals to Australia increasing by 2.5 per cent per annum on average compared with estimated annual growth in global tourist arrivals of 3.8 per cent.

New Zealand is Australia's largest inbound market in terms of visitor numbers, followed by the United Kingdom and China (Table 3). While Japan remains an important tourism export market for Australia, arrivals from Japan have fallen on average by almost 7 per cent per annum over the past decade. The decline in Japanese visitors to Australia reflects both a reduction in the size of the Japanese outbound travel market – as a result of demographic and economic factors – and a loss in market share, with Australia's share of the Japanese market falling from 4 per cent in 2000 to 2.4 per cent in 2010.[10]

In contrast, China and India represent a strongly rising share of overseas arrivals to Australia (Graph 13). The number of visitors from China and India has increased at an average annual rate of more than 12 per cent over the past 10 years, compared with growth in arrivals from New Zealand of 3½ per cent per annum. Australia's tourism industry has benefited from increased access to the Chinese visitor market since 1999, when Australia was one of the first western countries to be granted Approved Destination Status, which permitted Chinese citizens to travel in groups to Australia. In 2010, China became Australia's largest inbound market in terms of tourism revenue, reflecting higher average visitor expenditure (and a longer duration of stay) by Chinese visitors compared with visitors from other countries.

Graph 13
Overseas Arrivals*



* Seasonally adjusted by RBA
** Smoothed
Sources: ABS; RBA

Table 3: International Visitors to Australia by Country of Residence
2010/11

Rank	Country of residence	Share of arrivals	Average annual growth in arrivals[(a)]	Contribution to growth in total arrivals[(a)]	Share of tourism export revenue
		Per cent	Per cent	Percentage points	Per cent
1	New Zealand	20	3.6	7.0	6.8
2	United Kingdom	11	0.2	0.3	8.0
3	China	9	13.4	7.1	16.4
4	United States	8	–0.9	–0.9	4.6
5	Japan	6	–6.7	–7.2	3.5
Memo item:					
11	India	2	12.3	2.0	7.7

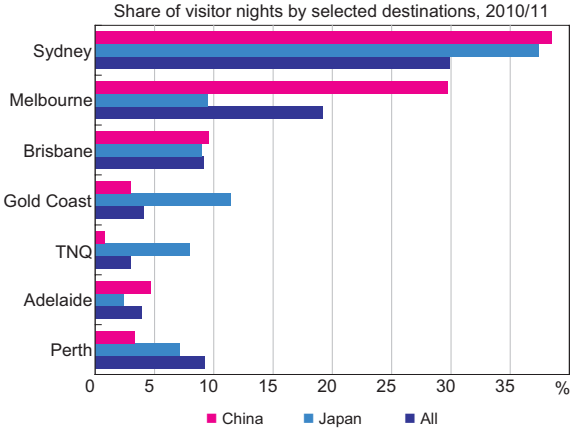
(a) Growth rates calculated over the period 2000/01 to 2010/11
Source: ABS

10 For further details on the Japanese market see Tourism Australia (2011).

Unlike domestic tourists, overseas visitors generally spend the bulk of their travel expenditure in capital cities and on average they have a longer length of stay (Graph 14). Liaison suggests that this is partly related to the importance of capital cities as major international gateways to Australia. Capital cities have benefited from a rising share of overseas visitor expenditure as spending by international visitors in regional areas has declined somewhat in recent years in real terms. This trend is consistent with the strong growth in Chinese visitors – who demonstrate a strong propensity for travel to capital cities – and the decline in Japanese tourists that has had a more pronounced effect on overall tourism demand in some regional destinations. For instance, in 2010/11, Sydney and Melbourne were the most popular destinations for Chinese visitors (as measured by visitor nights), whereas Japanese visitors have demonstrated a relatively stronger preference for travel to Queensland's beach destinations, notably the Gold Coast and Tropical North Queensland (TNQ) (Graph 15).

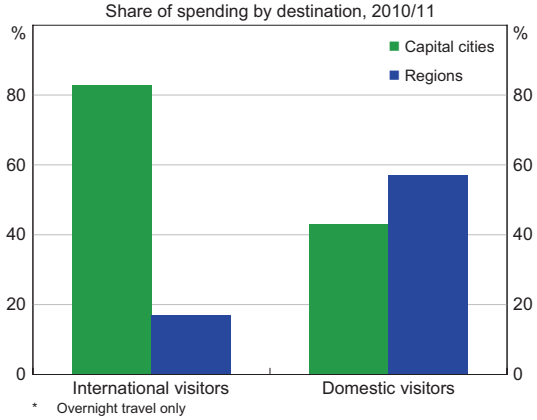
Looking forward, ongoing strong income growth in emerging economies, such as China and India, is expected to continue to underpin demand for Australia's tourism exports. Growth in Chinese visitors alone is expected to contribute around one-third of the growth in Australia's tourism export earnings out to 2020. As a consequence, the share of spending by international visitors in total tourism expenditure in Australia is forecast by the Tourism Forecasting Committee (TFC) to continue to rise over the next decade, driven principally by strong arrivals from Asia (Graph 16). This poses a challenge for the tourism industry in leisure and regional areas, which have at least to date had limited exposure to the growing segments of the inbound tourism market compared with Australia's capital cities.

Graph 15
International Visitor Patterns
Share of visitor nights by selected destinations, 2010/11



Source: TRA

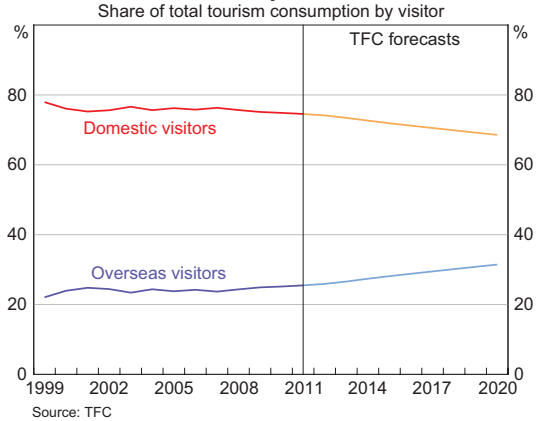
Graph 14
Visitor Expenditure in Australia*
Share of spending by destination, 2010/11



* Overnight travel only

Source: TRA

Graph 16
Tourism Consumption in Australia
Share of total tourism consumption by visitor



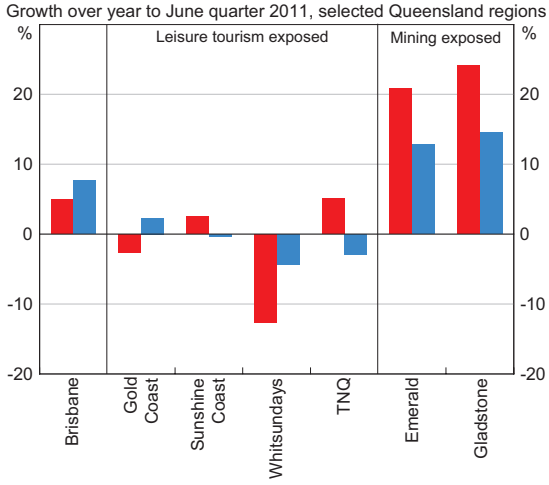
Source: TFC

Adjustments Within the Tourism Industry

In response to these trends in spending by Australian and overseas visitors, conditions within the tourism industry vary significantly. In particular, demand for hotels in capital cities has been strong in response to growing demand from overseas visitors and from business travel by Australian residents. Overall demand in regional areas has been mixed: while conditions in Australia's traditional domestic leisure markets have been soft as Australians have increasingly preferred to holiday abroad, demand for accommodation and other services in some regional towns and cities – especially those located close to mining activity – has been strong.

In response to this dichotomy in the relative strength of demand, tourism providers have, where possible, adjusted the price and mix of their operations. This adjustment is most apparent in the transport and accommodation sectors. For instance, strong growth in accommodation demand in Brisbane as well as in some mining-exposed regions – supported in part by the business travel market – has seen a sharp increase in room rates in the face of a tight supply of rooms (Graph 17). To date there has been little growth in hotel room supply, with liaison suggesting new supply has been constrained by a range of factors including lack of available development finance. Nonetheless, there has reportedly been an increase in hotel refurbishments over the past year or so in capital city markets, targeting the upper-end of the visitor market. In contrast to the strength of the CBD and some regional markets, accommodation providers in leisure tourism destinations in Queensland have held prices flat or reduced room rates in response to the weaker demand conditions that have prevailed. Liaison indicates that some providers in holiday destinations are investing in refurbishments and/or an expanded range of services, such as providing Chinese and Hindi-language television and menus, to attract the inbound visitor market, while others have begun to shift their rooms into the housing rental market.

Graph 17
Accommodation Indicators*
Growth over year to June quarter 2011, selected Queensland regions

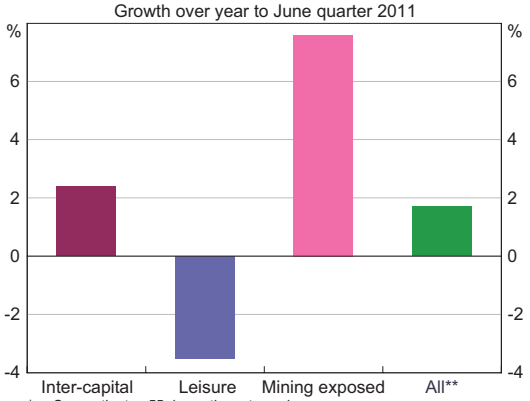


* Hotels, motels and serviced apartments
Source: ABS

A similar pattern of adjustment is evident in the domestic aviation market, where strong inter-capital transport services demand – as well as demand for air services into regional and remote areas of Australia in response to mining-related activity – is seeing a shift in capacity to service these growing markets. Data on the top 55 domestic aviation routes in Australia published by the Bureau of Infrastructure, Transport and Regional Economics (BITRE) confirm this adjustment. By classifying these routes as inter-capital, leisure based and mining exposed, a clear pattern of demand emerges. Passenger traffic on inter-capital and mining-exposed routes has increased, while the number of passengers carried on routes focused towards leisure travel has declined over the year to the June quarter 2011 (Graph 18).

Nonetheless, the ability of firms to reposition themselves and take advantage of opportunities for growth outside of the domestic leisure market depends on their flexibility and capacity to adapt. This adjustment appears to be easier for firms capable of shifting capacity, such as transport providers, but more difficult for bricks-and-mortar operators, such as accommodation providers, unless they can tailor their services to meet the requirements of the business and inbound visitor markets.

Graph 18
Australian Domestic Airline Passengers*
Growth over year to June quarter 2011



* Covers the top 55 domestic routes only
** Includes routes not classified elsewhere
Sources: BITRE; RBA

Conclusion

The increasing propensity for Australians to holiday overseas has brought about important changes in the pattern of tourism demand in Australia over the past decade. As a result of this change in travel behaviour and the rising globalisation of travel, Australia's tourism industry is expected to become more focused on tourism exports, especially growing markets such as China. Reorienting activity in response to the shifting spending patterns of Australian residents and overseas visitors is possible for some tourism providers, in particular those in the capital cities. However, conditions in other parts of the tourism industry, such as in the traditional leisure market destinations, are likely to remain more difficult in the period ahead.

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The Growth and Development of the Indonesian Economy

Stephen Elias and Clare Noone*

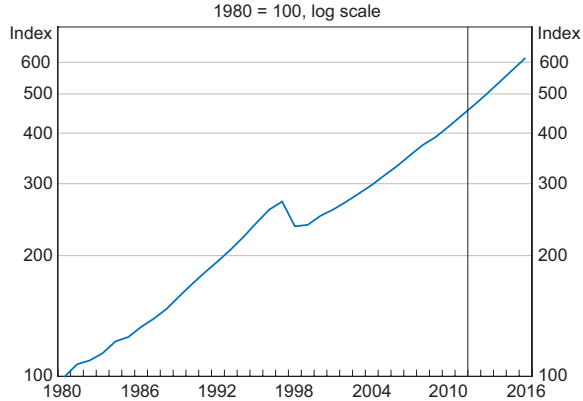
The Indonesian economy has recorded strong growth over the past few decades, and in recent years the firm pace of economic expansion has been accompanied by reduced output volatility and relatively stable inflation. Indonesia's economic performance has been shaped by government policy, the country's endowment of natural resources and its young and growing labour force. Alongside the industrialisation of its economy, Indonesia's trade openness has increased over the past half century. As a near neighbour, Australia has long had significant trade ties with Indonesia.

Economic Developments

Indonesia's economy has expanded strongly over recent decades, notwithstanding the sharp economic contraction that occurred during the 1997–1998 Asian financial crisis (Graph 1 and Table 1). This strong pace of growth has seen Indonesia become an increasingly important part of the global economy. It is now the fourth largest economy in east Asia[1] – after China, Japan and South Korea – and the 15th largest economy in the world on a purchasing power parity (PPP) basis. Furthermore, its share of global output – currently just under 1½ per cent – is expected to continue to rise over the years ahead (Graph 2).

Over time, the structure of the Indonesian economy has changed considerably. Historically, the economy has been heavily weighted towards the agricultural sector,[2] reflecting both its stage of economic development and government policies in the 1950s and 1960s to promote agricultural self-sufficiency. A gradual process of industrialisation and urbanisation began in the late 1960s, and accelerated in the 1980s as falling oil prices saw the Indonesian Government focus on diversifying away from oil exports and towards manufactured exports (Goeltom 2007). From the mid 1980s, trade barriers were reduced and the Indonesian economy became more globally integrated. Since the Asian crisis, Indonesia's relatively strong growth outcomes have been accompanied by reduced output volatility. Notably, economic growth in Indonesia slowed only moderately during the 2008–2009 global downturn, while there was a marked decline in output in most

Graph 1
Indonesia – Real GDP*
1980 = 100, log scale



* IMF forecast from 2011
Source: IMF

* The authors are from Economic Analysis Department.

1 Unless otherwise specified, east Asia refers to the economies of China, South Korea, Taiwan, Hong Kong, Singapore, Indonesia, Thailand, Malaysia and the Philippines.

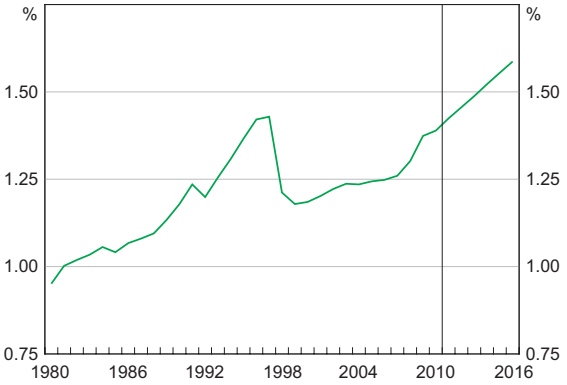
2 In this article the agricultural sector is defined to include forestry, fishing and hunting.

Table 1: Indonesia – GDP and Population
Per cent

	1960–67	1968–82	1983–96	1997–99	2000–10
Growth[a]					
Real GDP	2.0	7.5	7.2	–6.4	5.2
Real GDP per capita	–0.5	4.9	5.3	–7.7	4.0
GDP deflator	291	25	8	34	12
Population	2.5	2.4	1.7	1.3	1.2
Share of world[b]					
GDP[c]	0.4	1.0	1.4	1.2	1.4
Population	3.2	3.4	3.5	3.5	3.5

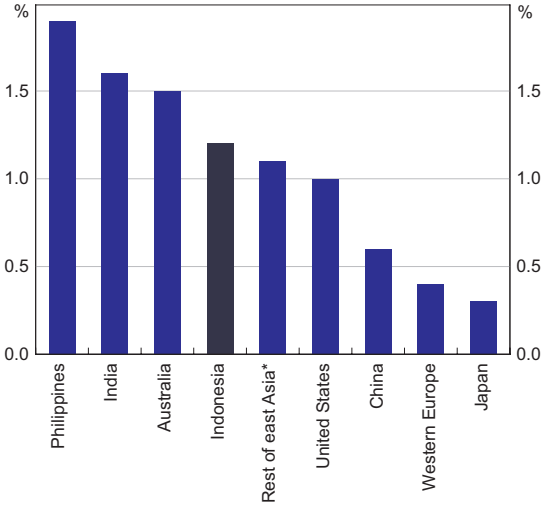
(a) Average annual rate
(b) End of period
(c) On a purchasing power parity basis
Sources: IMF; Penn World Table Version 7.0; World Bank

Graph 2
Indonesia – Share of World GDP*
At PPP exchange rates



* IMF forecast from 2011
Source: IMF

Graph 3
Population
Average annual growth, 2000–2009



* Including Hong Kong, Malaysia, Singapore, South Korea and Thailand
Source: United Nations

advanced economies and other east Asian economies (except China).

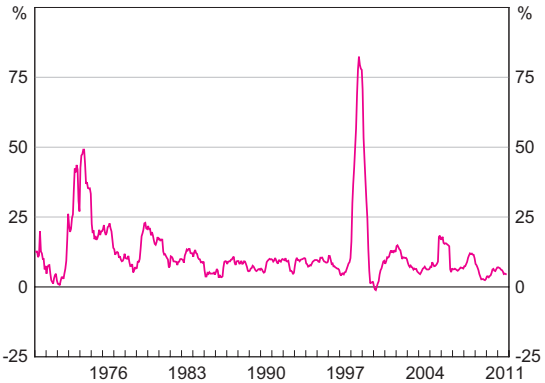
Indonesia is the fourth most populous nation in the world, with 242 million people, and the second most populous in east Asia after China. While Indonesia's population growth has been slowing, in the 2000s it outpaced that in China and the major advanced economies (Graph 3). By 2010, Indonesia accounted for 11 per cent of the population of east Asia and 3½ per cent of the global population. Importantly, Indonesia's population is relatively young. The median age in Indonesia is 28, which is the third youngest in east Asia and around 10 years younger than in most major advanced countries. The dependency ratio – the number of children and elderly relative to the working-age population – is low and the working-age population has been rising. These demographics have provided a

boost to GDP growth that should continue for much of the next two decades.[3]

The educational attainment of Indonesia's population has also risen markedly over recent decades. The proportion of primary school-aged children enrolled at school was close to 100 per cent in 2010, up from 70 per cent in 1975, while more than two-thirds of secondary school-aged children were enrolled in school (up from less than 20 per cent 35 years ago). Indonesia is likely to see strong productivity gains from further investment in its human capital, as it will allow more workers to be employed in industries with relatively high value added (Arze del Granado *et al* 2007).

Indonesia's recent strong economic growth has also been accompanied by relatively steady inflation. This followed a rapid increase in the price level during the Asian crisis driven by the sharp depreciation of the rupiah (Graph 4). Since an inflation target was introduced in Indonesia in 2000, the GDP deflator and the CPI have grown at an average annual pace of 10¾ per cent and 9 per cent, respectively, similar to the pace recorded in the two decades prior to the Asian crisis, but well below the pace in the 1960s and 1970s. Inflation has also generally trended lower through the 2000s, with some of the fluctuations in inflation reflecting government policy initiatives such as the changes in fiscal subsidies in 2005 and 2008 which caused large temporary spikes in CPI growth.

Graph 4
Indonesia – Consumer Price Inflation
Year-ended



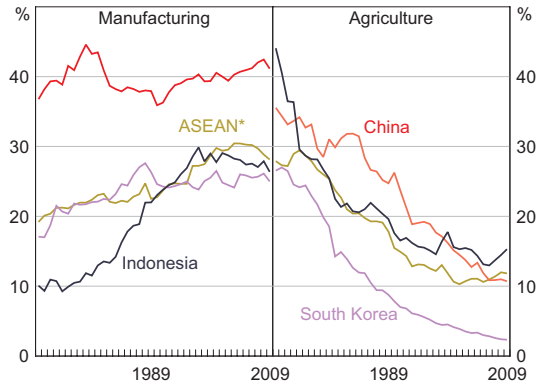
Source: Thomson Reuters

Structure of Production

Like many countries in east Asia, Indonesia has undergone a process of industrialisation and urbanisation over the past 50 years. From 1967 to 2009, the manufacturing share of GDP increased by 19 percentage points while the agricultural share fell by 35 percentage points (Graph 5 and Table 2). Similarly, the share of the population living in urban areas (the urbanisation rate) increased from 17 per cent to 53 per cent over this period (Graph 6). Overall, the pace of urbanisation and industrialisation has been comparable to that experienced elsewhere in the region.

Despite industrialising over the past half century, agriculture remains an important part of the Indonesian economy accounting for 16 per cent of output in 2009 (a relatively high share compared with other economies in east Asia; Graphs 5 and 7). In addition, nearly half of Indonesia's population continue to live in rural areas and, in 2008, agricultural industries accounted for more than 40 per cent of

Graph 5
Manufacturing and Agricultural Output
Share of nominal GDP



* Including Malaysia, Philippines and Thailand
Source: United Nations

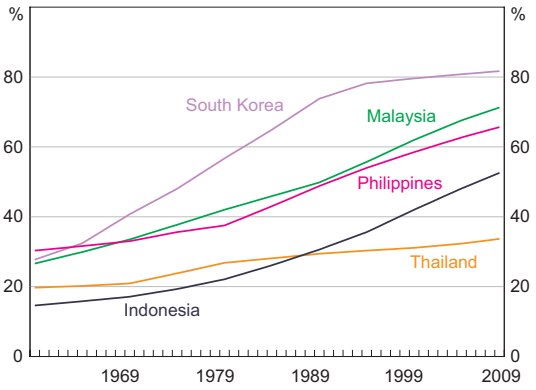
3 As explored in Hall and Stone (2010), this boost is expected to fade gradually with demographic factors starting to drag on growth in the late 2020s.

Table 2: Indonesia – Output by Sector
Sector share of GDP, per cent

	1967	1982	1996	1999	2009
Agriculture	51	23	17	20	16
Construction	na[(a)]	10	10	8	11
Manufacturing	8	13	26	26	27
Mining & utilities	na[(a)]	17	8	9	11
Services	36	37	40	37	35

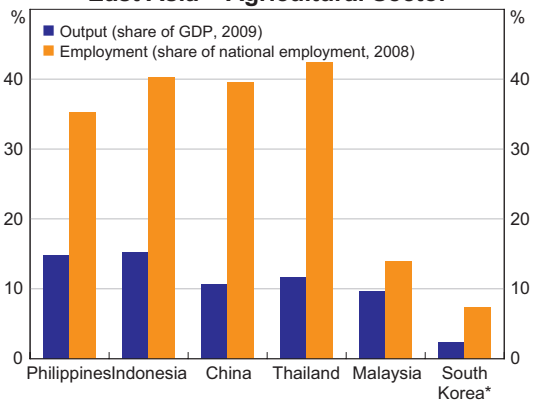
(a) In 1967 the combined share of construction and mining & utilities was 5 per cent
Sources: CEIC; RBA; World Bank; United Nations

Graph 6
East Asia – Urbanisation Rate



Source: World Bank

Graph 7
East Asia – Agricultural Sector



* Employment share is for 2007
Sources: CEIC; International Labour Organization; RBA; United Nations

employment – similar to that in China and Thailand, but well above that for Malaysia and Korea.

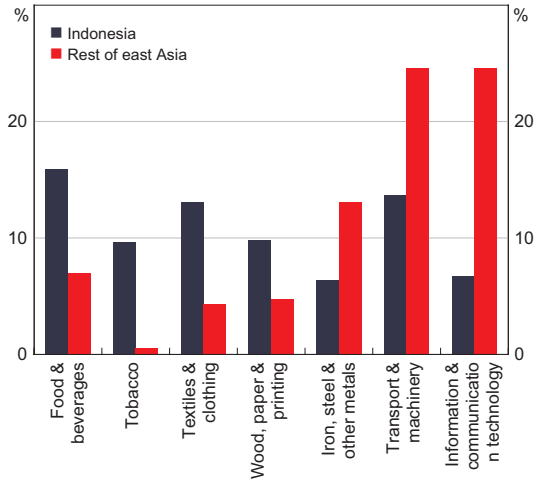
In provinces where employment is highly concentrated in the agricultural sector, incomes are considerably lower than in major urban centres such as Jakarta.[4] In part, this reflects the low labour productivity of parts of Indonesia's agricultural sector. Looking forward, there is considerable scope for productivity in the sector to improve, particularly if modern farming techniques become more widely adopted on Indonesia's outer islands and irrigation systems are improved (ADB, ILO and IDB 2010).

While the manufacturing sector's share of the economy has grown over the past 50 years – in common with other countries in east Asia – Indonesia's manufacturing industry has developed differently to manufacturing sectors elsewhere in the region. In particular, compared with the rest of the region, production in Indonesia has focused on food, tobacco and textiles rather than elaborately transformed manufactured goods (Graph 8).

Indonesia has a larger resource sector than many other countries in the region. Mining & utilities output has accounted for around 12 per cent of GDP since the late 1980s, a higher share than in most other east Asian economies and higher than the global average (Graph 9).

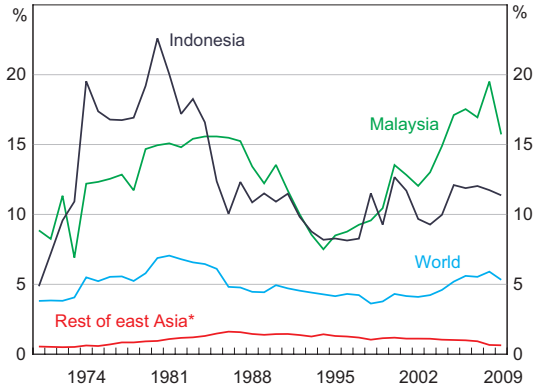
4 For example, in the East Nusa Tenggara and Maluku provinces, per capita GDP is just a fifth of the Indonesian average and one-sixteenth the size of per capita GDP in Jakarta.

Graph 8
East Asia* – Manufacturing Production**
Share of total, 2006



* Excluding Hong Kong and Taiwan
** Some categories not shown
Sources: RBA; United Nations

Graph 9
Mining & Utilities Output
Share of GDP



* Including China, Philippines, South Korea and Thailand
Sources: RBA; United Nations

Oil and gas production accounts for around 40 per cent of Indonesia's mining & utilities output and 1½ per cent of global crude oil and natural gas production. Indonesia is also an important global producer of coal accounting for over 4 per cent of global production in 2010, slightly less than Australia (BP 2011).[5] Indonesia is also a significant producer of a number of other commodities, accounting for 27 per cent of global tin extraction in 2009, 15 per cent of nickel extraction and 6 per cent of copper extraction.

International Trade

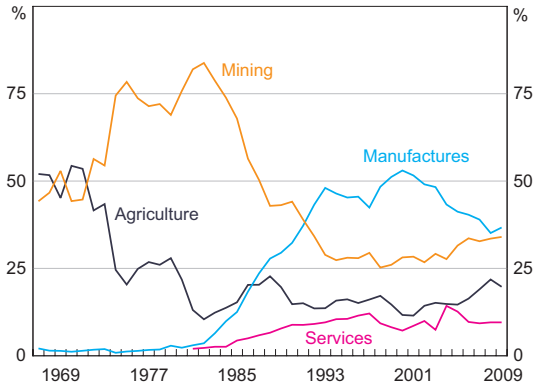
Indonesia has become increasingly globally integrated over the past half century, with its ratio of trade to GDP rising from 30 per cent in 1970 to 60 per cent in the 2000s. The value of Indonesia's exports rose rapidly in the early 1970s in line with the first oil price shock. With the world price of oil remaining elevated, oil exports continued to be an important source of revenue for the Indonesian economy through to the early 1980s and Indonesia's trade ratio rose in spite of the government's use of protectionist policies (ADB *et al* 2010). Falling oil prices in the early 1980s brought on a period of subdued growth in trade values and the government sought to develop non-oil sources of export revenue (Goeltom 2007). By the late 1980s, exports (and imports) had began to rise strongly again as the government pursued policies of trade liberalisation and as the industrialisation of the Indonesian economy accelerated. From this time through to the Asian crisis, Indonesia's trade ratio rose steadily and today the ratio is around its mid 1990s level.

Consistent with these developments, there have been substantial shifts in the composition of Indonesia's exports over the past 50 years (Graph 10). The oil price shocks of the 1970s and early 1980s, and later the industrialisation of the economy, saw agriculture's share of exports decline steadily from 1971 to the early 1990s. Manufacturing exports increased from just 2 per cent of total exports in 1980 to 46 per cent in 1993.

A different set of trends have been seen since the early 1990s. The manufacturing sector's share of exports no longer trended higher (and has more recently been declining) and fuel exports have remained a stable share of total exports. While growth in oil exports has been modest, partly due to fuel subsidises boosting domestic consumption,

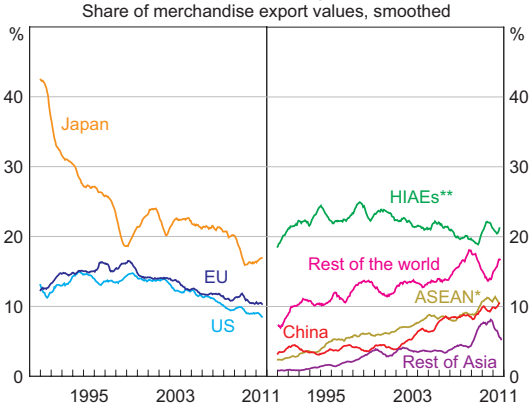
5 Australia and Indonesia's coal production differs in composition; partly reflecting this, Indonesia predominately exports thermal coal, whereas thermal coal makes up only around half of Australia's coal exports (by volume).

Graph 10
Indonesia – Exports of Goods and Services
Share of total*



* Merchandise exports only prior to 1981
Source: World Bank

Graph 11
Indonesia – Exports by Destination
Share of merchandise export values, smoothed



* ASEAN includes Malaysia, Philippines and Thailand
** Higher-income Asian economies include Hong Kong, South Korea, Singapore and Taiwan
Sources: CEIC; RBA

exports of coal and gas have been rising strongly. After growing at a firm pace through the 1990s, exports of travel services (which comprised more than 90 per cent of service exports until the early 2000s) have been subdued whereas exports of 'computer, communications & other services' began to rise rapidly, to account for nearly 40 per cent of all services exports in 2009.

Shifts in the composition of Indonesia's trade have been accompanied by changes in trade destinations. As is the case in other east Asian countries, growth in Indonesia's exports to economies within the region and to developing economies outside of the region has outpaced the rise in exports to major advanced economies (Craig, Elias and Noone 2011; Graph 11). Still, over a third of exports are sent directly to major advanced economies, and a significant proportion of goods exported to economies within the region are intermediate goods that are processed further and, ultimately, used to meet final demand in major advanced economies.[6]

As a near neighbour, Indonesia has longstanding trade ties with Australia and is now Australia's 12th largest trading partner; in 2010, 2 per cent of Australia's exports were sent to Indonesia (by value) and 2.7 per cent of imports came from Indonesia.

Over the years ahead, these trade ties are likely to strengthen further as policies negotiated under the ASEAN-Australia-New Zealand Free Trade Agreement come into force. In 2012 Australia will be exempt from 78 per cent of Indonesian tariffs, with this rising to 92 per cent in 2015 (from 11 per cent currently; DFAT (2011)).

Petroleum accounts for almost half of all Australian imports from Indonesia; other major imports include gold, telecommunications equipment and rural goods (Table 3). Cereals are Australia's largest export to Indonesia by value, after having surged by almost 100 per cent per year over the past four years (consistent with the large expansion in Indonesian livestock production). Non-ferrous metals and petroleum are other significant Australian exports to Indonesia.

Australia and Indonesia also have close links through travel and tourism. More than one in ten tourists to Indonesia in 2010 were of Australian nationality, the third largest share after those of Malaysian and Singaporean nationality. Per person, Australians spent 40 per cent more per visit than the average of all visitors to Indonesia. In the other direction, Indonesians accounted for around 2½ per cent of all short-term visitors to Australia in mid 2011.

6 Component trade is a significant portion of Indonesia's exports to east Asian economies even though Indonesia is not as heavily integrated into regional supply chains as most other economies in the region.

Table 3: Australia – Trade with Indonesia
2010/11, A$ million

Exports to Indonesia		Imports from Indonesia	
Cereals	1 158	Petroleum	3 117
Travel services	899	Travel services	1 774
Non-ferrous metals	560	Gold	433
Petroleum	299	Telecommunications equipment	229
Live animals	291	Transport services	188
Textile fibres	247	Wood	150
Meat	217	Metal manufactures	133
Dairy	161	Electrical machinery	118
Total	**6 007**	**Total**	**7 383**

Source: ABS

In 2010 Indonesia had a modest trade surplus with Australia (of 0.3 per cent of Indonesian GDP or around 10 per cent of total trade between the two countries) and a large aggregate trade surplus (of 3 per cent of Indonesian GDP). Indonesia has had an aggregate trade surplus since 1988 and, with the sharp widening of its surplus on goods trade during the Asian crisis, has recorded current account surpluses in almost every year since 1998.

Domestic Demand

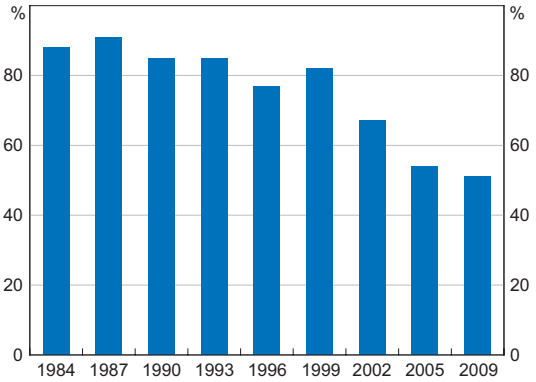
In recent years, Indonesia has seen consistently strong domestic demand growth despite the large shocks to external demand associated with the global economic downturn. As global output contracted by more than 3½ per cent over the three quarters to the March quarter 2009, Indonesian export volumes fell by 20 per cent but domestic final demand rose by 5 per cent with the pace of growth only slowing moderately. This resilience of domestic demand to external influences sets Indonesia apart from its ASEAN peers; over the past 10 years the correlation between domestic final demand and exports was considerably lower in Indonesia than in Malaysia, Thailand and the Philippines. Domestic demand is likely to continue to expand strongly over coming years, supported by an expanding middle class and ambitious government plans to improve infrastructure.

Private consumption expenditure

Household consumption expanded at a strong and stable pace over the past decade, averaging growth of around 5 per cent per year over the 2000s. This was faster than the 4½ per cent average growth reported in the rest of east Asia (excluding the economies of China, Japan and Taiwan), partly reflecting Indonesia's strong population growth. Per capita consumption grew at around 3 per cent per year since 2000, a touch lower than Indonesia's pre-crisis rate of 4 per cent.

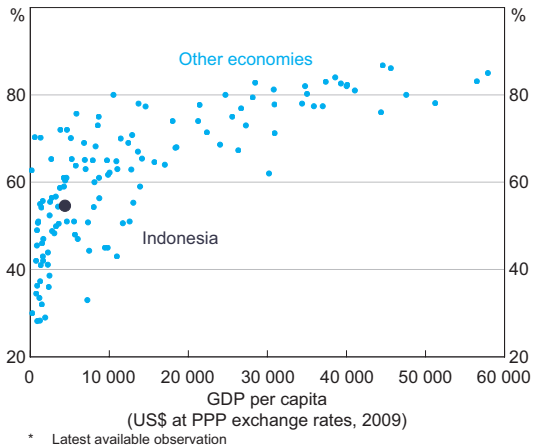
Strong consumption growth also reflects rising incomes, with Indonesians moving out of poverty and into the middle class. The share of the population living on less than US$2 per day fell from 91 per cent in 1987 to 51 per cent in 2009 (Graph 12). As this process occurred, consumption of non-food items expanded at a relatively fast pace, growing on average by around 6 per cent in the 2000s, more than double the average growth in food consumption. This resulted in household spending on non-food items rising to be half of total private consumption expenditure by 2009. Based on the experience of other countries, further increases in non-food consumption (relative to total consumption) are likely to occur in Indonesia as incomes rise (Graph 13).

Graph 12
Indonesia – Poverty Headcount Ratio
Proportion of population on less than US$2 a day*



* At 2005 prices; converted using PPP exchange rates
Source: World Bank

Graph 13
Non-food Consumption
Share of total private consumption*



* Latest available observation
Sources: Food and Agriculture Organization of the United Nations; Penn World Table Version 7.0

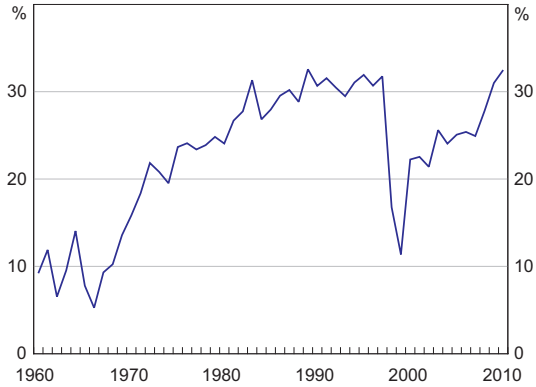
Investment

Strong investment growth is also expected to underpin domestic demand over the next decade, just as it did from the 1960s through to the Asian crisis. Infrastructure investment is expected to be particularly robust, with government plans already in place to substantially improve the current poor state of infrastructure in the country through traditional public works, investment by state-owned enterprises and the encouragement of private investment and public-private partnerships.

The industrialisation of the Indonesian economy saw investment expand at a rapid pace in the late 1960s and the 1970s, averaging around 12 per cent growth per year in real terms. Investment continued to grow at a firm pace over the following decades, increasing to one-third of nominal GDP in the late 1980s (Graph 14 and Table 4). In the wake of the Asian crisis, investment fell to 11 per cent of nominal GDP and Indonesia experienced annual net outflows of foreign direct investment until 2001. Since 2001, investment has expanded by around 7 per cent per annum and its share of nominal GDP has moved back up to 32 per cent.[7]

A rapid outflow of foreign capital contributed to the sharp contraction in investment during the Asian crisis. Between 1997 and 1999, net foreign direct investment in Indonesia shifted from an inflow of 2.2 per cent of GDP to an outflow of 1.3 per cent, while the volume of investment fell by 45 per cent. A number of years of weak investment followed; indeed, only recently has foreign investment recorded strong growth. In 2010, net foreign direct investment inflows increased fourfold to 1.9 per cent of GDP, with the increase broadly based across industries. In addition, the upgrade of Indonesia's sovereign credit rating in 2011 by

Graph 14
Indonesia – Investment
Share of nominal GDP



Source: World Bank

7 As a share of real GDP, investment is only moderately above its post-Asian crisis lows.

Table 4: Indonesia – GDP by Expenditure Component
Share of total, per cent

	1967	1983	1996	1999	2010
Final consumption expenditure	97	70	70	81	66
Gross capital formation	9	31	31	11	32
Exports	9	26	26	36	25
Imports	16	28	26	27	23

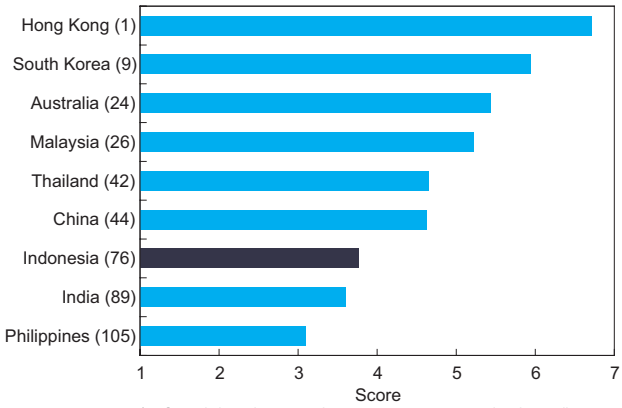
Source: World Bank

major credit rating agencies (to be one notch below investment grade) has boosted the attractiveness of Indonesia as an investment destination.

Nevertheless, the poor quality of physical infrastructure in Indonesia continues to be a major impediment to foreign investment. Indonesia is often ranked well below Malaysia and Thailand in global measures of infrastructure quality (Graph 15). Transport infrastructure, in particular, is considered to be a critical problem, with poor quality roads, rail networks, seaports and airports. In addition, a low proportion of the Indonesian population has access to electricity (just 61 per cent in 2007, compared with 97 per cent in Malaysia), and transmission and distribution losses are among the highest in Asia. Moreover, one-third of Indonesia's 44.5 gigawatts of installed generation capacity comprises small-scale units owned by individual firms to ensure adequate electricity supply (ADB *et al* 2010). The effect that Indonesia's poor infrastructure has on private investment notwithstanding, the quality of infrastructure in Indonesia is broadly in line with what would be expected for its stage of development (Graph 16).

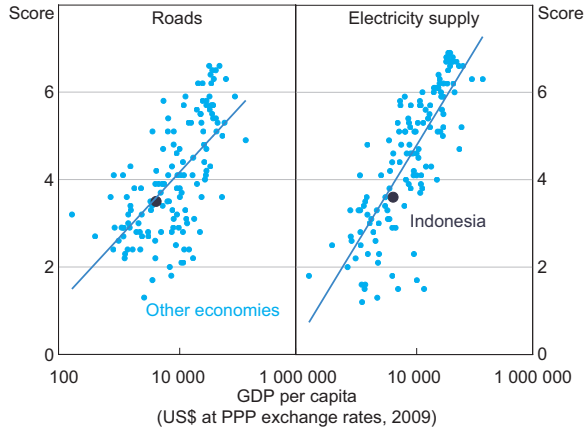
In an effort to improve the quality of infrastructure, in 2010 the Indonesian Government announced a range of infrastructure development targets to be reached by 2014. These included laying 20 000 kilometres of roads, constructing an integrated transport infrastructure network and increasing annual electricity generation capacity by 3 000 megawatts (almost 7 per cent of current capacity; National Development Planning Agency

Graph 15
Quality of Infrastructure
2011, score* (rank)



* Score is based on executive survey responses covering the quality and/or availability of roads, railroads, ports, air transport, electricity supply and telecommunications; 1 = extremely underdeveloped to 7 = well developed and efficient by international standards
Source: World Economic Forum

Graph 16
Quality of Infrastructure*

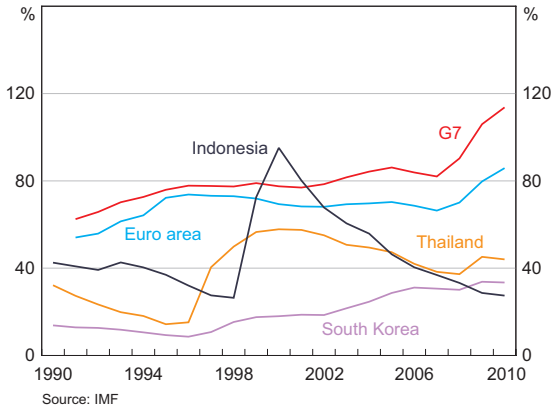


* Data are cross-sectional; logarithmic trend line shown; score is based on executive survey responses in 2011; 1 = extremely underdeveloped to 7 = well developed and efficient by international standards
Sources: Penn World Table Version 7.0; RBA; World Economic Forum

2010). Consistent with these plans, the government's budget allocation for capital expenditure increased by around 40 per cent in 2011, though the government is expected to face challenges in disbursing these funds (World Bank 2011). Further plans to improve Indonesia's infrastructure and boost potential growth were announced in 2011; this latest plan envisages infrastructure investment worth IDR 1 786 trillion (around US$250 billion) over 2011–2025 to be completed by the government, state-owned enterprises, the private sector and public-private partnerships (Coordinating Ministry for Economic Affairs 2011).

The Indonesian Government has a relatively low debt burden. At 27 per cent of GDP in 2010, the government's gross debt position is well below levels in both the major advanced economies and other east Asian economies (Graph 17). This is a significant turnaround from the late 1990s, when a sharp rise in government debt following the Asian crisis boosted general government gross debt to a peak of almost 100 per cent of GDP, partly reflecting the cost of recapitalising the banking system (de Mello 2008). Despite small budget deficits since then, the debt burden has fallen, reflecting firm economic growth and the sale of assets acquired in the late 1990s.

Graph 17
General Government Gross Debt
Per cent of GDP



Source: IMF

Conclusion

The Indonesian economy has recorded relatively strong average growth over a number of decades. Considerable structural change has taken place over this time, with Indonesia becoming increasingly industrialised and integrated into the global economy. With plans for substantial infrastructure spending over the next several years and favourable demographics, the Indonesian economy is widely expected to continue to grow at a strong pace over the next decade. Nevertheless, as elsewhere in the emerging world, policy implementation will be a key challenge in realising the country's growth plans.

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Depositor Protection in Australia

Grant Turner*

Depositors in authorised deposit-taking institutions (ADIs) in Australia benefit from a number of layers of protection designed to ensure that their funds are safe. At the broadest level, Australia has a strong system of prudential regulation and supervision which, together with sound management at individual institutions, has meant that problems in ADIs have been rare. In addition, depositors benefit from strong protections in the unlikely event that an ADI fails. They have a priority claim on the assets of a failed ADI ahead of other unsecured creditors, known as 'depositor preference'. Depositor protection arrangements were further strengthened in 2008 with the introduction of the Financial Claims Scheme (FCS), under which the Australian Government guarantees the timely repayment of deposits up to a predefined cap. This cap was temporarily set at $1 million per person per ADI when the FCS was introduced and is scheduled to be set on a permanent basis at $250 000 per person per ADI from 1 February 2012.

Introduction

An essential feature of a well-functioning financial system is its ability to channel funds from savers to borrowers. Banks and other deposit-taking institutions provide this function by accepting deposits and issuing debt into capital markets, and then lending these funds on to borrowers, typically at longer maturities. For this process of financial intermediation to work effectively, depositors and other creditors need to have a sufficient degree of confidence that their funds are safe. In the absence of depositor confidence, there is a heightened risk of deposit runs and contagion to other institutions given the limited scope for most depositors to differentiate between safe and unsafe banks. Confidence in the banking system is therefore important for financial system stability and, to this end, governments and regulatory authorities put in place various legal and regulatory arrangements to support confidence among bank creditors that their funds are secure.

* The author is from Financial Stability Department.

There are a number of reasons why authorities may seek to provide greater protection to depositors than to other creditors of banks. First, deposits are a critical part of the financial system because they facilitate economic transactions in a way that wholesale debt does not. Second, they are a primary form of saving for many individuals, losses on which may result in significant adversity for depositors who are unable to protect against this risk. These two characteristics also mean that deposits are typically the main source of funding for banks, especially for smaller institutions with limited access to wholesale funding markets. Third, non-deposit creditors are generally better placed than most depositors to assess and manage risk. Providing equivalent protection arrangements for non-deposit creditors would weaken market discipline and increase moral hazard.

This article describes the various layers of protection for depositors of Australian ADIs: the governance and risk management arrangements within ADIs themselves; prudential regulation and supervision of ADIs by the Australian Prudential Regulation Authority (APRA); the FCS, under which the Australian Government guarantees the timely repayment of

deposits in Australian ADIs up to a predefined cap; and depositor preference.[1]

Governance and Risk Management at ADIs

Boards and senior management are ultimately responsible for the financial safety and soundness of the financial institutions that they manage. Central to this responsibility is the need to ensure the institution is able to meet its financial commitments to its depositors, non-deposit creditors and other stakeholders on an ongoing basis. To maintain the soundness of their institution, stakeholders expect boards and senior management of ADIs to put in place structures and policies for risk management, internal controls and incentives that are commensurate with the institutions' complexity and risk profile.

Risk management involves identifying, measuring, monitoring and managing the key risks facing the ADI. ADIs are exposed to a number of different types of risks, including credit risk, liquidity risk, market risk and operational risk. A critical aspect of an ADI's risk management is its assessment of its capital needs based on its risk profile. An ADI's capital, broadly defined as its assets minus liabilities, acts as a buffer against unexpected losses and thereby helps protect depositors and other creditors. An appropriate internal capital buffer should, at a minimum, allow an ADI to withstand severe adverse shocks to its operations without imposing losses on its creditors, and thereby enable it to continue operating as its problems are addressed. Risk management also encompasses a self-assessment of liquidity needs given an ADI's own liability profile. ADIs need to manage their liquidity risk carefully because their intermediation activities normally expose them to maturity mismatches. An ADI should have enough liquidity to be able to meet its obligations (including deposit liabilities) as they fall due in a range of circumstances, including under stressed conditions.

Poor governance and deficient risk management practices prior to the 2008–2009 financial crisis were central to many recent cases of bank distress in the major advanced economies. Boards and senior management of some banks did not effectively establish or adhere to an acceptable level of risk, or have in place structures that adequately monitored and managed risk (Senior Supervisors Group 2009). Moreover, executive compensation practices in many of those banks encouraged excessive risk-taking that may have been in the short-term interests of some executives and shareholders, but was not in the broader interests of depositors, other creditors or stakeholders.

Australian banks did not have such governance problems or risk management deficiencies in the period leading up to the financial crisis; this was one of the factors that contributed to the resilience of the Australian banking sector during this period. Nonetheless, Australian banks and other local ADIs have been strengthening their governance and risk management arrangements in light of the crisis, including in the areas of board oversight of risk policies, funding risk management and stress testing practices.

Regulation and Supervision of ADIs

Although boards and senior managements have primary responsibility for maintaining the soundness of ADIs, the capital buffers and risk management practices that they might choose in the absence of regulation may not fully account for the risks that they pose to depositors, the financial system and the economy. As with any firm that is leveraged and where shareholders have limited liability, ADI shareholders and executives receive asymmetric returns, involving substantial upside and limited downside. Furthermore, their risk management

1 Authorised deposit-taking institutions (ADIs) include domestically owned banks, foreign-owned bank subsidiaries, foreign-owned bank branches, credit unions and building societies licensed by APRA to operate in Australia. The term 'Australian ADI' used in this article includes all ADIs except foreign-owned bank branches. Foreign-owned bank branches are not incorporated and capitalised in Australia, and are referred to as 'foreign ADIs'.

decisions will have effects beyond their own institutions. It is for this reason that authorities have widely established systems of prudential regulation and supervision that aim to ensure that deposit-taking institutions are able to honour their financial promises, including to depositors.

APRA is charged with the prudential regulation and supervision of ADIs in Australia.[2] Its mandate in relation to ADIs is to ensure that, under all reasonable circumstances, they meet their financial promises to depositors, within a stable, efficient and competitive financial system. This clearly defined mission helps ensure that APRA is not distracted, or conflicted, by other objectives, such as consumer protection or anti-money laundering work (Laker 2010).

APRA is responsible for the authorisation of institutions to carry out banking business in Australia, including the business of taking deposits and making loans. Authorised institutions that are locally incorporated and capitalised (that is, Australian ADIs) are able to accept deposits without restriction. However, foreign-owned banks operating in Australia via a branch (that is, foreign ADIs), which are not locally incorporated and capitalised, are prohibited from accepting initial deposits of less than $250 000 from individuals and non-corporate institutions in Australia. This restriction provides additional protection to smaller retail depositors by ensuring that their funds are backed by capital in Australia.

ADIs must comply with various prudential standards set by APRA, which include standards in relation to acceptable governance, risk management and internal control arrangements. Locally incorporated ADIs are also subject to prudential standards that specify a minimum capital requirement depending on their risk profile. APRA's current risk-based capital requirements are based on the internationally agreed Basel II capital standard, although with a more conservative approach in several areas than is required under the Basel II framework. APRA will be adopting the more rigorous Basel III international bank capital standard from 2013.[3]

In addition to setting prudential standards, APRA is also tasked with supervising ADIs. Supervision involves continuous monitoring and oversight of ADIs' behaviour to ensure that they comply with prudential standards, are in a sound financial condition and maintain effective governance and risk management systems. APRA follows a proactive and risk-based approach under which institutions that pose greater risks receive more intensive supervision. Although APRA has developed a constructive relationship with the ADI industry that helps it achieve its supervisory objectives through regular dialogue and consultation, it is able to respond to risks through direct intervention if necessary. For example, reflecting risks within individual institutions, APRA often imposes minimum prudential capital requirements for individual ADIs beyond the minimum requirements of the Basel II framework.[4]

APRA also has a wide range of legislated powers that enable it to take direct action if it identifies behaviour or financial distress that may threaten an ADI's ability to meet its financial obligations to depositors, or otherwise threaten financial system stability. These include powers to: obtain information from an ADI; investigate an ADI; give binding directions to an ADI (such as to recapitalise); and, in more extreme circumstances, appoint a statutory manager to assume control of a distressed ADI. It also has the power to prevent an Australian branch of a distressed foreign-owned ADI from moving assets

2 APRA is also responsible for regulating and supervising insurance companies, friendly societies and most superannuation funds.

3 The new Basel III capital standard sets out internationally agreed minimum requirements for higher and better-quality capital for banks and other deposit-taking institutions, better risk coverage and a new (non-risk-based) leverage ratio. It also includes measures to promote the build-up of capital that can be drawn down in times of stress. APRA (2011) has recently issued a consultation paper on the implementation of Basel III capital reforms in Australia.

4 For a more detailed discussion of APRA's approach to supervision, see Byres (2011).

out of, or liabilities into, Australia.[5] The existence of these powers and APRA's willingness to use them (though it has rarely had to do so) means that they can be effective in controlling behaviour without needing to be regularly deployed.

APRA's depositor protection mandate is also supported by the activities of the other main financial regulatory bodies in Australia. The Australian Securities and Investments Commission (ASIC) plays an indirect role in protecting depositors by setting standards around the sale and distribution of deposits and other financial products and services provided by ADIs under Financial Services Licences, and by enforcing standards set by the *Corporations Act 2001* for the behaviour of boards and senior executives of financial institutions. The Reserve Bank of Australia (RBA) has an overarching mandate to promote financial stability, including through its role in providing liquidity support to ADIs as part of its market operations, and as regulator of the payments system. More generally, the Council of Financial Regulators (the Council) – a non-statutory body comprising APRA, ASIC, the RBA and the Australian Treasury – is a forum for these agencies to share views and coordinate policy actions aimed at ensuring the safety and efficiency of the financial system.

Depositor Protection and Failure Resolution

Strong prudential regulation and supervision, and sound management at individual institutions, have meant that ADI failures in Australia have been very rare. A few smaller institutions failed in the late 1980s and early 1990s during a period of stress in the banking system that followed financial deregulation in the mid 1980s, but these failures were resolved without loss to depositors.[6]

In addition to this low failure rate, Australian depositors benefit from strong protections in the unlikely event that an ADI does fail. The principal mechanism for depositor protection has historically been the preferred status granted to Australian depositors over other unsecured creditors in the event of the insolvency of an Australian ADI. This legislative provision is referred to as 'depositor preference'. Depositor protection arrangements were considerably strengthened with the introduction of the FCS in 2008, under which the Australian Government guarantees the prompt repayment of deposits at a failed Australian ADI up to a specified cap (see below). Further details of the development of these depositor protection arrangements are provided in Box A.

5 These powers were all in place prior to the 2008–2009 financial crisis, although some have been strengthened over the past few years. In 2008, APRA's statutory management powers were widened to enable it to appoint a manager to an ADI prior to it becoming insolvent, and in 2010 APRA was explicitly provided with the power to direct an ADI to recapitalise.

6 These failures included the State Banks of Victoria and South Australia, and Pyramid Building Society, which at the time was the second largest building society in Australia. The most recent failure in which Australian depositors lost some portion of their deposit balances (and then only a minimal amount) was in 1931, the Primary Producers Bank of Australia (Davis 2004 and Fitz-Gibbon and Gizycki 2001). For a history of ADI failures prior to the introduction of prudential regulation and supervision in 1945, see Fitz-Gibbon and Gizycki (2001).

Box A
A History of Depositor Protection Arrangements in Australia

The principle of depositor protection in Australia was first enshrined in the *Banking Act 1945*. The legislation specified depositor protection as a function of the central bank (then the Commonwealth Bank of Australia) in accordance with its responsibility for prudential regulation of banks and the resolution of distressed banks (Cornish 2010). The *Banking Act 1959* transferred these responsibilities to the RBA upon its establishment as Australia's dedicated central bank. The RBA interpreted its depositor protection responsibility broadly to mean using its available powers in the interests of protecting depositors' funds, rather than implying that it should provide a blanket guarantee or protection against all failures (RBA 1997).

Depositor preference was also introduced in the *Banking Act 1945* but initially applied only to depositors in banks. The provision was extended to depositors in all Australian ADIs in 1998 following a recommendation from the Financial System Inquiry (1997). In addition, the responsibilities for prudential regulation and depositor protection were transferred from the RBA to APRA and broadened to encompass all ADIs, in accordance with the Inquiry's recommendations. Depositor preference arrangements were subsequently altered in 2008 upon the introduction of the FCS.

The number of countries providing explicit financial protection for depositors expanded noticeably in the 1980s and 1990s, partly in response to numerous banking crises internationally (Garcia 1999). There was little impetus to follow other countries in this regard given Australia's low rate of banking failure. As a result, apart from New Zealand, Australia was the only industrialised country not to have introduced a deposit insurance scheme by the mid 1990s (Kyei 1995).

In considering the case for introducing deposit insurance in Australia, the Financial System Inquiry (1997) came to the view that, on balance, the existing regime of depositor preference on liquidation provided greater protection for depositors. This reflected concerns that introducing deposit insurance could weaken incentives to monitor and manage risk. However, in 2005, following a comprehensive review of Australia's failure and crisis management arrangements which drew on *Study of Financial System Guarantees* (Davis 2004), the Council of Financial Regulators recommended that the Government introduce a limited mechanism to provide depositors and general insurance policyholders with access to their funds on a timely basis. The Council's rationale was that the lengthy nature of the wind-up process for a failed institution could create financial hardship for households and businesses if they could not access their funds in the meantime (Australian Treasury 2005). If that occurred, the Government would be under pressure to make an ad hoc response, as was demonstrated by the failure of the general insurer HIH in 2001.

The international financial stress that began to emerge in 2007 gave added impetus to the Council's previous analysis that Australia's crisis management arrangements for depositors should be enhanced. In late 2007 the Council recommended that the Government establish a facility to provide prompt repayment of up to $20 000 per depositor per institution; such a facility was also recommended

to the previous Government (RBA 2008). In June 2008, the Government announced that it would introduce legislation to establish a 'Financial Claims Scheme' (FCS) along these lines. In the event, the collapse of Lehman Brothers later in 2008 triggered an intensification of the international crisis, which needed to be taken into account in the implementation of the FCS and the temporary wholesale guarantees that were also introduced.

To reassure depositors and investors, and ensure Australian ADIs were not disadvantaged in their access to wholesale funding markets relative to banks in other countries, the Australian Government introduced guarantee arrangements for ADI deposits and wholesale funding in October 2008. The FCS provided a guarantee of deposit balances at Australian ADIs, up to a cap that was initially set at $1 million per depositor per institution, based on the aggregated deposits held in the name of each account-holder.[1] No fee was charged for this guarantee. Deposit balances greater than $1 million and wholesale funding instruments with a maturity of 5 years or less were eligible for a temporary government guarantee, for a fee, under a separate Guarantee Scheme (GS) for Large Deposits and Wholesale Funding. Unlike the FCS, the GS was available, with some restrictions, to branches of foreign-owned banks. These two schemes were successful in supporting confidence in ADIs and ensuring they had continued access to funding during the global financial crisis, and therefore supported financial system stability and the flow of credit to the economy (RBA and APRA 2009).

The GS was closed to new funding liabilities in March 2010, by which time funding conditions had substantially recovered. The value of outstanding large deposits and wholesale funding covered by the GS has since been declining. In October 2011 there were $118 billion of guaranteed large deposit and wholesale funding liabilities that were due to run off over the next four years.[2]

When the FCS was introduced, the Government committed to reviewing the Scheme's settings by October 2011. In December 2010, the Government confirmed the FCS as a permanent feature of the Australian financial system and changes to aspects of the Scheme's settings were announced in September 2011 (discussed below).

1 At the same time the Government also established a separate scheme for general insurers, the FCS Policyholder Compensation Facility. Further details on this scheme are available on APRA's website.

2 In regard to large deposits, $3.4 billion was guaranteed under this scheme in October 2011, representing only 0.2 per cent of ADIs' total deposit liabilities. More details on the GS, including a discussion of its closure, are available in Schwartz (2010).

The Financial Claims Scheme

The FCS is a form of deposit insurance that provides depositors with certainty that they will quickly recover their deposits (up to the predefined cap) in the event that an Australian ADI fails.[7]

The FCS is administered by APRA and operates as follows.

- The Scheme is activated at the discretion of the Australian Treasurer where APRA has applied to the Federal Court for an ADI to be wound up. This can only be done when APRA has appointed a statutory manager to assume control of an ADI and APRA considers that the ADI is insolvent and could not be restored to solvency within a reasonable period.
- Upon its activation, APRA aims to make payments to account-holders up to the level of the cap as quickly as possible – generally within seven days of the date on which the FCS is activated.
- The method of payout to depositors will depend on the circumstances of the failed ADI and APRA's assessment of the cost-effectiveness of each option. Payment options include cheques drawn on the RBA, electronic transfer to a nominated account at another ADI, transfer of funds into a new account created by APRA at another ADI, and various modes of cash payments.

When the FCS was introduced at the height of the global financial crisis, the Government committed to reviewing a number of aspects of the Scheme's initial settings by October 2011. To support this review, the Council undertook an assessment of whether the initial structure of the FCS was suitable for the post-crisis environment. Its advice informed the Government's revised arrangements, which were subject to a public consultation process prior to being announced in September 2011. The main feature of the revised arrangements for the FCS is the reduction in the level of the cap from $1 million to $250 000 per person per ADI from 1 February 2012. Term deposits that existed on 10 September 2011 (the day before the revised arrangements were announced) will continue to be covered by the old cap until 31 December 2012 or until the maturity of the term deposit – whichever occurs sooner. Despite the reduction in the cap, it is estimated that the FCS will still cover around 99 per cent of deposit accounts in full, and about 50 per cent of eligible deposits by value. For household deposits, the estimated proportion of the value of balances covered is higher, at about 80 per cent. The revision to the FCS cap in Australia is consistent with developments internationally, with a number of other governments having taken the decision to change their deposit insurance limits to more appropriate post-crisis levels. At $250 000 per person per ADI, the revised FCS cap is still at the higher end of the range of post-crisis deposit insurance caps relative to per capita GDP (Table 1).[8]

The Government also announced that it intends to make a number of legislative changes to the existing FCS framework to improve its effectiveness. These include: the removal of coverage of deposits in foreign branches of Australian-owned ADIs; enabling an additional payment option which would allow APRA to transfer deposits of a failed ADI to another institution; establishing a 'look-through' mechanism for deposits in pooled trust accounts; and enabling

7 Deposit accounts that are eligible for coverage under the FCS, and are also protected by depositor preference, are those which meet the definition of 'protected accounts' in the *Banking Act 1959*. They include a wide range of deposit products offered by ADIs, such as transaction accounts, cheque accounts, savings accounts, term deposits, debit card accounts, cash management accounts and farm management accounts.

8 However, at least two countries – Canada and the United States – allow depositors with funds in certain different deposit products to be eligible for more than one payment up to the cap per institution, which alters the comparison in these cases. Moreover, the United States has granted temporary unlimited insurance on non-interest bearing transaction accounts at Federal Deposit Insurance Corporation (FDIC) insured institutions until the end of 2012. Comparisons of coverage between the FCS and equivalent schemes elsewhere are also affected by differences in the eligibility of certain types of deposits. For example, a number of countries provide coverage of foreign currency deposits. In contrast, in Australia, one of the changes made in the revised FCS arrangements is that deposits denominated in foreign currency are no longer covered.

Table 1: Deposit Guarantee Arrangements – Selected Jurisdictions

	Deposit cap		Coverage		Funding[f]	Scheme functions[g]
	In local currency	Ratio to per capita GDP[c]	Foreign bank deposits[d]	Foreign currency deposits		
Australia	A$250 000[a]	4.1	No	No	*Ex post*	Reimbursement
Brazil	R$70 000	3.1	No	No	*Ex ante*	Reimbursement, resolution
Canada	C$100 000[b]	2.1	No	No	*Ex ante* (risk-based)	Reimbursement, resolution
France	€100 000	3.3	Yes	Yes[e]	*Ex ante* (risk-based)	Reimbursement, resolution
Germany	€100 000	3.3	Yes	Yes[e]	*Ex ante* (risk-based)	Reimbursement
Hong Kong SAR	HK$500 000	2.0	Yes	Yes	*Ex ante* (risk-based)	Reimbursement
India	Rs.100 000	1.6	Yes	Yes	*Ex ante*	Reimbursement
Italy	€100 000	3.9	Yes	Yes	*Ex post*	Reimbursement
Japan	¥10 million	2.7	No	No	*Ex ante*	Reimbursement, resolution
Malaysia	RM250 000	9.2	No	Yes	*Ex ante* (risk-based)	Reimbursement, resolution
Netherlands	€100 000	2.8	Yes	Yes	*Ex post*	Reimbursement
Singapore	SG$50 000	0.9	Yes	No	*Ex ante* (risk-based)	Reimbursement
South Korea	KRW 50 million	2.1	Yes	Yes	*Ex ante*	Reimbursement, resolution, supervision
Spain	€100 000	4.3	Yes	Yes	*Ex ante* (risk-based)	Reimbursement, resolution
Switzerland	CHF100 000	1.4	Yes	Yes	*Ex post*	Reimbursement
United Kingdom	£85 000	3.6	Yes	Yes	*Ex post*	Reimbursement, resolution
United States	US$250 000[b]	5.3	No	Yes	*Ex ante* (risk-based)	Reimbursement, resolution, supervision

(a) Applies from 1 February 2012, subject to a transition period for term deposits in place as at 10 September 2011
(b) Depositors with funds in different deposit products may be eligible for more than one payment up to the cap per institution; in the United States, non-interest bearing transaction accounts at FDIC-insured institutions have been granted temporary unlimited insurance until the end of 2012
(c) Based on per capita GDP for 2010
(d) Refers only to deposits in foreign-incorporated deposit-taking institutions
(e) Only foreign currencies of countries in the European Economic Area
(f) 'Risk-based' schemes are those that determine their insurance fees based on an institution's assessed risk of failure
(g) Scheme functions include: reimbursement of depositors; involvement in other resolution options; and supervision of institutions' financial condition
Sources: IADI; IMF; RBA; national sources

the Treasurer to activate the Scheme earlier than the point of winding up.[9]

Payouts of deposits covered under the FCS are initially financed by the Government through a standing appropriation of $20 billion per failed ADI (although it is possible that additional funds could be made available, if needed, subject to parliamentary approval). The amount paid out under the FCS, and expenses incurred by APRA in connection with the FCS, would then be recovered via a priority claim of the Government against the assets of the ADI in the liquidation process. If the amount realised is insufficient, the Government can recover the shortfall through a levy on the ADI industry.

This *ex post* method of funding FCS payouts contrasts with the *ex ante* approach that is more common in other jurisdictions. An *ex ante* approach involves charging deposit-taking institutions fees for the provision of the deposit guarantee, with the size of the fee typically determined either as a fixed proportion of an individual institution's insured deposits or based on an institution's assessed risk of failure. The fees received from insured institutions are usually pooled in a special purpose investment fund from which payouts can be made in the event of a failure.[10] In principle, this approach reduces the possibility that surviving institutions or taxpayers are burdened by a shortfall from the liquidation of a failed institution's assets. However, it may be difficult to accumulate adequate pre-funded resources in practice, as was demonstrated in a number of countries during the 2008–2009 financial crisis. In Australia's case, the adequacy of post-funding arrangements is supported by the historically low incidence of ADI failure and the priority claim the Government has on the failed ADI's assets in respect of amounts paid out under the FCS, which makes it highly unlikely that the Government would be unable to recoup payouts from the liquidation of an ADI's assets. Pre-funding also introduces operational costs and opportunity costs, as compared with a post-funded scheme. A further consideration is the low stock of government debt in Australia, which means that there would be only a limited pool of low-risk investments available to a deposit insurance fund. While pre-funded schemes remain the most common around the world, a number of countries other than Australia have chosen post-funded arrangements, including Austria, Chile, Luxembourg, Italy, the Netherlands, Slovenia and Switzerland.

Another important aspect of the design of the FCS is that it is administered by APRA. APRA's role as prudential supervisor provides it with the information necessary to determine whether or not the FCS needs to be activated. This approach helps to limit the potential for costly additional monitoring of ADIs that may occur in a separately governed scheme and ensures that there are no coordination problems in the event the FCS is activated. In contrast, deposit insurance schemes in many other countries are separately governed corporations, likely reflecting that the scheme administrators are effectively tasked with managing a special purpose fund (although in some cases regulatory authorities have representatives on the scheme's Board).

The Australian FCS operates as a so-called 'paybox' scheme, meaning that its sole purpose is to reimburse depositors in a failed Australian ADI. Some deposit insurance schemes in other jurisdictions have broader mandates which allow them to finance other bank resolution options, including the creation of a bridge bank and recapitalisation (for example, in Japan and Korea). Although APRA has these broader resolution options available to it, these functions are separate from the FCS.

APRA is in the process of developing a new prudential standard that sets out minimum requirements that Australian ADIs must meet to ensure they are adequately prepared to implement the FCS

9 The Council has recommended that the Australian Treasurer be given discretion to activate the FCS as soon as APRA has appointed a statutory manager to an ADI. This would provide depositors with greater certainty over the status of their deposits and the arrangements with respect to accessing their deposits (Australian Treasury 2011).

10 Some deposit insurance funds also have backstop funding arrangements in place, such as the ability to issue debt or borrow from the central bank.

should it be activated. The draft prudential standard was issued in September 2011 after a period of consultation with industry. In order to minimise the risk of payment errors in the event that the FCS is activated, ADIs must be able to identify each unique account-holder in advance, as well as develop and implement an aggregated deposit balance for each account-holder, known as a 'single customer view'. ADIs are also required to be able to generate FCS data within 48 hours of a request being made by APRA (72 hours during the transition period) to ensure prompt payouts can be made to depositors. FCS systems and data will be subject to external audit, as well as sign-off by the ADI's chief executive officer. These requirements are expected to come into effect on 1 January 2012 and ADIs must be in compliance with them after a two-year transition period (unless granted an extension by APRA).

Depositor Preference

While the existence of the FCS means depositors' funds are guaranteed up to the FCS cap, deposits above the cap in Australian ADIs also benefit from depositor preference. This means that Australian depositors have a priority claim on the assets of a failed ADI ahead of other unsecured creditors, after the Government has been reimbursed for any amounts paid under, and expenses incurred in relation to, the FCS. Section 13A of the *Banking Act 1959* states that if an Australian ADI is wound up, all of its assets in Australia are first made available to APRA (on behalf of the Government) to recover amounts paid out to depositors under the FCS, and then any other debts owed to APRA in relation to expenses incurred in operating the FCS. Thereafter, the failed ADI's remaining assets in Australia must be used to repay any deposits in Australia above the FCS cap before they can be used to repay other unsecured creditors. To further support depositors' interests, ADIs are required to hold sufficient assets in Australia at all times to meet their Australian deposit liabilities.

The existence of depositor preference in Australia has meant that Australian ADIs have historically been prevented from issuing covered bonds.[11] The reason was that covered bondholders would have preferential access to a specified pool of assets (the 'cover pool'), thereby subordinating the claims of other unsecured creditors, including depositors, over those assets. However, with the permanent FCS now providing full protection for nearly all depositors, the Australian Government recently passed legislation allowing covered bonds to be issued by ADIs, in order to give them additional flexibility in their mix of funding instruments. This has been accompanied by legislative safeguards to preserve the interests of depositors in addition to the protections provided by the FCS. In particular, to limit the degree of depositor subordination, the legislation provides for issuance of covered bonds by an ADI to be subject to a cap, such that the value of assets in the associated cover pools must not exceed 8 per cent of the value of the ADI's assets in Australia. The cap is designed to ensure that the ADI retains sufficient assets on its balance sheet to meet deposit liabilities in the event of default. The legislation also provides APRA with the power to prevent an ADI from transferring assets to cover pools if the ADI is in, or close to, default, as well as the power to prevent an ADI from issuing covered bonds in certain circumstances.

Australia is one of a minority of countries that have depositor preference, with most countries instead relying solely on deposit insurance. Other countries that have depositor preference include Argentina, China, Malaysia, Russia and the United States. In some other jurisdictions, depositor preference exists but only applies to insured deposits, including Chile, Hong Kong SAR and Switzerland. In addition, the introduction of preference for insured deposits was included in the recent recommendations of the UK Independent Commission on Banking (2011). Providing preference to insured deposits is primarily aimed at improving the recoveries of the deposit insurance scheme rather than protecting

11 For background on covered bonds, see RBA (2011).

depositors beyond the insurance scheme limits. It may still benefit uninsured depositors to the extent that wholesale creditors are provided with incentives to better monitor ADIs, but not to the same extent as generalised depositor preference of the kind prevailing in Australia.

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The Australian Credit Default Swap Market

Daniel Fabbro*

The Australian credit default swap (CDS) market has been increasingly used by financial institutions to trade and manage credit risk. As a result, there has been greater use of the market as a source of credit risk pricing information. Similarities between CDS and bonds allow pricing in the two markets to be compared. However, the CDS market has a greater tendency at times to be affected by poor liquidity, which complicates the interpretation of CDS pricing, particularly when there are large divergences from bond market pricing.

Introduction

A credit default swap or CDS is a derivative contract that provides a means of protection against credit risk. CDS contracts have been increasingly used by banks and other financial institutions in Australia and overseas to manage credit risk, with trading activity growing significantly over the past decade.

CDS contracts act like a form of insurance. The buyer of the CDS contract is compensated by the seller if a 'credit event' occurs to a third party (the reference entity) within a specified period of time. The CDS buyer pays a fee (or premium) in order to receive this credit protection. CDS contracts are predominantly traded over-the-counter (OTC), that is, directly between two parties rather than on an exchange. The reference entities on which CDS contracts can be written include corporations, governments and asset-backed securities. In Australia, CDS reference entities are predominantly corporations. Credit events can include bankruptcy, missing a debt payment, debt restructuring or a credit rating downgrade of the reference entity. The two most common types of CDS are single-name, which have only one reference entity, and index contracts that are tradable baskets of individual CDS contracts.

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The amount of compensation paid following a credit event depends on the change in the price of a debt liability, such as a corporate bond, of the reference entity. It can be paid in two ways. First, the protection buyer can deliver a bond of the reference entity to the protection seller in exchange for payment of the face value of the bond. For example, if the reference entity was to experience a credit event and the market value of its senior debt fell to 60 per cent of the face value, the protection buyer could deliver this debt and receive payment of the full face value. In effect, the protection buyer is compensated for the 40 per cent loss of the face value. Second, rather than delivering a bond, the protection buyer may simply receive a cash payment from the protection seller, the size of which is determined at an auction of the reference entity's bonds.[1] Cash settlement is now the standard means of compensation. This is partly to avoid the difficulties of insufficient stock of physical debt being available, as there are often more CDS contracts outstanding than there is physical debt for reference entities.

1 The International Swaps and Derivatives Association (ISDA) publishes a list of debt obligations that are eligible to be delivered in the auction. For more details on the auction process used to determine the cash payment from protection sellers to protection buyers, see <http://www.creditfixings.com/information/affiliations/fixings/auctions/docs/credit_event_auction_primer.pdf>.

CDS contracts can be used for both hedging and speculative purposes. For example, if a bond investor is seeking to reduce (or hedge) the credit risk in its bond portfolio, it can purchase credit protection via the CDS market on companies whose debt forms part of its portfolio. Likewise, banks use CDS to hedge credit risk in their loan portfolio. However, the ability to buy credit protection in the CDS market is not limited to those market participants that hold the physical debt of reference entities.[2] For instance, a market participant that buys credit protection on a reference entity, but does not actually hold its debt, is speculating that the creditworthiness of the entity will deteriorate or that the entity will experience a credit event. In the case of a deterioration in creditworthiness, the CDS premium for this entity would rise. The speculator could then sell credit protection on the same reference entity and profit from the difference between the current CDS premium and the premium that they are paying on their original CDS contract. Alternatively, a market participant could sell credit protection on a reference entity, in order to speculate on an improvement in its creditworthiness.

Credit Exposure in the CDS Market

Two types of credit exposure arise from CDS trading. First, as discussed above, there is the credit risk associated with the reference entity. Second, there is counterparty credit risk, which is the risk that one of the parties to the CDS contract fails to fulfil its obligations, such as paying the CDS premium or making the required compensation payment following a credit event. Market participants do, however, take measures to mitigate this counterparty credit risk, such as through margining or clearing through central counterparties.[3] Each of these types of credit risk are discussed below.

An aggregate measure of the net credit risk transfer (of reference entities) that is accruing in the CDS market can be calculated by adding up the net value of credit protection bought by individual market participants. An example involving a CDS market with two banks as participants and two reference entities is provided in Table 1.[4] If Bank A has 20 'bought' positions and 5 'sold' positions for reference entity 1, it has a net 'bought' position of 15. In net terms, Bank A has bought protection from Bank B. Net bought CDS positions for all reference entities can then be aggregated for all market participants to obtain the net outstanding face (or notional) value of contracts, or net credit exposure, of market participants. The net outstanding face value is also a measure of the maximum amount that credit protection sellers would need to pay to buyers if all CDS reference entities experienced credit events and the recovery rate on the underlying debt instrument was zero.[5]

A comparison of the value of net outstanding CDS contracts and outstanding bonds for Australian corporates shows that the CDS market is still relatively small. In aggregate, global bonds outstanding of Australian companies are close to US$690 billion, compared with US$31 billion of net outstanding CDS.[6] One reason for this large difference is that the value of outstanding bonds is heavily weighted towards bank debt (around 70 per cent of the total), while there is only a small amount of CDS

2 An interesting development recently is that the European Union has agreed to restrictions on which market participants can trade CDS on member states' sovereign debt. Specifically, credit protection will only be able to be bought by a market participant that owns physical debt of a sovereign.

3 In the global CDS market, ISDA reports that 93 per cent of all credit derivative trades executed in 2010 were subject to margining (collateral) arrangements (ISDA 2011). Also, BIS data as at June 2011 show that 17 per cent of gross outstanding CDS contracts were traded through central counterparties.

4 The aggregate net bought position is equal to the net sold position for each reference entity, as every CDS contract has a buyer and a seller.

5 While recovery rates are normally non-zero, recovery rates from many global CDS auction results in late 2008 and early 2009 were between zero and 20 per cent.

6 Figures are presented in US dollars as this is the most common currency denomination of CDS and bonds.

Table 1: Example of Outstanding Contracts Calculations

	Reference entity 1	Reference entity 2	Total
Bank A			
Bought contracts (+)	20	10	30
Sold contracts (–)	–5	–15	–20
Net bought contracts	15	na	15
Net sold contracts	na	–5	–5
Bank B			
Bought contracts (+)	5	15	20
Sold contracts (–)	–20	–10	–30
Net bought contracts	na	5	5
Net sold contracts	–15	na	–15
Total			
Net outstanding contracts	15	5	20
Gross outstanding contracts	25	25	50

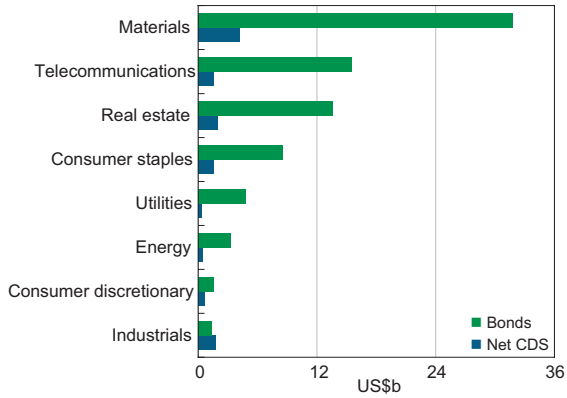
Source: RBA

referenced on Australian banks, which account for only one-third of Australian CDS.

For non-financial companies, the bond market is also larger than net outstanding CDS. Interestingly, the relativities across the different non-financial sectors are similar, partly reflecting that the bond and CDS markets complement each other in pricing credit risk. Most of the exposure to companies is in the materials, telecommunications, real estate and consumer staples sectors (Graph 1). However, there are some differences in relative credit exposures, which could reflect banks using CDS to hedge credit exposures on business loans.

An aggregate measure of counterparty risk, which does not take into account risk-mitigation methods, is the market value of outstanding CDS contracts. The market value of a CDS contract is the cost of replacing the contract at the current premium. If the level of CDS premia has not changed from when the contract was entered into, the market value will be approximately zero. Global data from the Bank for International Settlements (BIS) suggest that there was a significant increase in the market value of outstanding CDS contracts in the years leading up to, and then during, the financial crisis

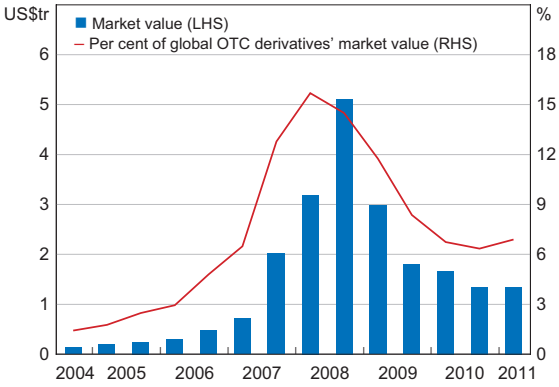
Graph 1
Outstanding Bonds and CDS
Australian companies, as at November 2011



Sources: The Depository Trust & Clearing Corporation; RBA

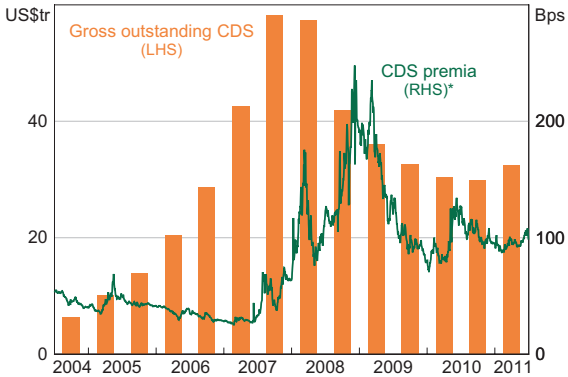
(Graph 2). Expressed as a percentage of the market value of global OTC derivatives, the market value of CDS contracts increased from around 1½ per cent in 2004 to a peak of more than 15 per cent by mid 2008. This reflected the growth in trading activity and the rise in CDS premia. Growth in trading activity from the early 2000s reflected, among other things, increased investor appetite for risk, with investors attempting to enhance returns by selling credit protection (which was associated with a downward trend in CDS premia) (Graph 3). As the financial crisis unfolded, however, investors increasingly sought to buy credit protection, which placed significant upward pressure on CDS premia.

Graph 2
Market Value of Global Outstanding CDS Contracts



Source: BIS

Graph 3
Gross Value of Global Outstanding CDS Contracts and CDS Premia



* Average premia for the major investment grade corporate CDS indices for Europe and the United States

Sources: BIS; Bloomberg

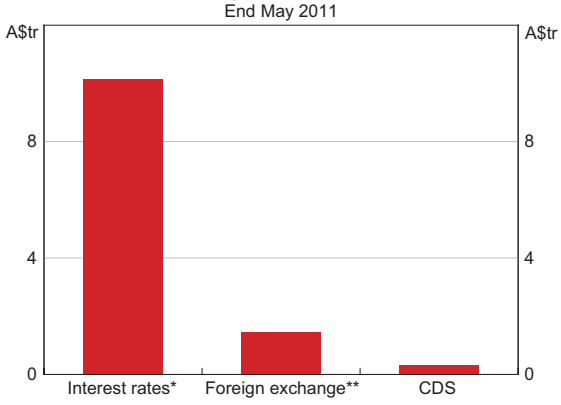
The significant decline in the market value of outstanding CDS contracts since 2008 largely reflects the increased use of trade compression services ('tear-ups') in the CDS market. These services – offered by companies such as TriOptima, Markit and Creditex, and conducted by some central counterparties – cancel out offsetting gross outstanding CDS contracts in order to reduce counterparty risk, while leaving net credit exposures largely unchanged. This is possible because the trading and market-making activities of CDS market participants tend to result in the build-up of a large number of offsetting bought and sold positions. Many market participants also prefer to maintain their trading positions in relatively new, and more liquid, contracts. As such, market participants will often close out old ('stale') CDS trading positions – those entered into six months earlier, for example – by entering into offsetting trades and then re-establishing the desired trading position in a more liquid contract. During the financial crisis, when counterparty risk concerns increased significantly, particularly for a number of large global banks that were major CDS market dealers, there was a dramatic increase in tear-up activity. The increase in tear-up activity was also supported by improved trade processing practices, such as increased use of electronic confirmations.[7] This followed concerns in the mid 2000s regarding counterparty risk stemming from the large backlog of unconfirmed CDS trades in major overseas markets.

Market participants in Australia also regularly engage in rounds of trade compression, which has had a significant effect on the gross value of outstanding contracts. The gross value for outstanding contracts was estimated by the Australian Financial Markets Association (AFMA) to be around A$340 billion in mid 2011 (AFMA 2011). Tear-ups in the Australian market have probably been around A$800 billion since 2006, as nearly A$1.2 trillion in CDS have traded over the period, mainly with a maturity of 5 years.

7 The Depository Trust & Clearing Corporation (DTCC) is the operator of the Trade Information Warehouse that is the main global repository of global CDS transactions, the vast majority of which are now electronically confirmed (matched). This warehouse facilitates the processing required in trade compression rounds.

As at end May 2011, CDS accounted for only around 3½ per cent of outstanding OTC derivatives in the Australian market (Graph 4). This suggests that CDS are not a major source of counterparty risk in Australia and that tear-up activity has made a significant contribution to reducing this risk.

Graph 4
Gross Outstanding Value of OTC Derivatives
End May 2011



* Includes Australian dollar interest rate swaps, overnight index swaps, forward rate agreements and interest rate options
** Includes cross-currency interest rate swaps and foreign exchange options
Source: AFMA

Liquidity in CDS and Bond Markets

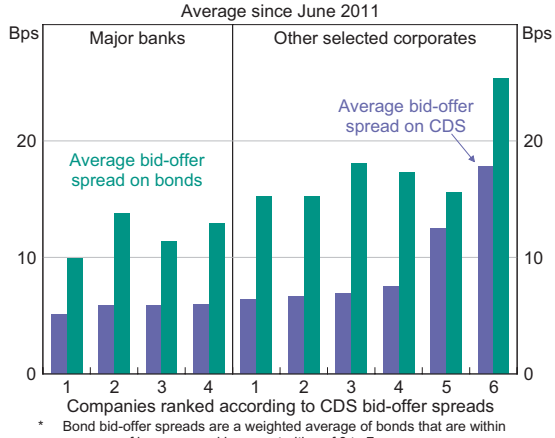
The reliability of information gleaned from CDS prices is very much a function of the market's liquidity. As noted above, CDS contracts expose market participants not only to the credit risk of the reference entity but also to counterparty risk. The presence of this counterparty risk could have a negative effect on liquidity in the CDS market relative to that in the bond market, particularly when this risk is perceived to be high, such as in recent months in global markets.

On the other hand, other factors promote CDS market liquidity relative to the bond market. CDS contracts are more standardised than bonds, with standard coupon rates that are paid at a common set of dates, and trading activity is concentrated in a small number of maturities (most notably 5-year contracts). In contrast, bonds have a wider range of maturities, some are secured and others are not, while some bonds have embedded options.

Another potential advantage for the CDS market is that trading is not restricted to the size of the physical bond market. All that is required to trade a CDS contract is for there to be another market participant that is willing to take the opposite position. In contrast, trading in bonds is limited to those particular bonds that have been issued and many Australian companies are not regular issuers of bonds. Also, bonds that have been issued may not trade very often as some bond investors have a 'buy-and-hold' approach.[8]

A commonly used gauge of market liquidity is the difference between the best bid and best offer prices in the market, known as the bid-offer spread. Indicative bid-offer spreads quoted by dealers in both the CDS and bond markets are shown in Graph 5. These suggest that for a selection of banks and non-financial corporates, the bid-offer spreads in the CDS market have been lower than in the bond market in recent months.

Graph 5
Bid-offer Spreads for CDS and Bonds
Average since June 2011



* Bond bid-offer spreads are a weighted average of bonds that are within one year of issuance and have maturities of 3 to 7 years
Sources: Bloomberg; RBA

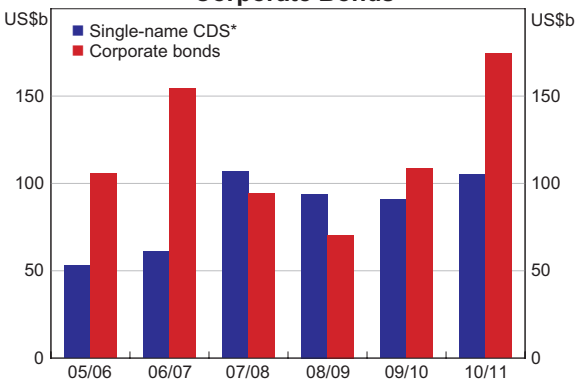
8 Buy-and-hold investors have a less limiting effect on trading activity if they readily lend their stock out to other market participants, who could then trade it. However, there does not appear to be a significant amount of corporate bond lending activity (via repurchase agreements) in Australia.

Another gauge of market liquidity is market depth, which refers to the size of the transaction that can be done without affecting the market price. For instance, it is typical for the larger CDS dealers in the Australian market to quote bid and offer prices for amounts of between US$5 million and US$10 million. While it is difficult to obtain estimates of the typical amounts that are quoted for corporate bonds, for some benchmark bond lines that have a relatively large volume of trading activity, such as those of the major banks, market participants are likely to have the ability to trade larger amounts at a given price than in the CDS market. This reflects the fact that the market for bank bonds is much larger than the market for bank CDS.

A broad indicator of overall market depth is turnover. In the domestic market, turnover is typically larger in aggregate for corporate bonds than single-name CDS, other than in 2007/08 and 2008/09 when corporate bond turnover fell sharply (Graph 6). Turnover in 2010/11 was significantly larger in corporate bonds than single-name CDS.

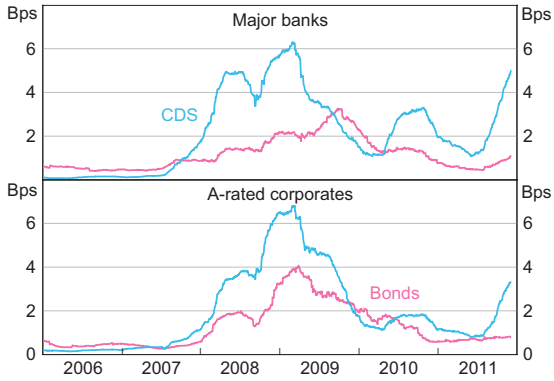
Another indicator of market depth is short-term price volatility. For a given volume of trading activity, a lower level of price volatility is likely to indicate greater market depth. For both the major banks and A-rated corporates, price volatility is consistently higher in the CDS market than in the bond market (Graph 7). Price volatility was also particularly high for CDS relative to bonds during the 2008/09 phase of the crisis and again in recent months. This suggests that during these periods of heightened uncertainty, when perceived counterparty risk also increased, pricing information in the CDS market has tended to be more affected by liquidity issues than the bond market.[9]

Graph 6
Australian Market Turnover of CDS and Corporate Bonds



* Includes single-name turnover of bank CDS
Sources: AFMA; RBA

Graph 7
Volatility in CDS and Bonds



* 6-month rolling average of absolute daily change in CDS premia and bond spreads to swap
Sources: RBA; UBS AG, Australia Branch

In summary, despite the tighter bid-offer spreads in the CDS market relative to the bond market, it appears that there is generally better liquidity in the bond market than in the CDS market, as reflected by the bond market's higher level of turnover and lower level of short-term volatility (notably during periods of market stress). This is particularly the case for the major banks' bonds.

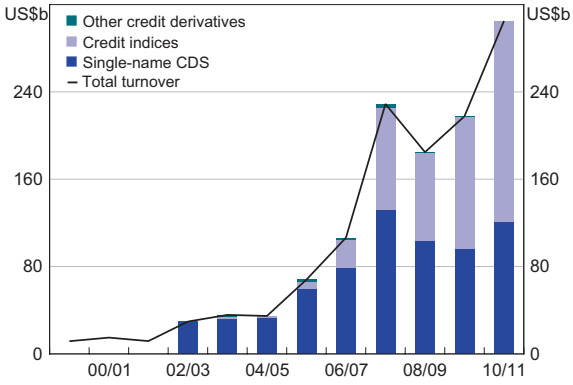
One area of the Australian CDS market where there is greater liquidity is in the CDS indices, with turnover predominantly between banks (including 'internal' trades).[10] While there was negligible trading in indices in 2005, they now account for around 60 per

9 It is difficult to make a comparison of CDS and bond markets for companies with ratings of BBB or lower, as there are fewer companies for which both CDS and bonds of a similar maturity are available.

10 Internal trades are trades that are done within banks. For example, to hedge credit risk, a bond trading desk at a bank may trade with the CDS trading desk within the same bank. The CDS trading desk will then likely hedge its risk on this internal trade by trading with another bank.

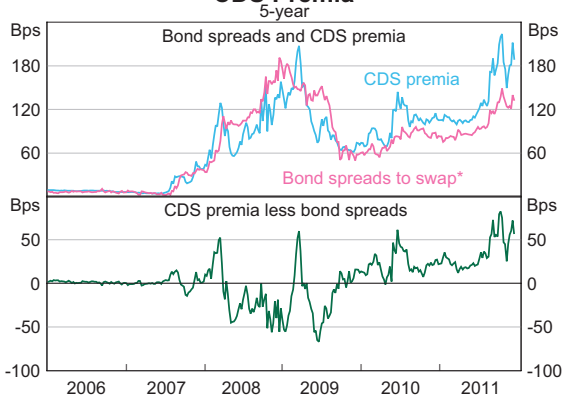
cent of total CDS turnover in Australia, and most of this is in the iTraxx Australia index (Graph 8). There are 25 investment-grade constituents in the iTraxx Australia index that are chosen based on the results of a Markit survey of market-makers' trading volumes in single-name CDS. The constituents receive equal weight in the index and there are no more than five banks included. The bid-offer spread on this contract was typically around 2–3 basis points on average in recent months, compared with around 4–5 basis points for single-name contracts with the lowest bid-offer spreads. The bid-offer spread on the iTraxx Australia contract has recently been comparable to that on the iTraxx Japan, but higher than on indices in Europe and the United States where bid-offer spreads are around 1 basis point.

Graph 8
Australian Market Turnover of CDS



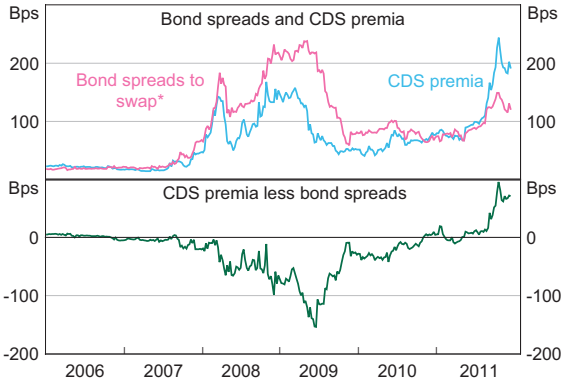
Sources: AFMA; RBA

Graph 9
Major Banks' Bond Spreads and CDS Premia
5-year



* Domestic secondary market spreads converted to US$ spreads
Sources: Bloomberg; RBA

Graph 10
Australian Corporates' Bond Spreads and CDS Premia
Matched sample of A-rated corporates, 5-year



* Domestic secondary market spreads converted to US$ spreads
Sources: Bloomberg; RBA

Pricing in CDS and Bond Markets

For a number of Australian companies, credit risk pricing information is available from both the CDS and bond markets. Where this is the case, in principle the two prices should move closely together. Indeed, for some time prior to the financial crisis, CDS and bond pricing were broadly similar for the major banks and A-rated corporates (Graphs 9 and 10).[11]

Subsequently, however, there have been periods of significant pricing discrepancies, which seem larger than can be reasonably explained by liquidity differences (such as bid-offer spreads).

One factor that might explain these pricing differences is market segmentation. The expectation that CDS premia and bond spreads, for the same maturity, will be relatively close for individual companies relies on the ability to arbitrage across these markets. That is, market participants would need to be able to enter into trading positions in both CDS and bonds that would allow them to profit

11 For corporates and banks, market convention is to compare CDS premia with the spread between bond yields and swap rates referenced to bank bills. This swap rate is used as the benchmark as this is the most appropriate rate to assume would be used in repo transactions required for arbitrage between CDS and bonds on corporates and banks (this arbitrage is explained in more detail below).

from pricing differences, while taking little or no risk. If arbitrage between the two markets is not possible or is very costly, CDS and bond pricing would only be similar if market participants across the two markets had similar views of credit risk, and other factors, such as liquidity risk, were similar across markets.

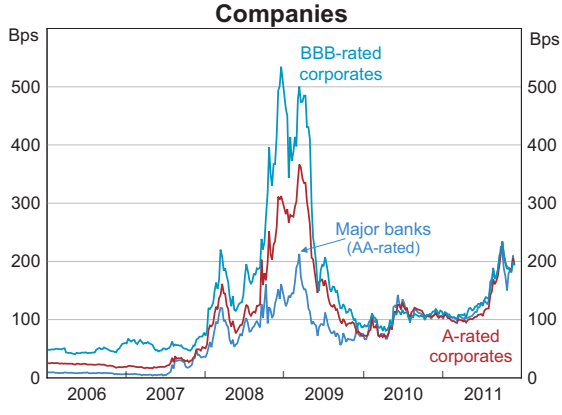
In the Australian market, arbitrage between the CDS and bond markets can be difficult to undertake and involves some costs. Arbitrage can be particularly difficult when there is positive 'basis' (the CDS premium is above the bond spread) for a particular corporate. A notable recent example of this is credit risk pricing for the major banks, with CDS premia widening significantly relative to bond spreads in recent months. In the case of positive basis, the arbitrage involves selling credit protection in the CDS contract (described as being 'long' CDS) and taking a short position in the relevant bond. However, establishing a short position in the bond involves borrowing the bond in the repurchase agreement (repo) market, before selling it. It can be difficult to borrow some corporate bonds, either because investors are not willing to lend them or there is a small stock outstanding. More generally, however, even if the bond can be borrowed, the usual borrowing term is very short, typically between one day and one week. Over this time frame, the arbitrage is not likely to be particularly profitable and maintaining the arbitrage involves rollover risk. If the bond cannot be borrowed continuously, the arbitrage may need to be unwound, potentially resulting in a loss if market prices have moved unfavourably (i.e. the basis has increased further).

When there is negative basis (the bond spread is above the CDS premium) for a particular corporate, arbitrage may be somewhat easier, as it involves buying the corporate bond and buying protection in the CDS market (going 'short' CDS). For market participants that have funding available, such as fund managers, this arbitrage would narrow the basis. However, for market participants that are looking to use the repo market to fund the arbitrage trade – by borrowing cash in a repo transaction in order to fund the bond purchase – it can be more difficult given the limited repo activity in corporate bonds in Australia. Probably the most significant issue with arbitrage of negative basis, which is also equally relevant for arbitrage of positive basis, is the transaction costs involved (notably bid-offer spreads), which can be sizeable for some CDS and bonds. These transaction costs can drive a wedge between pricing in the two markets.

Given these costs and difficulties in arbitraging differences between CDS premia and bond spreads, it should not be surprising to find that differences in pricing do occur. One possible reason for the particularly large price differences during periods of heightened uncertainty in recent years is that repo transactions in corporate bonds became more difficult to arrange, as market participants demanded higher quality collateral such as government and semi-government bonds.

Another factor behind pricing differences between CDS and bonds is how participants in these markets form views on credit risk. One of the notable developments in credit risk pricing in the CDS market over the past two years – using a broader range of companies for which comparable maturity bonds are not always available – is that average CDS premia across different credit ratings have converged (Graph 11). This contrasts with the period prior to, and during, the crisis when CDS premia tended to

Graph 11
5-year CDS Premia of Australian Companies



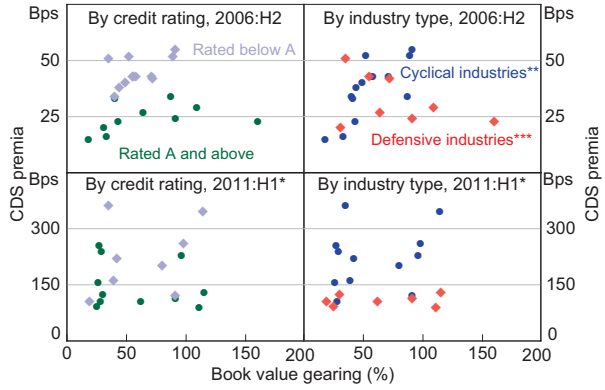
Source: Bloomberg

be higher for lower-rated companies. Pricing in the bond market, on the other hand, still tends to show higher credit risk premia for lower-rated companies.

The key driver of this result in the CDS market is changes in credit risk pricing for financial institutions and non-financial corporates. In particular, financial institutions have been perceived as more risky since the onset of the financial crisis. Over the course of 2009, as many A-rated and BBB-rated non-financial corporates reduced their gearing and risk perceptions generally eased, CDS premia for these corporates fell sharply towards those for the major Australian banks (rated AA). Since then, there have also been two notable episodes where the major banks' CDS premia rose above the averages for A-rated and BBB-rated corporates: during the first half of 2010 and over the past few months. Both of these episodes occurred during periods when global financial market volatility picked up significantly amid heightened concern regarding the creditworthiness of some European governments and the potential flow-on effects to their banking systems. This resulted in heightened concerns about financial institutions globally, and led to a widening of their CDS premia, including for the major Australian banks. This occurred despite these institutions remaining profitable and having strong capital positions. One explanation could be that some market participants in recent months have taken 'short' positions in CDS contracts (i.e. buying credit protection) in order to hedge against, or speculate on, the occurrence of unlikely but significant events, such as another deep global economic downturn.

More generally, the industry in which a corporate operates has become more important in determining its CDS premium. Prior to the crisis, non-financial companies with a credit rating of A or above tended to have lower CDS premia than those with a credit rating below A (top left panel of Graph 12). However, more recently, as shown in the bottom left panel of the graph, there are a number of companies with credit ratings of A or above that have higher CDS premia than lower rated companies. The bottom right panel of Graph 12 illustrates the current

Graph 12
Corporate Gearing and CDS Premia



* Average CDS premia since July 2011
** Includes energy, materials, industrials, consumer discretionary, real estate and IT
*** Includes consumer staples, health care, telecommunications and utilities
Sources: AFMA; Bloomberg; Morningstar; RBA

importance of the industry in which a corporate operates. The CDS premia of most companies in 'cyclical' industries (such as consumer discretionary and industrial companies) have recently been higher than the CDS premia of companies in 'defensive' industries (such as consumer staples, health care and utilities).[12] Furthermore, the level of gearing appears to have some importance for the CDS premia of cyclical industry companies, but the CDS premia of defensive industry companies tend to have little variation, regardless of the level of gearing.

Conclusion

The pricing information in the CDS market has become more closely watched by financial market participants in Australia over recent years. However, despite the development of the CDS market, there is some evidence to suggest that the bond market is generally deeper and short-term price movements are less affected by market liquidity. More broadly, the CDS market remains relatively small compared with the bond market and other OTC derivatives in terms of credit risk exposure.

12 Companies described as 'defensive stocks' tend to have below-average earnings volatility and lower volatility in their share prices because there is less uncertainty surrounding future earnings. Other companies can be described as 'cyclical stocks'. Compared with defensive companies, these companies' earnings tend to be more volatile, resulting in higher share price volatility.

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Foreign Exchange Market Intervention

Vicki Newman, Chris Potter and Michelle Wright*

The Reserve Bank's approach to foreign exchange market intervention has evolved since the float of the Australian dollar in 1983, as the Australian foreign exchange market has developed and market participants have become better equipped to manage their foreign exchange risk. Over time, foreign exchange market intervention has become much less frequent and more targeted towards addressing periods of market dysfunction. This article presents a new dataset and summarises the key characteristics of major intervention episodes since the late 1980s. Some simple regression analysis is undertaken to gauge the effectiveness of these interventions, but the results mainly illustrate the inherent limitations of such exercises.

Introduction

The Reserve Bank of Australia (RBA) transacts in the foreign exchange market on an almost daily basis. However, only a small subset of these transactions can be characterised as foreign exchange market 'interventions' – where interventions are defined as transactions undertaken with the sole objective of influencing market conditions. Instead, the bulk of the RBA's foreign exchange transactions are carried out as a result of the Bank's function as the provider of foreign exchange services for the Australian Government. In contrast to intervention, these routine transactions are expressly designed to avoid influencing broader market conditions.[1]

This article provides an overview of how the RBA's approach to foreign exchange market intervention has evolved since the float of the Australian dollar in 1983. To this end, it presents some summary statistics that characterise the RBA's major intervention episodes since the late 1980s, using new data that are being made available to the public for the first time.[2] These data provide a considerably more accurate series on intervention than that available previously. These data are also used to conduct some simple regression analysis which seeks to gauge the effect of these interventions on conditions in the foreign exchange market. Notwithstanding the improvement to the data, the regression analysis illustrates the limitations in empirically assessing the effects of interventions on exchange rates. Nevertheless, the results do provide some support for the conclusion that the RBA's intervention transactions have had a stabilising effect on conditions in the foreign exchange market, which is corroborated by the Bank's real-time observations of the influence of individual transactions on broader trading conditions.

The infrequency of foreign exchange market intervention by the RBA reflects the Bank's views of the benefits of a freely floating exchange rate: exchange rate adjustments play an important role in the economy adapting to external shocks. This

* The authors are from International Department.

1 Most studies define intervention as central bank foreign exchange transactions intended to influence foreign exchange market conditions (Vitale 2007). However, there is a lack of consensus over whether transactions for reserve accumulation or reserve reduction meet this definition (Adler and Tovar 2011). The RBA's reserve rebuilding and reduction transactions have been designed to avoid influencing market conditions and so are excluded from the intervention series presented here.

2 These data are now available on the RBA's website in Statistical Table A5 at <http://www.rba.gov.au/statistics/tables/xls/a05hist.xls>. These data will be updated annually with the release of the RBA *Annual Report*.

benefit relies upon market participants being able to effectively manage their exchange rate risk, which is enhanced by the presence of well-developed hedging markets.

The Bank's approach to intervention has evolved over the past 30 years. In the period immediately following the floating of the exchange rate, the market was at an early stage of development and the exchange rate was relatively volatile as a result. As market participants were not always well-equipped to cope with this volatility, the Bank sought to mitigate some of this volatility to lessen its effect on the economy. However, as the market developed and participants became better at managing their exchange rate risk, the costs of volatility have reduced. Accordingly, the Bank's interventions have become less frequent and more targeted towards addressing infrequent periods of disorderly market conditions.

How the RBA Intervenes

When the RBA intervenes in the foreign exchange market, it creates demand or supply for the Australian dollar by buying or selling Australian dollars against another currency. The RBA almost always conducts its intervention in the Australian dollar/US dollar exchange market, owing to the fact that liquidity and turnover are greatest in that market. The RBA has the capacity to deal in markets for the Australian dollar around the world in all time zones. Most of the RBA's foreign exchange intervention transactions occur in the spot market. If the RBA chooses to neutralise any resulting effects on domestic liquidity conditions, foreign exchange intervention transactions can be 'sterilised' through offsetting transactions in the domestic money market or, as has been typically the case, through the use of foreign exchange swaps.[3]

In large part, the approach taken by the Bank will depend on the precise objective of the intervention and, in particular, the type of signal the Bank wishes to send to the market. By using its discretion in deciding when to transact, the size of the transaction and how the transaction will be conducted, the RBA is potentially able to elicit different responses from the foreign exchange market. Generally speaking, transactions that are relatively large in size and signalled clearly are expected to have the largest effect on market conditions, with these effects further amplified if trading conditions are relatively illiquid. This is in stark contrast to the routine foreign exchange transactions undertaken by the RBA on behalf of the Government, where the express intention is to have a minimal influence on the exchange rate.[4]

Historically, the RBA has generally chosen to intervene by transacting in the foreign exchange market in its own name, in order to inform participants of its presence in the market. This 'announcement effect' can itself have a significant impact on the exchange rate, as it conveys information to the market about the RBA's views on the exchange rate from a policy perspective. The intervention transactions are typically executed through the broker market, either voice or electronic, or through direct deals with banks. Intervention in the broker market could involve the RBA placing a 'bid' or 'offer' but, if it wishes to send a stronger signal, the RBA would either 'give the bid' or 'pay the offer' of the broker. Direct deals with banks are similar whereby the RBA would request a 'two way' quote for a fixed amount and either 'give the bank's bid' or 'pay the bank's offer'. The effects of direct transactions with banks are realised over two stages. First, after receiving a direct quote request from the RBA, banks will adjust their quotes as compensation for holding the currency the RBA is trying to sell and for bearing the potential risk that the RBA is simultaneously dealing with other banks (who would also be adjusting their quotes). For example, if the RBA wants to sell US dollars and purchase Australian dollars, banks will increase their

3 For further information on the use of foreign exchange swaps for sterilisation purposes, see Becker and Sinclair (2004).

4 The RBA typically aims to minimise the effect of its routine transactions by executing trades at times when the market is liquid and, if necessary, breaking up the required purchases/sales into a series of smaller transactions so as to minimise the price impact of individual trades.

Australian dollar offer quotes. Second, after banks have traded with the RBA, this can trigger additional price adjustments among market makers in the spot foreign exchange market.

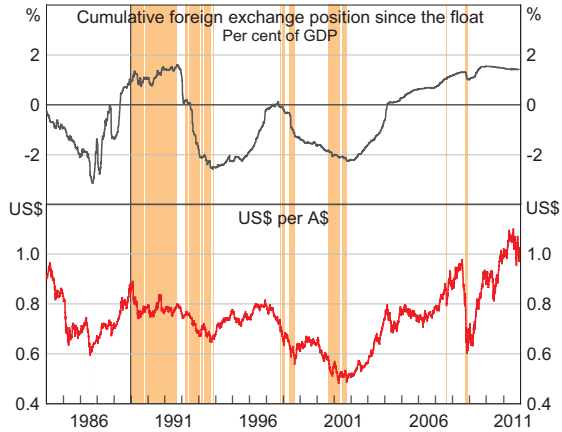
The Evolution of RBA Intervention

Since the float of the Australian dollar in December 1983, the RBA's approach to foreign exchange market intervention has evolved through a number of phases as the Australian foreign exchange market has matured.

In Becker and Sinclair (2004), the RBA's intervention transactions are described as occurring over three cycles – cycle 1 from December 1983 to September 1991, cycle 2 from September 1991 to September 1997, and cycle 3 from September 1997 onward. This characterisation was based on cycles in the RBA's cumulative net foreign exchange reserves position, which was a particularly relevant metric for their study (Graph 1).[5] This article focuses instead on individual intervention 'episodes', where episodes are defined as a set of intervention transactions. New episodes begin after conditions in the foreign exchange market have stabilised – at least temporarily – since the previous intervention episode, or when previous interventions were on the other side of the market.

Broadly speaking, in the years immediately following the float, the goal was to smooth out day-to-day volatility in the value of the Australian dollar. In the first few years after the float (end 1983 to around mid 1986), interventions were small, frequent, and often involved switches from purchases to sales of foreign exchange in quick succession. This period has previously been described as the 'testing and smoothing' phase of intervention, reflecting the RBA's dual purposes of: (i) maintaining a presence in the market in order to gain a better understanding of how it operated under the new floating exchange rate regime; and (ii) moderating the substantial day-to-day volatility in the exchange rate, given the limited capacity of some market participants to manage this volatility.

Graph 1
RBA Foreign Exchange Operations
With intervention episodes from 1989 shaded

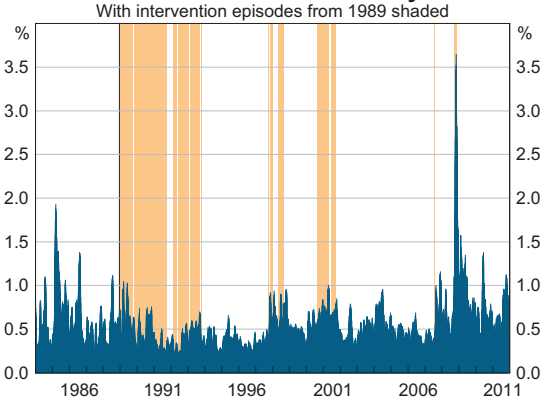


Sources: ABS; Bloomberg; RBA

Even before the end of the 1980s, the foreign exchange market had developed significantly, with the average daily turnover of Australian dollars in the Australian market having risen more than eightfold since the time of the float. By the early 1990s, volatility was also much reduced (Graph 2). With the need to 'test and smooth' now much diminished, the focus of intervention evolved towards responding to episodes where the exchange rate was judged to have 'overshot' the level implied by economic fundamentals and/or when speculative forces appeared to have been dominating the market. This shift resulted in less frequent, but typically larger, transactions. Reflecting the focus on redressing instances of exchange rate misalignment, switches between sales and purchases of foreign exchange were also somewhat less frequent than during the 'testing and smoothing' period. Periods where the exchange rate was judged to have 'undershot' were typically countered by a series of sales of foreign exchange reserves (purchases of Australian dollars), and periods where the exchange rate was judged to have 'overshot' were typically addressed

5 Becker and Sinclair (2004) use the 'profit test' to assess whether interventions have exerted a stabilising influence on the exchange rate, with the rationale being that if central bank intervention has been profitable, it must have 'bought low and sold high'.

Graph 2
Australian Dollar Volatility*
With intervention episodes from 1989 shaded



* 22-day rolling average absolute change
Sources: ABS; Bloomberg; RBA

through a series of foreign exchange purchases (sales of Australian dollars). This approach to foreign exchange intervention continued through to the early 1990s.

While data limitations make it difficult to identify a comprehensive series of intervention transactions prior to 1989, there were nevertheless some notable instances of intervention during this period. These include episodes in July 1986, January 1987 and October 1987, which involved large sales of RBA foreign exchange reserves in order to support the Australian dollar in response to major domestic and international developments (following the 'Banana Republic' comments, a European Monetary System exchange rate realignment[6] and the October 1987 stock market crash, respectively).

However, starting from 1989, it is possible to obtain a more reliable series by applying a filter to daily transactions data, and overlaying this with institutional knowledge (Table 1). The data are illustrative but not definitive, as the method used to identify the transactions is necessarily somewhat imprecise. Nevertheless, this new dataset indicates that the RBA intervened on almost half of the trading days between January 1989 and late 1991.

6 Four of the ten currencies in the European Currency Unit were revalued (the German mark, Dutch guilder and Belgian and Luxembourg francs).

This period consisted of a series of relatively lengthy foreign exchange purchase (Australian dollar sale) episodes to resist appreciation pressures on the Australian dollar, punctuated by shorter episodes of foreign exchange sales (Australian dollar purchases) to support the Australian dollar. Overall, the RBA undertook cumulative net purchases of foreign exchange (sales of Australian dollars) of around A$12½ billion through this period to place downward pressure on the relatively high Australian dollar. The daily intervention transactions that took place throughout this period were, on average, equivalent to around A$60 million, or 0.3 per cent of daily turnover in the Australian foreign exchange market, and as large as A$461 million, or 2.7 per cent of daily average turnover.

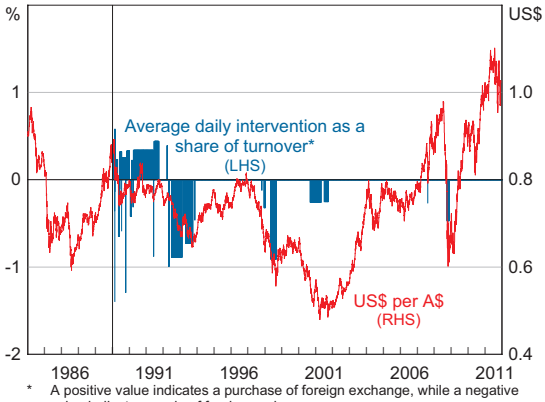
From the early 1990s, the threshold for what constituted an 'overshooting' in the exchange rate became much higher: a moderate misalignment was no longer considered sufficient to justify an intervention. This gradual change in the RBA's approach occurred as the foreign exchange market became increasingly developed and much less volatile than it had been in the late 1980s. But, more importantly, market participants had become better equipped to manage volatility, particularly through hedging. Accordingly, the main focus of intervention shifted to episodes that could be characterised by evidence of significant market disorder – that is, instances where market functioning was impaired to such a degree that it was clear that the observed volatility was excessive. Reflecting this, the previous pattern of alternating foreign exchange sales and purchases was replaced by a series of less frequent sales of foreign exchange (with no interventions in the form of foreign exchange purchases recorded after mid 1992, Graph 3). The one-sided nature of these interventions reflected concerns regarding market conditions when the exchange rate had been facing depreciation pressures.

Table 1: RBA Foreign Exchange Intervention Episodes – 1989–2011

Dates	Number of days with intervention transactions Number	Range of Australian dollar during episode US$ per A$	Total size of interventions during episode[a] A$ million	Average size of daily interventions Share of average daily turnover over intervention months Per cent
Period 1: January 1989–September 1991				
Jan–Feb 89	20	0.86–0.90	1 033	0.36
Feb 89 (1)	2	0.82–0.87	–128	0.36
Feb 89 (2)	1	0.82–0.83	47	0.26
Feb 89 (3)	1	0.81–0.81	–250	1.40
Feb 89 (4)	4	0.80–0.83	414	0.58
Feb 89 (5)	1	0.80–0.80	–25	0.14
Mar–Apr 89	21	0.80–0.83	956	0.23
May 89	9	0.74–0.79	–1 215	0.65
Jun 89 (1)	3	0.75–0.76	140	0.25
Jun 89 (2)	1	0.74–0.75	–20	0.11
Jun–Jul 89	21	0.74–0.78	1 161	0.32
Jul 89	1	0.74–0.75	–95	0.59
Jul–Oct 89	48	0.75–0.79	1 927	0.25
Oct 89	1	0.76–0.77	–210	1.29
Nov 89–Jan 90	17	0.77–0.80	877	0.33
Jan–Feb 90	9	0.74–0.80	–746	0.42
Feb–Mar 90	16	0.75–0.77	682	0.22
Mar 90	2	0.75–0.76	–115	0.31
Mar 90–May 91	116	0.75–0.84	7 151	0.34
Jun 91	3	0.75–0.76	– 445	0.88
Jun–Sep 91	22	0.76–0.80	1401	0.44
Period 2: March 1992–November 1993				
Mar–Apr 92	4	0.76–0.77	228	0.39
Apr–May 92	3	0.75–0.76	–455	0.99
Jun 92–Feb 93	59	0.66–0.75	–9 071	0.89
Mar–Apr 93	2	0.70–0.72	–200	0.50
Apr–Sep 93	23	0.64–0.72	–3 284	0.73
Nov 93	1	0.66–0.66	–90	0.46
Period 3: October 1997–September 2001				
Oct 97	1	0.68–0.72	–50	0.12
Dec 97–Jan 98	3	0.63–0.66	–350	0.32
May–Aug 98	10	0.55–0.64	–3 870	0.91
Sep 00–Apr 01	29	0.48–0.57	–2 906	0.26
Jul–Sep 01	9	0.48–0.54	–1 098	0.25
Period 4: August 2007–November 2008				
Aug 07	1	0.78–0.82	–318	0.27
Oct–Nov 08	9	0.60–0.77	–3 759	0.47

(a) A positive value indicates a purchase of foreign exchange, while a negative value indicates a sale of foreign exchange.
Sources: Bloomberg; RBA

Graph 3
RBA Foreign Exchange Intervention Episodes from 1989



* A positive value indicates a purchase of foreign exchange, while a negative value indicates a sale of foreign exchange
Sources: Bloomberg; RBA

There were six major intervention episodes in 1992 and 1993. With the exception of the first of these episodes, all intervention transactions during this period involved sales of foreign exchange (purchases of Australian dollars) to resist downward pressure on the Australian dollar, with cumulative net sales totalling around A$13 billion. Intervention transactions took place on around 20 per cent of trading days during this period but were much larger, on average, than those in the earlier period. The largest one-day intervention during this period was a A$1.3 billion sale of foreign exchange, equal to 7.5 per cent of daily average turnover; on average, the daily intervention transactions that took place during this period were equivalent to around A$145 million, or 0.8 per cent of daily average turnover in the Australian foreign exchange market.

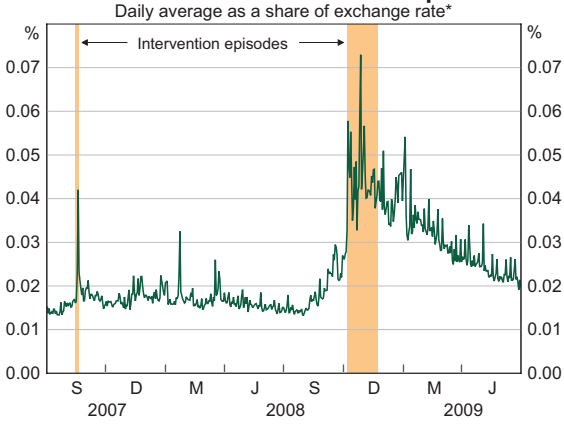
Between 1997 and 2001, there were five intervention episodes, with around A$8.3 billion in cumulative foreign exchange sales (purchases of Australian dollars) undertaken. The frequency of interventions fell even further, to just 5 per cent of trading days throughout this period. These episodes coincided with periods of significant market volatility – in particular, the 1997–1998 Asian financial crisis and the tech bubble in 2000–2001. During the tech bubble, the Australian dollar was under downward pressure as investors shunned commodity-based currencies in favour of those with exposure to new-economy technology assets. However, the RBA intervened as the Australian dollar became increasingly undervalued in one-sided market conditions.

The primary objective of interventions that occurred during the financial crisis beginning in 2007 was to address market dysfunction. In each of these particular episodes, the RBA had identified that trading conditions had become disorderly, with liquidity deteriorating rapidly in the spot market even though there did not appear to be any new public information. As discussed in Poole and D'Arcy (2008), the market became one-sided as large numbers of investors attempted to simultaneously unwind similar positions. At the same time, those participants with a natural interest on the other side of the market withheld liquidity, both in anticipation of better levels and because of uncertainty about whether transactions could be executed. As a result, there were increasingly sharp price movements between trades.[7] Accordingly, on each of these occasions, the interventions – which took place when liquidity was poor as indicated, for example, by widening bid-ask spreads (Graph 4) – were designed to improve liquidity in the market and thereby limit disruptive price adjustments.

Since these episodes, the RBA has not intervened in the foreign exchange market as liquidity in the Australian dollar has been acceptable, notwithstanding the fact that the Australian dollar exchange rate has traded in a wide range.

7 See also Debelle, D'Arcy and Ossolinski (2009) for more detail on these episodes.

Graph 4
AUD/USD Interbank Bid-ask Spread
Daily average as a share of exchange rate*



* Calculated from hourly average using tick data; excludes public holidays
Sources: RBA; Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters

Gauging the Effectiveness of RBA Interventions

Typically, studies of the effectiveness of foreign exchange market intervention attempt to quantify the effect of intervention transactions on the exchange rate. This is an inherently difficult exercise for three key reasons:[8]

(i) Interventions usually take place when the exchange rate is moving in the opposite direction to the expected effect of the intervention (the 'endogeneity' or 'reverse causation' problem), and it is virtually impossible to know what would have happened to the exchange rate in the absence of the intervention.

(ii) It may not always be appropriate to measure the success or failure of interventions using a simple metric such as the daily exchange rate return (a 'dependent variable' problem), nor may it be feasible to develop alternatives.

(iii) Data which accurately identify the magnitude of genuine intervention transactions have been scarce, with researchers often resorting to the use of imperfect proxies (an 'independent variable' problem).

Previous studies in Australia and elsewhere have employed various empirical methods that attempt to resolve the first problem, but with mixed and generally limited success. The second problem has generally received relatively little attention in the literature. The third problem has been an issue for previous studies of RBA interventions as they have all used some measure of 'net market transactions', which also includes the RBA's routine foreign exchange market transactions, to proxy for interventions.[9]

The econometric exercises presented in this article resolve this third problem by using the interventions series summarised in Table 1 as the independent variable. This new data series, which is being made available to all researchers, provides a considerably more accurate representation of the RBA's interventions in the foreign exchange market. But as these exercises demonstrate, despite efforts to reduce the impact of endogeneity and 'dependent variable' problems, these econometric issues cannot be overcome altogether, even with the benefit of a much-improved dataset.

In the first instance, the results of Equation 1 (Table 2) illustrate the pervasive problem of endogeneity. A standard GARCH (1,1) model of the relationship between the daily percentage change in the Australian dollar (exchange rate return) and contemporaneous RBA intervention transactions is estimated over the January 1989–December 2010

8 See Neely (2005) and Vitale (2007) for an overview of results of previous studies in Australia and elsewhere.

9 Using an econometric approach that attempts to control for endogeneity, Kearns and Rigobon (2005) found that RBA interventions had successfully influenced the Australian dollar with most of the effect occurring on the day of intervention. Using an approach combining an event study and an econometric study, Edison, Cashin and Liang (2003) found that although the RBA has had modest success in moderating a depreciating Australian dollar, interventions may have modestly added to uncertainty in the market at these times.

Table 2: Estimates of the Effects of RBA Intervention on the Australian Dollar
January 1989–December 2010, daily data

	Equation 1	Equation 2	Equation 3	Equation 4
Dependent variable	Exchange rate return (per cent)			Difference in exchange rate return (ppt)
Explanatory variables				
I_t	–0.146***	—	—	—
I_{t-1}	—	–0.012	–0.075***	—
$D_{t-1}I_{t-1}$	—	—	0.122***	—
ΔI_{t-1}	—	—	—	0.063***

Where:

I_t = contemporaneous intervention transactions

I_{t-1} = intervention transactions, lagged by one day

$D_{t-1}I_{t-1}$ = intervention transactions, lagged by one day, when there was also an intervention transaction on the previous day; in all other cases this variable is set equal to zero

ΔI_{t-1} = difference in intervention transactions, lagged by one day

Notes: ***, **, * indicate significance at the 1, 5 and 10 per cent levels respectively, based on a normal distribution; intervention transactions are measured in A$100 million blocks, with FX sales expressed as a positive value, and FX purchases expressed as a negative value

Eqn 1: $\Delta Ln(ER_t) = 0.011 - 0.146I_t + \varepsilon_t$; Variance: $h_t = 0.004 + 0.054(\varepsilon_{t-1})^2 + 0.938h_{t-1}$; $R^2 = 0.02$; DW = 2.09

Eqn 2: $\Delta Ln(ER_t) = 0.009 - 0.012I_{t-1} + \varepsilon_t$; Variance: $h_t = 0.004 + 0.053(\varepsilon_{t-1})^2 + 0.939h_{t-1}$; $R^2 = 0.00$; DW = 2.09

Eqn 3: $\Delta Ln(ER_t) = 0.009 - 0.075I_{t-1} + 0.122D_{t-1}I_{t-1} + \varepsilon_t$; Variance: $h_t = 0.004 + 0.052(\varepsilon_{t-1})^2 + 0.940h_{t-1}$; $R^2 = 0.00$; DW = 2.10

Eqn 4: $\Delta Ln(ER_t) - \Delta Ln(ER_{t-1}) = 0.000 + 0.063\Delta I_{t-1} + \varepsilon_t - 0.999\varepsilon_{t-1}$; $R^2 = 0.52$; DW = 2.07

Where: ER_t = US dollar per Australian dollar exchange rate; ε_t = residual from mean equation; h_t = conditional variance of ε_t

Sources: Bloomberg; RBA

sample period.[10] The negative coefficient estimate on the intervention variable suggests that sales of Australian dollars (purchases of foreign exchange) are usually associated with an appreciation of the Australian dollar, while purchases of Australian dollars (sales of foreign exchange) are typically associated with a depreciation. This result suggests that Equation 1 is not estimating the correct causal relationship from intervention to the exchange rate movement; rather, it appears to be identifying a causal relationship from the exchange rate movement to intervention (which is why the problem is also known as 'reverse causation').

One common approach to addressing the endogeneity problem is to lag the intervention variable by one day, with the rationale being that an observed change in the exchange rate on any given day cannot have influenced the decision to intervene on the previous day. Although this specification averts the problem econometrically, it can be expected to lose much of its explanatory power if the main effect of an intervention on the exchange rate is fairly immediate and short-lived.

10 The choice of a GARCH model is consistent with the literature. Financial time series typically exhibit volatility clustering, whereby large changes in a variable tend to be followed by other large changes and small changes tend to be followed by other small changes. GARCH models explicitly estimate this relationship and in so doing are able to estimate more accurate standard errors than an ordinary least squares approach. Variations of this standard GARCH model, for example an Exponential-GARCH, did not produce significantly different results.

Unsurprisingly, the estimated coefficient on the lagged intervention term is statistically insignificant (Equation 2). This is consistent with the results of previous work, which to the extent that it has been able to identify a causal effect of intervention on the exchange rate, suggests that this effect occurs on the day on which the intervention occurs (Kearns and Rigobon 2005).

While there is no evidence that previous-day interventions affect the current-day exchange rate return on average, Equation 3 suggests that the effect of a one-off intervention on the exchange rate is different from interventions that take place over two or more consecutive days. Equation 3 not only includes any intervention on the previous day, but also an interactive dummy variable for interventions that take place on the second and subsequent consecutive days of an episode. Taken literally, the coefficient estimates suggest that first-day interventions (including one-off interventions) have an effect counter to expectations: each A$100 million worth of foreign exchange sold (purchased) would be expected to contribute to a 0.07 per cent depreciation (appreciation) of the exchange rate on the following day. However, when the RBA chooses to follow-up the first-day intervention by intervening on the subsequent day(s), each A$100 million worth of foreign exchange sold (purchased) on a subsequent consecutive day of an intervention episode is estimated to contribute to a 0.05 per cent appreciation (depreciation) in the exchange rate on the following day (based on the sum of the coefficients on the intervention variables in the regression). This result might indicate that RBA interventions that take place over consecutive days are more 'effective' because the market views consecutive interventions to be more credible than one-off interventions. This effect is, however, still very small and it could be that these results are still affected by issues related to endogeneity.

Another problem with assessing the effectiveness of exchange rate intervention is that in some periods, the daily exchange rate return may not be an adequate proxy for the 'success' or 'failure' of these transactions (the 'dependent variable' problem). There are at least three possible reasons for this: (1) the effects of foreign exchange intervention may be very short-lived; (2) alternatively, interventions may have longer-term implications that are very hard to assess; or (3) in practice, the objective of intervention may not be to reverse the direction of an exchange rate move, but to simply improve market liquidity and/or slow the pace of the move, thereby restoring some order to trading conditions. Data constraints make it difficult to assess the relevance of the first two alternatives, but the third option (in particular, slowing the pace of the move) is examined in Equation 4.

Equation 4 uses the change in the exchange rate return – a measure of the speed with which the exchange rate is moving – as the dependent variable. Consistent with this, instead of using the level of intervention as the explanatory variable, this specification uses the (lagged) change in intervention. In effect then, Equation 4 can be interpreted as a weaker version of Equation 2, with all the variables used in Equation 2 expressed in changes in Equation 4.[11] The coefficient estimate from this exercise suggests that a A$100 million increase in sales (purchases) of foreign exchange is expected to lead to a 0.063 percentage point higher (lower) change in the exchange rate the next day. Whether this leads to an appreciation or a depreciation on the following day depends on the magnitude of the same-day move in the exchange rate and the size of the intervention. For example, if the exchange rate had depreciated by 0.5 per cent on the day of a A$100 million intervention to support the Australian dollar, it would still be expected to depreciate on the following day, but by less, at 0.44 per cent. However, if the size of the intervention was instead

11 Given that the dependent variable is now the change in the exchange rate return, Equation 4 is estimated as a moving-average (MA) model using ordinary least squares. The addition of a lagged intervention variable (in levels) to this equation did not yield statistically significant results. Note also that the R-squared term has a slightly different interpretation under an MA model, as it includes the explanatory power of the lagged residual term.

A$1 billion, the exchange rate would be expected to appreciate by 0.13 per cent on the following day. Consistent with the results of Equation 3, these effects will persist if interventions take place over consecutive days. Although a somewhat weaker test, it is arguably more appropriate for assessing the success of some of the RBA's foreign exchange interventions over time, particularly those designed to calm disorderly markets rather than to affect the level of the exchange rate per se.

While alternative dependent variables could be considered, or more sophisticated econometric techniques employed, the primary problem of endogeneity is very difficult – if not impossible – to overcome.

Conclusion

This article presents a new and improved data series on interventions by the RBA in the foreign exchange market. These data allow a documentation of the evolution in the approach to foreign exchange market intervention after the float of the exchange rate. This evolution reflects a recognition that when foreign exchange markets are deep and liquid (and the capital account is open), the effects of intervention on the level of the exchange rate are generally short-lived. Moreover, under these 'normal' circumstances, the practical difficulties involved in determining what the 'fair value' of an exchange rate should be suggest that it is difficult for policymakers to systematically improve on market outcomes, particularly in real time. Nevertheless, in instances of severe market dysfunction, intervention can exert an important stabilising influence on the foreign exchange market.

The article uses the new data to reassess previous empirical assessments of the effectiveness of foreign exchange market intervention. It shows that it is not possible to draw strong conclusions, notwithstanding the use of an improved measure of RBA interventions. The well-known limitations of this type of analysis suggest that the estimates of the effect of intervention on the exchange rate are expected to be understated, and may even be perverse. Moreover, as the goal of intervention has evolved toward addressing instances of extreme market dysfunction, it has become less clear that such specifications are still well-suited for assessing the effectiveness of foreign exchange market intervention.

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Recent Changes in IMF Lending

Kim Edwards and Wing Hsieh*

IMF lending has risen sharply in the wake of the global financial crisis from the lows in the mid 2000s. Despite increasing recently, the number of new IMF financing arrangements has been relatively small, but the average size of these arrangements is high by historical standards. Much of the new lending has been to Europe, which has resulted in marked changes in the geographical distribution of outstanding IMF loans. The terms on which lending has been made available have also changed in recent years, with the IMF implementing reforms aimed at making it easier for countries to access large loans, increasing its emphasis on the provision of precautionary financing, and streamlining its use of conditionality.

IMF Lending Activity[1]

One of the main roles of the IMF is to provide temporary financing to member countries with a balance of payments need. Financing is typically provided under an 'arrangement', which stipulates specific policies and measures (known as conditionality) that are intended to resolve a borrowing country's balance of payments difficulties. Disbursements of IMF loans to a country are generally dependent on the progress made by that country in implementing the agreed measures.

While a variety of arrangements are available to low-income countries on concessional terms, this article focuses on the IMF's non-concessional lending, which is subject to the IMF's market-related interest rate. Stand-By Arrangements (SBAs) and Extended Fund Facility (EFF) arrangements have historically accounted for the bulk of the IMF's non-concessional lending. SBAs are designed to help member countries address short-term balance of payments problems, while EFFs are available for countries with longer-term needs. A number of new facilities have also been introduced in recent years. One is the Flexible Credit Line (FCL), which is available to members with strong economic fundamentals and a track record of good economic policy. Another is the Precautionary Credit Line (PCL), which was previously available to countries possessing sound fundamentals, but also some vulnerabilities that precluded them from obtaining an FCL. In November 2011, the PCL was replaced by the Precautionary and Liquidity Line (PLL), which has the same qualification criteria as the PCL, but is available to countries with actual as well as potential balance of payments needs. This feature allows the PLL to be drawn down immediately upon approval, unlike the PCL, which was only available on a precautionary basis. When an arrangement is approved on a precautionary basis, a country opts not to draw on the approved amounts immediately, but retains the option to do so if conditions worsen. SBAs and FCLs can also be provided on either a precautionary or a non-precautionary basis.[2]

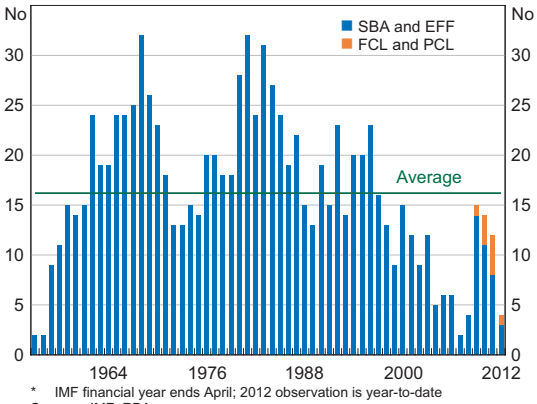
Both the number of new non-concessional lending arrangements and the total amount of lending committed under these arrangements have increased sharply in recent years (Graphs 1 and 2). Since the collapse of Lehman Brothers in September

* The authors completed this work in International Department.

1 For previous discussions of IMF financing activities, see Doherty (2009) and Brassil (2010).

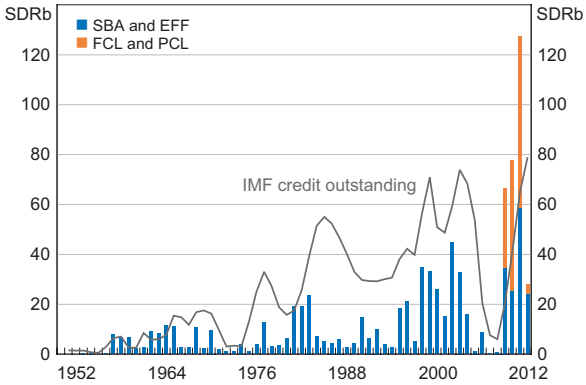
2 The PLL is also available as a six month arrangement, in contrast to the PCL, which was only available for periods of one to two years.

Graph 1
Number of New IMF Lending Arrangements*
Non-concessional



* IMF financial year ends April; 2012 observation is year-to-date
Sources: IMF; RBA

Graph 2
Value of New IMF Lending Commitments*
Non-concessional; inflation-adjusted**

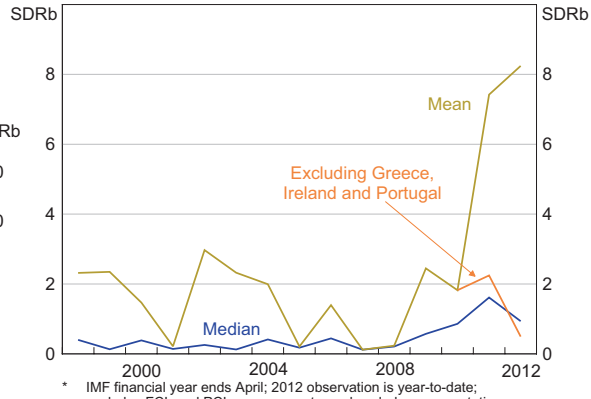


* IMF financial year ends April; 2012 observation is year-to-date; new commitments include new arrangements and augmentations/reductions to existing arrangements
** Data are adjusted using a weighted average of the GDP deflators of countries that have SDR currencies; the base period is 2010
Sources: IMF; RBA

2008, the IMF has approved 45 new arrangements, compared with 18 in the preceding four years.[3] Notably, however, the annual number of new arrangements approved during the recent crisis is still well below the number approved during earlier episodes of financial distress, including the 1980s debt crisis.

In the past four years, the IMF has approved around SDR300 billion of new non-concessional lending commitments.[4] While about half of this was under FCL arrangements, each of which were treated as precautionary and none of which were drawn, the average size of recent arrangements excluding the FCL has still been large by historical standards, both in absolute terms and measured relative to the recipient's quota subscriptions (see below). For instance, the average size of SBAs and EFFs approved during the IMF's 2011 financial year (to April) was SDR7.4 billion, compared with SDR2.3 billion during the 1997–98 Asian financial crisis (Graph 3).

Graph 3
Average Size of New IMF Arrangements*
Non-concessional



* IMF financial year ends April; 2012 observation is year-to-date; excludes FCL and PCL arrangements, and excludes augmentations
Sources: IMF; RBA

Much of the recent increase in lending has been to countries in Europe and the Commonwealth of Independent States (CIS).[5] These countries have accounted for around half of the arrangements that have been approved since September 2008, and have received about 90 per cent of the amount of new lending commitments (excluding commitments under FCL and PCL arrangements). As a result, outstanding IMF lending is now highly concentrated in Europe and the CIS region, which

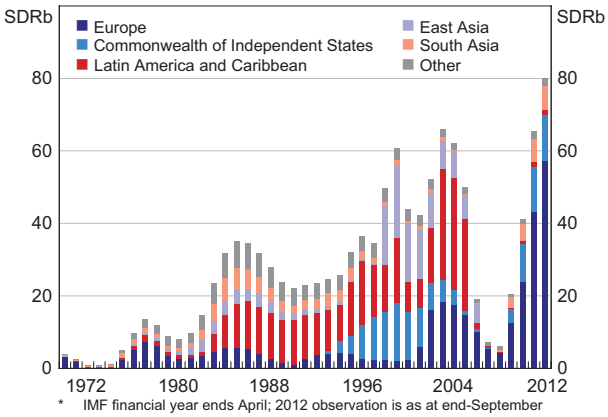
3 This does not include a FCL arrangement for Poland which was cancelled in 2011, and replaced by a new FCL.

4 The data in Graph 2 have been adjusted to account for the effect of inflation over time. When lending data are scaled as a proportion of global trade or GDP (see, for example, Brassil (2010)), the recent spike in new lending commitments is less prominent.

5 This article follows the IMF convention and includes Georgia and Mongolia in the CIS group due to geography and similarities in economic structure.

together account for 87 per cent of total credit outstanding (Graph 4).

Graph 4
IMF Credit Outstanding*
Non-concessional



* IMF financial year ends April; 2012 observation is as at end-September 2011
Source: Thomson Reuters

This is a marked change from earlier decades, during which IMF lending was more evenly distributed across regions, and Europe accounted for a relatively low share. This geographical shift partly reflects the external and financial sector vulnerabilities that had built up in many Eastern Europe and CIS economies prior to the crisis, and their close financial and economic links to the advanced countries at the centre of the crisis. In the year following the collapse of Lehman Brothers, the Ukraine, Hungary and Romania each received arrangements of more than SDR10 billion, while eight other European and CIS countries received loans totalling around SDR10 billion in the same year.

More recently, the sovereign debt problems in the euro area have seen Greece, Ireland and Portugal receive very large assistance packages from the IMF. These lending packages were organised in conjunction with the European Union, with the IMF providing around one-third of the €78 billion assistance to Portugal, and around one-quarter of the €85 billion pledged to Ireland and the €110 billion pledged to Greece.[6] Conversely, many of the economies in Asia and Latin America that borrowed from the IMF in the past entered the recent period of turmoil with relatively strong external positions. It has also been argued that the imposition of IMF conditionality in previous episodes of financial distress was regarded by the recipients as overly onerous, which may have led some emerging economies to seek alternatives during the recent crisis.[7]

Recent Changes to IMF Lending Practices

The IMF has recently implemented a number of changes to its lending practices in an effort to strengthen its capacity to both prevent and resolve crises. These changes include: a greater willingness to allow 'exceptional access' above 'normal' lending limits; an increase in the proportion of financing that is frontloaded; a shift in emphasis towards the provision of precautionary financing; and a more streamlined and focused use of conditionality.

Exceptional access and frontloaded financing

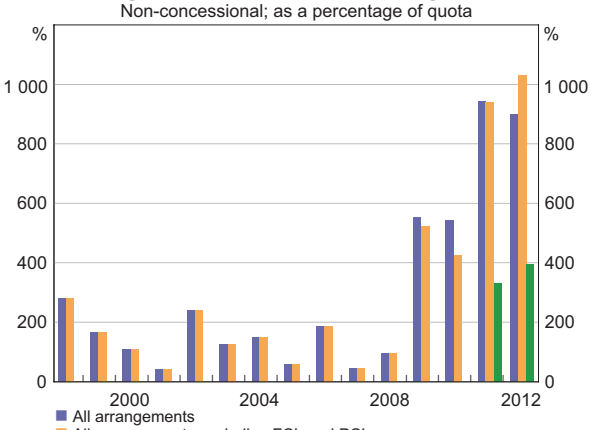
A useful way to measure the size of individual Fund arrangements is to scale them as a proportion of the recipient's 'quota' in the IMF, which is determined broadly on the basis of economic size and characteristics (the quota formula incorporates data on GDP, balance of payments flows, and official reserve holdings). A country's quota determines its maximum financial commitment to the IMF, and helps to determine the maximum size of any loan it can access – with the 'normal' lending limits of most Fund arrangements set at a fixed percentage of quota.

On this basis, the average access approved by the IMF in its non-concessional lending arrangements has increased markedly since 2008, to ratios well above historical norms (Graph 5). This indicates that recent IMF loans have been larger than in previous years, even after controlling for the size of the

6 The €85 billion package for Ireland included a contribution from the Irish authorities.

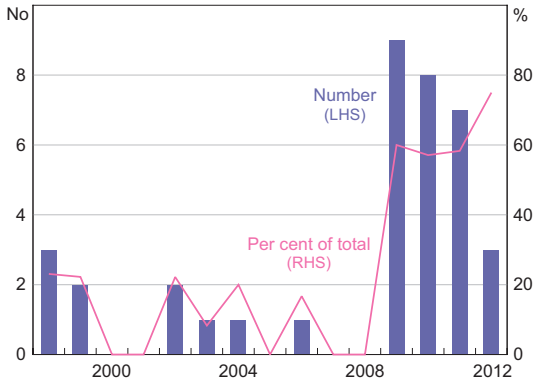
7 See, for example, IEO (2007), Ito (2007) and Takagi (2010).

Graph 5
Average Size of New IMF Arrangements*
Non-concessional; as a percentage of quota



* IMF financial year ends April; 2012 observation is year-to-date; excludes augmentations
Sources: IMF; RBA; Thomson Reuters

Graph 6
IMF Lending Arrangements Greater Than 300 Per Cent of Quota*
Non-concessional



* IMF financial year ends April; 2012 observation is year-to-date; excludes augmentations
Sources: IMF; RBA; Thomson Reuters

recipient. The increase can partly be attributed to the March 2009 reforms to IMF lending, in which the normal access limits of the SBA were doubled from 300 to 600 per cent of quota.[8] Since the reforms were passed, over half of the approved arrangements have been for amounts equivalent to more than 300 per cent of quota (Graph 6). The conditions that allow a country to obtain loans above normal lending limits (known as exceptional access criteria) were also eased as part of these reforms, and a number of countries affected by the recent crisis received exceptional access above the new 600 per cent threshold, including Greece (about 3 200 per cent of quota at the time of approval), Ireland and Portugal (both around 2 300 per cent of quota at the time of approval).

Most IMF lending is disbursed in a series of instalments, or 'tranches'. The 2009 IMF lending reforms allowed SBA disbursements to be 'frontloaded as appropriate', on the basis that disbursing a larger proportion of financing in the initial stages of a Fund arrangement may, in some circumstances, help to boost confidence and insulate recipients from the effects of external shocks. IMF analysis suggests that the degree of frontloading in recent arrangements has been higher than in previous crises: the median value of the first tranche of lending equated to 35 per cent of total access for the 17 SBAs approved between mid 2008 and mid 2009, compared with a median of 26.5 per cent for arrangements approved in previous crises.[9] However, the degree of frontloading has been somewhat less in the more recent programs for Greece, Ireland and Portugal (averaging 22.5 per cent of total access).

Precautionary instruments and crisis prevention

Since 2009, the IMF has introduced new facilities and reformed existing arrangements with a focus on crisis prevention, rather than resolution. The FCL and the PLL, for instance, incorporate qualification criteria that are intended to signal strong economic fundamentals and policies, as well as a credit line designed to act as a buffer against future external shocks. Moreover, once a FCL is approved, disbursements are not subject to IMF

8 The limits for access in any given year were also doubled from 100 to 200 per cent of quota. These access limits are net of scheduled repayments. See also Doherty (2009).

9 For more details, see IMF (2009).

conditionality (unlike the SBA and EFF; see below), and hence eligibility for FCL financing is based solely on meeting the qualification criteria.[10] These features are partly intended to mitigate the stigma that has been associated with IMF facilities in the past. As part of the package of reforms agreed in March 2009, the SBA was also upgraded to facilitate high-access borrowing on a precautionary basis for members that may not qualify for these newer facilities.

Despite these reforms, the proportion of arrangements approved on a precautionary basis has fallen slightly in recent times, from around 42 per cent of all non-concessional arrangements approved in the period from 1998 to 2008 to around 36 per cent of those approved since 2009. Moreover, only three countries (Mexico, Poland and Colombia) have signed up for the FCL since its introduction in 2009, and only one country had signed up for the PCL (FYR Macedonia) before it was replaced by the PLL this year. A possible reason for the limited take-up of these facilities is that residual stigma issues remain: some potential applicants may have feared that a FCL or a PCL could be interpreted as a signal of external vulnerability (despite the qualification criteria), or as an indication of dependence on the IMF. Other possible reasons include increased self-insurance through reserve accumulation, and the availability of alternative sources of financing such as swap lines.

The three countries that have signed up for the FCL have all renewed the facility twice, while not having drawn on the credit line component, suggesting that they see some benefit in the insurance and/or the market signal that the FCL provides. A feature of FCLs is that they tend to be approved for large amounts: Mexico and Poland renewed their FCLs for SDR47.3 billion (1 500 per cent of quota) and SDR19.2 billion (1 400 per cent of quota) in 2011, while Colombia renewed its FCL for SDR3.9 billion (500 per cent of quota).

Changes in conditionality

IMF conditionality is intended to help resolve the balance of payments problems of a borrowing member, and ensure that the member's external position is sufficiently strong for it to be able to repay its loan. In most cases, the release of each tranche of financing depends on whether the borrower has met certain policy conditions. These conditions include structural benchmarks, which are (often non-quantifiable) reform measures deemed critical to achieve program goals, and quantitative performance criteria, which are specific, measurable conditions generally relating to macroeconomic variables. Program reviews allow the IMF to periodically assess the progress that has been made on agreed policy reforms, and consider whether modifications are necessary to meet the program's objectives.

Over the past decade the IMF has made a number of changes aimed at making its conditionality more streamlined and focused on its core areas of expertise, in an attempt to ensure that loans carry only the minimum conditions necessary for achieving program objectives.

IMF analysis suggests that recent arrangements have tended to include fewer structural conditions than was the case prior to 2008. An average of around 10 structural conditions per program per year were attached to non-concessional arrangements approved between 2008 and 2010, compared with an average of around 19 conditions per year in the arrangements approved between 2002 and 2007, and around 17 conditions per year in the arrangements approved between 1995 and 2002.[11]

An examination of the structural conditionality imposed in a sample of large IMF arrangements since the Asian crisis also suggests that the emphasis of IMF conditionality has changed somewhat in

10 PLL (and PCL) facilities involve light conditionality, in keeping with their less stringent qualification criteria.

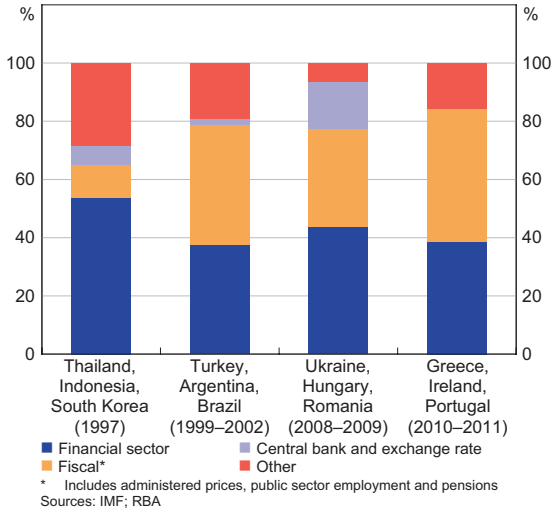
11 For more details, see IMF (2009, 2011).

recent years (Graph 7).[12] For instance, 28 per cent of the total structural conditions for the three largest Asian crisis borrowers are classified in the 'Other' category, which includes conditions pertaining to privatisation, trade policy, labour market reform, and private sector legal and regulatory changes.[13] These types of conditions have become less prevalent in more recent arrangements, in line with the IMF's attempts to focus conditionality more on its core areas of expertise.

On the other hand, conditions pertaining to the financial sector have consistently comprised a large proportion of structural conditionality, accounting for 43 per cent of the total conditions imposed across the entire sample, and more than half of the conditions in the three Asian crisis arrangements. Resolving financial sector vulnerabilities was an important priority of the Asian programs, and a large proportion of the structural reform conditions involved dealing with non-viable financial institutions, recapitalising viable institutions, and improving prudential regulations and supervision.

Fiscal conditions have also been prominent in most programs in our sample, with the exception of the Asian crisis programs. Notably, fiscal conditions comprise just under half of the total structural conditions in the arrangements for Greece, Ireland and Portugal. The fiscal conditions in these arrangements have been quite varied, although tax recovery, expenditure monitoring and control, and improving fiscal transparency are common themes.

Graph 7
Structural Conditionality
Per cent of total structural conditions



Sources: IMF; RBA

12 The sample here includes the three largest arrangements (including subsequent augmentations) that were approved by the IMF during each of: the Asian crisis period in 1997; the post-Asian crisis period from 1999 to 2002; the period immediately after the collapse of Lehman Brothers in 2008–2009; and the most recent period of 2010–2011. The data are available at <http://www.imf.org/external/np/pdr/mona/index.aspx>. Previously published analyses such as IMF (2009, 2011) draw on a larger sample of arrangements but do not disaggregate conditions in pre-2002 arrangements by category.

13 As the IMF categorisation of conditions for pre-2002 arrangements differs from its categorisation of conditions in more recent arrangements, some recategorisation was required to make the coverage of each of the four categories of conditions used in this analysis as consistent as possible across the four groups of arrangements.

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The Inaugural Warren Hogan Memorial Lecture

Glenn Stevens, Governor

The University of Sydney
Sydney, 8 December 2011

It is a very great pleasure, as a former student of Professor Warren Hogan, to give this lecture in his memory. Thank you to the Hogan family, many of whom are here this evening, and to the School of Economics at the University of Sydney for giving me this honour.

Before recounting one or two personal reminiscences, it is appropriate to say something about his life. Many fascinating details of it are revealed in the interview with John Lodewijks, and the eulogy by Tony Aspromourgos, both fittingly published in the *Economic Record*.[1]

Warren Pat Hogan was born in Papakura, just south of Auckland, New Zealand, in 1929. He completed his undergraduate and Master's education at Auckland University College, where he was taught by Colin Simkin, who later was also at the University of Sydney. He married Ialene, a fellow student in the same faculty, in 1952. Hence, it is not altogether surprising that Hogan's children seemed drawn to economics. Four of the five children, and several of the grandchildren, have degrees in economics.

After gaining early work experience at the Reserve Bank of New Zealand, Hogan, with a young family in tow, came to Australia in the mid 1950s, where he gained a PhD from the Australian National University in 1959, his research being on growth theory. His supervisor for that work was Trevor Swan, one of Australia's most renowned theoretical economists (and subsequently a member of the Reserve Bank Board). Ivor Pearce, with whom he would later collaborate in writing about international finance, was a close confidant and mentor. Among the early fruit of this work, as recounted in the Lodewijks interview, is that Hogan uncovered an error in a celebrated paper by Robert Solow. This led to an exchange between Hogan and the future Nobel Prize winner in the *Review of Economics and Statistics*.[2] Heady stuff indeed for a young graduate student from the antipodes.

Hogan rose quickly through the ranks at Newcastle University College in the 1960s. But it was as Professor of Economics at the University of Sydney, for 30 years from 1968, that Hogan came to more prominence. Joined by Simkin, he sought to lift the technical standard of economics at the faculty, including by putting more emphasis on quantitative techniques. This met a good deal of resistance as part of the broader debates about how economics should be taught. By the time I was a student here from 1976 on, both sides seemed to have dug into the trenches and the dispute had been bitter.[3]

None of that stopped Warren Hogan from grappling with significant issues in economics or economic policy. In fact, Hogan's professional life shows an active mind always pursuing some important question. In a career that produced over 150 articles, books and chapters of books, and many shorter

1 See Lodewijks (2007) and Aspromourgos (2010).

2 See Hogan (1958b) and Solow (1958).

3 My own perspective, for what it is worth, is that the shift in emphasis towards quantitative techniques at the University of Sydney probably did not go far enough, at least as far as my own undergraduate education was concerned. This was something which had to be rectified at graduate school.

publications, he ranged broadly. As early as 1958 he was producing articles examining the rise of new financial intermediaries outside the regulated banking system – a theme about which we were still hearing in the 1980s, and one which should resonate today in light of the attention being given to 'shadow banks' and the expansion of the weight and width of the global regulatory footprint currently under way.[4] Hogan retained an interest in both financial regulation and deregulation throughout his career, and married this with a nuanced understanding of the behaviour of financial players in their appetite for risk.

Hogan also worked on issues of development in the emerging world, wages, immigration and transport. He served as economic adviser to one Federal Treasurer (Lynch) and as a director of various companies, most notably serving on Westpac's Board for 15 years, including through the period of deregulation and subsequent tumult. In his later years he conducted a major review of pricing in aged care. He also served in numerous capacities over the years in various university administrative positions and on other committees in the broader community. His was a full life indeed.

It was in my third year at Sydney University that I think I first encountered Professor Hogan. This would have been in 1978. More than three decades after I sat in afternoon seminars conducted by him, the memories of his general style are clearer than the things he actually said. He was usually dressed in a suit – which would have been much more unusual for an academic in the late 1970s than it is now. The reason was perhaps that he had been in the city earlier in the day as he was active in dealing with practical policy issues and had links with the business world. On days when there might have been a nice business lunch, there was a certain relaxed expansiveness to his demeanour. He spoke often without notes on whatever economic topic we were covering, and as he spoke he would take the various coins from his pocket and arrange them into small piles on the table. We wondered what subconscious portfolio balance idea might have been behind that behaviour. Warren often had a somewhat elliptical way of saying things – you had to listen carefully to get what he may have really been saying, and sometimes you weren't sure you had understood correctly. As I reflect now on this characteristic, I wonder whether he missed a calling as a central banker!

He certainly had built up contacts in the central banking world, as an occasional visitor to the BIS, where he was on very good terms with the late Palle Schelde Andersen, a renowned BIS economist and student of the international economy and financial system. I assume that their acquaintance was made in the late 1970s, when Andersen visited the University of Sydney for a period, funded by a grant from the Reserve Bank.[5]

One Hogan paper of that era that really struck a chord with me then – I have always recalled its title – was about the issue of revisions to economic statistics. It was entitled 'How Do We Know Where We Are Going, When We Don't Know Where We Have Been, Let Alone Where We Are?'.[6] These days the study of revisions to data is an art in itself (though the quality of national accounts data is better than it was in the 1970s). Central banks put huge effort into what has come to be called 'nowcasting' – that is, working out what the national accounts probably will, or should, say about the current quarter in three or four months' time when they are released. Some central banks actually 'backcast' the recent past, deciding their own version of GDP, not necessarily the same as the one published by the statisticians, in effect foreshadowing revisions to come.[7] The RBA has not gone to that extent, though of course we have seen certain difficulties in assessing the current

4 See Hogan (1958a).

5 Hogan was at the conference in Basel to honour Palle Schelde Andersen's professional life in December 2007.

6 See Hogan (1978).

7 For example, the Bank of England's (BoE) Monetary Policy Committee, for some time, has been presented with output growth numbers that contain various adjustments by the BoE's staff. For more information, see Cunningham and Jeffery (2007).

pace of underlying inflation in our own country over recent months, with reasonably significant revisions to some data series. So Hogan was on to something here – as far back as 1978.

But the work on which I wish to focus for a brief period tonight is the book Hogan co-authored with Ivor Pearce entitled *The Incredible Eurodollar*.[8] Published first in 1982, with subsequent editions published in 1983 and 1984, this fascinating little book sought to explain the workings of the Eurodollar market and the institutions which operated in it. In the 1970s – the dataset on which Hogan and Pearce based their work – the Eurodollar markets were an exotic new development, spawned by a period of international financial turmoil and innovation, some of which was in response to regulation.

The post-World War II compact known as the Bretton Woods system had held for about 20 to 25 years. This involved a US dollar standard, under which countries fixed, and occasionally adjusted, their exchange rates to the US dollar; the dollar was fixed to gold at US$35 per ounce; private capital flows were limited in scope; and official flows made major contributions, via the IMF, to international adjustment. But by the late 1960s and early 1970s, this arrangement had come under severe strain as private capital flows began to increase in size and US policymakers found they could not live with the constraints of the system. In a sequence of events, including the break of the link with gold and the decision by key countries to allow their currencies to float against the dollar, the system broke down. The result was a system in which exchange rates between the then major currencies have floated, with occasional efforts at management, ever since.

The Eurodollar Market was in essence a pool of obligations issued by banks outside the US jurisdiction but denominated in dollars. It grew rapidly, apparently unconstrained by regulation conducted on a national basis (as all regulation was, and largely still is). It was part of a large increase in cross-border financing activity by internationally active banks. When Hogan and Pearce published their third edition in 1984, the stock of cross-border assets held by BIS reporting banks was about US$2 trillion. Today, it is around US$32 trillion.

In the early 1980s, much of the talk about the Eurodollar Market was couched in terms of whether Eurodollar deposits should be added to measures of the money stock, which were the height of economic fashion at the time. As you will recall, this was the period in which the US Federal Reserve targeted monetary aggregates explicitly and in which weekly monetary aggregates data were scrutinised closely for signs about the likely direction of US interest rates. One can see this background quite clearly in Hogan and Pearce's little book, which has lots of discussion about whether Eurodollar deposits are 'money' (they thought not) or just 'debt' (they thought so).

It was only a few years later that most countries gave up the effort to define 'money' and to conduct their policy discussion in terms of money aggregates, instead going back to the former model of setting a short-term interest rate. It is interesting, though, that in recent years the 'zero lower bound' for nominal interest rates, which as students we would have been taught about as 'the liquidity trap', is no longer a curiosity in the textbook from a bygone era, but has actually been binding in several major countries. One implication, among others, has been that calibrating monetary policy in terms of monetary quantities has come back into vogue in some places – this time with the relevant central banks consciously seeking to increase the size of their balance sheets. Whether the relationship between 'money' and nominal GDP or prices has become any more reliable than it was 25 years ago, when it was

8 In choosing this work for more detailed consideration, I am conscious of the question: was it more Hogan's work or Pearce's? Certainly Pearce had already released a piece by that name (Pearce 1980). But equally Hogan was clearly a student of financial intermediaries and markets from early in his career, and released two working papers on Eurofinance markets in 1979 (Hogan 1979a, 1979b). No doubt he and Pearce had exchanged views on such issues over time, particularly during Hogan's visit to the University of Southampton in 1979. My assumption is that the book published as Hogan and Pearce (1982) was a genuinely collaborative effort.

found too fluid to be useful for policy purposes, is not clear.

But if the language in Hogan and Pearce's early 1980s work is, perhaps, a product of its times, some of the observations are astute, and there are some quite prescient insights.

To begin with, Hogan and Pearce note that the activities of Eurocurrency markets – and we could generalise this to cross-border private financing generally – lessened the pressure on countries to adjust to current account imbalances, especially on the deficit side. This could be seen as good – allowing capital to flow more efficiently to the locations offering the highest risk-adjusted return. Or it could be worrying: the markets giving a nation more rope, so to speak, by allowing current account balances to become larger and more persistent than they would otherwise. Remember that at the time they wrote, current account positions had rarely been more than a few percentage points of GDP for any length of time, at least since 1945.

The analysis of the mythical planet Htrae, with three countries Surplusia, Deficitia and Balancia, with respective currencies Surps, Defs and Bals, focuses on the operation of markets and, importantly, the role of financial institutions as intermediaries between savers in one country and borrowers in another. In the language of more recent times, financial institutions are key to the dynamics of so-called 'global imbalances'. Indeed, Hogan and Pearce state, rather bluntly: 'Financial intermediaries live upon imbalances'.[9] At one level that is obvious – financial intermediaries or markets exist to transfer resources from savers to borrowers (and back again), which is to say that an imbalance between saving and investment at the level of an individual household or firm in the economy is matched against an equivalent imbalance of opposite sign in some other firm or household. The deeper sense in which this 'thriving' takes place in an international setting is that savers in one country lend their money to borrowers in another jurisdiction, about whom they know next to nothing, but feel safe in doing so because what they hold directly is an obligation of a large, well-known, globally active bank, assumed to be safe.

But as Hogan and Pearce point out, a European entity raising dollars to fund a balance sheet does not have automatic access to a lender of dollars of last resort in the event that market conditions change. It is therefore exposed to serious funding risk in a way that does not occur in purely local currency operations. The average 'Eurobank' in the early 1980s had access to marks or francs – today euros – or pounds from its national central bank, but it could not be assumed that in times of stress these currencies could necessarily easily be swapped for dollars. In fact, this very phenomenon was at the heart of the crisis that began to unfold in 2007. It was in Europe, where banks had, and still have, a structural need for dollar borrowing to fund US dollar denominated assets, that the market strains first appeared in August 2007. As the crisis intensified, the need for access to central bank funding in dollars required a number of central banks to enter into swap arrangements with the US Federal Reserve so their domestic banks could borrow US dollars secured by local currency collateral. European banks were by far the largest users of these facilities – about US$400 billion was accessed via the ECB and other central banks in Europe at the peak in December 2008.

Of course, it is also in Europe that we have seen the epicentre of the most recent stage of the crisis. In some other respects, today's problems are a little different, and perhaps more complex, from those of three years ago. They arise from cross-border lending within a currency area that has a single money but very divergent experiences in terms of fiscal discipline and productivity, and that lacks a well-developed capacity for intra-area transfers – which is being built as we speak. Nonetheless, dollar funding for European banks has again tightened up and the swap lines among major central banks have

9 See Hogan and Pearce (1984, p 60).

again been activated to assist. This is presumably designed to slow the speed of European bank deleveraging of dollar assets that would otherwise be forced to occur.

Lots of people claim to have predicted the crisis, though I doubt that Warren Hogan, were he here, would claim that he and Ivor Pearce foresaw it in all its dimensions almost 30 years ago. I think they would perhaps claim that their saga of Htrae, where international cross-border financing ultimately produced a crisis, contained many relevant insights. I doubt that they fully appreciated the role that the financial institutions of the leading deficit country – the United States – would play in creating risk and transferring it elsewhere. In their story, the key institutions were those of the country of Balancia, where the international accounts initially were balanced. I think they would have expected the response of major central banks to the crisis to have resulted in more inflation than it has, so far. That may be a reflection of the inflationary times in which they were writing – when it seemed almost inconceivable that deflationary problems akin to the 1930s could re-emerge. The example of Japan, where there has been deflation for well over a decade, had not yet occurred in 1982. Of course, they might just have expected the inflation still to be coming. They would not be alone in that view.

It is certain though that Hogan would have been watching all these developments with close interest. He would have been recognising certain things that he could have broadly predicted, and I suspect he would have said so with that very dry turn of phrase he had. He would also, surely, have been observing things that would have surprised him, and he would have been thinking about how his view of the world needed revision. He would have been pondering the future of the international financial system.

In that vein, I shall use the remainder of the time this evening to make a few observations in that area.

The first is that there is an extensive program of regulatory reform under way. In an international setting potentially the most far-reaching is the set of proposals recently endorsed at the G-20 summit to mitigate the problems posed by institutions that are too big to fail at an international level, otherwise known as Globally Systemically Important Financial Institutions, or G-SIFIs. Some 29 individual banks have been identified as fitting the criteria to be labelled G-SIFIs at present, though the list is not a fixed one: banks can enter and leave it over time. There will, in due course, be a framework for globally systemic insurance companies with parallel criteria. The intention of the policy is to make the failure of such entities less likely by requiring additional capital, and to make the consequences of failure less dramatic by developing better tools to resolve entities that have failed or are on the point of failure. The latter, in particular, is a very ambitious undertaking and contains some potentially far-reaching components – such as the ability to 'bail in' certain creditors to an institution on the point of failure, effectively turning them into shareholders, so as to lessen the likelihood that taxpayers will be called upon in such a situation. To make it work would require considerable co-operation across jurisdictions at moments where everyone's instinct is to protect creditors and counterparties in their own jurisdiction.

I don't know what Hogan would have made of this. I suspect he would be wondering whether, if regulatory actions bind on one group of institutions, the behaviour in question would end up migrating to other, less-regulated places. This possibility is understood by the international regulatory community, which also has a regulatory agenda for 'shadow banking'. This is actually a critical point. I would offer the observation that, if we can get through the next year or so without a major crisis and successfully implement the various reforms – which might both be big 'ifs' – the next financial crisis may not occur in the same sorts of institutions as last time (or this time), but in different ones. It could well occur in institutions or markets that do not as yet exist.

The key thing in avoiding disastrous crises in the future is less the specifics of regulation or resolution – as important as these are – than having a clear understanding of the nature and extent of risk-taking behaviour, in all its potential dimensions and locations. On my reading of Hogan's work, I believe he would have shared this view. Put in the simplest of terms, we might ask: where are financiers apparently making easy money? In what area of risk-taking are the profits large or expected to be large? There is a good chance that it is there that, given enough time, the likelihood of excesses is greatest.

In Hogan and Pearce's book, financial institutions and their behaviour were seen as central to the build-up of imbalances. But they are in one sense merely facilitating flows of capital that are reflective of other phenomena, resulting from the collective behaviour of the actors in surplus and deficit countries. So in contemplating the future of the international financial system, reforming the regulation of financial institutions, and understanding their behaviour, will be key, but it will be of equal importance to understand the underlying behaviour of the entities in the real economies.

The role of official capital flows, in particular, is one element of the post-crisis world that seems to be becoming quite prominent. Indeed, perhaps one of the most striking features of the international financial system is the size of official reserve assets that have been accumulated by what Hogan and Pearce would have labelled 'Surplusia' – the countries that have run persistent current account surpluses. In the early 1970s, the accumulation of US dollars by surplus countries made for problems of monetary control in some large reserve holders like West Germany. When the Bretton Woods system finally broke down in 1973, total foreign reserves of all countries amounted to about 2½ per cent of annual global GDP. West Germany's reserves were about 7 per cent of West German GDP. Today, total reserves in the world amount to the equivalent of about 15 per cent of global GDP, up from 10 per cent only five years ago. China's reserves are close to 50 per cent of Chinese GDP. Many other Asian countries have equivalent ratios around 30 per cent or more; while, in Latin America, foreign exchange reserve holdings are typically in the 10–15 per cent range.[10]

There are numerous reasons behind this build up. The very high levels of energy prices in recent years have pushed up the reserves of oil producers, and this accumulation may have some logic as they seek to spread over a long period the income gains accruing from a finite resource. The reserves of many Asian countries have risen to much higher levels after the 1997 crisis, as a form of insurance against capital flow reversal. Indeed, the IMF advised this after the crisis, advice that has been taken to heart perhaps a little more than the Fund intended.

One can understand the desire for self-insurance, and particularly as those Asian countries that had IMF programs in the late 1990s felt the conditions for mutual insurance – through the IMF – were very onerous. But the self-insurance provided by large holdings of reserves is costly, especially in the low interest rate environment we see in the major countries. Trillions of dollars and euros held on behalf of the citizens of countries across Asia (and elsewhere) are earning meagre returns and subject to increasing sovereign risk. This cost of self-insurance is therefore becoming increasingly apparent, a trend that will surely continue as, inevitably, Asian productivity levels continue to increase relative to the Western countries and their real exchange rates rise.

Large centres of high saving with portfolios that are overweight in foreign assets whose return is low and whose value is highly likely to go down, measured in the currencies of the holders, amounts to something of a problem. Attempts by those holders to exit this position quickly would be, to say the least, highly disruptive. They know that and that is why they do not attempt it, though there is a degree of

10 Australia's official reserve assets, for comparison, are equivalent to about 3 per cent of our annual GDP.

diversification under way. To paraphrase the old line, if I owe you a few billion, I may have a problem. If I owe you a trillion or two, you may have a problem every bit as big as mine.

So there is a very long-term issue of portfolio rebalancing to be addressed here as well as one of structural realignment of national price levels (i.e. real exchange rates). At the same time though, there are increasing calls for the emerging economies with large surpluses and high reserve holdings to play a part in assisting Western economies facing budgetary and banking sector problems. With the balance sheets of many Western sovereigns already under pressure, there is hope for contributions from large reserve holders – they, after all, are the ones with the cash.

It has to be observed, surely, that pressing reserve-heavy emerging economies to lend into structures designed to smooth adjustment processes in the advanced world amounts to a call to perpetuate, to a fair extent and for at least a bit longer, some of the very 'imbalances' that so many have lamented for so long. What people are really saying is that they want to move only quite slowly away from the current constellation of resource flows and prices that, in other discussions, have been seen as constituting the problem.

That may well be the best approach. But it is observable that large reserve holding countries are already getting uncomfortable with their degree of exposures to major Western governments. Hence, any offers of assistance are likely to be made with a careful eye to risk minimisation. This is likely to mean they will prefer to operate through international institutions, such as the IMF. Alternatively, they may prefer to take hard assets in return for their cash, rather than financial obligations, which, in turn, could easily raise the social and political tension level. At the very least, managing all this over the next decade will require level-headed analysis, far-sighted decisions on the part of national policymakers and a degree of international co-operation much greater than we usually see.

Moreover, there will be some very important questions to be confronted. Not least among them will be that, with the relative economic weight of the emerging world rising quickly, and a rise in their financial weight flowing from their high rates of capital accumulation and increasing creditor status, they will expect an increased role in global financial governance as a condition of accepting more obligations to contribute to the global common good. The willingness of the established, post-war leadership countries to cede a degree of status and control to the emerging world will need to increase at the same speed as the emerging countries' willingness to grasp and accept their rising responsibilities. Will this occur? It is hard to judge. Much will depend on whether the various parties have the same general ideas about the purpose of the international monetary system. That is, at this point anyway, not clear.

Another thing we might see is a certain tendency towards the financial repression that was a feature of the post-war world in which Warren Hogan first studied economics. A legacy of the 1930s was a much tighter regulatory regime for banks, elements of which lasted for decades. A legacy of the 1940s was a very large stock of government debt. Debt-to-GDP ratios were well into triple digits for countries like the United Kingdom and the United States (and for Australia). Yet from the 1950s through to the 1970s, debt-servicing dynamics were kept within manageable bounds. The rapid growth in economic output in the long post-war boom, which was aided by demographics and productivity performance, was a major help. But also contributing was a combination of central banks holding down long-term interest rates at government direction, and banks and other entities being forced to hold government debt. And of course, at the end of that boom, a period of unanticipated high inflation played a role in lowering debt-to-GDP ratios.

In the current era, however, the rapid output growth will likely occur in the countries that don't have much government debt but do have productivity catch-up

working for them, while in many of the countries that have a lot of debt the demographics will be going the wrong way. It is therefore conceivable that with slow-growing countries feeling pressed for solutions, regulatory actions might have certain attractions. Given this, and with many emerging countries having mixed feelings about many aspects of free financial markets anyway, it is conceivable that the current trend towards more assertive and intrusive financial regulation – which is occurring for very understandable reasons – will end up going much further than contemplated at present. The potential for an outcome that eventually involves significant inflation is also obvious.

I have only touched the surface of many of these issues. As I said earlier, I cannot know what Warren Hogan would have thought of them, or whether he would agree with my views. I am sure, though, that he would have thought these matters worthy of further discussion and that he would have contributed to that discussion. Hopefully, I will have succeeded in stimulating some further discussion tonight.

Once again, thank you to the University, and to the Hogan family, for permitting me this honour. I hope this marks the start of a successful series of lectures.

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On the Use of Forecasts

Glenn Stevens, Governor

Address to the Australian Business Economists Annual Dinner
Sydney, 24 November 2011

Thank you for the invitation to return to this platform.

This being a forecasting conference, you will have spent much of your time contemplating the outlook for 2012. The Reserve Bank set out its views on the outlook only a few weeks ago, and I will not canvass any changes to them on this occasion. Instead, I propose to return to a theme I have covered on some previous occasions, namely, the nature and use of forecasts for policy purposes. A couple of important points that have been illustrated over the past two or three years are worth drawing out.

To begin, I would like to draw some observations from another kind of forecast. I do a bit of aviation in my spare time. Hence I am a serious user of weather forecasts and there are very detailed forecasts prepared on a frequent basis for the aviation community, in order to make flying more predictable and safer.

I want to give an example. A couple of months ago, a pilot I know had planned to fly in a light aircraft from Bankstown airport in Sydney's west to Armidale, about 90 minutes flight time to the north, pick up some people and return to Bankstown.

On the relevant day (25 September), pertinent excerpts from the forecasts for the two aerodromes were as follows:

YSBK (Bankstown)

15015G25KT 9999 LIGHT SHOWERS OF RAIN FEW 012 SCT020 BKN030

TEMPO 2500/2506 3000 SHOWERS OF RAIN BKN008

YARM (Armidale)

16012 9999 LIGHT SHOWERS OF RAIN SCT030

INTER 2501/2508 4000 SHOWERS OF RAIN BKN010

PROB30 INTER VRB20G30KT 3000 THUNDERSTORMS WITH RAIN SCT 045CB

It was windy and wet in Sydney that day, one of those days when strong south easterly winds bring in moisture from the Tasman Sea and dump it on the Sydney basin. The Bankstown forecast indicated that for much of the day, there were expected to be periods of reduced visibility and heavy, low cloud. Conditions could thus be quite marginal for a landing on the return flight, and it was possible they would be below the legal minimum for a landing off an instrument approach during those periods of time. This meant a requirement to have extra fuel on board in case of the need to hold prior to landing, waiting for the weather to improve. The Armidale forecast showed some similar periods of weather, also requiring extra fuel. More significantly, the Armidale forecast indicated that there was a probability (assessed as 30 per cent) of thunderstorms in the area, which could persist for up to half an hour at a time. Thunderstorms at the airport amount to very dangerous conditions in which to attempt a landing because of the potential for very strong winds and windshear near the ground, not to mention heavy rain or hail. Even large aircraft avoid landing in such circumstances. Again, this meant a requirement to have additional fuel in case of the need to hold prior to landing, waiting for the storm to pass.

Apart from that, the general conditions between the two airports were forecast to include isolated thunderstorms, rain and areas of low cloud, all produced by the south-easterly airstream operating across much of New South Wales. The route goes more or less along the Great Divide, which means that terrain effects on weather conditions are an issue to keep in mind.

These conditions did not necessarily preclude the flight, which could have been legally commenced, provided the requisite additional fuel was carried. It is very likely that it could have been safely completed. For professional pilots, who fly every day in a multi person crew environment in high performance aircraft, dealing with these conditions would be seen as reasonably routine, if a bit tedious. The main question was whether it was prudent for an amateur single pilot flying a light aircraft to conduct the flight on this occasion. It was observable that at the intended time of departure from Bankstown, conditions there were at least as bad as forecast, while a phone call from Armidale indicated that there were in fact storms present at that time. It did not look like a day on which the forecasters had been too pessimistic. The pilot in question decided to stay on the ground.

The point of this little diversion into aviation is to make a few observations about the nature and use of forecasts, which I think have some relevance in the economic sphere.

The first is that the weather forecasters had understood what I would call the 'big forces'. In this case, there was a high pressure system over Tasmania, and a low pressure system off the north east coast of New South Wales. This combination fed very moist air over the south east of the continent, resulting in cloud and rain.

In fact, meteorologists know a lot about how weather works. They have pretty long time series of observations and increasingly frequent real-time observations of conditions. They have highly developed models. The combination of real-time data, understanding of how the dynamics of weather occur and their experience, enabled the forecasters to get the big picture right, and give a very useful forecast for those planning on venturing into the skies that day.

The second point of note is that some elements of the forecast were probabilistic in nature. This was explicit in the use of the term 'PROB30'. Weather forecasters know they are dealing with a very complex, non-linear system, and are careful to present their forecasts accordingly. They are able to observe the unstable atmospheric conditions that are conducive to storms – mainly heat and moisture, with a role played by terrain as well. They cannot say for sure that there will be storms over a particular location, but they know enough about likely conditions in an area to assess a probability. On the day in question, there would almost certainly have been some storms to avoid somewhere along the route.

The third observation is that forecasts are used in particular ways. In aviation, lives can depend on the way a forecast is used. Professional pilots in large, well-equipped aircraft that fly above most of the weather still carefully study forecasts and make the requisite amendments to their plans. They carry additional fuel, have a plan B for an alternative airport and so on as needed, in response to the forecast conditions. Many of us have had the experience of fog-induced delays in Canberra in winter, for example, where the runway is not fully visible at the legal minimum on approach and so the aircraft cannot land and must go somewhere else. International flights into Sydney very occasionally end up in Brisbane or Melbourne because of fog, having been required by the forecast to carry the necessary additional fuel. They may have carried it all the way across the Pacific, at non-trivial cost.

Despite the criticism aimed at weather forecasters, the forecasts I have seen in use for aviation are generally pretty good. And the saying that economic forecasters are there to make weather forecasters

look good has something going for it. Of course one big difference in economics is that some decisions based on forecasts may alter the outcomes – as in the case of economic policy decisions, or spending decisions by businesses and households – whereas our response to a weather forecast will not actually alter the weather. That factor makes economic forecasting more difficult than weather forecasting. Still, some aspects of the process of weather forecasting are valuable in the economic sphere.

One is that the most useful economic forecasts, like weather forecasts, are those that are based on a good sense of the 'big forces', as well as on an understanding of the dynamics of how economies typically behave. In addition, we should admit that economic forecasts have a margin of error – they are a point in a distribution of possible outcomes.

On the latter point, often much is made about small changes to forecasts, or small differences in two forecasters' numbers. But when consideration is given to the real margin for error around central forecasts, such differences are often, for practical purposes, insignificant. For example, in the case of a year-ended forecast for growth of real GDP four quarters ahead, experience over the past couple of decades is that the probability of a point forecast being accurate to within half a percentage point is about one in five. For year average forecasts the accuracy is better, but still the margins for error are non trivial. So any point forecast will very likely not be right. The likelihood of some outcome other than the central forecast is actually quite high. When comparing forecasts, if we are not talking about differences of at least half a percentage point, the argument is not worth having.

In any event, the question is not really whether the forecasts will turn out to be exactly right. The question is whether they form a reasonable basis for sensible analysis or decisions at the time. When the forecast turns out to be not exactly correct, as is very likely, that is actually not much of a basis on which to criticise the decision-makers who used the forecast (or, for that matter, the forecaster).

For monetary policy operating a medium-term inflation target, we are naturally interested in our ability to forecast inflation. Experience over the inflation targeting era (since 1993) suggests that the probability of the CPI outcome being within half a percentage point of the central forecast is roughly two in five at either a one-year or a two-year horizon. For underlying inflation, the probability of the forecast being within half a percentage point is about two in three at one year and just over one in two at two years. The smaller forecasting errors for underlying inflation reflect the inherently more stable properties of the underlying measure, which of course is by design.

Hence, if the central forecast for CPI inflation at a two year horizon was 2½ per cent, the chances of the outcome being between 2 and 3 per cent, based on this historical experience, would be about two in five. The chances of being between 1½ and 3½ per cent would be three in five. I note in passing that, if this is a reasonable description of forecast accuracy, it suggests that the configuration of the inflation target is a pretty good one (though I hasten to add that, when it was first set out, we did not really have a great deal of confidence in the accuracy of inflation forecasts).

It would, in my judgement, be vastly preferable for discussions of forecasts to be couched in more probabilistic language than tends to be the case in practice, and for there to be more explicit recognition that the particular numbers quoted are conditional on various assumptions. Careful observers will have noted that the latest forecasts published by the Bank actually have a range for growth and inflation at the horizon. Moreover, there is more extensive discussion these days of the ways in which things could turn out differently from the central forecast. This goes at least some way to recognising the inherent uncertainties in the forecasting process, and is also important in relating the forecast to the policy decision.

Taking account of the accuracy statistics I have quoted above, we can characterise the RBA's latest

published outlook as suggesting that, absent large shocks to oil prices or the Australian dollar, or further extreme weather events, or the world economy taking a serious turn for the worse (say, because of events in Europe), Australia's inflation rate in 2012 has a pretty good chance of being between 2 and 3 per cent. The chances of a similar outcome in 2013 are also reasonable, though with slightly greater probability that inflation would end up above 3 per cent in that year than seems the case for 2012. That is, the point forecast is a little higher in the second year. Even so, a margin of uncertainty is inevitable. A big change in any of the variables subject to assumptions would quite easily push outcomes away, and maybe a long way away, from the forecast.

This degree of uncertainty can of course be quite disconcerting. It is only natural to desire certainty. Everyone wants to know what will happen. We all want to believe that someone, somewhere, does know and can tell us what to expect. But the truth is that the best we can do when talking about the future is to speak about likelihoods and possible alternative outcomes.

This is not a counsel of despair. It is not as though we can say absolutely nothing about likely performance. We know something about average rates of growth through time, and we know something about the long-run forces that work to produce them (productivity and population growth). We know that there have been, and will be again, periods of recession and recovery, though our ability to forecast the timing of those episodes is limited. We know from experience some things about the nature of inflation, including its characteristic persistence, and the things that can push it up or down. We know some of the 'big forces' at work on the global and local outlooks – a once in a century terms of trade event, for example, and a once in a century deleveraging event in major countries. We know that our country is exposed to both forces – the expansionary effects of the rise in the terms of trade, and the dampening effects of a mild degree of deleveraging in our household sector (and indirect effects of the more intense deleveraging in some other countries). We also know that the terms of trade change is a large shift in relative prices, which will bring about changes to economic structure.

So there is a good deal we can say about the things that are relevant to our future, and economists' understanding about these forces will be helpful in making sense of what occurs over time. We simply have to recognise the limits on our capacity to predict their net impact with any precision.

This in turn has implications for the way policymakers use numerical forecasts. In the case of monetary policy, forming a forecast is unavoidably part of the process, simply because the evidence suggests that monetary policy changes take time to have their full effect. So we have to use forecasts – but not unquestioningly. We have to form a view about the big forces at work, but also operate with due recognition of the limitations of numerical forecasts. The extent to which policy should respond to forecasts will therefore always have some element of judgement.

The conduct of policy over the past few years has exhibited these features. The Bank's assessment of the very broad major forces at work has been central. Policy was tight in a period in which the economy was very fully employed, confidence was high, the terms of trade were rising and inflation was picking up. The very large and rapid easing of monetary policy late in 2008 and early 2009 was a response to a major change in the outlook, which occurred because the 'big forces' changed direction very quickly, due to the financial events at that time. Among other things, this saw strong growth in Asia go into sharp retreat, appetite for risk and willingness to lend sharply curtailed and confidence slump. The changes to monetary policy beginning in the latter months of 2009, designed to restore 'normal settings', occurred when it had become clear that the risk of a major economic contraction in Australia had passed. In fact, the 'big forces' in the expansionary direction had reasserted themselves, after an unexpectedly short absence: resurgent

Asian growth helped to push the terms of trade to new highs. In that world, leaving interest rates at 50-year lows would have been imprudent.

Over the past 18 months or so, policy changes have been much less frequent, but the process of decision-making has nonetheless not been dull. A year ago, the then current data on inflation showed nothing particularly alarming. The analysis of the Bank's staff suggested, however, that the fall in inflation we had been seeing since 2008 would probably not continue, but instead inflation would probably begin to rise, albeit quite gradually. The Board took the view that, on the basis of that outlook and in the circumstances prevailing, it would be prudent for policy to exert some mild restraint, and so it decided late last year to raise the cash rate by 25 basis points.

The inflation data for the first half of 2011 do indeed show some increase in underlying inflation (though after a sequence of revisions, this is not quite as large as it looked a few months ago). As of May this year, the central forecast was for inflation to pick up further over the ensuing couple of years, eventually rising to be clearly in excess of 3 per cent. This carried a simple message. As the Bank said in the May *Statement on Monetary Policy*:

> The central outlook sketched above suggests that further tightening of monetary policy is likely to be required at some point for inflation to remain consistent with the 2–3 per cent medium-term target.

But there was still a matter of judging how to respond to that message. The Board did not tighten policy at that time, nor did it do so three months later when the forecasts for inflation still looked similar to those in May. It certainly considered whether that course of action would be appropriate, but elected to sit still, watching unfolding events. Eventually, last month, far from tightening, the Board actually eased policy slightly – though by then, of course, the forecasts had changed materially from those of six months earlier.

This was not a repudiation of the forecasts, nor a sign that forecasts are not useful. The process of forming forecasts remains key to the forward-looking conduct of policy. In electing to take time in considering their response to signs of an increase in inflation, and central forecasts of further increases, the policymakers were simply recognising the inherent uncertainties of the situation and the difficulties the forecasters face, and giving those factors due consideration.

It is, in my view, entirely appropriate that there be this degree of limited discretion for the policymakers in their response to changes in numerical central estimates. It is not that forecasts should be ignored. But neither should the decision be rigidly and mechanically linked to forecasts. Were that to be so, the policymakers would in effect have delegated the policy decision to the forecasters, which is not what policymakers are supposed to do.

So the relationship between the formal forecasts and the policy decision can sometimes be a subtle one. Ultimately, the policymakers have to make a judgement call, based partly on what the central forecast says but conditioned also by the degree of confidence they have in it. At the same time it must be emphasised that policymakers can be in a position to make the sorts of judgements I have just been describing only if they have generally acted in a timely, forward-looking way in earlier decisions.

In my view, these judgements over the past year were the right calls. But in truth we will not know for a while – such are the lags in monetary policy. As always, more data will help the process of evaluation, though they might also provide evidence of new shocks (that is, things the forecasters could not predict). Such is the nature of the forecasting game.

In conclusion, to those of you here who do not have to make forecasts, I hope you realise how fortunate you are! To those who do, I offer my sympathy – and best wishes for clear vision over the year ahead.

Economic and Financial Developments

Ric Battellino, Deputy Governor

Address to Citi's 3rd Annual Australian & New Zealand Investment Conference
Sydney, 25 October 2011

Introduction

2011 has been a frustrating year for the world economy. The recovery in most of the large advanced economies lost momentum in the first half of the year and financial market volatility and concerns about sovereign debt posed renewed threats in the second half. This led the IMF in September to note that the world economy had 'entered a dangerous new phase'. In many ways, these difficulties can be seen as the continuing after-effects of the financial crisis that gripped the North Atlantic economies in 2008.

Australia, as with most of Asia, has to date been relatively shielded from the events in the North Atlantic countries. Nonetheless, the local economy has not been as buoyant as had been expected at the start of the year and downside risks stemming from further weakness in the major overseas economies or financial market volatility cannot be ruled out. The situation in Europe is particularly disturbing since the authorities need to agree on policies that deal simultaneously with excessive government debt, weak banking systems, soft economic activity and sharp differences in competitiveness among European countries.

The situation is not all gloom, however. Economic data in the United States over the past month or two have, more often than not, surprised on the upside; Asia is also generally continuing to do well; and some of the local economic news has also been more positive of late.

Let me run through some of these issues in more detail. I will start with the world economy.

The World Economy

As you know, 2010 had been a very strong year for the world economy. Growth was a little over 5 per cent, which is about as fast as the world economy ever grows. The strong growth was not surprising, as most countries were applying unprecedented amounts of monetary and fiscal stimulus as they sought to recover from the 2008/09 recession.

It was always expected that economic growth in 2011 would not be as strong. Early in 2011, most forecasters were expecting growth for the year of about 4½ per cent; while this was less than 2010, it was still a very good figure.

By the second quarter, however, economic outcomes were beginning to disappoint. In the United States, consumer confidence and spending weakened, possibly due to the strong increases in oil prices that had taken place; US industrial production was affected by the disruptions to global supply chains caused by the Japanese earthquake in March; employment growth slowed; and jobless claims, which had been gradually declining, started to rise again.

Growth in Europe also faltered in the second quarter, with confidence being eroded by the escalating concerns about sovereign debt in several European countries. And, of course, Japanese economic activity was severely disrupted by the after-effects of the earthquake.

Elsewhere in the world, however, economic activity remained robust. In fact, through most of Asia and Latin America the concern was that the strength of

economic activity was putting upward pressure on inflation, and the authorities in many countries in these regions were tightening monetary policy.

Overall, forecasts for global growth in 2011 were scaled back around mid year to around 4¼ per cent, due mainly to the softer outlook for the major developed economies.

Subsequent to this, the marked increase in financial market volatility that occurred in the third quarter caused analysts to expect further weakening in the global economy, due to the sharp falls in consumer and business sentiment that occurred in most countries and the significant reduction in wealth caused by the falls in share prices.

The reductions in growth forecasts were again most pronounced for the developed economies. IMF forecasts for growth in the United States and the euro area in 2011 were reduced to around 1½ per cent. Although growth forecasts for Asia and Latin America were also revised down somewhat, the forecast outcomes for these countries remained quite robust.

While the forecast for overall growth for the world economy in 2011 was reduced to 4 per cent, that figure is still a healthy outcome. It is broadly in line with trend. The disparate outcomes between the advanced economies and the emerging economies, however, mean that the growth is very unbalanced and there is a sense that the forecast is fragile because of possible severe downside risks.

While forecasts have been revised down since the recent period of financial volatility, the run of actual economic data that has become available over that period, at least for countries outside Europe, has generally been better than might have been expected. This is particularly the case in the United States. It seems that, before the onset of the financial volatility, the US economy was starting to recover from the first half slowdown and that, so far at least, despite the fall in confidence, real economic activity has held up. Recently, analysts have been revising up their estimates of annualised US GDP growth for the third quarter, and the consensus is now for a figure of around 2½–3 per cent.

Japan also seems to be continuing to recover gradually from the economic effects of the earthquake.

Elsewhere in Asia, recent data have been mixed, though broadly consistent with the modest slowdown that authorities in the region have been trying to achieve in order to contain inflationary pressures. India perhaps has been the country pursuing this approach most vigorously, and seems to be the country where growth has slowed most noticeably. Overall, however, growth in the region remains solid. Growth in Chinese GDP over the year to the September quarter was 9.1 per cent, and recent monthly data for retail sales and industrial production have been robust. The latest data available to the Bank on shipments of Australian coal and iron ore to China (these are up to September) suggest that shipments have held up, though the weakening in iron ore prices over the past couple of weeks may be pointing to some softening ahead.

The Australian Economy

Here in Australia, 2011 got off to a shaky start, despite the bright prospects offered by the second phase of the resources boom. A lot of this was due to the weather, as cyclones and floods disrupted economic activity, and coal production in particular. As you know, GDP fell noticeably in the first quarter of the year.

GDP recovered in the second quarter but, overall, measured economic output in the first half of the year was pretty flat. As well as the weather-related disruptions, there remained a generally cautious mood among households and businesses.

As the Bank has pointed out before, in recent years there has been a structural change in household spending and financing in Australia.[1] After a 10–15 year period during which households

1 See Stevens G (2011), 'The Cautious Consumer', Address to The Anika Foundation Luncheon, Sydney, 26 July.

increased their gearing and reduced their rate of saving, they have returned to a more conservative, and traditional, pattern of financial behaviour. Household credit growth has slowed to a rate in keeping with, or slightly below, the growth in household incomes; the saving rate has increased to a level that is more normal based on history; and household spending growth has slowed from a rate that substantially exceeded household income growth, to one that, over the past year, has been broadly in line with income growth. Within total consumer spending, there appears to have been a shift away from spending on goods in stores to spending on services, particularly services such as overseas travel, eating out and entertainment. As a result, retail sales have been particularly weak.

This adjustment in consumer behaviour has created a difficult trading environment for some businesses, coming as it has after a prolonged boom. But the adjustment in Australia has been benign compared with the adjustments in household finances and housing markets elsewhere in the world, and it has put household spending and financing on a more sustainable path. This will ultimately benefit the health of the economy.

In the case of business investment, there is a clear dichotomy between the resource and non-resource sectors of the economy. Investment by the former is very high at present, and much more lies ahead. Outside the resources sector, however, business investment is relatively flat. In some cases this is due to the dampening influence of the high exchange rate, with the manufacturing and tourism industries particularly affected. In the case of tourism, the problem is not so much that foreign tourists have stopped coming to Australia but that many more Australians are going overseas. Overseas trips by Australians are running about 60 per cent higher than five years ago. Given the increase in overseas travel, it is not surprising that the traditional holiday destinations in Australia, such as the Gold Coast and North Queensland, are currently among the weaker parts of the Australian economy. In other sectors, such as commercial property, the weakness is mainly the result of investors and lenders having to deal with the consequences of over-gearing in the pre-2008 period. When too much borrowing and lending occurs, as it did in this sector, it can take many years for the excesses to be unwound. Some large adjustments have already taken place in the commercial property sector but the process probably still has further to run.

While the sectoral composition of business investment is uneven, the overall growth of investment has been very solid, with a rise of 6 per cent in the first half of 2011. Overall, private demand is rising solidly, and taking the place of public spending, which is now growing more slowly as earlier fiscal stimulus is unwound.

Total final demand grew by 3.4 per cent over the year to June, which is about in line with past trends. That, however, has not translated to trend growth in GDP, as the high exchange rate and the high import content of some mining investment have seen an increased proportion of demand being met from imports, rather than domestic production. The weather-related disruptions to coal exports added to the shortfall in production. In this environment, employment growth slowed noticeably in the first half of the year, and around the middle of the year there was some rise in unemployment.

At the same time, inflationary pressures, which had declined through 2010, appeared to pick up noticeably in the first half of 2011 and the prospects were that inflation would rise to above the target range of 2–3 per cent over the next couple of years. That created a difficult environment for monetary policy. As the Bank noted after the October Board meeting, however, the downward revisions to recent estimates of underlying inflation and the softer global economic outlook have made the outlook for inflation less concerning, providing scope for monetary policy to be supportive of economic activity, if needed. Tomorrow's CPI data will provide further information in this regard.

It remains to be seen how the Australian economy will respond to the recent financial volatility and the consequent fall in confidence and the loss of wealth. To date, however, as in the United States, the flow of monthly data in Australia has been a little better than might have been expected given the volatile financial environment. Retail sales have picked up a little, housing loan approvals also seem to be picking up somewhat, most measures of business conditions remain around average levels and the most recent employment data have been more positive after a number of weak months. Nonetheless, job vacancies and advertisements are lower than their peak around the start of the year, overall credit growth remains subdued and the housing market remains soft.

Recently, there has been some easing in financial conditions following the fall in market interest rates that has accompanied the financial volatility. Banks have passed through to borrowers notable declines in interest rates on term housing loans and some business loans, as their cost of funds has declined. Increased competition among banks in response to the increased availability of deposits and relatively subdued demand for loans, has also resulted in some shaving of interest rates on standard variable mortgage loans for new borrowers. As a result, the interest rates on new loans are now around 10–15 basis points lower than they were early in the year. The modest net fall in the exchange rate in recent months has also, to some extent, reduced pressures on some sectors of the economy.

Looking Ahead

As I have noted, as yet there have not been signs outside Europe that the rate of growth of economic activity has taken another step down since the recent bout of financial volatility. It is, however, still too soon to conclude that this will not happen. As we have seen from last weekend's events in Europe, much still needs to be done to deal with the challenges these countries are facing, and further market volatility is therefore to be expected. The United States also has challenges to deal with in the areas of fiscal policy and housing, so it would be optimistic to assume that the US economy will resume robust growth any time soon. Economic activity in large parts of the developed world is therefore likely to remain subdued in the period ahead.

The question is whether this will flow through in due course to the large emerging economies that have been the main force driving global GDP growth in recent years. Some flow-on is, of course, to be expected, even if the situation in the advanced economies does not deteriorate further. However, so far at least, there has not been the debilitating freezing up of trade finance that damaged Asian economies in 2008.

More generally, domestic demand in these economies has considerable momentum and, should it slow more than the authorities desire, they have considerable scope to provide support via monetary and fiscal policy, unlike in many advanced economies. The fact that inflationary pressures in many of these economies seem to be peaking may provide room to do so.

Overall, while it is possible that the global economic situation might take a sharp turn for the worse, at this stage the Bank's central scenario is that global GDP growth will be broadly in line with its long-run average over the period ahead. That would create a reasonably benign environment for the Australian economy. The global situation remains fragile, however, and will require careful monitoring.

Will Australia Catch a US Cold?

Ric Battellino, Deputy Governor

Address to the Euromoney Forum
New York, 21 September 2011

It is a great pleasure to be taking part in this conference, and in particular to be here in New York again.

I have been visiting New York regularly for a large part of my career at the Reserve Bank. I have always very much enjoyed these visits, but that, of course, was not their purpose. The point of my visits was to find out what was going on in the US economy because, for a long time, this had a major bearing on the Australian economy.

Through the 1980s and into the 1990s, developments in the Australian economy showed a close correlation with those in the US economy. It was particularly striking that the recessions of the early 1970s, early 1980s and early 1990s were highly synchronised between the two countries and had many similarities in their nature and origins. As a result, it was common in the 1980s and 1990s to hear the phrase 'when the US sneezes, Australia catches a cold'.

Australian economists, including those in the Reserve Bank, spent a lot of time researching the question of why growth in the Australian economy was so highly correlated with that in the US. We were intrigued by the closeness of the relationship because the trade flows between the two economies were not particularly large. The United States has always been only a moderately important export destination for Australia.

The research unearthed various channels that contributed to the close relationship, but two factors seemed particularly important:

First, the economic shocks faced by the two countries in the lead up to the recessions of the 1980s and 1990s were similar, as were the policy responses. It was understandable, therefore, that the economies would follow similar paths.

Second, the financial and cultural links between the two countries have always been very strong. The United States is a large investor in Australia and many Australian companies have operations in the US. US economic news receives very wide coverage in the Australian media. This, in turn, has often promoted very similar movements in financial prices, business sentiment, and even household behaviour.

Scrutiny of this close relation between the two economies reached its peak around the mid 1990s. Ironically, this was around the time when the relationship began to change.

Certainly, by the first decade of this century, the paths of the economies had clearly diverged. Whereas the United States experienced recessions in 2001 and 2008/09, the economic downturns in Australia around those times were relatively mild. It has been 20 years since the Australian economy experienced a year of negative growth. This represents the longest period of uninterrupted growth in Australia's economic history, and one for which there are few precedents among the developed economies.

Why have the paths of the two economies diverged? I don't think I can provide an exhaustive or conclusive answer to this question, but there are a couple of factors that have clearly played significant roles.

First, both the 2001 and 2008/09 recessions in the United States were to a large degree the consequence of financial misadventure. The former was heavily influenced by the collapse of the 'tech' bubble, and the latter by the collapse of the sub-prime housing bubble.

Australia was not affected nearly as seriously by either of these events. The tech bubble largely missed Australia. In fact, in the late 1990s Australia was constantly being berated for being an old-world economy in that it did not have a homegrown information technology industry. As it turns out, being a heavy user of technology, but not a manufacturer of it, was an advantage. The Australian economy was not distorted by the tech bubble that built in the late 1990s, and it did not weaken as much as the US economy when the price of tech stocks collapsed in 2001.

The mildness of the 2001 economic slowdown in Australia meant that the Reserve Bank was able to normalise interest rates relatively quickly thereafter. In the event, this helped Australia avoid the worst of the excesses in housing markets that subsequently built up in many other countries. The housing market was most 'frothy' for Australia as a whole around 2002–2003, and it cooled noticeably in 2004 as interest rates rose. While there were subsequent price increases in particular cities, the speculative element in the market had subsided considerably in most states by the time the global financial crisis hit in 2008.

Aside from increasing interest rates, the Reserve Bank also warned repeatedly around that time about the danger of excessive increases in house prices and borrowing, which may have, at the margin, curtailed some speculative activity. It was also helpful that the Australian Prudential Regulation Authority (APRA), the prudential supervisor, pressed the banks to maintain relatively high lending standards. While there was some sub-prime lending activity in Australia, it was on a small scale, and mainly by non-bank lenders. As such, arrears rates on housing loans have remained at low levels, and Australian banks have remained profitable. Australia, therefore, did not have a homegrown financial crisis in 2008/09, and its financial institutions also had little direct exposure to the US housing market. As a consequence, just as had been the case in 2001, Australia experienced only a mild economic slowdown in 2008/09.

The fact that Australia avoided the direct impact of both the tech crash and the sub-prime crisis obviously helps to explain why the Australian economy has done better than the US in the past decade. But another factor that has contributed to its outperformance has been the growing role of China in the global economy. The expansion of China has had an overwhelmingly positive impact on the Australian economy over the past 10 to 15 years, whereas the implications of the Chinese expansion for the United States have been more mixed. The integration of China into the global economy has been an important factor shaping the performance of many economies over the past 10 to 15 years. Generally, economies that complement the Chinese economy have done relatively well. Obvious examples are commodity exporters such as Australia and some Latin American countries, exporters of capital equipment and luxury cars, such as Germany, and countries that are part of the China supply chain, such as many in Asia.

Arguably, Australia is one of the economies that most complements the Chinese economy. It is a large producer of food, energy, basic materials and education and tourism services – products and services for which China has a very strong demand – while the limited size and specialised nature of Australia's manufacturing sector mean that the economy as a whole is not facing widescale competitive pressures from China. As evidence of this, over the past decade Australia has experienced a much larger rise in its terms of trade than all other major commodity exporters, apart from Chile.

While it is clear that China now has a large influence on the Australian economy, that is not to say that US developments no longer matter. Clearly, they do. They continue to play an important role in shaping financial market behaviour, and household and business sentiment. The point, however, is that over the past 10 to 15 years these channels have not been powerful enough to dominate overall economic outcomes, being outweighed by the other influences I have mentioned.

At this juncture, the US and Australian economies find themselves in very different cyclical positions. The United States is still struggling to recover from the deep recession caused by the sub-prime crisis, while Australia, having grown for 20 years, is operating with relatively little spare capacity and is investing heavily to meet rapidly growing demand for resources from China, and elsewhere in Asia.

A topical question at present is whether the recent turmoil in global markets will eventually overwhelm the positive effects on the Australian economy from China.

That could occur either because the financial uncertainty undermines household and business confidence, and therefore consumer and investment spending, or because the turmoil also weakens the Chinese economy, leading to reduced demand for resources.

It is simply too early to be able to answer this question. For one thing, nobody yet knows when, or how, the issues that are causing the financial turmoil will be resolved. In some cases they go to the heart of institutional arrangements in Europe, and cannot be resolved quickly. It is impossible to know, therefore, how long the turmoil will last, or even if it will escalate further.

As yet there is little in the way of hard economic data available for the period since financial market volatility escalated, but let me briefly run through what we do know.

I will begin with some observations about China. A few years ago, a common question was whether the Chinese economy could continue to grow if the US economy slowed. The experience of the past three or four years has, I think, answered that question, and the answer is in the affirmative. China has maintained strong growth in the face of the US recession and the sluggish recovery. The latest batch of Chinese data, which relates to August, suggests that any slowing in the economy has, to date, been modest. This is confirmed by recent data on Australia's shipments of coal and iron ore to China, which have also held firm. So too have the prices of iron ore and coal.

In relation to Australia, the most comprehensive data on the economy – the national accounts – are only available up to the June quarter, and so pre-date the recent financial volatility. They confirmed, at that point, a picture of very strong business investment; declining government investment, as earlier fiscal stimulus is unwound; relatively flat dwelling investment; and weak commercial construction. All this was broadly in line with expectations.

The one area of the national accounts that surprised was the strength of household consumption. Retail sales had been subdued through much of this year, and this had generally been taken as a sign of weak consumption overall. But the national accounts showed that household spending on services has been strong. Households are spending more on entertainment, eating out and travel, particularly overseas travel.

At one level, this was surprising given the clear signs of caution among households, but it is less surprising when account is taken of the ongoing fast pace of increase in household income. For a time, this increased income was used to rebuild saving, but with the household saving ratio having stabilised in recent quarters, income growth is now providing the wherewithal to fund consumption.

The national accounts also showed that Australia's GDP continues to be affected by the severe effects on mining activity of the floods over the Australian summer. Taken literally, the weakest sector of the Australian economy over the past year has been the mining sector, where output has fallen by 9 per cent.

We know this is in the process of being reversed, so we need to look through it to judge the underlying strength of the economy. Our estimate of the underlying trend in mining-related activity over the next couple of years is for increases in the order of 10 to 15 per cent. The rest of the economy on the other hand, is growing at an annual rate of only

about 2 per cent. This is below what would have been regarded as normal in the past.

This slow pace of growth in the non-mining sector is not simply a matter of a shortfall in demand. There are signs that the capacity of this part of the economy to supply goods and services has also slowed. For one thing, growth in the working-age population has slowed markedly over the past couple of years, due largely to a slowdown in immigration. Also, productivity growth continues to be low. For growth in the non-mining economy to pick up, it is likely that these trends will need to reverse.

Labour market data are available up to August. They continue to point to soft outcomes for employment, after the surprisingly fast increase last year. The unemployment rate has also risen by 0.4 percentage points over the past few months, after having been steady at around 5 per cent for much of the year. These trends could be an indication of the economy having slowed recently to a pace that is below its potential.

On the other hand, there are some aspects of labour market numbers that have a stronger feel. Contrary to the slowing in the number of people employed, there has been solid growth in total hours worked recently. Also, the very recent rise in unemployment has been most pronounced in the resource-rich states, while an independent indicator – the number of people on unemployment benefits – does not point to any rise in unemployment. All this suggests more information is needed before we can draw any firm conclusions about whether or not the labour market is weakening.

Measures of consumer and business confidence declined sharply in August, following the increase in financial market volatility. This is not surprising. Consumer confidence has subsequently recovered somewhat in September. We will need to wait to see how these swings in confidence affect spending. So far, recent liaison information from retailers does not point to any further significant weakening.

Let me end with a few words on how the Reserve Bank has been seeing monetary policy.

The context for monetary policy over the past year or so has been that the overall economy is operating with relatively little spare capacity, and is facing a very large boom in investment and a large rise in national income. The Bank's view has been that, if this is to be accommodated without generating undue inflationary pressures, other components of spending would need to grow less than might otherwise be the case. The implication of this is that monetary policy would need to provide an element of restraint. Accordingly, the Bank late last year lifted the cash rate to the point that resulted in most lending rates in the economy being a little above average.

From time to time over the past year, the Bank has considered whether further restraint was required, but on balance concluded that existing policy settings remained appropriate, particularly given the restraint also being applied by the high exchange rate. At its most recent monetary policy meeting, the Board judged that the recent financial volatility could weaken the outlook for demand, and hence may, in due course, act to dampen pressure on inflation. On this basis, the Board judged that it was prudent to maintain the current stance of monetary policy.

In the meantime, financial markets seem to have concluded that the risks are weighted towards the Australian economy weakening sharply and, taken literally, seem to be pricing in a reduction in official interest rates towards the unusually low levels reached after the global financial crisis. There are technical reasons why current market pricing may not be giving an accurate picture of interest rate expectations. Nonetheless, markets do seem to have reached a pessimistic assessment and this appears to be based mainly on the assumption that weakness in the US and Europe will flow through to Australia.

The present situation has some similarities to that in 2003. From late 2002 to the third quarter of 2003,

financial markets were pricing in cuts in interest rates in Australia, largely on the back of concerns about the sluggishness of the US recovery at that time. In the event, however, that sluggishness in the United States did not flow through to the Australian economy and Australian interest rates did not fall.

Conclusion

Let me conclude.

It is too early at this stage to judge with any degree of certainty whether Australia will catch cold from the US. However, given that over the past 10 to 15 years the Australian economy has been less vulnerable to severe US symptoms, there are reasonable grounds for optimism.

Until a clearer picture emerges, the Bank's approach will be to keep an open mind, and base its assessments about appropriate policy on a careful analysis of the data that become available.

Reserve Bank Publications

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

Statement on Monetary Policy

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

Financial Stability Review

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

Annual Reports

- *Reserve Bank of Australia Annual Report*
- *Payments System Board Annual Report*
- *Equity & Diversity Annual Report*

Research Discussion Papers (RDPs)

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

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

Conference Volumes

Conference volumes have been published on the Bank's website since 1993. The most recent titles are:

- *The Australian Economy in the 2000s*, December 2011
- *Reserve Bank of Australia 50th Anniversary Symposium*, July 2010
- *Inflation in an Era of Relative Price Shocks*, May 2010
- *Lessons from the Financial Turmoil of 2007 and 2008*, October 2008
- *The Structure and Resilience of the Financial System*, November 2007
- *Demography and Financial Markets*, October 2006
- *The Changing Nature of the Business Cycle*, October 2005
- *The Future of Inflation Targeting*, November 2004

Other Publications

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

- *2010/11 Assessment of Clearing and Settlement Facilities in Australia*, September 2010
- *Review of Card Surcharging: A Consultation Document*, June 2011
- *Strategic Review of Innovation in the Payments System: Issues for Consultation*, June 2011
- *Strategic Review of Innovation in the Payments System: Results of the Reserve Bank of Australia's 2010 Consumer Payments Use Study*, June 2011
- *Central Clearing of OTC Derivatives in Australia*, June 2011
- *Submission to the Inquiry into Access for Small and Medium Business to Finance*, February 2011
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- *Submission to the Inquiry into Access of Small Business to Finance*, March 2010

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