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Cycles in Non-mining Business Investment

Stephen Elias and Craig Evans*

Growth in private non-mining business investment has been quite subdued over the past few years relative to the cyclical upswings seen in the 1980s and 1990s. Part of this weakness can be explained by cyclical factors that affect investment – such as a more moderate pace of growth in the output of, and demand for, non-mining goods and services. Further, the increasing importance of sectors of the economy that require less physical capital is likely to have weighed on non-mining investment in recent years. Nonetheless, non-mining investment is expected to pick up over time, supported by a gradual increase in the growth of domestic demand and accommodative monetary conditions.

Introduction

Private business investment has grown strongly over recent years, driven by mining investment. Private non-mining business investment – which is greater than mining investment – has, however, been quite subdued in recent years. This article examines how the most recent cycle in private non-mining business investment compares with that of previous cycles, and outlines some possible reasons why non-mining business investment has remained relatively subdued in recent years. The Bank's current forecast is for mining investment to fall sharply over the next few years, while growth of non-mining business investment is expected to pick up, although there is considerable uncertainty around the timing and extent of these changes.

Data

Private non-mining business investment has experienced a number of distinct cycles over the past 50 years. Since the downturns are often of short duration, it is desirable to use quarterly rather than annual data to identify the various cycles accurately. However, the Australian national accounts only provide private business investment data *by sector* at an annual frequency. Hence, an estimate of quarterly

private non-mining business investment needs to be constructed.

To do this, we estimate quarterly series of mining investment by asset type (non-residential construction, machinery and equipment, and intellectual property), and then derive the quarterly level of private non-mining business investment as a residual item.¹ The quarterly mining investment series are constructed by comparing the available annual national accounts data for the mining sector with closely related mining quarterly series from the ABS Private New Capital Expenditure and Expected Expenditure (Capex survey) release.² Specifically, the benchmarking procedures developed by Denton (1971) are used to create quarterly estimates of mining investment that are consistent with the annual national accounts data. Given the existing *total* private business investment data from the national accounts, the quarterly mining investment estimates allow for quarterly non-mining estimates to be derived as the residual of these.

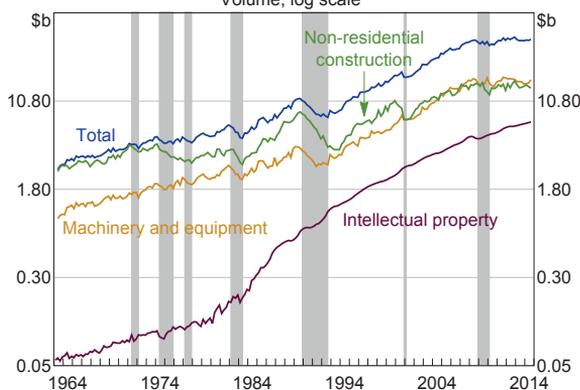
1 Mining sector investment includes all investment by companies mainly involved in resource extraction, regardless of whether that investment is directly mining related.

2 Where a closely related series was not available, quarterly movements in a related measure for all industries from the national accounts were used. For example, mining sector research and development and computer software investment data are not available in the Capex survey, so their respective quarterly series for all sectors in the national accounts were used.

* The authors are from Economic Analysis Department.

To identify cycles in private non-mining business investment and its components, we used the Bry-Boschan quarterly (BBQ) algorithm described in Harding and Pagan (2002), adjusting the criteria to reflect the characteristics of the non-mining investment data. Broadly speaking, a trough occurs when the level of private non-mining business investment is estimated to be lower than it was in the two quarters prior to, and two quarters following, the quarter in question. This method identifies seven cycles in private non-mining business investment over the 50 years to 2013 (Graph 1). There were three downturns in the 1970s, one in the early 1980s, one in the early 1990s, and one around the time of the introduction of the GST in 2000. These align fairly closely with Australian economic recessions and/or periods of weakness in the growth of activity. The most recent trough in non-mining investment is estimated to have occurred in the March quarter 2010 following the global financial crisis.

Graph 1
Private Non-mining Business Investment
 Volume, log scale*



* Excluding investment in livestock and orchard growth; adjusted for second-hand asset transfers between the private and other sectors; shaded periods indicate downturn

Sources: ABS; RBA

We do not classify the weakness in non-mining investment since the beginning of 2013 as another downturn. While the BBQ algorithm would suggest that it is, some methods that allow for the fact that non-mining investment downturns tend to occur during periods of weakness in other observed variables suggest that it is more likely that non-mining

investment was not in a downturn. For instance, in applying the framework used in Filardo (1994) or an adaptation of Kim and Nelson (1999, pp 124–126) to non-mining investment, the estimates suggest that there is less than 50 per cent chance that non-mining investment was in a downturn in early 2013.

Cycles in Private Non-mining Business Investment

It is not surprising that downturns in private non-mining business investment tend to occur at the same time as broader slowdowns in the Australian economy. Investment tends to fall more sharply than overall output during slowdowns, but then typically recovers more strongly in upswings. However, there have been more downturns in investment over the past 50 years than broader economic slowdowns and, on average, the duration of investment contractions has been slightly longer.

On average, during the past 50 years, downturns in private non-mining business investment have lasted around two years and investment has contracted by 16 per cent from peak to trough (Table 1). Investment expansions, on average, have lasted around five years and seen growth of more than 70 per cent. There has, however, been considerable variation around the size of the contractions (Graph 2). The 1980s and 1990s downturns were substantial – with falls in non-mining investment of between 25 and 50 per cent – in line with the significant declines in activity in the rest of the economy during these periods. In contrast, the 1970s downturns saw falls of around 10 to 15 per cent. The most recent downturn was much smaller than the 1980s and 1990s downturns but was similar in magnitude to the declines seen in the 1970s episodes.

Cycles in which downturns were larger have tended to be followed by stronger recoveries. In the 1980s and 1990s cycles, private non-mining business investment fell sharply but recovered rapidly to be more than 50 per cent higher than its trough after four years. In contrast, the decline and subsequent

Table 1: Non-mining Investment Cycles^(a)

As at 4 December 2014

	Total ^(b)	Machinery and equipment	Non-residential construction	Intellectual property
Number of cycles since 1963	7	8	6	4
Average duration of contraction (quarters)	6	5	9	2
Average duration of expansion (quarters)	19	18	17	23
Average decline in contraction (per cent)	16	15	30	14
Average growth in expansion (per cent)	71	65	81	72

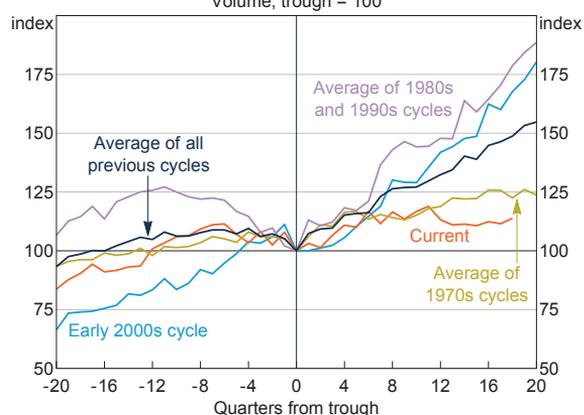
(a) Includes complete phases of cycles only

(b) Excludes investment in livestock and orchard growth

Sources: ABS; RBA

**Graph 2
Private Non-mining Business Investment***

Volume, trough = 100



* Excluding investment in livestock and orchard growth; adjusted for second-hand asset transfers between the private and other sectors

Sources: ABS; RBA

expansions in investment in the 1970s and the current cycle have been more modest.

The longer duration of non-mining business investment downturns (relative to the rest of economic activity) largely reflects the behaviour of the non-residential construction component of non-mining investment, which sometimes experiences quite protracted downturns. In contrast, non-mining machinery and equipment investment appears to have experienced more frequent downturns, but they have been of a relatively shorter

duration and smaller magnitude. This increased frequency of downturns in machinery and equipment may reflect the relative ease of ceasing investment in this asset type, compared with buildings and structures for which the projects may be committed to early in the construction process. Conversely, the shorter period required for companies to undertake planning, and to obtain approvals and funding for, machinery and equipment investment, compared with the more substantial requirements to build new structures, means that it can recover sooner.

Most of the downturns in private non-mining business investment have seen both machinery and equipment investment and non-residential construction investment contract. In contrast, intellectual property investment,³ which is currently around one-sixth of non-mining investment, is estimated to have experienced only one downturn in the past 30 years. This stability largely reflects computer software investment, which has grown consistently since the mid 1980s.

Taking all earlier downturns together, the most recent downturn in non-mining investment was less substantial than the average peak-to-trough

³ Intellectual property investment includes investment in research and development, computer software, and entertainment, literary and artistic originals.

contraction. After initially recovering at around its average pace, the strength of the recovery during the recent episode has moderated such that, as a whole, the current recovery in non-mining investment is noticeably weaker than the average recovery. These features are evident in both non-residential construction investment and machinery and equipment investment (Graph 3 and Graph 4).

The Current Cycle

As discussed above, private non-mining business investment is currently experiencing a weaker recovery than those in the past. A number of factors weighing on non-mining investment are likely to be cyclical and, therefore, wane over time. However, there are several longer-run determinants of business investment that may also be contributing to a weaker recovery. While theories such as the accelerator model of investment or Tobin’s q model are relatively clear about what factors are relevant to investment (such as expected demand or the user cost of capital), it can be difficult to establish these links empirically for many of the factors.

Kent (2014) outlined several reasons why non-mining investment may have been subdued in recent years. These include: the relatively low growth of both current domestic demand and businesses’ expectations of future demand; below-average levels of business confidence (until about mid 2013); the effects of the high exchange rate on domestic firms producing tradable goods and services; businesses’ lower appetite for risk; and changes in longer-term determinants of investment.

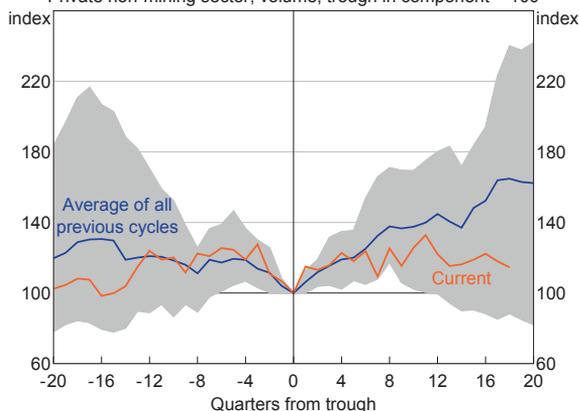
There do not seem to be consistent patterns in the behaviour of the exchange rate, measures of business confidence or the appetite for risk in past cycles of non-mining business investment. However, the downturn in domestic demand in the current cycle was milder than in the downturns in the 1980s and 1990s, and the subsequent growth rate of domestic demand has also been less strong (even after excluding the large decline in mining investment). Hence, the lower rate of growth in non-mining output may partly explain a lower rate of growth in investment in the current recovery relative to that seen in previous recoveries.

Firms have indicated through the Bank’s liaison program that they are reluctant to commit to a substantial increase in investment until they see a sustained pick-up in sales of their products that would require them to add new productive capacity.

Graph 3

Non-residential Construction Investment*

Private non-mining sector, volume, trough in component = 100



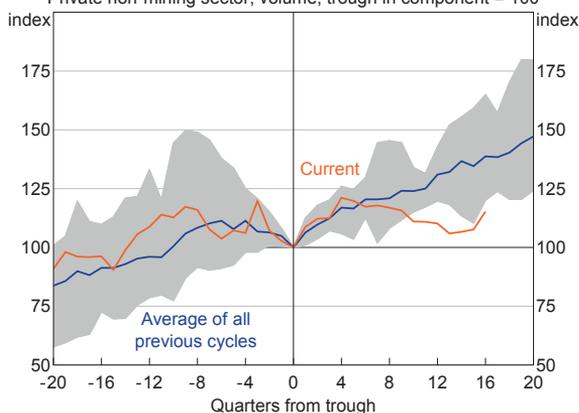
* Adjusted for second-hand asset transfers between the private and other sectors; shaded region represents the range of previous outcomes

Sources: ABS; RBA

Graph 4

Machinery and Equipment Investment*

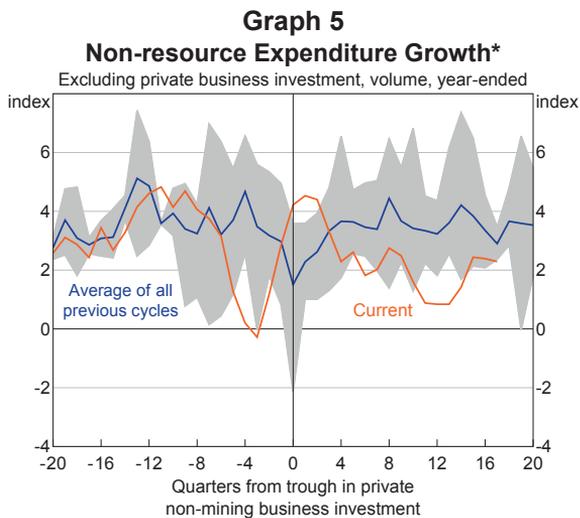
Private non-mining sector, volume, trough in component = 100



* Adjusted for second-hand asset transfers between the private and other sectors; shaded region represents the range of previous outcomes

Sources: ABS; RBA

Indeed, surveys suggest that non-mining capacity utilisation has been below average over the past few years, although it has picked up to around average more recently. Growth in the parts of the economy that would drive demand for domestic businesses' goods and services appears to have been weaker at this stage of the recovery than in previous cycles, notwithstanding some recent improvement (Graph 5). Some of this weakness in demand reflects the changing behaviour of Australian households and governments since the global financial crisis. For example, the household saving rate increased sharply from 2006 and has been relatively stable over recent years following a long period of decline up to the mid 2000s. Accordingly, consumption growth has been weaker compared with the pace seen through the early 2000s (Kent 2013).



* Public and dwelling investment, consumption and non-resource exports; shaded region represents the range of previous outcomes
Sources: ABS; RBA

The fact that firms are reporting that they have sufficient capital, such that the anticipated recovery in non-mining investment might be weaker than in the past, could also be related to longer-term structural factors affecting the amount of capital required to produce a unit of output. This could be, for example, because relatively more growth in the

economy is being accounted for by sectors that are less capital intensive, such as the services sector, and this could weigh on investment for a time.

Another structural factor relates to evidence that the average life of capital in aggregate has increased, such that less investment is required to replace depreciated capital. This could reflect a number of factors. For example, data from the Australian Bureau of Statistics suggest that capital in the services sector typically has a longer life than in sectors such as manufacturing. As the share of services rises, this would see investment to replace depreciated capital contribute less to real investment growth than in the past.

Conclusion

The current recovery in non-mining investment appears to be weaker than those of the 1980s and 1990s and more similar in strength to those seen in the 1970s. Part of this weakness can be attributed to cyclical factors that are expected to influence investment, such as modest rates of growth in non-mining activity and domestic demand. Further, compositional changes in the economy towards sectors that require less fixed capital may also have been weighing on non-mining investment. Even so, with growth in domestic demand forecast to pick up gradually, non-mining investment is expected to pick up, supported by the current accommodative monetary conditions. ✕

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Labour Movements during the Resources Boom

Mary-Alice Doyle*

Resource construction employment grew rapidly during the investment phase of the resources boom. However, both investment and employment in the resources sector peaked in 2013 and are expected to decline over coming years. A range of sources suggest that the earlier increase in resource construction employment largely drew on workers with experience in other types of construction, and that demand for their skills from other sectors is expected to be relatively strong in coming years. As a consequence, resource construction workers are generally expected to be able to find employment outside of the resources sector.

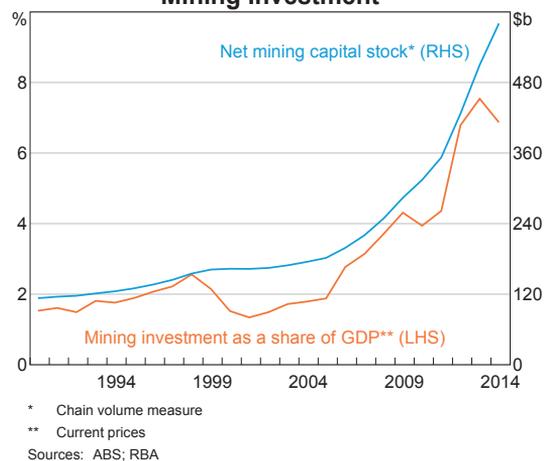
Introduction

Resource investment in Australia grew rapidly from the mid 2000s, as high commodity prices encouraged new investment in iron ore, coal and liquefied natural gas (LNG) facilities. Mining investment increased from around 2 per cent of GDP in the mid 2000s to a peak of close to 8 per cent in 2013. The level of the mining capital stock almost tripled over this period (Graph 1). The boom in investment led to a rapid increase in resources sector employment, as a large number of workers were required to construct the new facilities. On-site resource construction employment is estimated to have increased from around 15 000 in the mid 2000s to around 90 000 in 2013.¹ Resource construction activity is expected to fall over the next few years as resource projects are completed, and liaison-based estimates suggest that the labour required for the operation of the new mines and LNG facilities is typically only around one-third of that required for project construction. Consequently, there is likely to be a significant net decline in resources sector employment.

* The author is from Economic Analysis Department and would like to acknowledge the valuable input to this article from all colleagues in the Regional and Industry Analysis section.

1 There are no official data on the level of resource construction employment. The estimates presented here are based on information obtained through the RBA's business liaison program and should be interpreted as indicative rather than precise.

Graph 1
Mining Investment



This article looks at how the resources sector was able to increase employment so rapidly by considering the characteristics of workers who moved into resource construction jobs. Household-level data and information from the Bank's business liaison program² suggest that the majority of people who moved into resource construction jobs had previous experience in other types of construction. As a consequence, these workers have skills that should allow them to transfer back to non-resources sectors, such as residential and civil construction. Most liaison

2 For a description of the business liaison program, see RBA (2014).

contacts expect that workers will be able to return to their previous industries; for many workers, this has already occurred. Of course, this transition will also depend on the growth of aggregate labour demand, which is expected to remain a little below trend in the near future. The smoothness of this transition will also depend, in part, on geographical labour mobility, as many relevant job opportunities will lie outside of Western Australia and Queensland where most resource construction workers currently reside.

Two types of resources sector employment can be identified: construction and operational. There is also substantial resource-related employment in other industries, such as business services and equipment hire, which is not considered in this article.³ The ABS collects data directly on operational employment in the resources sector. Information from the Bank's business liaison program has been used to estimate the number of construction workers in the resources sector.

Labour Movements and Characteristics during the Run-up in Resource Investment

The resource investment boom was accompanied by a substantial adjustment in the labour market, as strong demand for labour and the high wage rates on offer in the resources sector attracted workers from other industries. However, this dynamic is difficult to quantify because there are no official data that specifically isolate resource construction workers from other types of construction workers. Consequently, this article relies on insights from the Bank's business liaison program.

Many contacts from the RBA's liaison program reported losing workers to the resources sector during the investment boom period, especially from the construction, agricultural, manufacturing and business services industries. A large number of these workers apparently moved into resource construction on a short-term basis, with liaison

contacts noting that some workers returned after a few months, typically before construction projects were complete. There appears to have been frequent turnover of on-site labour. Part of that reflected the reportedly high level of voluntary turnover in the industry. In addition to this, resource project construction usually occurs in stages, each lasting a few months and requiring different skills (such as earthmoving, construction of on-site infrastructure and assembly). Hence, while some construction workers who specialised in resource construction tended to move from project to project, contacts reported that many workers moved into the resources sector to work on a single project for a few months, and then returned to other sectors.

In addition to liaison information, two sources of household-level data are useful for determining the characteristics of workers who became involved in the construction phase of the resources boom:⁴

- Data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The annual HILDA Survey provides longitudinal data on household characteristics, including income, employment and location.⁵ Accordingly, these data can be used to compare the characteristics of people who started a new job in the construction industry during the 2008–12 period (when resource investment and employment were growing most rapidly) with those who started a new job in construction in the five years prior.⁶
- Census data from 2011 can be used to identify categories of workers who are likely to be involved in resource construction. The focus

4 The construction industry is made up of three sub-industries as defined by the ABS: building construction, heavy & civil engineering and construction services. For both datasets, analysis of the construction industry excludes the building construction sub-industry. This eliminates some, but not all, residential, office, retail and industrial construction workers from the sample. The two remaining sub-industries, construction services and heavy & civil engineering, are likely to be most representative of resource construction workers.

5 For a longitudinal study, data are gathered for the same subjects over a period of time.

6 The two periods contain 469 and 634 observations, respectively, of workers commencing a job in the construction industry. Conclusions are robust to changes in dates.

3 These broader estimates are provided in Rayner and Bishop (2013).

here is on construction workers whose usual residence is in a mining region or whose place of work is in a mining region.

Previous industry and occupation

HILDA data can be used to draw inferences about resource construction workers' previous industries and occupations. The data do not distinguish between resource and non-resource construction workers, but inferences can be drawn regarding the effect of resource construction by comparing the period when resource investment was growing most strongly (2008–12) with the five years prior. Because a greater share of people starting a new construction job in the latter period were moving into resource construction work, the difference between the two periods is likely to represent the effect of the resource investment boom on construction employment. The 2003–07 period is used to represent 'normal' activity in the construction industry.⁷ While the evidence is circumstantial, it is consistent with liaison comments, which lends support to the methodology.

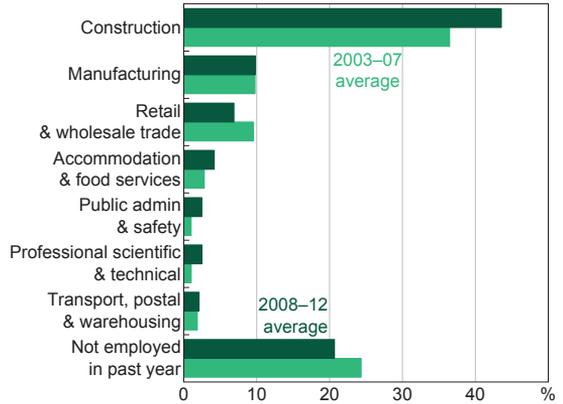
The HILDA data suggest that resource construction workers were largely recruited from other types of construction work; during the 2008–12 period, around 45 per cent of the people who started a new construction job were previously employed in the construction industry, compared with around 35 per cent in the five years prior (Graph 2).⁸ Transitions from the manufacturing, professional, scientific & technical and accommodation & food services industries remained a small share of total moves to construction, but became slightly more common in the 2008–12 period, supporting comments from liaison that some resource construction workers were also recruited from those industries. The share of people who were not employed in the past year decreased slightly over the two periods, suggesting

7 Between the two periods, both residential and other non-residential construction work done remained more or less constant. Public sector construction work done increased in the latter period, but this increase was small compared with the strong growth in resource construction.

8 Some of this increase may be attributable to the higher rate of turnover of resource construction workers.

Graph 2
Previous Industries of Construction Workers*

Share of people who moved to a new construction job in the past year



* Includes only heavy & civil engineering, construction services and construction (not further defined)
Source: HILDA Release 12.0

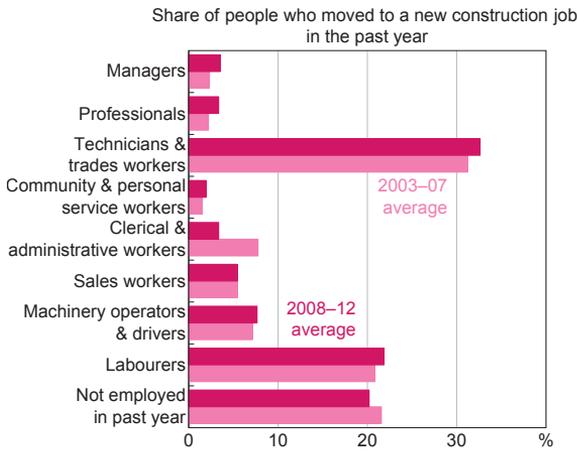
that resource construction workers were less likely than other types of construction workers to have moved from outside of employment.

Resource construction workers were likely to have been recruited from the same broad occupations as other construction industry workers. The HILDA data show that workers who started a new job in the construction industry in 2008–12 were drawn from the same sorts of previous occupations as was the case for those starting a new construction job in 2003–07 (Graph 3). This indicates that there was little difference between the work experience of resource construction workers and other types of construction workers.

Census data suggest that, compared with the construction industry as a whole, construction workers in mining regions were more frequently employed in lower-skilled rather than higher-skilled occupations, despite having similar previous experience (Graph 4).⁹ This implies that higher-skilled workers were moving into lower-skilled occupations (though these jobs may have paid more

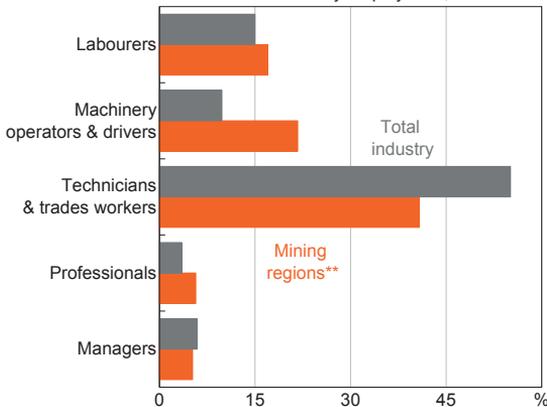
9 Note, however, that the data in Graph 4 may somewhat understate the skill level of resource construction workers if some higher-skilled workers are usually located off-site.

Graph 3
Previous Occupations of Construction Workers*



* Includes only heavy & civil engineering, construction services and construction (not further defined)
Source: HILDA Release 12.0

Graph 4
Construction Workers in Mining Regions* – By Occupation
Share of industry employment, 2011



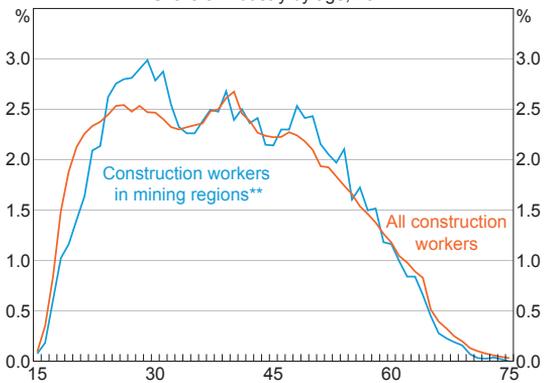
* Includes only heavy & civil engineering, construction services and construction (not further defined)
** Place of work; mining regions are Gladstone-Bioela, Bowen Basin - North, Central Highlands (Qld), Lower Hunter, Goldfields and Pilbara
Source: ABS

favourably than equivalent or even higher-skilled jobs outside of the resources sector). In particular, a higher share of construction workers in mining regions tended to work as labourers or machinery operators & drivers, and a smaller share as technicians & trades workers, than is typical in the rest of the construction industry.

Age and qualifications

Liaison contacts and industry reports note that resource construction firms had a strong preference to hire experienced and qualified workers, with opportunities for low-skilled workers or first-time job seekers fairly limited (see, for example, Atkinson and Hargreaves (2013)). Reflecting this, construction workers in mining regions were typically slightly older, and therefore likely to have more years of work experience, than the construction industry average (Graph 5).

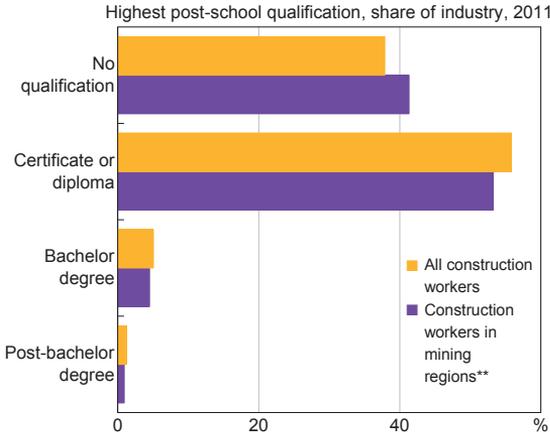
Graph 5
Age of Workers in the Construction Industry*
Share of industry by age, 2011



* Includes only heavy & civil engineering, construction services and construction (not further defined)
** Place of work; mining regions are Gladstone-Bioela, Bowen Basin - North, Central Highlands (Qld), Lower Hunter, Goldfields and Pilbara
Source: ABS

Resource construction workers generally had similar types and levels of qualifications to those of other construction workers, with the majority holding a certificate or diploma (Graph 6). As could be expected given the nature of the work, a slightly higher share of construction workers in mining regions held qualifications in engineering-related disciplines, and a smaller share held qualifications in other building trades (architecture and building; Graph 7). Around 40 per cent of construction workers living in mining regions held no post-school qualification, which is slightly higher than the share for the whole construction industry, but in line with the all-industries average.

Graph 6
Construction Workers* – Level of Qualification

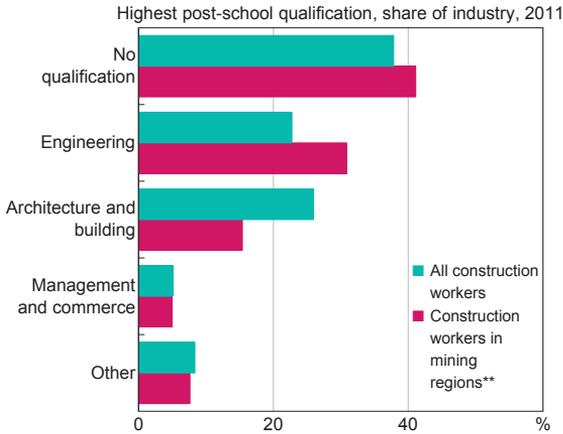


* Includes only heavy & civil engineering, construction services and construction (not further defined)

** Place of usual residence; mining regions are Gladstone-Bioela, Bowen Basin - North, Central Highlands (Qld), Lower Hunter, Goldfields and Pilbara

Source: ABS

Graph 7
Construction Workers* – Field of Qualification



* Includes only heavy & civil engineering, construction services and construction (not further defined)

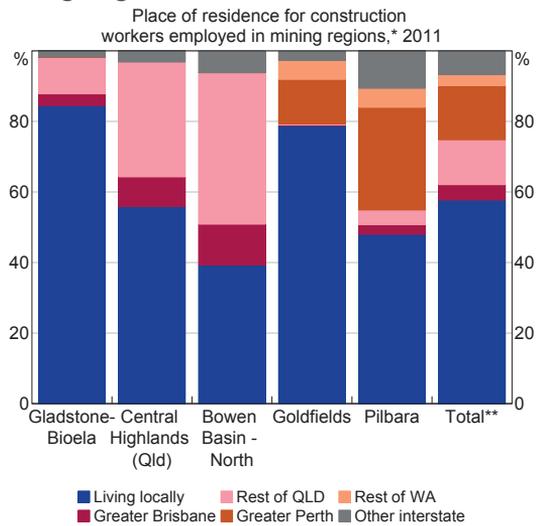
** Place of usual residence; mining regions are Gladstone-Bioela, Bowen Basin - North, Central Highlands (Qld), Lower Hunter, Goldfields and Pilbara

Source: ABS

Geographical factors

A large share of people who worked in resource construction were 'fly-in fly-out' or 'drive-in drive-out' workers, generally commuting from other parts of Western Australia and Queensland (Graph 8). The largest source regions for long-distance commuters were Perth and regional Queensland; interstate migration and commuting has become more common in the resources sector in recent years, but these workers remain a relatively small share of the workforce.

Graph 8
Mining Regions – Workers' Place of Residence



* Includes only heavy & civil engineering, construction services and construction (not further defined)

** Total of five mining regions

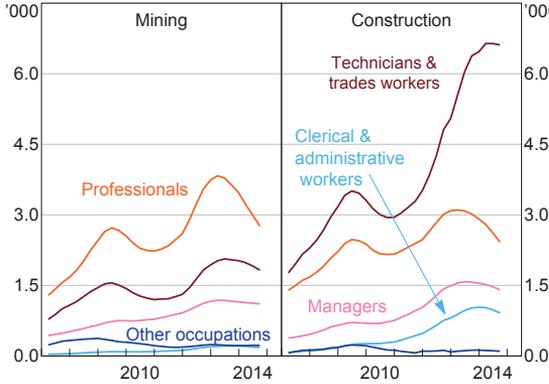
Source: ABS

Resource firms also filled vacancies through the temporary skilled visa program (457 visas). This program allows employers to bring in workers from abroad on contracts of up to four years. When resource investment peaked in 2013, just over 2 per cent of the construction workforce and around 3½ per cent of the mining workforce in the resources states were on a 457 visa (compared with around 1 per cent of the total workforce). These visas were mainly used for engineers and other professional roles in the mining and construction industries, but were also used to bring in workers with trades skills that were difficult to find locally (Graph 9).

Graph 9

457 Visa Holders – By Industry and Occupation

Four-quarter moving average

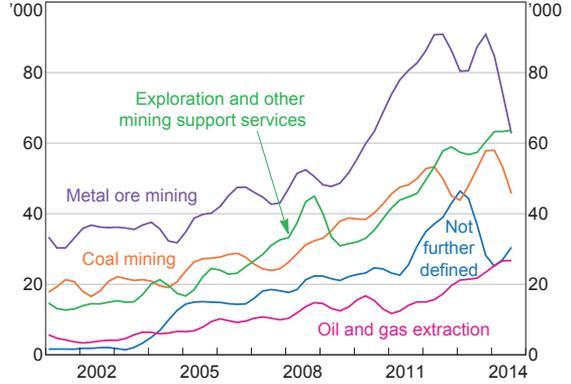


Source: Department of Immigration and Border Protection

Graph 10

Mining Industry Employment

Total employment, trend*



* 7-period Henderson trend
Sources: ABS; RBA

The Outlook for Resources Sector Employment

As the investment phase of the resources boom comes to an end and resource construction employment declines, operational employment in the newly constructed mines will increase. ABS data show that the operational part of the resources sector currently employs around 240 000 people (2 per cent of national employment), the majority of whom work on-site in production roles.¹⁰ Around 30 per cent of resources sector operational employment is in metal ore mining (which includes iron ore, gold, copper and bauxite), 20 per cent in coal mining and 10 per cent in oil and gas extraction (Graph 10).

Based on information provided by the Bank’s business liaison, employment in resource construction is estimated to have peaked at around 90 000 workers in 2013. This was around one-quarter of all people working in both resource construction and operations in that

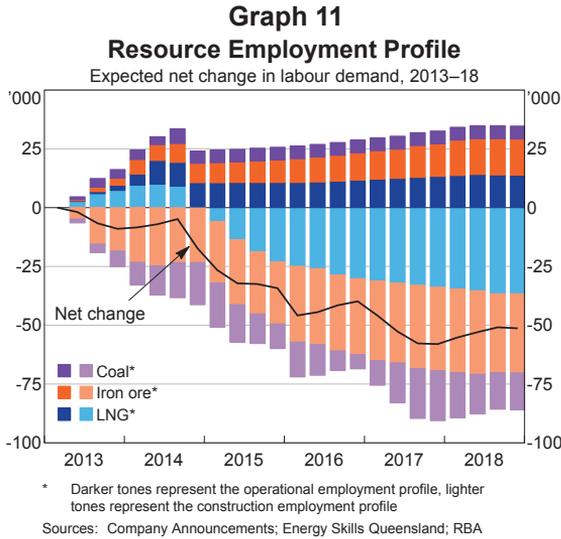
year, and ¾ per cent of the Australian workforce.¹¹ Employment in resource construction is expected to fall by 60 000 people from 2014 to 2018 (Graph 11).¹² However, as a result of recent investment, around 20 000 new operational positions have been created in 2013 and 2014 (an 8 per cent increase in permanent mining industry employment), and an additional 10 000 jobs are expected to be created over the next few years. Net employment in the resources sector is therefore expected to decline by around 40 000 workers between 2014 and 2018.

In terms of composition, the majority of the ongoing employment in the resources sector is in coal and iron ore production. However, the *net* addition to employment from operating coal mines over the coming years is expected to be negligible. Indeed, coal mining firms have been working to cut costs

10 Around two-thirds of employment in the mining industry is in direct operational roles that are likely to be located on-site (machinery operators & drivers, technicians & trades workers and labourers). A further 25 per cent of the industry works as professionals or managers, some of whom are also likely to work on-site.

11 This differs from the estimate provided in Rayner and Bishop (2013) for methodological reasons. They estimated that resource-related construction employment was 1½ per cent of total employment in 2011/12 based on input-output analysis. Their estimate represents a broader definition of resource-related construction employment; for example, it includes employment that has resulted indirectly from activity in the resources sector, as well as off-site construction industry employment. In contrast, this article uses information from the RBA’s liaison program, where contacts were asked how many construction workers were employed on-site at any one time. Rayner and Bishop (2013) also assume that productivity is constant for all types of construction workers.

12 Resource construction employment may actually increase slightly in 2016 if development of the Galilee Basin goes ahead.



in response to low global coal prices by reducing employment at operating mines while maintaining or increasing production levels. Some producers have also closed high-cost coal mines, and there may be further closures of high-cost mines. In contrast, iron ore operational employment is expected to increase gradually over time, partly due to an increase in the labour intensity of extraction as mines age. Conventional LNG operations in Western Australia and the Northern Territory will require very few workers, but the labour requirement is

likely to be more substantial for coal seam gas-LNG operations in Queensland, where a significant permanent workforce will be needed to regularly drill new wells to extract gas.¹³

Transitions within the resources sector

The skills required for resource operations are quite different from those required during construction, though there is some overlap (Table 1). In particular, operational workers are generally much more likely to be professionals and machinery operators & drivers, while resource construction workers are more likely to be technicians & trades workers. The labour requirement for LNG operations is slightly different from other resources, employing a greater share of professionals such as mining engineers, accountants and geologists, and a very small share of machinery operators & drivers.

As a consequence, only a fairly small share of current resource construction workers are likely to transition to operational work. A report by the Australian Workforce and Productivity Agency provides estimates of labour demand by detailed occupation for both the construction and the operations phase of the resources boom (AWPA 2013). These estimates suggest that there are only a few thousand roles for which construction and operations skills overlap

Table 1: Resources Sector – Skills Requirements
 Share of total, 2014–18

	Construction	Operations
Managers	6	11
Professionals	3	21
Technicians & trades workers	59	24
Clerical & administrative workers	10	10
Machinery operators & drivers	8	29
Labourers	12	4
Other	1	1

Source: Australian Workforce and Productivity Agency

¹³ A report by Energy Skills Queensland (2013) suggests that between 2014 and 2018, 11 000 to 16 000 workers will be required across all three coal seam gas-LNG projects, with the vast majority working in gas extraction.

(these include, for example, mining engineers, truck drivers and earthmovers), meaning that if construction workers are to remain in the resources sector, they would need to change occupations. Still, the estimates of changes in employment shown in Graph 11 indicate that total operations employment will increase only modestly from its current level. Hence, the majority of resource construction workers will need to move out of the resources sector.

Transitions from the resources to other sectors

The above analysis and business liaison suggest that many current resource construction workers have skills that are transferable to some other industries. In particular, a large share of these workers appear to have originally moved from other construction jobs, and so they have the requisite qualifications and experience to move back into non-mining construction jobs, contingent on labour demand. The most commonly cited barrier to moving from resource construction to other industries is the high wage expectations of these workers. If this is the case, some of these workers may choose to exit the labour force, at least for a period.

Within the construction industry, contacts have noted that non-residential (and particularly civil) construction is the most similar to resource construction. While a small amount of retraining is reportedly required for resource construction workers to move into some other types of construction (such as residential), in most cases workers already have many of the requisite skills. In addition, liaison contacts in the wholesale, manufacturing, agriculture and retail industries have noticed an improvement in the availability of suitable labour recently. Many attribute this to the return of workers from the resources sector, suggesting that former resource construction workers have also started to return to jobs outside of the construction industry.

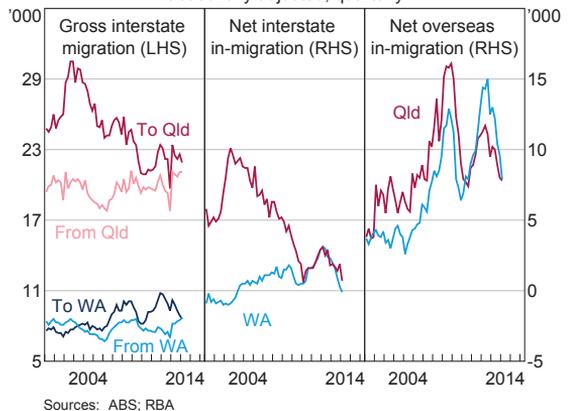
At the same time, labour demand is currently strong in industries into which resource construction

workers can most easily move. With the recent increase in residential building approvals, particularly for high-density dwellings, demand for construction workers looks likely to continue to grow over the next few years. In civil construction, there are a number of infrastructure projects that are expected to ramp up in the next few years (mainly located in Sydney and Melbourne) that, according to their websites, are expected to create a total of around 20 000–30 000 jobs.

One obstacle could be that the majority of resource construction workers currently reside in Western Australia and Queensland, while much of the planned residential and civil construction work will be located in other states. Hence, substantial interstate migration will be required for former resource construction workers to fill these roles. There is some evidence that this is already occurring, with interstate migration data showing an increase in departures from Western Australia and Queensland of around 2 000 people per quarter in 2013 and early 2014 (Graph 12).

Graph 12 Migration

Seasonally adjusted, quarterly



Liaison contacts note that the resources sector workers with skills that are least transferable to other industries are professionals, such as geologists and certain types of engineers. However, according to liaison reports, these highly skilled professionals are very mobile globally, moving to other countries

where their skills are in demand. In 2011, up to 20 per cent of some types of professionals in the mining and construction industries were on temporary work visas, and therefore are unlikely to remain in Australia when their current work comes to an end (Table 2). Recent data suggest that outward migration of resources sector workers on temporary visas is already starting to occur.

Although most workers have skills and experience that will allow them to take up jobs in other sectors, there are some specific groups that may have more difficulties changing jobs. Liaison contacts note that there are few non-mining job opportunities for workers who choose to remain in mining regions. In addition, young resource construction workers without qualifications beyond high-school are likely to experience difficulty obtaining work in other industries, although they comprise a relatively small share of resource construction employment.

Conclusion

Resource construction employment increased substantially during the investment phase of the resource investment boom, peaking at around ¾ per cent of national employment in 2013. The resources sector was able to increase employment rapidly by drawing workers whose skills were readily

transferable from other types of construction into resource-related construction.

Between 2014 and 2018, the number of resource construction jobs is estimated to decline by about 60 000, with only a relatively small offset from an increase in operational jobs over that period. This would lead to a net decrease in resources sector employment of 40 000. Nonetheless, the available data and the Bank’s liaison suggest that the workers released from the resources sector are likely to be absorbed by other sectors. While a large number of resource construction jobs are ending, this will take place over several years. Furthermore, these workers’ skills are reportedly quite transferable to residential and civil construction, for which labour demand is expected to remain relatively strong. Their above-average levels of experience and around-average levels of post-school qualifications should enable them to find work in other industries as well. Of the professional workers whose skills are reportedly least transferable to other industries, a substantial share are temporary migrants, who are unlikely to remain in Australia if they do not find ongoing work, while highly specialised domestic professionals are also reportedly globally mobile.

As newly constructed mines and LNG facilities come on line over the next few years, resource exports

Table 2: 457 Visa Holders – By Industry and Occupation
 Visa holders^(a) as a share of total employment, as at 2011 Census

	Mining industry	Construction industry
Construction managers	8	0
Engineers	12	12
– Mining engineers	8	5
– Civil engineers	20	12
Architectural, building and surveying technicians	6	1
Construction trades	2	1
Metal fitters, machinists, structural steel and welding trades workers	2	3
Contract, project and program administrators	4	4

(a) Year average of visa holders
 Sources: ABS; Department of Immigration and Border Protection

are expected to grow strongly. With estimates suggesting that approximately half of Australia's resource export receipts accrue to Australian residents,¹⁴ strong growth in exports is expected to stimulate further demand, which itself can be expected to create more employment throughout the Australian economy (Connolly and Orsmond 2011). ❖

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¹⁴ That is, through direct labour costs, use of domestically sourced intermediate inputs, tax and royalty payments and the small share of profits that are owned by Australian residents. This share may decrease in coming years as more LNG projects, which use fewer domestic inputs, begin exporting.

The Effect of the Mining Boom on the Australian Economy

Peter Tulip*

This article presents estimates of the effects of the mining boom using a macroeconomic model of the Australian economy. The mining boom is estimated to have boosted real per capita household disposable income by 13 per cent over the decade to 2013. The boom contributed to a large appreciation of the Australian dollar that has weighed on other industries exposed to trade, such as manufacturing and agriculture.

Introduction

The world price of Australia's mining exports more than tripled over the 10 years to 2012, while investment spending by the mining sector increased from 2 per cent of GDP to 8 per cent. This 'mining boom' represents one of the largest shocks to the Australian economy in generations. This article presents estimates of its effects, using a macroeconomic model of the Australian economy. It summarises a longer research paper, which contains further details and discussion of the results (see Downes, Hanslow and Tulip (2014)).

The model estimates suggest that the mining boom increased Australian living standards substantially. By 2013, the boom is estimated to have raised real per capita household disposable income by 13 per cent, raised real wages by 6 per cent and lowered the unemployment rate by about 1¼ percentage points. However, not all parts of the economy have benefited. The mining boom has also led to a large appreciation of the Australian dollar that has weighed on other industries exposed to trade, such as manufacturing and agriculture. However, because manufacturing benefits from higher demand for inputs to mining, the deindustrialisation that sometimes accompanies resource booms – the so-called 'Dutch disease' – has not been strong.

Model estimates suggest that manufacturing output in 2013 was about 5 per cent below what it would have been without the mining boom.

Modelling the Mining Boom

To estimate the impact of the mining boom, this article uses AUS-M, which is a large structural model of the Australian economy. The model assumes that most output is determined by demand in the short run, with some important exceptions. The major expenditure components of real GDP are estimated by separate time series regressions. The model is designed to fit the data closely, with a relatively loose connection to economic theory.

Quantifying the effects of the mining boom involves a comparison of two scenarios:

- how the Australian economy evolved throughout the mining boom (the baseline scenario)
- how the Australian economy might have evolved without the mining boom (the counterfactual scenario).

Differences between the baseline and counterfactual scenarios are interpreted as the effects of the mining boom. The baseline scenario reflects the actual behaviour of the economy to 2013 and then uses AUS-M to project economic conditions to 2030. The extension to 2030 is used to capture the transition of

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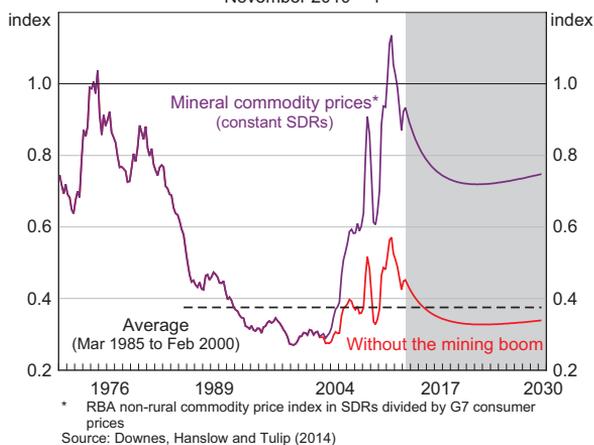
the mining industry from the investment phase to the production phase of the boom and to measure lagged responses. This extension differs significantly from RBA forecasts. It is not intended to be precisely realistic and is already out of date in some respects. It is simply intended to provide a plausible baseline from which deviations can be measured.

The counterfactual scenario, in which the mining boom does not occur, is based on simulations of AUS-M under the following three assumptions:

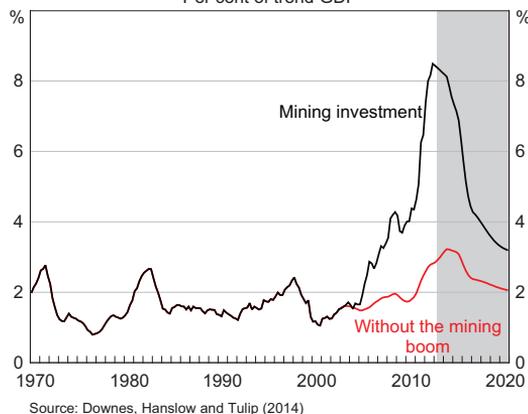
- The trend growth of world industrial production is held constant at its 2002 rate and not allowed to accelerate.
- World mineral commodity prices are reduced (beyond what arises from the previous assumption) to their average level from 1985 to 2000.
- Remaining unexplained strength in mining investment (beyond its normal response to economic conditions) is removed so that it remains about 2 per cent of GDP.

These assumptions lead to significantly lower mineral commodity prices and mining investment in the counterfactual scenario (Graph 1 and Graph 2).

Graph 1
Mineral Commodity Prices
November 2010 = 1



Graph 2
Mining Investment
Per cent of trend GDP



Aggregate Effects

The effect of the mining boom on overall living standards can be gauged by the difference in real household disposable income per capita, which is estimated to have been about 13 per cent higher in 2013 than it would have been without the boom (Graph 3).

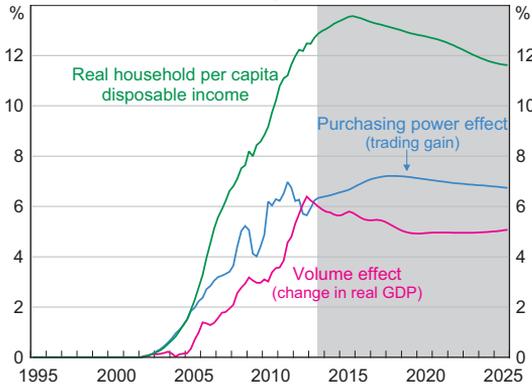
This effect can largely be decomposed into increases in the purchasing power and volume of output. Higher commodity prices translate into higher terms of trade, which directly boost the purchasing power of domestic income. This boosted real gross domestic income (GDI)¹ by about 6 per cent in 2013 (Graph 3). The contribution to real GDI overstates the increase in real national income due to the mining boom, because some of the benefit accrues to foreign investors.

Graph 3 also shows an estimate of the increase in the volume of goods and services produced arising from the boom. Higher mining investment directly contributes to higher aggregate demand. Furthermore, higher national purchasing power boosts consumption and other spending components. Higher mining investment also increases the national capital stock and hence aggregate supply. There are many further

¹ Real GDI is a standard measure for assessing purchasing power effects. It differs from GDP in that nominal exports are deflated by import prices, rather than export prices.

Graph 3

Effects of the Mining Boom on Income*



* Percentage deviation of baseline estimates from the no-mining-boom counterfactual

Source: Downes, Hanslow and Tulip (2014)

compounding and offsetting effects, discussed below. The estimated net effect is to increase real GDP by 6 per cent.

The increase in both the purchasing power and volume of domestic production accounts for most of the increase in household disposable income. There are also minor contributions from changes in taxes, foreign income, population and so on.

Many of the effects of the mining boom estimated by AUS-M reflect changes in the exchange rate. As a result of the mining boom, the real exchange rate is estimated to have been 44 per cent higher in 2013, relative to its level in the absence of the boom (Graph 4). That is, the exchange rate would not have appreciated but would have remained around the same levels as the previous 20 years.²

The stronger activity arising from the mining boom results in stronger employment, reducing the unemployment rate by 1¼ percentage points in 2013 (Graph 5).³

2 While estimating exchange rate behaviour is difficult, the elasticity of the exchange rate to the terms of trade is similar in AUS-M to other models of the Australian economy, such as the Monash Multi-Regional Forecasting model, or Stone, Wheatley and Wilkinson (2005).

3 As in all the graphs, estimates are based on published data up to 2013, then model simulations. A divergence between the simulations and subsequently published data is especially noticeable for the unemployment rate. It is also worth noting that AUS-M longer-term projections of the unemployment rate were lower than projections of other forecasters.

Graph 4

Real Exchange Rate

November 2010 = 1

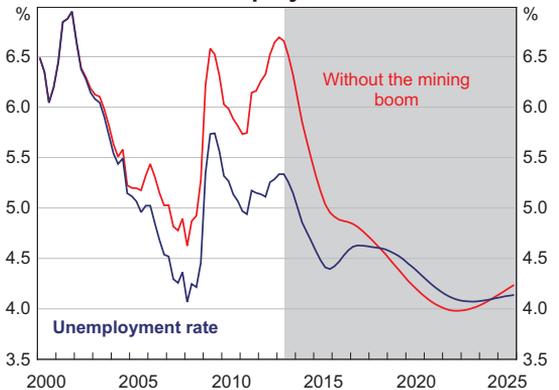


* Trade-weighted exchange rate adjusted for movements in relative consumer prices

Source: Downes, Hanslow and Tulip (2014)

Graph 5

Unemployment*

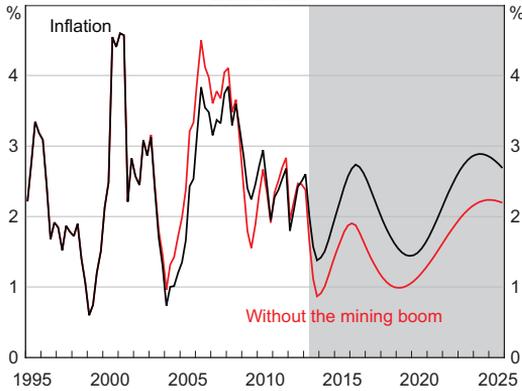


* Estimates are based on published data up to mid 2013, then model simulations thereafter

Source: Downes, Hanslow and Tulip (2014)

The lower unemployment rate and higher energy prices that accompany the mining boom placed upward pressure on inflation. However, these effects were initially more than offset by the appreciation of the exchange rate, which lowered import prices. The estimated net effect in the first few years of the mining boom was to lower the inflation rate by an average of about half a percentage point (Graph 6). However, in AUS-M, the effect of a change in the exchange rate on inflation is temporary, whereas the effect of a change in the unemployment rate is highly persistent. So, by 2008, the unemployment effect begins to dominate and inflation is higher.

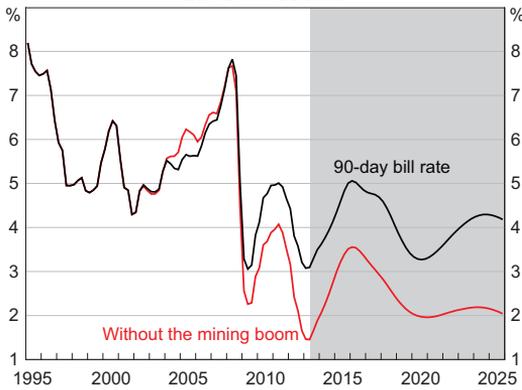
**Graph 6
Inflation***



* Inflation is measured as the four-quarter percentage change in the household consumption deflator; this national accounts measure differs slightly from the consumer price index
Source: Downes, Hanslow and Tulip (2014)

In the first few years of the boom, interest rates are estimated to have been slightly lower than they otherwise would have been (Graph 7). This reflects lower inflation (as a result of the exchange rate appreciation) offsetting stronger activity. However, as the effects of the exchange rate on inflation diminished, interest rates rose in reaction to the tight labour market. By 2013, interest rates were almost 2 percentage points above their estimated levels without the boom. Interestingly, interest rates are estimated to remain positive in the counterfactual. That is, even without the strong growth in Asia and its effects on commodity prices, and without the surge in mining investment, the model suggests

**Graph 7
Interest Rates**



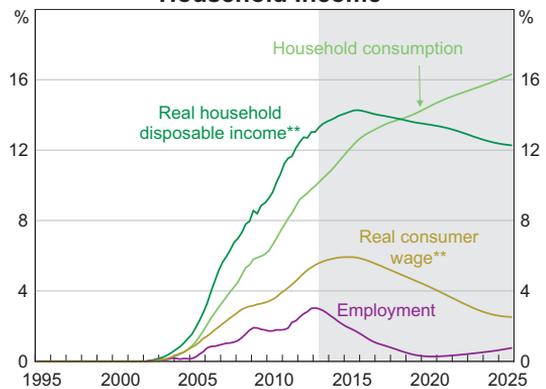
Source: Downes, Hanslow and Tulip (2014)

that Australia would still have escaped the zero lower bound on interest rates that has constrained monetary policy in many other countries. The strong fiscal stimulus following the global financial crisis may be one reason for that.

Sectoral Effects

The mining boom raises household income through several different channels within the model (Graph 8). As of 2013, employment was 3 per cent higher than in the counterfactual, largely due to the boost to aggregate demand. Real consumer wages were about 6 per cent higher, reflecting the effect of the higher exchange rate on import prices. Property income increased, reflecting greater returns to equities and real estate. A larger tax base led to lower average tax rates, all of which helped raise real household disposable income by about 13 per cent.

**Graph 8
Effects of the Mining Boom on Household Income***



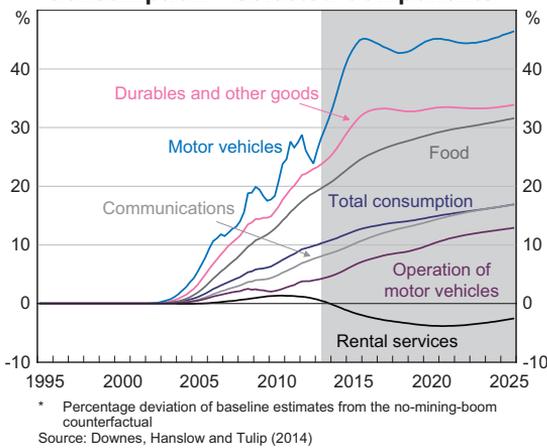
* Percentage deviation of baseline estimates from the no-mining-boom counterfactual
** Real incomes are deflated by the national accounts consumption deflator
Source: Downes, Hanslow and Tulip (2014)

As can be seen in Graph 8, household consumption is estimated to initially rise more slowly than real household disposable income. That is, the saving rate increases. This reflects inertia in consumption behaviour, coupled with a default assumption that households initially view the boom as temporary. In the medium to long run, as it becomes apparent that the change in income is persistent, savings return

toward normal and consumption rises further. In the long run, consumption will adjust by about the same proportion as the rise in household disposable income.

Changes in the composition of consumption are an important determinant of how the mining boom affected different industries (Graph 9). Demand for motor vehicles and other consumer durables are estimated to have increased strongly, reflecting lower import prices and strong income growth. Relative price changes for most other categories of consumption were smaller, with consequently less effect on their relative demand.

Graph 9
Effects of the Mining Boom on Household Consumption – Selected Components*

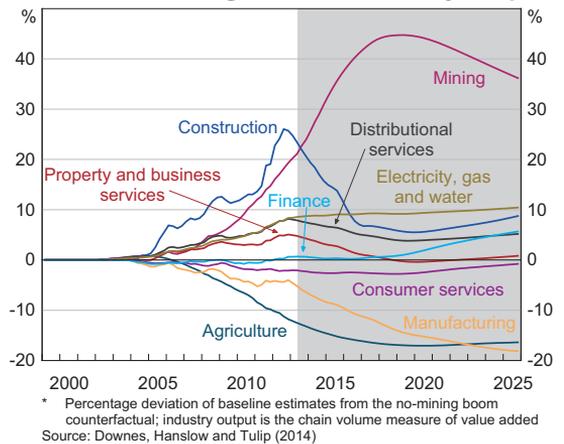


* Percentage deviation of baseline estimates from the no-mining-boom counterfactual
Source: Downes, Hanslow and Tulip (2014)

The increase in household disposable income has involved a surge in demand for housing. However, whereas most other elements of consumption are supplied elastically, the supply of housing is relatively fixed in the short run. Thus, the mining boom results in a substantial reduction in vacancy rates and an increase in rents. Although high rents and house prices encourage housing construction, these effects are more than offset by higher interest rates after 2009 relative to the counterfactual (Graph 7), which depress dwelling investment. So despite a large increase in nominal consumption, the supply of housing declines, compounding the downward pressure on vacancies and upward pressure on rents.

Effects of the mining boom on industry output are shown as shares of real GDP in Graph 10. The industries that are estimated to benefit most from the boom, outside mining itself, are construction, electricity, gas and water, and distributional services. These industries sell a disproportionate share of their output to the mining industry. An industry that bears some of the largest burdens of the boom is agriculture.⁴ It is an industry heavily dependent on export earnings, which fall with the exchange rate appreciation. It gains little benefit from the surge in domestic incomes and demand associated with the mining boom.

Graph 10
Effects of the Mining Boom on Industry Output*



* Percentage deviation of baseline estimates from the no-mining boom counterfactual; industry output is the chain volume measure of value added
Source: Downes, Hanslow and Tulip (2014)

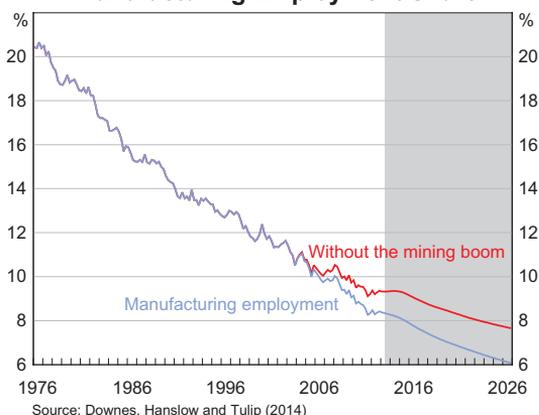
The manufacturing sector has been the focus of concern about the 'Dutch disease' and 'deindustrialisation'. In the short term, manufacturing output is supported by the higher incomes and expenditure associated with the mining boom. In particular, manufacturing benefits from strong demand for equipment and material used in construction. As a result, investment by manufacturing is higher in the first few years of the boom. However, this effect is more than offset by the 40 per cent appreciation of the exchange rate, which makes manufacturing less competitive. In the first decade of the boom the net effect is moderate,

4 This is consistent with previous studies, such as Stoeckel (1979).

with manufacturing output estimated to be about 5 per cent lower in 2013 than it would have been in the absence of the boom (Graph 10). Then, as mining investment fades, and with it the demand for manufacturing inputs, the relative price effects increasingly dominate. By 2016, manufacturing output is estimated to be about 13 per cent lower, an effect that continues to increase over time.

However, it would be wrong to conclude that the mining boom is the main source of the manufacturing sector’s relative decline. Manufacturing has been declining as a share of total employment for decades (Graph 11). The mining boom accentuates this trend, but its contribution is small compared with the changes that have come before.

Graph 11
Manufacturing Employment Share



Conclusion

The mining boom can be viewed as a confluence of events that have boosted mineral commodity prices, mining investment and resources production. This combination of shocks has boosted the purchasing power and volume of Australian output. It has also led to large changes in relative prices, most noticeably an appreciation of the exchange rate. The combination of changes in income, production and relative prices has meant large changes in the composition of economic activity. While mining, construction and importing industries have boomed,

agriculture, manufacturing and other trade-exposed services have declined relative to their expected paths in the absence of the boom. Households that own mining shares (including through superannuation) or real estate have done well, while renters and those who work in import-competing industries have done less well.

All of these results are estimates that depend on linkages and assumptions which are open to debate. Some confidence can be placed in the broad pattern of responses discussed above, which is in line with previous research. There is less certainty about magnitudes and the timing of responses. ❖

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Chinese Rebalancing and Australian Exports

Gerard Kelly*

The Chinese authorities plan to gradually rebalance the composition of Chinese economic growth from investment towards household consumption. This article uses the World Input-Output Database (WIOD) to give a general sense of how this rebalancing might affect Australian exports and economic activity. Dollar for dollar, Chinese investment appears to absorb more than twice as much Australian value-added output as Chinese household consumption. This largely reflects the significant role of resource commodities in Australia’s exports to China, which are used more intensively in investment than consumption. Simple analysis using the WIOD suggests that a shift from investment to consumption in China is likely to weigh on the growth of demand for Australia’s mineral resources, although a rise in demand by Chinese households for food products and services could provide some offset.

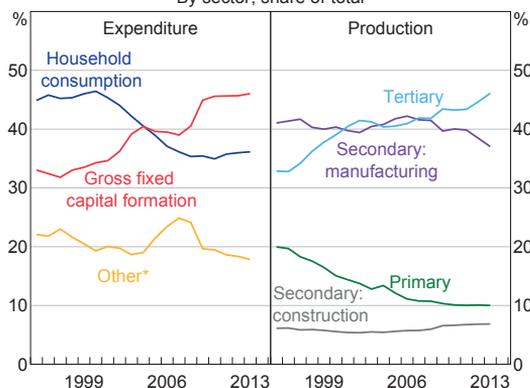
Introduction

Since the early 2000s, Chinese economic growth has been supported by rapid growth of investment. Accordingly, the investment share of GDP has risen from 36 per cent to 46 per cent over the past 10 years or so (Graph 1). The Chinese authorities have emphasised that the investment share cannot sustainably remain at its recent levels, and that household consumption should become

increasingly important as a driver of growth as the economy develops (see, for example, NPC (2011)). Indeed, in recent years household consumption’s share of GDP has trended a little higher, suggesting that the process of rebalancing may already have begun. As the Chinese economy continues to move towards more consumption-driven growth, the balance of activity across the different sectors of the economy can be expected to change. In particular, the tertiary (services) sector’s share of the economy is likely to increase further and the secondary (manufacturing and construction) sector’s share is likely to decline, as has happened in other economies as they developed.¹

Australian exports to China consist primarily of resources, particularly iron ore and coal, and China’s manufacturing sector (especially steel production) absorbs the majority of these exports. This sector, in turn, relies to a significant extent on investment, and particularly construction-related investment, as a driver of demand. A shift in the composition of Chinese growth therefore has important implications

Graph 1
China – Gross Domestic Product
By sector, share of total



* Includes government consumption, inventory investment and net exports

Sources: CEIC Data; RBA

* The author is from Economic Group.

¹ For an analysis of trends in China’s household consumption and related policies, see Baker and Orsmond (2010). For a general overview of the relationship between economic development and the reallocation of economic activity across sectors, see Herrendorf, Rogerson and Valentini (2014).

for Australia's economic links with China. The World Input-Output Database (WIOD) can provide a sense of how Chinese household consumption might differ from Chinese investment in terms of demand for Australian exports. These data measure domestic and international flows of goods and services of 35 industries in 41 regions for the years 1995 to 2011.² Each 'table' represents a snapshot of the structure of the world economy for the year in question, measuring how the output of each industry in each country flows either to intermediate uses (i.e. as inputs into production) or final uses (as consumption or investment).³

For a given amount of final demand in China, the WIOD allows us to estimate how much of this demand will ultimately be met by Australian value-added output.⁴ Standard techniques can then be applied to determine how much demand for Australian value-added output comes from Chinese investment and how much comes from Chinese consumption.⁵ The analysis relates only to the *composition* of economic activity in China rather than

the *growth* of the Chinese economy. As such, it gives an impression of how the variation in the balance between household consumption and investment in China could affect the Australian economy.

One important caveat to this analysis is that it does not consider any possible change in demand for Australia's exports by other trading partners, or any change in industry production activities within Australia in response to changing global demand or supply. Moreover, input-output analysis is subject to some notable data limitations. First, the flows in the WIOD's input-output tables represent values rather than volumes, so that the changes over time may represent either price or quantity effects. It might be reasonable to expect large quantity effects driven by changes in demand to be reinforced by price effects, which would reduce the accuracy of estimates.⁶ Second, the WIOD's input-output tables are released after a considerable time lag, with the most recent tables (for 2011) describing economic relationships that are likely to have since changed somewhat. Nonetheless, the WIOD provides a means of deriving rough estimates of some of the potential effects of Chinese rebalancing on Australian exports and economic activity.

Sectoral Composition of Chinese Final Demand Components

According to the WIOD, household consumption accounted for 36 per cent of Chinese final expenditure in 2011, and investment accounted for 46 per cent.⁷ Chinese household final consumption expenditure largely consisted of spending on services and food (Graph 2). Construction accounted for more than half of Chinese investment, with electrical, optical & transport equipment and other machinery accounting for another 16 per cent and 12 per cent, respectively. These differences in the nature of expenditures, and the variation in different Chinese sectors' demand for Australian exports, can

2 For an overview of the WIOD's contents, sources and methods, see WIOD website at <<http://www.wiod.org>> and Timmer (2012). For more details on how the WIOD can be used to complement Australian trade statistics, see Kelly and La Cava (2014).

3 Investment is split into changes to inventories (inventory investment) and gross fixed capital formation (GFCF). Inventory investment generally accounts for only a very small share of output, and this article considers the GFCF or non-inventory component of investment only.

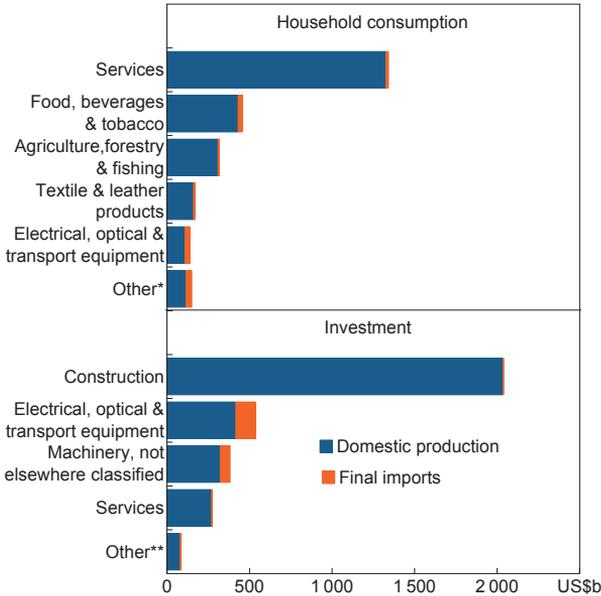
4 Value-added output refers to the difference between the value of gross output and the value of intermediate inputs, and corresponds to the value contributed by labour and capital. The WIOD data only measure value added in total and do not distinguish compensation of employees (wages) from gross operating surplus (profits). In this context, gross operating surplus refers to the return on capital involved in Australian production regardless of whether or not the capital is domestically owned.

5 The flows of intermediate inputs between industries yield a 1435×1435 matrix of technical requirements. Calculating the 'Leontief inverse' (the infinite geometric series of this matrix) allows any element of final demand to be related to the total gross output necessary to produce that element as well as its required intermediate inputs – and these inputs' required intermediate inputs – through every stage of production. Mathematically, for n sectors, define Z as an $n \times 1$ vector of all sectors' gross output, then $Z = X + Y$ where vector X gives intermediate uses and vector Y gives final uses. $X = AZ$, where A is an $n \times n$ matrix of technical requirement coefficients between 0 and 1. Then $Z = AZ + Y$, or $Z = (I - A)^{-1}Y$, where $(I - A)^{-1}$ is the 'Leontief inverse', which can be multiplied by any vector representing elements of final demand to arrive at the necessary output. For further details, see Kelly and La Cava (2014).

6 Basic input-output analysis also only considers average effects and not marginal effects.

7 These are similar to the shares of 2013 GDP in China's national accounts data.

Graph 2
China – Components of Final Expenditure
2011



* Includes all other manufacturing, mining & quarrying, utilities and construction
 ** Includes agriculture, forestry & fishing, mining & quarrying, all other manufacturing and utilities

Sources: RBA; World Input-Output Database (WIOD)

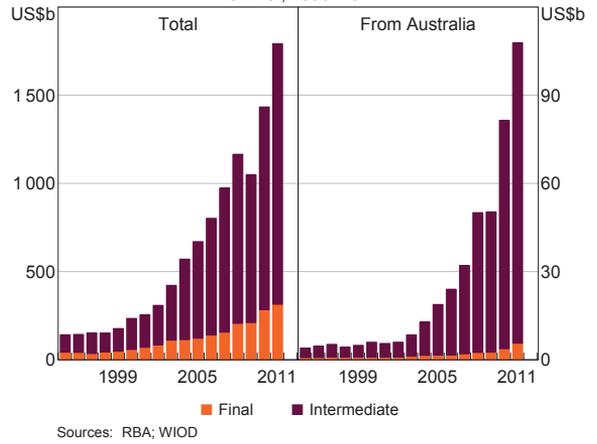
be used to give a sense of how a rebalancing of activity from investment to household consumption might affect the Australian economy.

China’s imports from Australia are primarily intermediate goods. Unlike final imports, these intermediate imports do not go directly to either household consumption or investment, but are instead used to produce other goods or services. In 2011, around 80 per cent of China’s total imports were intermediate goods and services, of which 7 per cent were from Australia (Graph 3).⁸ These accounted for 95 per cent of total Australian exports to China. In contrast, Australian exports of final goods and services represented only a small fraction of China’s total final imports, which themselves account for only a small share of Chinese final expenditure.

In 2011, the basic metals & fabricated metal industry underpinned the bulk of Chinese demand for

8 China has a trade deficit in intermediate goods and services and a trade surplus in final goods and services.

Graph 3
China – Imports
Nominal, 1995–2011



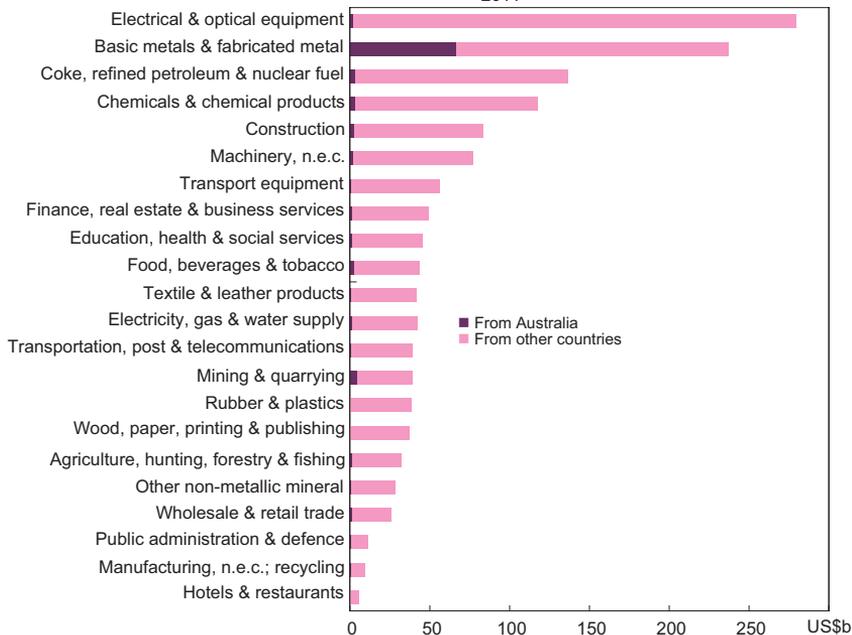
Australian intermediate exports (Graph 4).⁹ This industry directly accounted for one-quarter of the total output of Australia’s mining industry in 2011, and more than 60 per cent of all Australian exports to China. Around 90 per cent of the output from the basic metals & fabricated metal industry went towards domestic intermediate use, providing important inputs into other Chinese industries producing goods and services both for export and for domestic use.

According to the WIOD, investment accounts for more than half of the demand for Chinese metals manufacturing production, and the construction sector accounts for about two-thirds of this demand (Graph 5).¹⁰ In addition, the WIOD suggests that almost one-third of the output of Chinese metals manufacturing is ultimately attributable to foreign demand for Chinese output, mainly embodied in the exports of other industries that use manufactured metals products as inputs (similar to the findings of Roberts and Rush (2010)). Household consumption

9 Note that the sector labels in Graph 4 refer to the sector using the intermediate input, not the category of intermediate input; in the case of China’s basic metals & fabricated metal sector, most of the inputs come from Australia’s mining & quarrying sector.

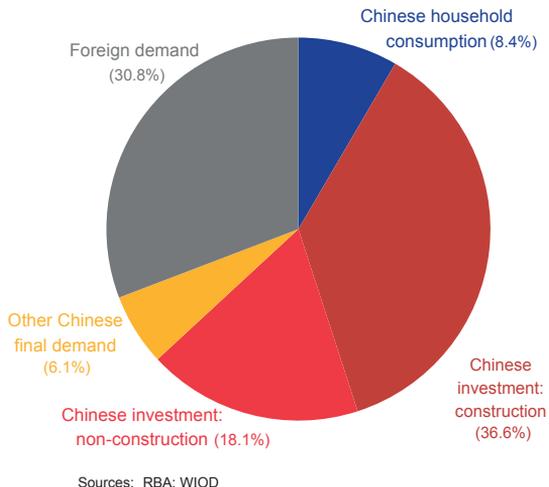
10 The WIOD does not contain enough information to distinguish between the different types of Chinese construction (e.g. housing versus infrastructure) in terms of their metal usage intensity. These questions have been considered in Berkelmans and Wang (2012) and Wilkins and Zurawski (2014).

Graph 4
China – Imported Intermediate Inputs
 2011



Sources: RBA; WIOD

Graph 5
China – Metals Manufacturing
 Sources of final demand, 2011



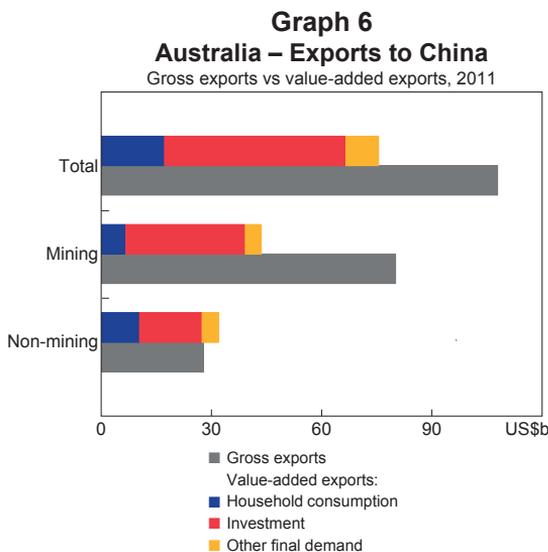
Sources: RBA; WIOD

in China accounts for less than 10 per cent of the demand for metals manufacturing production. The importance of investment demand for the output of the Chinese metals manufacturing sector suggests a similar importance (relative to household consumption) for the Australian economy, due to the specialised nature of Australian exports to China.

The Contribution of Australian Value-added Output to Chinese Final Demand

To estimate the effect of Chinese rebalancing on Australian exports, it is necessary to draw a distinction between Australia’s gross exports and ‘value-added exports’ to China. Gross exports are simply the total value of goods and services exported from Australia to China. Value-added exports are calculated by removing from gross exports the value of (a) the content that is re-exported in some form from China to other countries, and (b) the contribution to Australian exports to China made by imports from

outside Australia (e.g. the cost of imported machinery used in Australia's mining industry to produce resource exports).¹¹ These calculations suggest that total Australian value-added exports to China were approximately 70 per cent of gross exports to China in 2011 (Graph 6). These value-added exports to China accounted for about 5 per cent of Australia's total value-added output and 27 per cent of the value-added output of the mining industry.



Sources: RBA; WIOD

The value-added exports of Australia's mining sector were lower than its gross exports, while the value-added exports of the non-mining sector exceeded its gross exports. This largely reflects the contribution made by non-mining sectors in providing inputs into Australia's mining sector, such as mining-related business services. Hence, much of the value added in Australia's exports of mineral resources can be attributed to the non-mining sector. This effect also contributes to the importance of the role that

¹¹ Value-added exports from Australia to China also adds to gross exports any content from Australia that ultimately arrives in China after being used as intermediate inputs to production in third countries. Similarly, the value-added exports of a particular sector can be estimated by subtracting from the value of its gross exports the contribution made by the intermediate inputs from other sectors, and adding the contribution that it makes to the exports of other sectors. For more detail on the distinction between gross exports and value-added exports, see Kelly and La Cava (2014).

Chinese investment plays in the value-added exports of Australia's non-mining sector.¹²

Chinese investment accounts for the largest share of Australian value-added exports both because it is the largest share of Chinese final demand and because it is weighted toward Chinese industries with more intensive requirements for Australian value-added output. The Chinese construction industry had by far the highest total requirements for Australian value-added output in 2011, accounting for almost half of the total (Table 1). Australian value-added output was also relatively significant for a range of manufacturing industries important for investment, including machinery, transportation equipment, and electrical & optical equipment. In addition to requiring significant Australian content in *absolute* terms, these industries also had relatively high requirements for Australian value-added exports *per dollar* of output, suggesting that rebalancing of activity away from these industries would be likely to weigh on Chinese demand for Australian value-added output. In contrast, food, beverage and tobacco manufacturing have high requirements in *absolute* terms but fairly low requirements *per dollar* of Chinese demand. Similarly the agriculture industry and most of the tertiary sector – which are more important for household consumption – had relatively low *per dollar* Australian content requirements.

The estimates indicate that in 2011, each dollar of Chinese investment involved more than double the demand for Australian value-added output compared with each dollar of household consumption, and almost four times the demand for the Australian mining sector's value-added output (Table 2; Graph 7). Assuming no changes in prices, or any change in production patterns in Australia or elsewhere, this suggests that a shift of \$1 from Chinese investment to Chinese household consumption would by itself reduce demand for Australian value-added output by about 0.8 cents, of which 0.7 cents would be from

¹² The inter-industry links through which non-mining sectors' value added is embodied in mining exports are analysed using Australian input-output tables in Rayner and Bishop (2013).

Table 1: Australian Value-added Output in Chinese Final Demand by Industry
2011

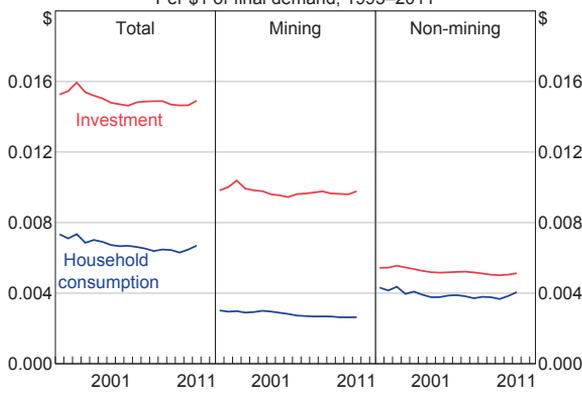
Sector	Share of Australian value-added exports to China	Required Australian value-added output per \$1 of Chinese demand
	Per cent	\$
Construction	46.7	0.016
Services	17.1	0.005
Machinery, not elsewhere classified	9.9	0.020
Transport equipment	6.7	0.015
Electrical & optical equipment	6.3	0.016
Basic metals & fabricated metals	4.0	0.051
Food, beverages & tobacco	3.9	0.006
Other ^(a)	5.4	0.005
Total	100.0	0.011

(a) Includes agriculture, forestry & fishing, mining & quarrying, utilities and all other manufacturing
Sources: RBA; WIOD

Table 2: Australian Value-added Exports in Chinese Final Demand by Expenditure
2011, dollars

	\$1 of Chinese household consumption	\$1 of Chinese investment
Total Australian value added	0.0067	0.0149
Australian mining value added	0.0026	0.0098
Australian non-mining value added	0.0041	0.0051

Sources: RBA; WIOD

Graph 7
China – Demand for Australian Value Added
Per \$1 of final demand, 1995–2011

Sources: RBA; WIOD

the Australian mining industry. To put this in some perspective, if in 2011 China's consumption share of GDP had been 10 percentage points higher and the investment share 10 percentage points lower, the estimates suggest this could have lowered Australian GDP by about ½ per cent. In practice, however, such a marked shift in the composition of China's growth could only be expected to happen over a number of years; over such a time period, relative prices, including the exchange rate, as well as demand for the goods and services that Australia produces, could change significantly both in China and elsewhere. In other words, rebalancing in China could be expected to have some dampening effect on growth in Australia, but the extent of this effect is highly uncertain.

Conclusion

Slowing Chinese investment growth accompanied by a rise in the growth of household consumption is likely to weigh somewhat on demand for Australian minerals, and could reduce the overall growth of Australian value-added exports to China. However, there are many uncertainties about how this would play out in practice, which makes it difficult to judge the implications for overall economic activity in Australia. While growth in Chinese demand is expected to slow from the rapid rates seen over the past decade, this growth will be from a much higher base, and the overall volume of Chinese imports is likely to expand further. Chinese rebalancing is likely to be a gradual process, which means that the Australian economy should have some time to adapt. Australian producers may well find alternative markets for their products, or the composition of production may alter in response to changing global demand and supply conditions (and any resulting changes in the Australian terms of trade). For example, a more developed Chinese economy with a higher consumption share is likely to involve greater demand by households for items such as food, education and tourism, which will provide opportunities for firms outside the Australian resources sector. These factors should see the Chinese economy continue to be an important source of demand for Australian goods and services in coming decades. ✎

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The Equity Securities Lending Market

Jonathan Carroll and Ashwin Clarke*

An equity securities loan is an arrangement in which one party (the lender) agrees to transfer an equity security to another party (the borrower) temporarily, usually in exchange for collateral and a fee. The market for securities loans is an important component of Australia’s equity market and contributes to its efficiency and smooth functioning. Regulatory developments since the global financial crisis are contributing to significant changes to the equity securities lending market globally, including in Australia. This article discusses some of these changes and how participants in the market could respond.

The equity securities lending market contributes to the efficiency and smooth functioning of Australia’s equity market. By facilitating certain trading strategies, securities lending adds to equity market liquidity, helps to improve price discovery and contributes to lower bid-offer spreads. Securities lending also supports the equity settlement process. Regulatory and behavioural changes since the global financial crisis are giving rise to significant structural changes in the equity securities lending market.

This article describes some of the changes underway and their expected implications for the functioning of the market. The article presents an overview of the structure of the equity securities lending market in Australia. It then reviews some of the domestic and international regulatory developments in recent years and considers their implications.

The Structure of the Market

The equity securities lending market in Australia is characterised by a decentralised network of bilateral relationships. The basic structure of a securities loan is described in Figure 1.

The ultimate owners (beneficial owners) of loaned securities are usually long-term wholesale investors – superannuation funds, insurance companies and investment managers. These institutions loan their securities to earn an incremental return on their investments. Beneficial owners typically use intermediaries (in most cases large internationally active ‘custodian banks’) to manage their lending. Similarly, borrowers, including hedge funds, often use intermediaries (generally large ‘prime brokers’) to support their activity.¹ Borrower intermediaries may also act in a proprietary capacity. Since most

Figure 1: Structure of a Securities Loan



Source: RBA

* The authors are from Payments Policy Department and would like to thank Timothy Hogben (ASX Group), Adam Judd and Anna Zajkowski (Australian Securities and Investments Commission), Kieran Buckley, Natalie Floate and Peter Martin (Australian Securities Lending Association), Karen King (Markit), and Jenny Hancock and Mark Manning (Reserve Bank of Australia) for their valuable comments in preparing this article.

1 A lending intermediary generally acts as ‘agent’ in the transaction – that is, enters into a securities loan on behalf of the beneficial owner – but in some cases acts as ‘principal’, in which case the beneficial owner lends to the intermediary who then on-lends to the borrower intermediary. The majority of borrower intermediaries act as principal to the loans they arrange.

lending and borrowing intermediaries, as well as beneficial owners and borrowers, are large overseas institutions, much of the securities lending involving ASX-listed equities occurs offshore.

The majority of securities lending activity occurs under industry standard documentation that sets out the legal terms of a loan. In Australia, this is the Australian Master Securities Lending Agreement, which is modelled on the Global Master Securities Lending Agreement. Under these terms, the lender generally has the right to recall loaned securities at any time. If securities are recalled, the borrower is obliged to return the securities within three business days. Most loans involve the transfer of title from the lender to the borrower. This allows the borrower to use the securities as if they were its own.

In return for lending its securities, the beneficial owner receives a fee from the borrower. Where a lending intermediary is used, this fee is shared between the beneficial owner and the intermediary. Typically, all the economic benefits and risks associated with ownership of the security, such as dividends, are retained by the beneficial owner.

To mitigate credit risk, the beneficial owner or its intermediary usually sets a minimum credit rating for borrowers. In addition, both borrowers and lenders generally use credit limits to mitigate the risks associated with concentrated counterparty exposures. The borrower will also usually be required to provide collateral against any loan, in accordance with collateral eligibility criteria and concentration limits determined by the beneficial owner. Collateral may take the form of cash or non-cash assets.² If non-cash collateral is provided, the lender generally applies a margin (or 'haircut') that discounts the value of the collateral to cover possible future declines in the market price of the collateral. Over the life of the loan, which most often ranges from overnight to 364 days, both the loaned securities and the collateral are revalued daily to assess the adequacy of collateral coverage. Additional collateral may be requested if

² Intermediaries generally can 're-use' the securities delivered as collateral to collateralise another transaction.

coverage is insufficient. Notwithstanding the controls to mitigate credit risk, lending intermediaries often – and increasingly – provide indemnities to beneficial owners against financial risks that may arise from their lending activity.

Collateral received in the form of cash is typically reinvested; the return on such reinvestment funding is used to cover an agreed interest payment to the borrower. Any return above this agreed payment contributes to the beneficial owner's overall income from lending its securities. Accordingly, the beneficial owner sets criteria for the reinvestment activity of its lending intermediary.

Securities lending transactions in Australia are mainly driven by borrower demand for specific equity securities, not lender demand for cash. Borrowers typically have two primary motivations: to support certain trading strategies; and to cover equity settlement obligations. These are described below.

Trading strategies

A variety of trading strategies require an investor to be able to establish a 'short position'. To do this, an investor must first arrange to borrow the security from a lender.³ The investor then sells the security and fulfils its delivery obligation using the borrowed security. The investor subsequently buys the security to close the short position and returns the security to the lender. The profit or loss from the transaction is the price at which the security was sold less the cost of borrowing the security and the price at which it was bought back.

Short positions are used by institutions and individuals for a number of purposes. The most obvious is 'directional' or speculative short selling, where an investor anticipates a decline in the price of a security and therefore establishes a short position to make a profit. Another motivation is hedging, whereby an investor takes a short position

³ Since 2008, the Australian Securities and Investments Commission (ASIC) has required that all investors 'cover' a short position (i.e. arrange for the security to be borrowed or have already borrowed it) before selling the security.

in a security to mitigate the risk of future losses from another related investment. Finally, short positions can also support arbitrage trading, which involves seeking to profit from the price difference between two instruments that have highly correlated prices or values (e.g. an equity derivative and the security to which it is referenced).

Equity settlement

The settlement of equity securities in Australia is facilitated by ASX Settlement, which is the securities settlement facility for all equity securities issued in Australia.⁴ Equity settlements take place daily in a multilateral net 'batch' process in which all scheduled securities obligations are reduced to a single net transfer per equity for each participant. The payments associated with the batch are settled simultaneously across banks' accounts with the Reserve Bank of Australia (RBA) using the Reserve Bank Information and Transfer System, also on a net basis.⁵

To make sure that market participants have sufficient securities and cash to meet their delivery obligations in the batch, the financial institutions directly involved in the settlement process must ensure that their clients' securities are in the correct accounts. This can be an operationally complex process, in part because securities generally need to be transferred from a number of custodian banks, some of which are based overseas. Any operational disruption preventing clients or their custodian banks from transferring their securities could mean that the financial institution does not have enough of the correct securities in its account.

Participants' access to the securities lending market is essential to cover any such shortfalls. The result of this access, combined with incentives to meet

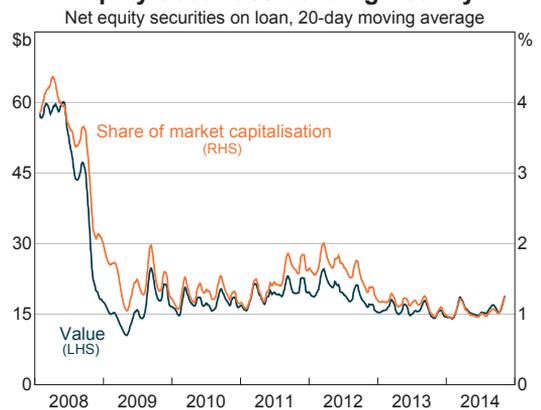
delivery obligations on time and the efficient design of ASX Settlement's systems, has meant that the incidence of market participants failing to deliver their equity securities is very low in Australia. The daily failure rate averaged around 0.1 per cent of the value of equities scheduled to be settled in 2013/14.

Activity

Data from a survey of market lenders conducted by the financial data provider Markit suggest the net value of ASX-listed equity securities loaned – which broadly measures the underlying demand for borrowed securities – decreased sharply during the global financial crisis. This can be attributed to a combination of deleveraging by both borrowers and their intermediaries and a decrease in short positions. It has since been relatively stable at this lower level, largely reflecting the amount of short positions in the market. From 2009, securities lending has remained between \$15 and \$25 billion by value, and between 1 and 2 per cent as a proportion of total market capitalisation (Graph 1).

Notably, the net value excludes on-lending activity by intermediaries (i.e. borrowed securities that fund onward loans, and loans that are funded by borrowed securities). Outstanding positions can also be measured on a gross basis, which includes this activity. Since the beginning of 2010, gross positions

Graph 1
Equity Securities Lending Activity
Net equity securities on loan, 20-day moving average



Sources: Bloomberg; Markit; RBA

4 ASX Settlement is a subsidiary of ASX Group. It is a licensed Clearing and Settlement facility, jointly regulated by ASIC and the Reserve Bank of Australia.

5 Simultaneous settlement of securities and associated funds transfers is known as delivery-versus-payment. This settlement mechanism mitigates the principal risk that could otherwise arise should one party complete its delivery (of either securities or funds) and the other party fail to do so.

THE EQUITY SECURITIES LENDING MARKET

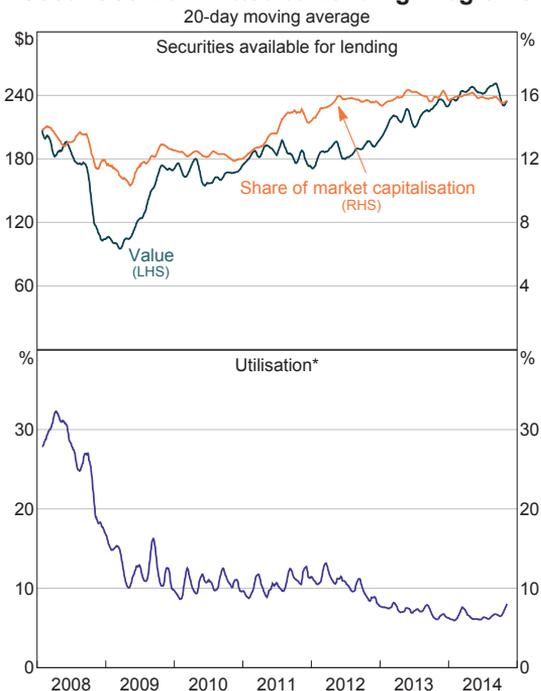
have been on average around twice the value of net positions. That is, there have been on average two intermediate loans before any security reaches the ultimate borrower.⁶

After a significant decline during the global financial crisis, the value of securities committed to lending programs – that is, the securities that beneficial owners have made available to lend – has since recovered and increased substantially, both in value terms and relative to market capitalisation (Graph 2). Since the low point in 2009, securities committed to lending programs have almost doubled by value and have increased by around 4 percentage points relative to market capitalisation. This is most likely the result of lower volatility and more positive investor sentiment since the crisis, encouraging beneficial owners to return to the market. Given lower growth

in the value of securities loaned, however, aggregate utilisation – the share of securities committed to lending programs that is actually loaned – has fallen around sixfold since early 2008.

Relative to market capitalisation, the level of equity securities lending activity in Australia is similar to that in a number of other countries, at around 1 to 2 per cent (Graph 3). The value of securities committed to lending programs, however, tends to be more variable across countries, ranging from around 5 to 25 per cent of market capitalisation. In Australia, this proportion is in the middle of that range; this is higher than in Asian economies, but lower than in most of the large Northern Atlantic economies.

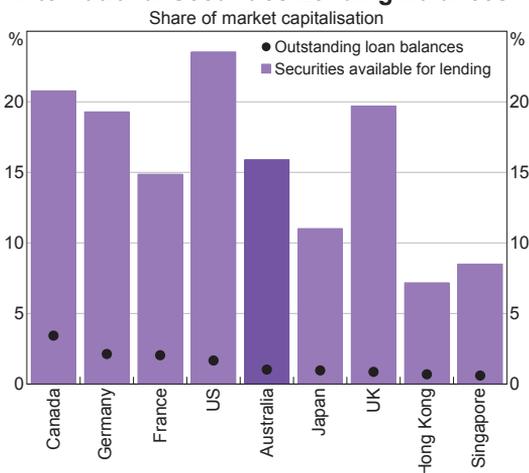
Graph 2
Securities Committed to Lending Programs



* Share of securities committed that are loaned
Sources: Bloomberg; Markit; RBA

6 The level of on-lending in the market is calculated using data collected under the Australian equities securities lending disclosure regime, which is described in further detail in the section 'Securities Lending Disclosure and Settlement Risk in the Australian Market'.

Graph 3
International Securities Lending Balances*



* Daily average from 1 January 2014 to 30 September 2014
Sources: Bloomberg; Markit; RBA

Securities Lending Disclosure and Settlement Risk in the Australian Market

In Australia, the securities lending market received some regulatory attention in the RBA's 2008 *Review of Settlement Practices for Australian Equities* (RBA 2008). One finding of that review was that transparency in the Australian equity securities lending market could usefully be improved. The benefits of this included helping both ASX Group (ASX) and market

participants identify potential settlement risks arising from securities lending activity. Settlement risk in this context arises primarily because beneficial owners may recall their securities at any time, and borrowers may not be able to deliver the securities within the specified three-day period. This risk is likely to be most acute when there is a widespread recall of securities; for instance, after an event that materially affects the price of the security. Greater transparency was also expected to improve the balance of information in the market; previously, only those directly involved in these transactions had access to such information.

As a result, the RBA worked with ASX and industry participants to develop a disclosure regime for equity securities lending, which was implemented in 2009. Disclosure requirements under the regime apply to all ASX Settlement participants (and any related bodies corporate).⁷ The regime consists of three components:

- *Transaction tags.* Participants are required to identify whether settlement instructions submitted to ASX Settlement are associated with securities lending transactions.
- *Daily reports of outstanding positions.* Participants are required to report the number of shares, by security, outstanding as either borrowed or loaned positions under a securities lending arrangement.
- *Quarterly reports of securities committed to lending programs.* Participants are required to report the number of shares, by security, available for loan in a lending program.

⁷ ASX Settlement is obliged to make available such information as part of its disclosure requirements under the RBA's Financial Stability Standards for Securities Settlement Facilities. Guidance note 18.3.1 states: 'A securities settlement facility should disclose to each individual participant data to help each participant understand and manage the potential financial risks stemming from participation in the securities settlement facility. For instance, participants should have access to sufficiently timely and broadly comprehensive data on equities securities lending to enable them to assess the potential implications for settlement risk. This is particularly important where equities securities loans are bilaterally negotiated and not novated to (or otherwise cleared through) a central counterparty, but nevertheless settled alongside centrally cleared exchange-traded transactions.'

Reports based on these data are publicly available on ASX's website on an aggregated basis (across reporting entities).⁸ To provide useful context for statistics on the tagged transaction component of the securities lending data, ASX has also increased the availability of data on total settlement activity and settlement performance. These data are published alongside the securities lending data.

The coverage of ASX's reporting regime is not as extensive as that of some private sector providers of securities lending data, such as Markit. However, while some other data are often available only to market participants or subscribers, the ASX data are accessible to the public and also available at a more granular level. The ASX data may also be used to track lending activity on both a gross and a net basis. Accordingly, the ASX data are complementary to those available via other sources and may be used to assess the settlement risk posed by large securities lending positions.⁹ For example, using the data, three statistics can be calculated that may provide an indication of the potential difficulty in covering an obligation to return borrowed securities:

- *On-lending.* The more on-lending activity is observed for a given equity, the more likely it will be that chains of securities loans exist. Therefore, the higher the probability that the recall of a single loan may trigger one or many additional recalls of securities loans.
- *Utilisation.* The higher the utilisation of securities committed to lending programs, the more difficult it is likely to be to borrow the equity to deliver a recalled loan.
- *Securities loaned as a proportion of turnover and market capitalisation.* The larger the value of

⁸ The data are available at <<http://www.asx.com.au/services/information-services/securities-lending-disclosure.htm>>.

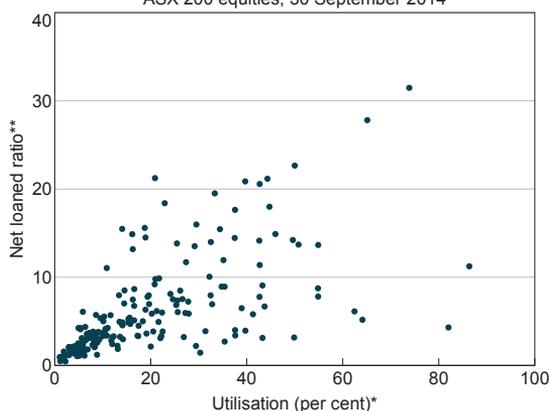
⁹ Under the regime, only ASX Settlement participants are required to report their securities lending positions. Accordingly, institutions that are active in the Australian securities lending market but do not participate directly in ASX Settlement are not obliged to report. However, these institutions' positions would be captured if the counterparty to their positions is an ASX Settlement participant. To ensure that at least some non-reporters' positions are reflected in the statistics, the disclosure regime requires that reporting institutions report both their loaned and borrowed positions.

securities loaned as a proportion of turnover or market capitalisation, the more difficult it may be to access market liquidity to purchase securities to complete the delivery of a recalled loan.

To illustrate the use of these statistics, Graph 4 and Graph 5 compare utilisation with the net loaned ratio and on-lending, respectively, for ASX 200 equities. Equities towards the top right of both graphs are likely to have a high degree of settlement risk. In

Graph 4, the equities with both a high utilisation and a high net loaned ratio – that is, the equities for which it would be difficult to borrow or access sufficient liquidity to purchase after a mass recall of loans – are likely to have a higher degree of settlement risk. Likewise, in Graph 5, there would be a higher degree of settlement risk for the equities with both high utilisation and a high level of on-lending, since a mass recall would be likely to lead to an unwinding of a number of linked loans and it could be difficult to source equities to borrow.

Graph 4
Utilisation and Net Loaned Ratio
ASX 200 equities, 30 September 2014

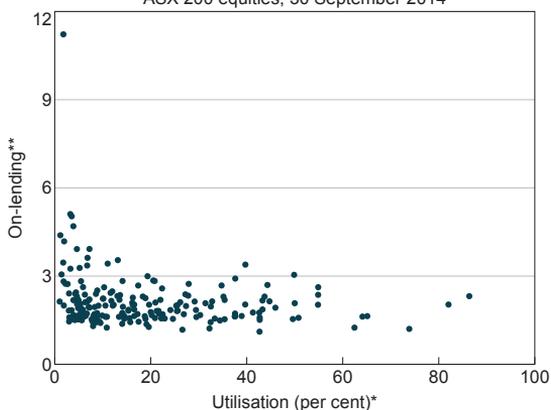


* Net value of the security loaned as a share of the value committed to lending programs

** Net value of the security loaned as a per cent of the daily average value of turnover in that security over the preceding 20 days

Sources: ASX; RBA

Graph 5
Utilisation and On-lending
ASX 200 equities, 30 September 2014



* Net value of the security loaned as a share of the value committed to lending programs

** Gross value of the security loaned divided by the net value on loan

Sources: ASX; RBA

International Regulatory Developments

The global financial crisis highlighted a number of shortcomings in the policies and practices of both financial institutions and regulators, primarily in North Atlantic jurisdictions. In response to these shortcomings, authorities have initiated regulatory reforms in a number of areas to increase the resilience of the financial system. With the G20 providing the impetus, these reform efforts have mainly progressed through the Financial Stability Board (FSB) and its member standard-setting bodies. Three areas of reform, in particular, are contributing to significant change in the equity securities lending markets internationally, with potential implications for the market in Australia:

- *FSB work on securities lending.* As part of its work to address 'shadow banking' risks, the FSB established the Workstream on Securities Lending and 'Repos' (hereafter referred to as the FSB Workstream) to develop policy recommendations, where necessary, in order to strengthen regulation of the securities lending and the repurchase agreement (repo) markets.¹⁰
- *Basel III.* While not having a direct focus on the securities lending market, the initiative that will probably have the most prominent effect on the securities lending market is the extensive reform to bank prudential regulatory standards.

¹⁰ The shadow banking system is defined as entities and activities outside the regular banking system that are associated with credit intermediation, and maturity and liquidity transformation.

These reforms, known as Basel III, consist of a comprehensive set of measures that aim to strengthen the regulation, supervision and risk management practices of the banking sector, developed by the international bank standard-setting body, the Basel Committee on Banking Supervision.

- *Reforms to the over-the-counter (OTC) derivatives market.* Reforms to improve the way counterparty risk is managed in the OTC derivatives market, while not having a direct impact on the securities lending market, are likely to affect the use of collateral in financial markets more broadly, including in the securities lending market. Among other things, these reforms are increasing the use of central counterparties (CCPs) in the OTC derivatives market and the exchange of collateral to support OTC derivatives trades that are not centrally cleared.

At a high level, these reforms are likely to have implications in three main areas: the transparency of the securities lending market and participants' risk management practices; the cost of intermediation in the lending market; and the management of collateral.

The impact of the reforms and participants' potential responses are discussed below.

Transparency and risk management

As part of its work, the FSB Workstream reviewed market practices in securities lending and repo markets and existing regulatory frameworks. Based on this review, the Workstream identified a number of characteristics of activity in these markets that could have implications for financial stability. Two of the most significant of these issues are:

- *Leverage and procyclicality.* Securities lending and repo markets facilitate credit and maturity transformation that is not subject to prudential regulation. In addition, the degree of leverage that can be gained through these markets is procyclical. That is, it is positively correlated with the value of the collateral, the re-use of collateral, the size of haircuts and the creditworthiness of trading counterparties.

- *Interconnectedness.* Cash collateral reinvestment and the re-use of non-cash collateral can increase interconnectedness in the financial system, which may increase the possibility of contagion; that is, the likelihood that problems in one financial institution could affect another.

Both these characteristics increased the fragility of the financial system in the lead up to the global financial crisis. In addition, due to the opaqueness of these markets, authorities were unable to properly assess the financial stability risks arising from these markets.

Shortcomings in some financial institutions' risk management practices further exacerbated the financial stability implications of these characteristics. For example, insufficient rigour in the calibration of haircuts allowed participants to take on excessive leverage. Additionally, inadequate practices in relation to the valuation and management of collateral and securities purchased through reinvestment programs contributed to the risk of contagion in the financial system.

In response to the issues it had identified, the FSB Workstream developed a number of recommendations. To allow regulators to better identify vulnerabilities in the securities lending and repo markets, the FSB has recommended that authorities should collect data on securities lending frequently and with a high level of granularity. It has also recommended that the transparency of participants' practices, especially in relation to collateral reinvestment and re-use, should be increased.

The FSB Workstream has also proposed minimum regulatory standards in relation to collateral reinvestment, and the valuation and management of collateral. Qualitative standards for calculating haircuts and the imposition of minimum haircuts have also been proposed. As well as improving participants' practices, these regulatory standards aim to reduce the potential for leverage in the securities lending and repo markets to be increased in a procyclical way. The FSB Workstream has also

proposed standards in relation to rehypothecation, which is the re-use of *client* assets, in part to decrease the degree of interconnectedness in the market.

In part reflecting that most of the FSB's recommendations have only recently been finalised, to date there has been relatively less focus in Australia on the implementation of reforms to the securities lending market (as well as to shadow banking more broadly). This also recognises that shadow banking accounts for a relatively small and declining share of financial system assets in Australia (see, for example, Schwartz and Carr (2013)).

Nonetheless, anecdotal evidence suggests that many of the FSB's recommendations are already reflected in some of the practices of a large number of participants in the Australian market. This reflects the earlier observation that most of these participants are overseas institutions and have adopted practices that reflect overseas regulatory changes that are consistent with the FSB's recommendations. Enhancements to these practices have been reinforced by an increased focus among beneficial owners on the risks that they face in engaging in securities lending transactions.

Cost of intermediation

One of the main areas of reform under Basel III is enhancement to the regulatory capital framework for banks. Capital in its simplest form represents a bank's ability to withstand losses without becoming insolvent. Basel II, the previous iteration of international bank prudential standards, included requirements for banks to maintain minimum capital ratios – that is, the ratio of a bank's capital to its assets adjusted for risk, known as 'risk-weighted assets'. Financial exposures assumed by intermediaries in their equity securities lending activity, including any indemnities to beneficial owners, would be taken into account in calculating risk-weighted assets for capital purposes.

Under Basel III, minimum capital ratios have been raised and capital has been defined more strictly to refer to financial instruments that are better able to absorb loss (and are therefore generally more costly). In addition, Basel III also strengthens the risk coverage of the capital framework, with more capital being required for counterparty credit risk arising from off-balance sheet exposures, such as securities lending transactions. Combined, these changes require banks to better manage the risks arising from their activity. In doing so, however, they also have the potential to increase the capital cost of securities lending activity for banks borrowing and lending as principal, as well as for agent lenders providing indemnities to beneficial owners.

Another important element of the new regulatory capital framework is a ceiling on the total (i.e. non-risk-adjusted) amount of leverage a bank can take on, which is known as the leverage ratio. In certain cases, the leverage ratio may be a constraint for the securities lending activity of some institutions. This is partly because banks borrowing as principal are not allowed to offset their securities lending exposures with collateral accepted as part of the trade when they calculate the ratio. In addition, strict conditions must be satisfied to be able to net offsetting transactions.¹¹ If the leverage ratio requirement is a binding constraint – that is, if a bank's leverage ratio is at or around its minimum level – the bank may have to allocate extra capital for any securities lending activity, which would in turn push up the cost of that activity.

While most elements of Basel III have been implemented or are in the process of being implemented in a majority of FSB member jurisdictions, including Australia, the impact of the reforms are still working their way into the market.

¹¹ These conditions are: transactions have the same explicit final settlement date; the right to set off the amount owed to the counterparty with the amount owed by the counterparty is legally enforceable; and the counterparties intend to settle net, settle simultaneously, or the transactions are subject to a settlement mechanism that results in the functional equivalent of net settlement.

With banks increasingly focused on the cost of capital as the new requirements under Basel III are being rolled out, many of them have implemented more sophisticated processes for capital allocation across business functions. For bank intermediaries involved in the securities lending market, this has created a heightened awareness of the capital cost of the business and the pricing of services both on the lending and borrowing sides of the market.

Accordingly, the way that intermediaries conduct and price their securities lending market activity may change in response to the higher costs. Some intermediaries may pass on a portion of the higher costs to their beneficial owner and borrower clients. This could manifest itself in a lower split in revenue for beneficial owners and higher fees for borrowers. There may also be consolidation in the industry. That is, the changing economics may encourage some intermediaries to exit the market or refocus their activity on customers or loans that attract higher fees; others may increase their activity to achieve greater economies of scale. Higher activity may also allow certain intermediaries that are both borrowing and lending, for example borrower intermediaries that engage in a high amount of on-lending, to increase the scope for risk offsets. These risk offsets could reduce the amount of capital they need. In the longer term, intermediaries may seek to increase their use of centralised infrastructure, such as CCPs and electronic trading platforms, which have the potential to generate both capital and operational efficiencies (see 'Box A: Centralised Market Infrastructure').

Management of collateral

Since the global financial crisis, higher risk aversion has caused an increase in investors collateralising their wholesale transactions. However, regulatory change is increasing the demand for collateral, particularly for high-quality collateral assets (see, for example, Cheung, Manning and Moore (2014)). The most prominent drivers of this trend are

reforms to improve the way counterparty risk is managed in the OTC derivatives market. These reforms are increasing the use of central clearing in this market, which is in turn increasing the demand for high-quality securities to meet CCP initial margin requirements. In addition, starting from December 2015, requirements to collect both variation and initial margin on non-centrally cleared OTC derivatives will be implemented in a number of FSB member jurisdictions. The new Basel III 'liquidity coverage ratio' is another source of demand for such assets. This will require banks to hold sufficient high-quality liquid assets, such as cash and Australian government debt, to withstand a hypothetical 30-day period of funding stress.¹²

Rising demand for collateral assets, in particular high-quality assets, will likely push up the opportunity cost of providing collateral for securities lending activity. In recent years, participants have been increasingly taking into account these costs when arranging their transactions. For instance, borrowers and their intermediaries are less willing to provide cash and high-quality securities as collateral. In addition, participants are seeking to optimise the use of their collateral assets. This is, for instance, through the establishment of 'collateral desks' that manage institutions' collateral across different business lines (e.g. across an institution's securities lending and repo businesses). By centralising collateral management, these desks are able to allocate collateral more efficiently and better recognise collateral offsets. Institutions are also increasingly utilising tri-party collateral managers, which can improve the efficiency of an institution's use of collateral securities (see 'Box A: Centralised Market Infrastructure').

¹² The Australian Prudential Regulation Authority has defined these high-quality 'liquid' assets as comprising reserve balances with the RBA, Commonwealth Government securities and semi-government securities.

Box A

Centralised Market Infrastructure

In recent years, there has been increased interest in centralised infrastructure in a range of markets, including the securities lending market. This is in part because the use of these infrastructures has the potential to generate capital and other cost efficiencies. Three types of infrastructures that could be used for these purposes are described in greater detail below.

Central Counterparties

A central counterparty or CCP inserts itself between both trading counterparties after trades are executed to protect each counterparty from the risk that the other defaults before the obligations are settled. This occurs through a process known as 'novation', whereby the contract between the original parties to a trade is replaced by two contracts: one between the buyer and the CCP; and one between the seller and the CCP. To manage the risks it takes on, a CCP maintains a comprehensive, conservative and transparent risk management framework. A typical framework includes: minimum financial and operational requirements for direct participation; initial and variation margin requirements; and additional prefunded pooled financial resources.¹

While no CCP currently offers clearing services for securities loans in Australia, CCPs do offer such services in overseas markets. In the United States, a securities lending central clearing service has been offered since July 1993 by the Options Clearing

Corporation. More recently, in November 2012, Eurex Clearing launched a clearing service for securities loans for equities listed in a number of European countries.

To date, securities lending volumes in these CCPs has not been high. However, anecdotal evidence suggests that there is increasing interest from the industry in securities lending CCPs due to the potential for CCPs to offset banks' increasing capital costs. Under Basel III, banks are allowed to allocate less capital for exposures that are cleared by a CCP compared with exposures that are not. In addition, central clearing allows greater scope for intermediaries with offsetting exposures to realise those offsets, which can in turn allow those intermediaries to economise on their capital.² Finally, the use of CCPs may also enhance the integrity and stability of the equity securities lending market.

CCPs are also innovating to overcome barriers that have historically prevented the use of central clearing in the securities lending market. One of these barriers is that beneficial owners generally find the cost of meeting initial margin requirements prohibitive. Recently, participation models have been developed which allow beneficial owners to clear their loans as principal without having to post initial margin.³

¹ CCPs collect variation margin to cover observed changes in the mark-to-market value of participants' open positions and initial margin to manage potential future price changes before an exposure to a defaulted participant's position can be closed out. For more information on CCP risk management practices, see RBA and ASIC (2009) and Rehlon and Nixon (2013).

² There is the potential for these offsets to be recognised across securities lending transactions and also in some cases across product classes (e.g. across equity options and securities loans).

³ For example, Eurex Clearing avoids requiring initial margin from a beneficial owner by 'pledging' (rather than transferring title of) the collateral received from the borrower to the beneficial owner. Under this arrangement, Eurex Clearing retains title to the collateral and would be able to use it to cover losses incurred in the event of the default of the borrower.

Trading Platforms

Over the past decade, new electronic platforms have emerged that reduce search costs and improve the efficiency of arranging securities loans. These platforms come in a number of different forms. For example, some platforms automatically match borrower and lender orders anonymously using a price finding algorithm, similar to central limit order books used in the trading of cash equities. Others are designed to improve the efficiency of existing bilateral relationships by providing tools to decrease the cost of matching borrowing and lending intentions among bilateral counterparties. While use of these electronic platforms has been widespread overseas, only recently has one of these platforms, Equilend, received regulatory clearance from the government to operate in Australia.

Traditionally, lending transactions have been arranged through bilateral communication channels, such as the phone, fax or electronic messaging platforms. The use of these communication channels involves high search costs and may also introduce back-office inefficiencies, since transactions may need to be processed and reconciled manually. For this reason, the use of electronic platforms has the potential to decrease the cost of arranging and processing securities lending transactions, especially transactions with more standardised terms that generally require little negotiation.

Centralised Collateral Management

Tri-party collateral management services act as intermediaries between the giver and receiver of collateral. Tri-party services enable greater efficiency in collateral use, with collateral being optimised across exposures arising from a firm's different business lines. A greater degree of collateral diversification is also an advantage of tri-party services since they can handle a wider range of collateral than is typically used in bilateral arrangements. Tri-party collateral services allow participants in the securities lending market to outsource their back-office and IT functions.

The four major tri-party service providers include two custodian banks (Bank of New York Mellon and JPMorgan) and two international centralised securities depositories (Clearstream and Euroclear). Several national securities settlement facilities also operate tri-party services, including ASX Collateral in Australia, which uses technology developed by Clearstream. Users of custodian banks' services have the advantage of access to a wider range of securities over a larger number of markets around the world. National offerings from securities settlement facilities are typically limited both by geography and the types of securities held in the relevant facility, although, in time, links with other facilities internationally may expand the scope of these offerings. Services offered by securities settlement facilities also have the benefit of being directly integrated with the securities settlement infrastructure, making it easier to transfer securities in and out of the tri-party system.

Conclusion

The securities lending market is an integral component of Australia's equity market, contributing to the efficiency of the market and supporting the equity settlement process. In recent years, a number of regulatory developments have been reshaping the landscape of the market.

Domestically, the RBA, working with ASX and industry participants, has sought to increase the transparency of the lending market by initiating a reporting regime. Statistics collected under this regime facilitate the identification of settlement risks arising from securities lending positions.

International regulatory initiatives since the global financial crisis, directed at weaknesses in the securities lending market, as well as vulnerabilities in the financial system more broadly, are contributing to significant changes to the equity securities lending market. The FSB has recommended a number of enhancements to participants' risk management practices, as well as greater transparency in the market. In addition, Basel III reforms to improve the resilience of the banking sector will be likely to increase the direct cost of banks' securities lending activity, and therefore the cost of intermediation in the lending market. Reforms to the OTC derivatives market, combined with new Basel III liquidity standards, are also fundamentally altering the way that collateral is used in financial markets. And, by generating competing demands for high-quality assets, these developments are focusing attention on using collateral efficiently in the securities lending market.

It will take some time for the full effect of these reforms to work their way through the securities lending market. However, there is some evidence to suggest that participants are already responding in the form of higher fees and changes in the composition of collateral. In the longer term, there are likely to be further changes in the way the market operates, potentially involving greater use of centralised infrastructure. ✎

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Fast Retail Payment Systems

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In December 2014, a group of Australian financial institutions announced that funding had been secured for the next phase of the New Payments Platform (NPP), which will provide the capability for Australian consumers and businesses to make and receive payments in near to real time. The NPP is one example of a fast retail payment system, a number of which have been implemented in other countries in recent years. This article provides an overview of some of the features of fast payment systems and discusses the approach taken in the design of the NPP.

Introduction

On 2 December 2014, a consortium of Australian financial institutions announced that they had committed to funding the building and operation of infrastructure that will support a new fast retail payment system.¹ The new system, referred to as the New Payments Platform (NPP), will be a landmark change for the Australian payments system, bringing not just immediacy of retail payments, but a range of other advances that will improve convenience for consumers and provide potentially significant efficiency gains for businesses. The NPP is scheduled to be operational in 2017.

This development in Australia has not occurred in isolation. A number of other countries have implemented similar systems in recent years and many others now have such projects under consideration. This emerging trend provided a backdrop for the Reserve Bank's Strategic Review of Innovation in the Payments System, which was a catalyst for the current project (RBA 2012).

This article examines key features of the fast retail payment systems that have been developed around the world, providing some context for the development of the NPP in Australia.

Background

The ability to make payments in real time has been a feature of large-value payment systems for many years. Many countries implemented real-time gross settlement (RTGS) systems in the 1990s and early 2000s as a way of reducing risk arising from the large exposures that could otherwise build up when settlement of funds between institutions is deferred. These real-time systems are generally aimed at facilitating a relatively small number of large corporate and financial market transactions. However, advances in technology – in particular improved telecommunications, faster processing speeds and wide penetration of internet connectivity – mean that real-time payments can be extended to the high-volume, low-value payments used by consumers and businesses ('retail payments'). Systems implemented in a number of countries allow businesses and consumers to make and receive payments in near to real time, with close-to-immediate funds availability to the recipient. Fast retail payment systems can benefit end users of payments systems, and also payment providers themselves – for example, by replacing the use of relatively costly cheque payments with real-time transfers using a payment application on a mobile device.

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¹ The announcement included the appointment of SWIFT to build and operate the NPP (see APCA (2014) and SWIFT (2014)).

In the *Strategic Review of Innovation in the Payments System: Conclusions*, released in June 2012, the Reserve Bank's Payments System Board (PSB) noted that some customer-facing innovations had benefited financial institutions and their customers. However, it also noted that market forces might not be sufficient to produce some innovations that are in the public interest, particularly those requiring collective effort to succeed (RBA 2012). To address these concerns, and recognising trends internationally, the PSB set out a number of 'strategic objectives' that included the ability for business and consumers to make and receive real-time retail payments. Other strategic objectives included the ability to: make and receive payments outside normal banking hours; send more explanatory information with a payment; and send payments without having to use full Bank State Branch (BSB) and account number details.²

Other countries that have not already progressed to fast retail payments have been considering very similar issues. For example, in the United States the Federal Reserve Banks commenced a consultation process in September 2013, sharing their perspectives on some key gaps in the payments system (The Federal Reserve Banks 2013). This consultation process was similar to the Reserve Bank's Strategic Review. In August 2014, the Federal Reserve Banks released a paper that suggested that building new infrastructure may be the best way to facilitate real-time payments.³ Several industry task forces are planned to provide input on the process of speeding up transactions.

Fast Retail Payments

Fast retail payments can be thought of as payments that are available for use by the recipient a short time after the payment has been initiated by the sender – within minutes, or indeed seconds. This contrasts with many established retail payment systems that rely on batch processing where funds are made available

on the next business day, or even several days later – particularly in the case of cheques.⁴

There are three steps within the payment process relevant for achieving fast payments – clearing, posting and settlement. First, following the initiation of a payment by the customer (payer), the exchange of payment instructions and the calculation of payment obligations between financial institutions (referred to collectively as 'clearing') need to be performed in real time. Many retail payment systems have tended to clear payments infrequently in batches, making timely receipt of funds by the payee impossible. Second, the recipient's financial institution must act on the payment instructions it receives in the clearing process to make funds available to the recipient ('posting') in near to real time. Finally, the payer's financial institution needs to 'settle' the funds owing to the receiver's financial institution for the payment. This typically occurs by transferring funds between accounts held by financial institutions at the central bank (Exchange Settlement Accounts in Australia's case).

Clearing and posting need to occur quickly for a system to be, in effect, a 'fast' system. However, settlement between financial institutions need not be completed before funds are made available to the recipient customer. There is therefore freedom for settlement to occur in a number of ways and indeed the fast retail payment systems implemented to date have taken varying approaches (see 'Features of Fast Retail Payment Systems' below).

While there have been significant developments in recent years, the concept of fast retail payments is not new. For example, Japan's Zengin Data Telecommunication System (Zengin System) was established in 1973. The development of fast payment systems has generally occurred in one of two ways: through the extension of existing

2 In Australia, bank identifier codes are known as 'BSB numbers'; in other countries these are called bank codes, transit numbers and sort codes.

3 The Federal Reserve Banks conducted an assessment of international fast retail payment systems to identify potential options for improving the speed of payment systems in the United States (The Federal Reserve Banks 2014a).

4 As an example, Australia's Direct Entry system, which processes bulk payments (such as salaries and direct debits) as well as internet 'pay anyone' transactions, has traditionally made funds available on the following business day. In recent years, a number of banks have begun to make funds available on the 'same day'. Interbank settlement arrangements introduced in 2013 allow this to occur without financial institutions incurring overnight settlement risk.

infrastructures (such as high-value systems or real-time ATM infrastructure) to accommodate high-volume, fast retail payments, or through new purpose-built infrastructure.

In most cases, new specialised infrastructure has been adopted for retail payments, but there are examples of hybrid systems processing both high-value and retail payments. For example, Japan's Zengin System clears both high-value and low-value funds transfers in near to real time, but settlement arrangements vary with transaction size. Switzerland's Swiss Interbank Clearing (SIC) provides for near to real time clearing and settlement of high-value payments and some retail funds transfers. A range of other countries have introduced fast retail payment systems either as hybrid systems or as dedicated low-value systems since 2000 (Table 1). As discussed below, Australia's NPP system will rely on newly developed clearing infrastructure, with settlement occurring in real time through a new component of the Reserve Bank's high-value settlement system, the Reserve Bank Information and Transfer System (RITS).

Features of Fast Retail Payment Systems⁵

The fast retail payment systems implemented around the world are distinguishable from each other in a number of ways. As noted, settlement models vary significantly, but other features also differ. Of particular interest in an Australian context are the approaches taken to the areas identified as objectives by the PSB – hours of availability, the ease of 'addressing' payments and the capacity to transmit richer information with a payment. The latter is closely related to the form of payment messages adopted by the system, which in turn is significant for the adaptability and interoperability of systems.

Settlement

There are broadly two modes of settlement in payment systems – RTGS, where interbank obligations are settled one by one in real time, and deferred net settlement, where payments are netted and settled in a batch or batches. In systems using RTGS, the speed of settlement can range from

Table 1: Examples of Fast Retail Payment Systems Introduced since 2000

Country	System	Commencement
South Korea	Electronic Banking System (EBS) ^(a)	2001
Brazil	Funds Transfer System (SITRAF) ^(b)	2002
Mexico	Interbank Electronic Payment System (SPEI) ^(c)	2004
South Africa	Real-Time Clearing (RTC)	2006
United Kingdom	Faster Payments (FPS)	2008
China	Internet Banking Payment System (IBPS)	2010
India	Immediate Payment Service (IMPS)	2010
Sweden	Payments in Real Time (BiR) ^(d)	2012
Poland	Express ELIXIR	2012
Singapore	Fast and Secure Transfers (FAST)	2014
Denmark	RealTime24/7 ^(e)	2014

(a) Also known as HOFINET

(b) Sistema de Transferência de Fundos

(c) Sistema de Pagos Electrónicos Interbancarios

(d) Betalningar i Realtid

(e) Straksclearingen

Sources: National Sources; RBA

⁵ The information about the features of fast retail payment systems in this article has been drawn from a range of sources including Andresen and Jensen (2014), the Association of Banks in Singapore (2014), Banco Central do Brasil (2014), Banco de México (2014), Bankgirot (2014), BIS (2011, 2012), CPMI (2014), Japanese Banks' Payment Clearing Network (2014), National Payments Corporation of India (2014), Nets (2014), PASA (2014), Payments Council (2014), SIX Interbank Clearing (2014) and Sveriges Riksbank (2013).

FAST RETAIL PAYMENT SYSTEMS

around one second up to a few minutes. In systems using deferred net settlement arrangements, the frequency of settlement batches can also vary, from a single batch at the end of the day to multiple batches during the day. Unlike clearing, fast settlement is not an essential component of a fast retail payment system.

In systems using deferred net settlement, settlement exposures can build up between financial institutions. While these exposures are typically small relative to the exposures that can arise in large-value systems, prudent risk management suggests the need for mechanisms to manage these exposures. Common methods that have been introduced in a number of countries include the holding of collateral against exposures and the use of debit caps, which prevent additional transactions once an exposure has reached a specified size. These mechanisms are not required with RTGS.

Fast retail payment systems with real-time settlement have been implemented in Mexico, Sweden and Switzerland. In Australia, the Reserve Bank has committed to build a dedicated service to facilitate real-time settlement of payments through the NPP. In some other systems, settlement arrangements are determined by the value of the transaction. Japan's Zengin System settles payments over ¥100 million (A\$1 million) in real time, while payments under this threshold are settled on a net basis at the end of the day.

In systems that use deferred net settlement, the frequency of settlement cycles can range from daily to almost real time (Table 2). Korea's EBS has a next-day settlement cycle, while fast retail payment systems with multiple settlement cycles a day include Singapore's FAST, which has two cycles a day, and the United Kingdom's FPS, which has three cycles. South Africa's RTC has hourly net settlements during the business day, while Brazil's SITRAF system settles payment batches every five minutes.

Availability outside traditional banking hours

Broader developments in the economy as well as society have meant that a range of services are increasingly available outside traditional business hours. In the conclusions to the Strategic Review, the PSB noted the desirability of the retail payments system being able to support transactions outside normal banking hours (RBA 2012).

For some fast retail payment systems overseas, transactions can be initiated and funds received 24 hours a day, 7 days a week. These 24/7 operations include Denmark's RealTime24/7, India's IMPS, Korea's EBS, Singapore's FAST, South Africa's RTC, Sweden's BiR and the United Kingdom's FPS. Other fast retail payment systems such as Mexico's SPEI, Brazil's SITRAF and Japan's Zengin System are limited to business days (Table 3). Mexico's SPEI

Table 2: Settlement

Country – System	Interbank settlement model
Brazil – SITRAF	Deferred net (every five minutes)
Denmark – RealTime24/7	Deferred net (six cycles a day)
India – IMPS	Deferred net (three cycles a day)
Japan – Zengin System	Hybrid; deferred net; real time for payments above ¥100 million
Mexico – SPEI	Real-time
Singapore – FAST	Deferred net (two cycles a day)
South Africa – RTC	Deferred net (approximately hourly cycles)
South Korea – EBS	Deferred net (one cycle on the next day)
Sweden – BiR	Real-time
Switzerland – SIC	Real-time
United Kingdom – FPS	Deferred net (three cycles a day)

Sources: National Sources; RBA

will progressively expand operating hours for fast payments via mobile devices over 2015, moving towards 24/7. The Bank of Japan recently announced that it would investigate whether the Zengin System should transition to 24 hour operations, identifying that this could improve the efficiency of managing funds and enable beneficiaries to use funds in real time (Bank of Japan 2014).

Table 3: Examples of System Availability

Country – System	Operating hours
Brazil – SITRAF	07:30–17:00 ^(a)
Denmark – RealTime24/7	24/7
India – IMPS	24/7
Japan – Zengin System	08:30–16:40 ^(a)
Mexico – SPEI	06:00–17:30 ^(a)
Singapore – FAST	24/7
South Africa – RTC	24/7
South Korea – EBS	24/7
Sweden – BiR	24/7
Switzerland – SIC	16:40 _{s-1}} –16:15 _s ^(b)
United Kingdom – FPS	24/7

(a) Business days

(b) The settlement day starts on the day prior to the value date and continues through to the afternoon of the value date; customer payments after 15:00 in SIC are settled as next-day payments (Mägerle and Oleschak 2009)

Sources: National Sources; RBA

‘Addressing’ solutions

In order for a payment to be made by the payer directly into a recipient’s account, the receiving financial institution needs sufficient information about that account. Traditionally, the recipient would be obliged to provide the payer with account details – usually a code to identify the financial institution and another to identify the account. In Australia, this typically means a six digit BSB number and a nine digit account number. Very often, these details are difficult to remember and can easily be keyed in incorrectly. ‘Addressing’ solutions, which allow a payment to be sent to an account linked to a phone number, email address or other identifier, offer a

means for tackling these difficulties and will be a feature of Australia’s NPP.

Internationally, India’s IMPS allows mobile phone numbers to be used as addresses for payments. IMPS uses a seven digit Mobile Money Identifier (MMID) to link a customer’s bank account number to their mobile phone number. Payers can use a payee’s MMID and mobile number to make payments through a mobile application, via SMS or at an ATM. In the United Kingdom earlier this year, the Payments Council, along with participating banks and building societies, released Paym, a service that enables mobile phone numbers to be used as payment addresses for person-to-person payments.

Richer remittance information

The ability to attach explanatory (remittance) information to a payment is very important to businesses and, to a lesser degree, consumers. In a number of countries, including Australia, the electronic payment systems used by businesses have provided only very limited capacity to carry additional information – typically 16 to 20 characters. This is one reason why cheques have been used rather than electronic payments in some circumstances, as additional information can be provided by writing on the back of the cheque, by attaching written information with a paper clip, or via a perforated form. The newer retail payment systems, including the NPP, are being built with the capacity to carry a significant amount of additional information. As well as the increased amount of data that can be attached to a payment, the ability to use an agreed structure to the data provides scope for improvements in business efficiency, from facilitating straight-through processing, to making reconciliation of payments and receipts easier and more accurate. For example, Japan’s Zengin System, originally constrained to 20 characters of information per payment message, has been expanded to provide the option of 140 characters (Bank of Japan 2014). In Australia’s case, there will be a significant expansion from the 18 characters currently available using the Direct Entry system.

Changes to the capacity to carry remittance information in many cases are closely associated with the standards adopted for the format of payment messages. Historically, many jurisdictions have relied on unique domestic messaging standards for payment systems. However, as modern payment systems are increasingly being integrated with other systems, both domestically and internationally, there is an increasing need for payment messaging to be interoperable. A relatively new standard, ISO 20022,⁶ is becoming accepted as ‘an enabler of a single, common “language” for global financial communications’ (The Federal Reserve Banks 2014b). Many existing fast payment systems will adopt, or are considering adopting, ISO 20022 standard messaging, while most new systems are developed to be compliant with these standards. For example, in Europe, ISO 20022 standard messaging is a requirement for processing interjurisdictional Single European Payments Area payments (European Payments Council 2014). Denmark’s RealTime24/7, Sweden’s BiR and Singapore’s FAST systems were developed to include ISO 20022 messaging standards, while Switzerland has committed to upgrade SIC to incorporate ISO 20022. The United Kingdom’s FPS currently operates using an alternative standard, ISO 8583. The NPP will adopt ISO 20022 messaging.⁷

Services provided

Fast retail payment systems have tended to target person-to-person payments, where speed is valued, and business-to-business payments, where both speed and improved remittance information are valued (The Federal Reserve Banks 2014a). They could potentially also target person-to-business payments. This is the case with the Zapp service, to be offered in 2015 through the FPS system in the United Kingdom.

⁶ ISO, the International Organization for Standardization, develops and publishes international standards. ISO 20022 is a standard set by the ISO technical committee responsible for standardisation in the field of banking, securities and other financial services.

⁷ The ISO 20022 message format will form part of the core functionality of the NPP’s basic infrastructure (see APCA (2013) and SWIFT (2014)).

The access channels provided vary depending on the country setting. In many countries, users access fast payment functionality via internet services provided by their bank. This is readily extended to smartphones. However, in India the opposite progression occurred. IMPS started as a bank-led mobile phone payment service. It was available on most mobile phones (i.e. not restricted to smartphones) and was considered a potential platform to increase accessibility to banking products, given the large proportion of India’s population that does not have a bank account. The robust adoption of IMPS mobile payments has seen its product offerings evolve to include both internet and ATM real-time interbank fund transfers.

The use of mobile phones as an access channel for fast payment services is a focus for a number of fast payment systems, including in the United Kingdom, Sweden and Singapore. This dovetails particularly well with some services for easier addressing of payments. For instance, the Paym service recently introduced in the United Kingdom enables mobile phone numbers to be used as payment addresses for person-to-person payments (Payments Council 2014). Users register their mobile phone number and link it to their bank account number. They can then send and receive real-time payments to other registered users using their mobile phone numbers through their bank’s internet portal.

The Design of the New Payments Platform

The broad approach to providing infrastructure that would support fast retail payments in Australia was established by the industry Real-Time Payments Committee (RTPC) and published in February 2013 (APCA 2013). The RTPC proposed the establishment of a mutual collaborative clearing utility to provide the payments infrastructure to which authorised deposit-taking institutions would be connected for real-time clearing of payments. This utility, known as the Basic Infrastructure (BI), will not be commercial in nature and will provide a platform through which a variety of payment services can be offered. While

financial institutions will be able to offer basic payment services to their customers using only the BI, the model proposed by the RTPC anticipates that a variety of 'overlay services' will be able to use the BI to offer commercially oriented services, for instance through a commercial scheme. Participation by financial institutions in any particular commercial overlay would be voluntary. This model was chosen with the view that it would provide the greatest scope for innovation and competition between financial institutions and payment providers in the services that can be offered to end users.

The RTPC also proposed that an agreed overlay service, referred to as the 'Initial Convenience Service' (ICS), would be built at the same time as the BI, to help establish a compelling proposition for use of the NPP from the outset. While the ICS will be the first overlay to give payments system users access to fast retail payments, it is intended to be the first of a number of overlay services that could be developed over time.

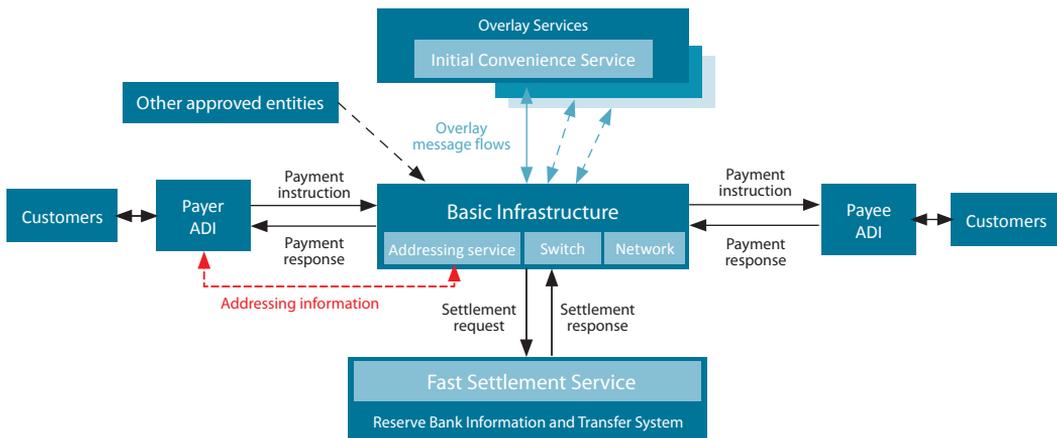
The BI and the ICS comprise two of the three main components of the NPP. In addition, the Reserve Bank is developing a Fast Settlement Service (FSS)

that will provide line-by-line real-time settlement of transactions processed through the NPP. This model will enable real-time clearing and settlement for retail payments, with the recipient's financial institution able to provide fast access to funds without incurring interbank settlement risk. The interaction of these three components – BI, ICS and FSS – is illustrated below (Figure 1).

Consistent with the approach taken in recently developed fast retail payment systems, the NPP will operate 24 hours a day, 7 days a week and will incorporate ISO 20022 messaging standards to facilitate the inclusion of richer remittance information with transactions. The NPP model also includes an addressing solution, enabling users to receive payments without having to supply BSB and account numbers to the payer.

This combination – of real-time capability, 24/7 operations, richer messaging functionality and easier addressing – addresses the key gaps in the payments system identified by the Strategic Review. The capacity for new overlay services to utilise the system should also be a vehicle for innovation and competition.

Figure 1: The New Payments Platform



Sources: APCA; RBA

Concluding Comments

The NPP will represent an important piece of national infrastructure for Australia. While its development is a significant undertaking for the payments industry, the services it will provide are consistent with the changing needs and expectations of payments system users and with developments overseas, where interest in such systems is becoming more widespread. The Australian industry is seeking to learn from the experiences overseas; at the same time, the Australian approach to implementing fast retail payments is also being observed closely in other jurisdictions considering taking similar steps in the future.

The Reserve Bank will continue to work with the industry over the coming years to turn the NPP vision into reality. ✕

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The Offshore Renminbi Market and Australia

Eden Hatzvi, William Nixon and Michelle Wright*

The Chinese authorities have continued to make progress in internationalising China's currency, the renminbi (RMB). In particular, the use of RMB for cross-border trade and investment transactions has increased noticeably over recent years and the market for RMB in a number of jurisdictions outside of mainland China – known as 'offshore centres' – has developed further. As part of this broader trend, the use of RMB by Australian entities has also increased somewhat, although there remains considerable scope for further growth. In order to facilitate this, a number of policy initiatives designed to allow the local RMB market to develop have recently been agreed with the Chinese authorities. Most notably, these include the establishment of an official RMB clearing bank in Australia and a quota that will allow Australian-based entities to invest in mainland China's financial markets as part of the RMB Qualified Foreign Institutional Investor (RQFII) program.

Background

The Chinese authorities have continued to make significant progress in liberalising China's financial system. In addition to domestic financial market reform and development, the partial liberalisation of China's exchange rate and cross-border capital flows have been key elements of the reform process.¹ While cross-border trade flows have been subject to relatively few restrictions for some time, China's cross-border capital flows have been managed much more closely. But in recent times, restrictions on direct investment flows have been relaxed, and the capital account liberalisation process has also extended to portfolio investment flows. In particular, the Chinese authorities have started to open up China's debt and equity markets to foreign investment and have also allowed Chinese residents to invest more freely in offshore markets. The substantial effects of China's earlier trade liberalisation process on the global economy suggest that China's ongoing capital account liberalisation process will also have significant implications for the global financial system.

Closely related to China's ongoing 'opening up' process, the Chinese authorities have introduced reforms that aim to promote the Chinese renminbi (RMB) as an international currency.² As outlined in Lowe (2014), there are two key conditions to be met before the RMB can be considered an 'international currency'. The first is that the RMB is widely used in transactions between Chinese residents and non-residents. The second is that the currency is widely used in transactions between non-residents.³ While considerable progress has been made on the first condition, there is some way to go yet on the second.

An important feature of the RMB internationalisation process to date has been the development of a number of offshore RMB 'centres' outside of mainland China. The various restrictions on China's capital account transactions mean that the flow of RMB *between* the onshore and offshore markets has, to date, been primarily the result of trade-related cross-border transactions between Chinese residents

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1 For more details, see Ballantyne *et al* (2014).

2 See Cockerell and Shoory (2012) and Ballantyne, Garner and Wright (2013) for details.

3 This includes non-residents choosing to transact in RMB despite ultimately requiring another currency, as well as non-residents being willing to hold unhedged exposures to the RMB.

and non-residents. Crucially though, there are no restrictions on the use of RMB *within* the offshore market. As a result, the offshore RMB market can be thought of as providing an environment in which a range of RMB banking products can be developed and in which firms outside of mainland China can begin using the currency, even if they do not have direct access to the onshore market.

The first – and still the most important – offshore RMB centre is Hong Kong, which was announced as an RMB centre by the Chinese authorities in 2003. In contrast, other RMB centres have typically been established at the instigation of the local authorities and market participants, in recognition of the RMB's significant potential as an international currency.

Against this background, the Australian authorities have worked together with the Chinese authorities to facilitate the development of the local RMB market. These steps recognise Australia's already close economic relationship with China and the increasingly close financial linkages between the two countries. Most recently, these initiatives have included:⁴

- the establishment of an official RMB 'clearing bank' in Australia, which will make it easier for Australian residents to transact in RMB with their counterparts in mainland China
- the establishment of a quota as part of the RMB Qualified Foreign Institutional Investor (RQFII) program, which will allow Australian-domiciled financial institutions to invest RMB obtained in the offshore market in China's onshore bond and equity markets.

These announcements are in addition to existing initiatives, including: the local currency swap agreement between the Reserve Bank of Australia (RBA) and the People's Bank of China (PBC) signed in 2012; the commencement of direct trading between the RMB and the Australian dollar in mainland China's interbank foreign exchange market in 2013; and the

RBA's investment of a portion of its foreign currency reserves in RMB-denominated assets in the past year. There has also been ongoing engagement on RMB internationalisation between Australian officials (including the RBA and Treasury) and the private sector through forums such as the Australia-Hong Kong RMB Trade and Investment Dialogue and the newly established 'Sydney for RMB' working group, which is a private sector led initiative.

This article discusses the recent announcements within the context of initiatives that have been implemented in other offshore RMB centres. In light of the importance of these offshore centres for China's overarching goal of internationalising the RMB, the article then provides an update on the progress that has been made over the past year or so.

An Official RMB Clearing Bank in Australia

The key function of an official RMB clearing bank is to facilitate cross-border payments and receipts of RMB.⁵ An official RMB clearing bank is able to perform this function relatively efficiently, because its 'official' status grants it more direct access to China's domestic payments system (including access to RMB liquidity from the PBC) and a dedicated quota to transact in China's onshore foreign exchange market.

However, the official clearing bank channel is not the only means of facilitating cross-border RMB transactions. Indeed, RMB transactions between Australian and Chinese entities were effected prior to the establishment of an official RMB clearing bank in Australia, albeit through somewhat less direct channels. These alternative channels have included traditional 'correspondent banking' relationships with banks in mainland China, as well as RMB clearing 'services' offered by Australian branches of Chinese banks through their head offices in

4 See 'New Measures to Facilitate the Development of the Renminbi Market in Australia' (RBA 2014a).

5 As well as providing a connection between the offshore and onshore markets, an official clearing bank can also clear and settle RMB transactions *within* the offshore market.

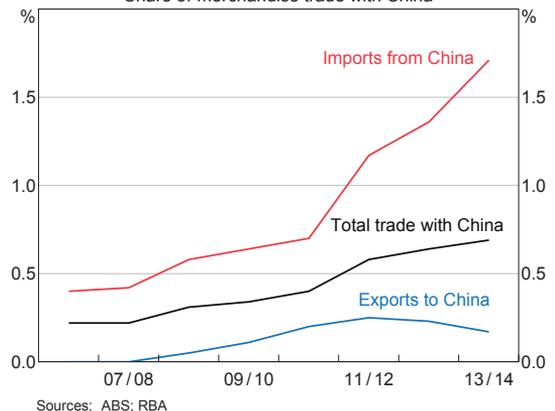
mainland China.⁶ Both of these channels ultimately rely on a *mainland Chinese bank's* access to the Chinese interbank payments system. In addition, Australian banks have been able to make use of relationships with participants in other offshore RMB centres – most likely Hong Kong – or become direct participants in these other offshore centres' RMB payments systems. These latter two channels ultimately rely on these other *offshore centres' clearing banks* to effect transactions.

Although Australian financial institutions have had – and continue to have – a number of alternative options for effecting RMB transactions on behalf of their corporate clients, a local official clearing bank provides a more direct avenue. Over time, this has the potential to improve the efficiency of these transactions by reducing payment delays and/or lowering transaction costs. In addition, official clearing banks have also played an important symbolic role in establishing recognised offshore RMB centres. This is likely to confer some important additional benefits to the Australian market, particularly through raising awareness among Australian firms about the Australian financial sector's capacity to facilitate RMB transactions. It could also increase the private sector's confidence that the payments system infrastructure is capable of accommodating the development of the RMB market.

Taken together, these potential benefits could help to mitigate some of the impediments to increasing the share of Australia's bilateral trade with China that is invoiced in RMB. In particular, a survey of Australian firms conducted by the Centre for International Finance and Regulation (CIFR) in late 2013 found that payment delays and uncertainty regarding the settlement process were significant impediments to increased use of RMB trade settlement (Eichengreen,

Walsh and Weir 2014). The most recent data show that less than 1 per cent of Australia's merchandise trade with China was invoiced in RMB in 2013/14, and although this share has been increasing over time, it remains low compared with a number of other economies (Graph 1).⁷ More disaggregated data indicate that the majority of RMB invoicing has been related to Australian firms' imports of machinery and transport equipment, 'miscellaneous manufactured articles' (such as clothing), manufactured goods and chemicals. Australia's exports of iron ore and coal continue to be invoiced almost entirely in US dollars, consistent with the prevailing global practice.⁸

Graph 1
Australia's Trade Invoiced in RMB
Share of merchandise trade with China



The official Australian clearing bank is one of thirteen such clearing banks worldwide, all of which are offshore branches of Chinese banks.⁹ The first official clearing bank was announced in Hong Kong in

6 Under the 'correspondent banking' model, an offshore bank signs an agreement with a commercial bank in mainland China that offers international settlement services. The offshore bank can then open an RMB nostro account with its correspondent bank to access China's domestic payments system. According to the PBC, by the end of 2013 foreign banks had opened 1 954 correspondent accounts with mainland Chinese banks.

7 Firms' choice of *invoicing currency* (the currency used at the stage of contracts) is not necessarily the same as the *settlement currency* (the currency used at the stage of payments). Data on Australian firms' choice of settlement currency are not available.

8 The CIFR survey found that some Australian mining companies had actively examined a range of RMB banking products in preparation for being asked to settle and invoice their exports in RMB. Some firms had also settled their imports of mining-related equipment from China in RMB.

9 Bank of China (Sydney) was designated as the official clearing bank by the PBC and will partly fulfil this function by making use of an agreement with the Australian Securities Exchange to clear and settle RMB payments between participant banks through the Austraclear system.

2003, then in Macau in 2004. This was followed by the establishment of official clearing banks in Taipei and Singapore in early 2013, and earlier this year in London, Frankfurt, Luxembourg, Paris and Seoul. In November 2014, plans to establish official clearing banks were also announced for Doha, Toronto, Kuala Lumpur and Sydney.

In 2013, Hong Kong’s clearing bank processed around 85 per cent of all cross-border RMB remittances between China and the offshore market. While this share is likely to decline somewhat as foreign entities increasingly make use of their local clearing bank arrangements, a range of other metrics (such as the value of RMB trade settlement and RMB deposits, discussed below) indicate that the Hong Kong RMB market remains substantially deeper and more sophisticated than other offshore centres.

It is possible that the role of clearing banks (along with the other current mechanisms for effecting cross-border RMB payments) could diminish somewhat over time. In particular, the Chinese authorities are in the process of developing the China International Payments System (CIPS), which is expected to give all offshore banks the opportunity to acquire access to China’s domestic payments system and foreign exchange market, rather than clearing banks alone. However, the development of CIPS may take some time.

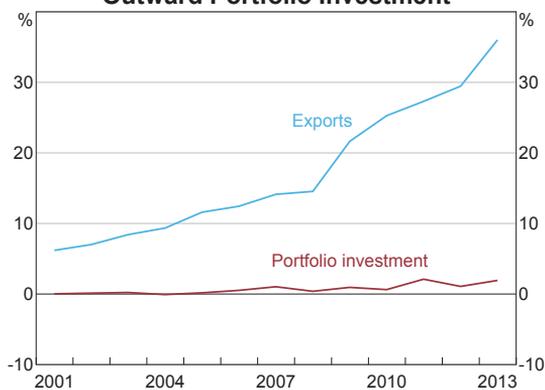
The RMB Qualified Foreign Institutional Investor Program

The RQFII program allows approved foreign investors to buy and sell designated assets in China’s onshore financial markets using RMB obtained in the offshore market. As such, the scheme provides these investors with greater access to China’s capital markets. Therefore, the RQFII scheme can be thought of both as being part of China’s broader capital account liberalisation process and as an initiative which is designed to encourage broader participation in the offshore RMB market. Access to this program is obtained in two steps: first, the authorities in a given jurisdiction obtain an investment quota for

that jurisdiction; and second, individual financial institutions which are domiciled in that jurisdiction apply to the Chinese authorities for an individual portion of that overall quota.¹⁰

In November, the Australian financial sector was granted an RMB 50 billion (around A\$10 billion) RQFII quota, which will subsequently be allocated by the Chinese authorities to Australian-domiciled financial institutions. Although only around 2 per cent of Australia’s outward foreign portfolio investment assets were in China as at the end of 2013, there would appear to be significant potential for Australian fund managers to invest in China’s bond and equity markets as part of the RQFII program (Graph 2). Australia has a relatively large funds management industry by global standards, with around A\$2.4 trillion worth of assets under management and around one-fifth of this currently invested overseas.¹¹

Graph 2
China’s Share of Australia’s Exports and Outward Portfolio Investment



Sources: ABS; RBA

The RQFII program was initially made available to Hong Kong-domiciled investors, with a quota of RMB 20 billion granted in 2011. Hong Kong’s quota has since been raised to RMB 270 billion in a number of steps. Since the middle of 2013, RQFII quotas

¹⁰ After obtaining an RQFII licence from the China Securities Regulatory Commission, firms must then obtain an RQFII allocation from the State Administration of Foreign Exchange (SAFE).

¹¹ The Australian Bureau of Statistics only publishes data on overseas investments for those assets that are managed on behalf of domestic clients, which currently total A\$1.9 trillion.

totalling RMB 500 billion have also been granted to Singapore, the United Kingdom, France, Germany, Korea, Qatar, Canada and, most recently, Australia (Table 1).¹²

Table 1: RQFII Quotas^(a)

Centre	Quota RMBb	Date announced	Allocation to date ^(b) RMBb
Hong Kong	270	Dec 2011	270
Singapore	50	Oct 2013	9.8
UK	80	Oct 2013	9.6
France	80	Mar 2014	6.0
South Korea	80	Jul 2014	3.0
Germany	80	Jul 2014	na
Qatar	30	Nov 2014	na
Canada	50	Nov 2014	na
Australia	50	Nov 2014	na

(a) The activation of Taiwan's RQFII quota is conditional on the finalisation of the Cross-Strait Trade in Services Agreement

(b) As at the end of November 2014

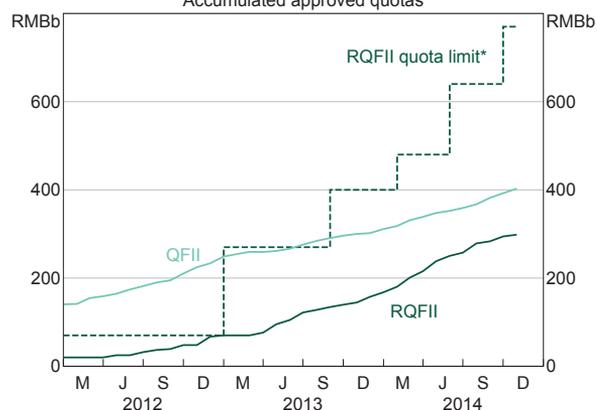
Sources: PBC; SAFE

As of November 2014, around 80 Hong Kong-domiciled entities had been granted RQFII licences totalling RMB 270 billion. Some of these firms have partnered with US- and European-domiciled financial institutions to launch RQFII exchange-traded funds on foreign stock exchanges, including the New York Stock Exchange and the London Stock Exchange, thereby allowing international investors without an RQFII quota to gain an exposure to China's equity and bond markets. Outside of Hong Kong, only 14 financial institutions have so far been granted RQFII quotas.

The RQFII program is in addition to the Qualified Foreign Institutional Investor (QFII) program, which has been in place since 2003 and allows approved foreign investors to use *foreign currency* to invest in designated Chinese financial assets. Unlike the RQFII program, there are no jurisdiction-specific quotas under the QFII program. Indeed, to date there are at

least three Australian-domiciled financial institutions with QFII quotas. However, from an investor's perspective, the RQFII program has several potential advantages relative to the QFII program, including greater discretion in portfolio allocation and less restrictive rules regarding the repatriation of funds. To date, the total value of allocated quotas under the RQFII scheme is around RMB 300 billion, with an additional RMB 470 billion worth of aggregate global RQFII quotas yet to be allocated, compared with around RMB 400 billion of allocation for the QFII scheme (Graph 3).

Graph 3
Foreign Investment in Chinese Financial Assets
Accumulated approved quotas



* Excludes Taiwan's RQFII quota

Sources: CEIC Data; RBA; SAFE

Central Bank Initiatives

Both the official clearing bank and the RQFII quota are designed to facilitate greater use of the RMB by the private sector. In addition to these initiatives, the Bank has increased its own use of the RMB in the past year by investing a portion of its foreign exchange reserves in RMB-denominated assets.¹³ As discussed in the RBA's 2013/14 Annual Report, this portfolio shift recognises the growing importance of China in the global economy and the broadening financial relationship between Australia and China

¹² Taiwan has also been granted an RQFII quota of RMB 100 billion, but its activation is conditional on the finalisation of the Cross-Strait Trade in Services Agreement.

¹³ The RBA's investment makes use of a scheme commonly known as the China Interbank Bond Market scheme, which is separate to the QFII and RQFII programs and is typically used by central banks and sovereign wealth funds.

(RBA 2014b). From a portfolio perspective, the shift also increases the diversification of the Bank's foreign currency investments and is expected to enhance returns over the long run. Moreover, the investment undertaken to date has allowed the RBA to deepen its own understanding of Chinese financial markets.

The RBA also signed an RMB 200 billion (A\$30 billion) local currency swap agreement with the PBC in 2012. The RBA's swap agreement is one of 28 bilateral local currency swap agreements that have been signed with the PBC (Graph 4). From the RBA's perspective, a key objective of the swap line is to provide market participants with confidence that liquidity in the Australian RMB market will be sufficient to enable market participants to meet their RMB-denominated payment obligations in the event of market dislocation. There has not yet been a need to activate the swap agreement other than for test purposes, although it can be used if required.

The MAS also allows participants in Singapore's payments system to access three-month RMB loans for trade-related purposes. Further, in anticipation of additional demand for offshore RMB following the launch of the Shanghai-Hong Kong Stock Connect Scheme (discussed below), the HKMA introduced an intraday RMB repurchase agreement (repo) facility to provide up to RMB 10 billion to banks in Hong Kong.¹⁴

RMB Initiatives in Other Offshore Centres

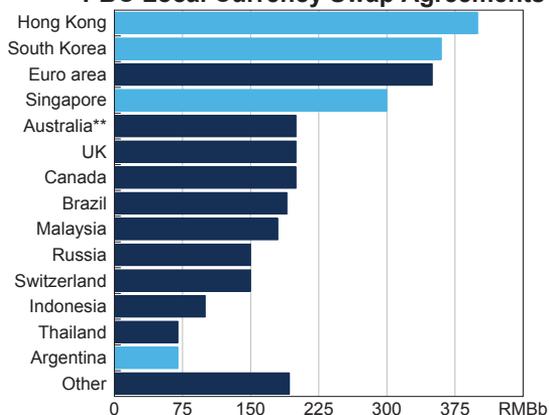
Official RMB clearing banks, RQFII quotas and central bank foreign currency reserve investments and swap lines have now been introduced across a range of offshore centres. However, some of the more developed offshore RMB centres, particularly in Asia, have also taken additional steps to develop their local RMB markets. These initiatives – which include the Shanghai-Hong Kong Stock Connect Scheme and various cross-border RMB lending programs – aim to increase the linkages between the offshore RMB market and the onshore market.

Shanghai-Hong Kong Stock Connect Scheme

The Shanghai-Hong Kong Stock Connect Scheme, which began operating on 17 November 2014, allows eligible offshore investors to purchase approved stocks listed on the Shanghai Stock Exchange (SSE). Similarly, eligible onshore investors are able to purchase stocks listed on the Hong Kong Stock Exchange (HKEx). Purchases in both exchanges are subject to a quota, with offshore investors permitted to purchase a total of RMB 300 billion worth of SSE stocks and onshore investors permitted to purchase a total of RMB 250 billion worth of HKEx stocks.¹⁵

Graph 4

PBC Local Currency Swap Agreements*



* A lighter blue bar indicates that some portion of the swap line has been activated as at November 2014 (based on publicly available information)

** Activated for test purposes only

Sources: PBC; RBA

Some central banks have established RMB liquidity facilities to provide short-term RMB funds to offshore market participants, in some cases using their swap facilities with the PBC. In particular, the Hong Kong Monetary Authority (HKMA) and the Monetary Authority of Singapore (MAS) both offer eligible financial institutions access to overnight RMB loans.

¹⁴ Additionally, the HKMA designated a number of banks as Primary Liquidity Providers (PLPs). The HKMA offers PLPs an RMB repo line (to obtain both intraday and overnight funds) to ensure that they have sufficient liquidity available to perform market-making functions in Hong Kong's offshore market.

¹⁵ Onshore investors are also subject to a daily quota of RMB 10.5 billion on their net purchases of HKEx stocks, while offshore investors are subject to a daily quota of RMB 13 billion on their net purchases of SSE stocks.

The Stock Connect Scheme thus provides an additional avenue through which offshore investors can buy and sell Chinese equities (in addition to the RQFII and QFII schemes). Like the RQFII scheme, the currency exchange takes place in the offshore market (in Hong Kong), so, for example, investors must purchase RMB in the offshore market in order to buy mainland stocks.

Cross-border RMB lending initiatives

China has also sought to build connections between the onshore and offshore RMB markets through various pilot schemes that permit RMB-denominated lending between defined mainland cities or regions and various offshore centres. The first such scheme, established in January 2013, allows companies incorporated in Qianhai – which is a ‘special economic zone’ within the Chinese city of Shenzhen – to borrow RMB from banks in Hong Kong to fund investment projects in Qianhai. As interbank RMB interest rates have typically been noticeably lower in Hong Kong than in the mainland (notwithstanding some narrowing in the onshore-offshore spread in the latter half of 2014), it is possible the scheme has provided Qianhai firms with access to cheaper funding.¹⁶

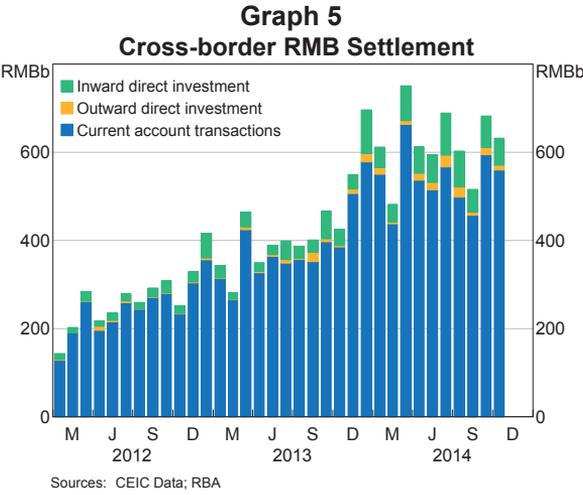
In 2014, similar schemes were established between Singapore-based banks and firms in China’s Suzhou Industrial Park and Tianjin Eco-City as part of a broader range of initiatives between the Chinese and Singaporean Governments to develop these two regions. Entities in both regions have also been permitted to issue RMB-denominated bonds in Singapore and to undertake direct investment in Singapore-based corporations.

Another scheme with Taiwan, which was established in late 2013, follows a slightly different model. Under this scheme, subsidiaries of Taiwanese firms in the Chinese city of Kunshan are permitted both to borrow RMB from their offshore parent companies and to make RMB loans to them. In addition, most recently, non-bank financial institutions and

enterprises domiciled in the Shanghai Free Trade Zone have been permitted to borrow RMB from any offshore centre, subject to certain conditions.¹⁷

Recent Progress towards RMB Internationalisation

Partly as a result of the policy initiatives outlined above, China has made significant progress in internationalising its currency over the past few years. In particular, China’s RMB-denominated current account transactions (mostly trade) have grown rapidly and now account for around one-fifth of China’s total current account transactions (Graph 5). RMB-denominated investment (particularly inward investment) has also increased noticeably in recent years but remains small relative to the value of RMB-denominated trade settlement.



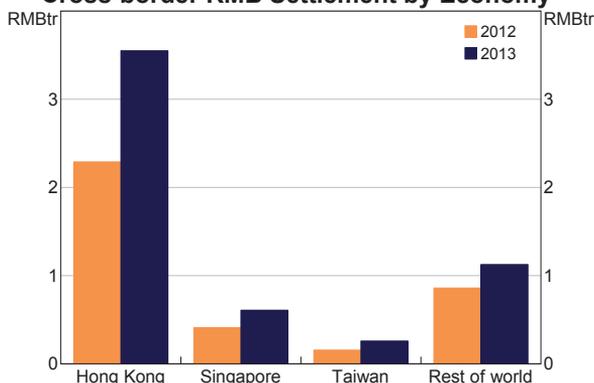
By economy, Hong Kong continues to account for the majority of China’s RMB-denominated cross-border transactions, followed by Singapore and Taiwan (Graph 6). However, the launch of official RMB clearing banks in Singapore and Taiwan in early 2013 was followed by a substantial increase in the RMB-denominated share of each economy’s bilateral merchandise trade with China in 2013 (Graph 7). In

¹⁶ Interest rates are privately negotiated between borrowers and lenders.

¹⁷ The funds must be put toward manufacturing operations and project construction within the zone and their value cannot exceed specified limits.

Graph 6

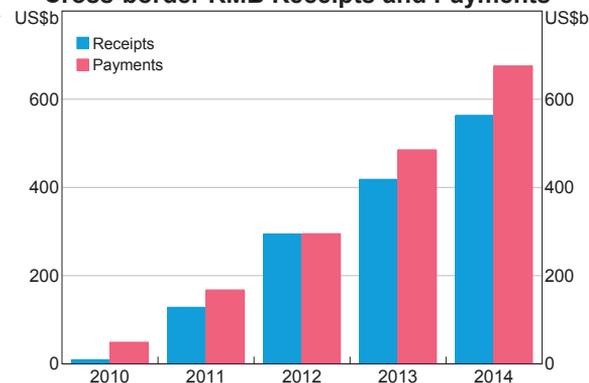
Cross-border RMB Settlement by Economy*



* For transactions with mainland China
Sources: PBC; RBA

Graph 8

Cross-border RMB Receipts and Payments*

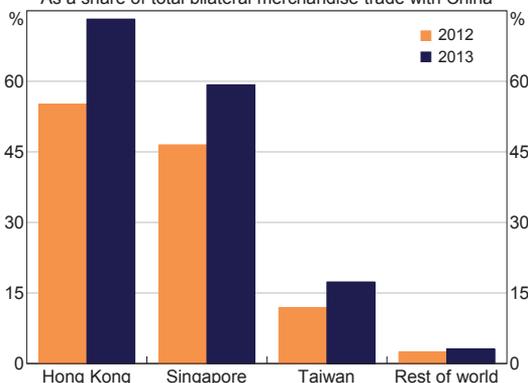


* Observations for 2014 are based on data to the end of October 2014
Sources: CEIC Data; RBA; SAFE

Graph 7

Bilateral RMB Settlement

As a share of total bilateral merchandise trade with China



Sources: CEIC Data; PBC; RBA

contrast, China's share of RMB-denominated bilateral merchandise trade with economies excluding Hong Kong, Taiwan and Singapore increased slightly in 2013 and remained relatively low at around 3 per cent.

China's cross-border RMB payments (e.g. for imports) have typically been larger than China's cross-border RMB receipts (e.g. from exports), leading to a net outflow of RMB that, ultimately, supplies RMB to the offshore market (Graph 8). One reason for this is that the value of the RMB against the US dollar has typically been higher in the offshore market than in the onshore market. As a result, a Chinese importer (for example) would seek to convert RMB

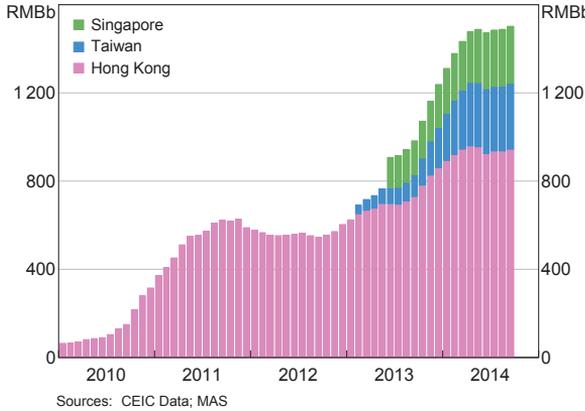
into foreign currency in the offshore market before paying its foreign supplier. Another reason why RMB payments have typically been greater than receipts is that there has been an expectation over the past few years that the RMB would appreciate, which has generally been the case except for a period earlier this year. Firms exporting goods and services to China have been generally more willing to accept RMB on the basis that they expect the RMB's value against the US dollar to increase.

The net outflow of RMB from China over recent years has led to a rapid increase in the stock of RMB deposits in offshore centres (Graph 9). While Hong Kong continues to account for the majority of offshore RMB deposits, the stock of deposits in Taiwan and Singapore has increased rapidly over the past year, rising to around RMB 300 billion and RMB 260 billion, respectively, by the end of September 2014.¹⁸

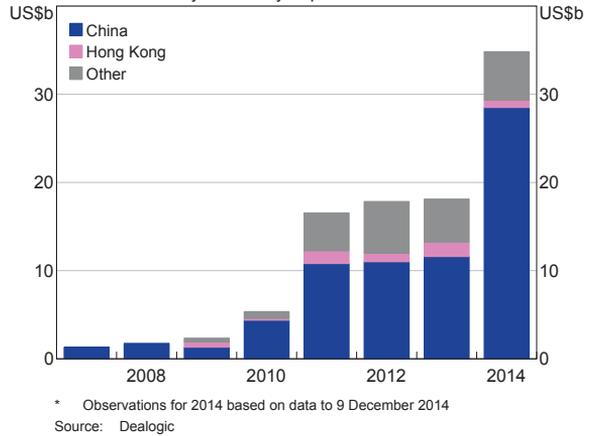
As the pool of offshore RMB deposits has grown, so too has the offshore RMB-denominated bond market. Hong Kong remains the prime location for offshore RMB bond – or 'dim sum' bond – issuance, but the market is also growing rapidly in Singapore and Taiwan. The majority of issuers continue to be mainland Chinese companies or offshore subsidiaries of mainland Chinese companies, with the funds raised typically repatriated back to mainland China

¹⁸ Time series data on RMB deposits in other offshore centres are generally not available.

Graph 9
Value of Renminbi Deposits
Stock



Graph 10
Dim Sum Bond Issuance*
By nationality of parent issuer

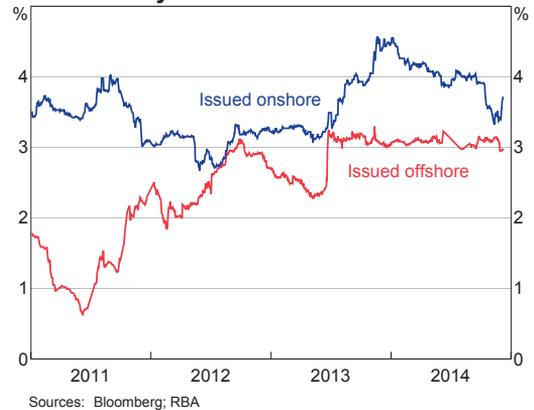


(Graph 10). Most of the dim sum bond issuance by non-Chinese firms has also been used to fund their operations in mainland China.

One reason for the prevalence of mainland Chinese issuers in the dim sum bond market is that the cost of funding has typically been lower in the offshore market than in the mainland. This is evidenced, for example, by the consistently lower yield paid on Chinese government bonds issued in the offshore market relative to those issued in the onshore market (Graph 11). This is partly because capital account restrictions limit the flow of offshore RMB back to the mainland, such that there is a large pool of RMB in offshore markets with relatively limited investment opportunities (and therefore strong demand for dim sum bonds from offshore investors). Another reason why mainland firms dominate the dim sum bond market is that there are some structural issues that potentially limit non-Chinese firms' participation in the market. In particular, the tenors are relatively short (three years or less) for most dim sum bonds – which is partly related to the fact that markets for longer-term currency hedging products are relatively illiquid – and there is only limited issuance of benchmark bonds.

There have also been a small number of offshore RMB bond issues by foreign governments, with the UK Government raising RMB 3 billion in October and the New South Wales Treasury Corporation

Graph 11
Chinese 5-year Government Bond Yields



raising RMB 1 billion in November. This followed the Canadian Province of British Columbia's issuance of RMB 2.5 billion worth of dim sum bonds in late 2013.

Alongside the increase in RMB-denominated trade and capital flows, turnover of RMB in global foreign exchange markets has risen markedly in recent years. According to the 2013 BIS Triennial Foreign Exchange Turnover Survey, average daily turnover in the RMB rose by 250 per cent over the three years to April 2013, with the RMB ranking as the ninth most traded currency in the world (BIS 2013). The rapid growth was evident not only in the turnover of spot foreign exchange, but also in derivative products such as deliverable forwards, options and

cross-currency swaps. Around three-quarters of total global turnover occurred in the offshore market, with Hong Kong, the United Kingdom and Singapore the largest individual offshore markets (Graph 12).

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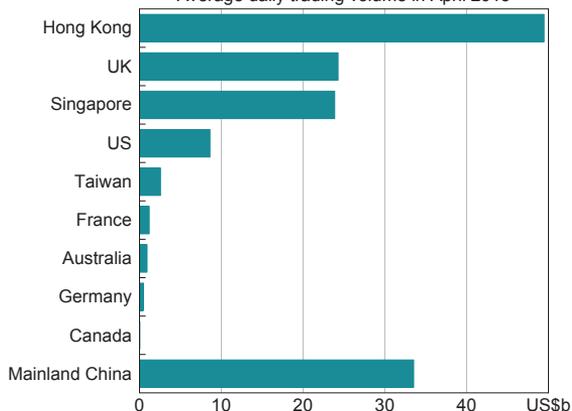
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Graph 12
RMB Turnover by Economy

Average daily trading volume in April 2013



Source: BIS

Conclusion

The international use of the RMB continues to increase, facilitated by policy initiatives within mainland China and in offshore centres. While the use of RMB by Australian entities has also increased, there remains considerable scope for future growth. In order to facilitate the development of the Australian RMB market – and allow Australian entities to more readily transact in RMB – a number of policy initiatives have recently been announced. In particular, the designation of an official Australian RMB clearing bank by the PBC should provide a more direct mechanism for settling Australian firms’ RMB-denominated transactions with their Chinese counterparts. In addition, the establishment of an RQFII quota will allow Australia’s funds management industry to offer its customers exposure to China’s financial markets, which could, in turn, lead to further development of the local RMB market. ✎

Identifying Global Systemically Important Financial Institutions

Mustafa Yuksel*

A key element of the G20 response to the global financial crisis has been to develop policies to address the ‘too-big-to-fail’ problem posed by systemically important financial institutions (SIFIs). The first step is to identify such entities. To that end, there has been extensive work undertaken in recent years, especially at the global level in view of the cross-country impact of large international financial institutions should they fail or become distressed. This article examines the methodologies developed by standard-setting bodies for identifying global SIFIs among banks, insurers and non-banks, drawing out common elements as well as important differences among them. Policy work addressing the ‘too-big-to-fail’ problem is ongoing. At the recent G20 Summit in Brisbane, leaders built on these reforms by endorsing two further proposals to improve the ability to resolve failing or distressed global systemically important banks.

Definition of a (Global) SIFI

The ‘too-big-to-fail’ problem refers to the fact that certain financial institutions, because of their size and/or interconnectedness, could pose a material risk to financial stability and the real economy if they were to fail. Such institutions are referred to as systemically important financial institutions (SIFIs). This issue pre-dates the recent financial crisis.¹ However, the damage to the financial system and the wider economy caused by distress at several such institutions during the crisis, plus the cost of public sector bail-outs, have spurred authorities to develop policies to minimise the probability and impact of a SIFI failure. A precondition for implementing these policies is the ability to identify a SIFI, which has led international bodies to develop agreed identification methodologies. These methodologies distinguish between systemic importance at the global and at the domestic level. Given that the failure or distress of large cross-border institutions can have serious

effects across multiple jurisdictions, international efforts since the crisis focused initially on identifying global SIFIs and, in particular, global systemically important banks.

At its first meeting at leaders level in 2008, the G20 called for work to define the scope of SIFIs. Building on joint work with the Bank for International Settlements and the International Monetary Fund,² in 2010 the Financial Stability Board (FSB) defined SIFIs to be those institutions ‘whose disorderly failure, because of their size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity’ (FSB 2010, p 1). Further, the FSB defined ‘global SIFIs’ in particular to be ‘institutions of such size, market importance, and global interconnectedness that their distress or failure would cause significant dislocation in the global financial system and adverse economic consequences across a range of countries’ (FSB 2010, p 2). These FSB definitions of (global) SIFIs are reflected in the several methodologies that were subsequently developed by international and national bodies to identify SIFIs even though, as

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1 For example, the term ‘too-big-to-fail’ gained prominence following the US Federal Deposit Insurance Corporation’s intervention in the resolution of Continental Illinois, a bank which failed in 1984.

2 See BIS, FSB and IMF (2009).

discussed below, different approaches were used for different types of institutions.

Three methodologies have been developed by the relevant standard-setting body for identifying global SIFIs:³

- *global systemically important banks* (G-SIBs), developed by the Basel Committee on Banking Supervision (BCBS)
- *global systemically important insurers* (G-SIIs), developed by the International Association of Insurance Supervisors (IAIS)
- *non-bank non-insurer (NBNi) G-SIFIs*, developed jointly by the FSB and the International Organization of Securities Commissions (IOSCO).

While a common focus of the methodologies is to identify SIFIs during 'normal' times, it is possible that authorities would consider a wider group of financial institutions to be systemically important during a crisis. A possible criticism of identifying SIFIs is the potential for exacerbating moral hazard, by reinforcing perceptions that an institution is 'too-big-to-fail' and therefore potentially prone to receiving public sector support. For this reason, the package of reforms addressing the 'too-big-to-fail' problem includes a number of measures to make SIFIs more resolvable without public support.

While Australia is not home to any identified G-SIBs or G-SIIs, domestic agencies have been involved in the development of these methodologies through membership of international bodies. As in other reform areas, this participation has sought to promote good policies and proportionate approaches. For SIFIs, this involves being careful to ensure that methodologies to identify 'global' SIFIs do not incorrectly capture largely domestically focused entities.

Methodologies for Identifying Global SIFIs

Global systemically important banks (G-SIBs)

Banks were the initial focus of global efforts for identifying G-SIFIs, because they typically dominate financial systems, present the largest systemic risk and in several jurisdictions were the main type of financial institution requiring public sector support during the crisis. The G20 tasked the BCBS with developing a methodology for identifying G-SIBs, which was released in 2011 (BCBS 2011). The methodology uses indicators of banks' size, interconnectedness, substitutability, complexity and global (cross-jurisdictional) activity to rank their global systemic importance (see Appendix A for a summary of the indicators used by the BCBS). These categories are largely self-explanatory, with the possible exception of substitutability, which refers to the capacity for the activities of an institution to be readily replaced by other service providers in the event of failure. A key basis for the BCBS' methodology, and one which has been followed by the other standard-setting bodies, is that the focus of the identification methodology is on the impact of an institution's failure or distress on the financial system and the economy, not the probability of failure or distress.

Using this methodology, around 75 of the world's largest banks were ranked using data for each indicator. Each bank's overall score represented its global systemic importance relative to the other banks in the sample. Based on the clustering of scores produced by the methodology, banks with the highest scores above a certain 'cut-off' were designated as G-SIBs. National authorities are also able to add to the list if they judge a domestic bank that they supervise to be of global systemic importance. The annual G-SIB identification process involves banks submitting data to their national regulator, which in turn pass these data onto the BCBS, which coordinates the assessment. The final

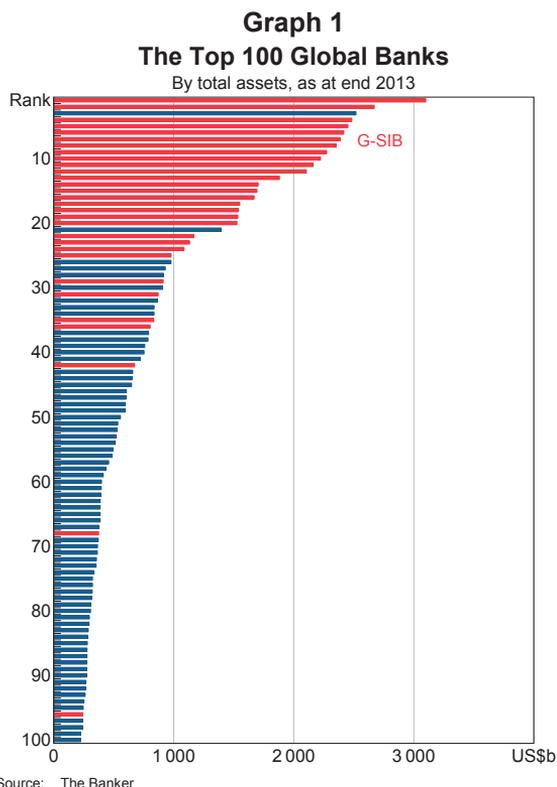
³ There is an extensive research literature by academics and other researchers on the identification of SIFIs, which often draws heavily on market indicators and/or networks of connections between financial institutions. The focus here, however, is on methodologies developed by international standard-setting bodies, which in turn lead to 'official' designations as (global) SIFIs.

step involves the FSB publishing the list. To date, there have been four annual G-SIB designations, starting in 2011, with the list being updated every November to reflect new data and any adjustments to the methodology.

The identification of G-SIFIs has enabled the development of a number of policies designed to reduce the probability and impact of failure of such institutions. These policies will also provide an incentive for G-SIFIs to reduce their systemic importance over time. To date, the lists have been very stable at their annual November updates, with only a few banks being added or removed, and there also exists a degree of stability of the rankings *within* the list.⁴ This stability is hardly surprising since major changes to a bank’s global systemic importance would not usually be expected to happen quickly. Moreover, frequent and large changes to the rankings could indicate that the methodology is not robust.

While size has an equal weighting (20 per cent) in the BCBS’ methodology as the other four categories (interconnectedness, substitutability, complexity and global activity), it is often positively correlated with the other categories as well given the tendency for larger banks to also be more interconnected, complex and globally active. The important influence of size is reflected in the fact that of the 30 largest global banks by assets, 24 have been currently identified by the FSB and BCBS as G-SIBs (Graph 1). However, several of the largest global banks are not on the G-SIB list, and not all G-SIBs are among the very largest global banks – a couple of G-SIBs are much smaller in terms of global assets. Specialised banks in particular could be relatively small in terms of assets but still rank much higher than other banks on a particular indicator (such as substitutability), which would boost their overall ranking of global systemic importance.

4 Beginning in 2012, G-SIBs were allocated to buckets corresponding to their required level of additional loss absorbency, with G-SIBs allocated to higher buckets as their global systemic importance increases. There has been limited movement of banks between the buckets from one annual G-SIB list to the next.

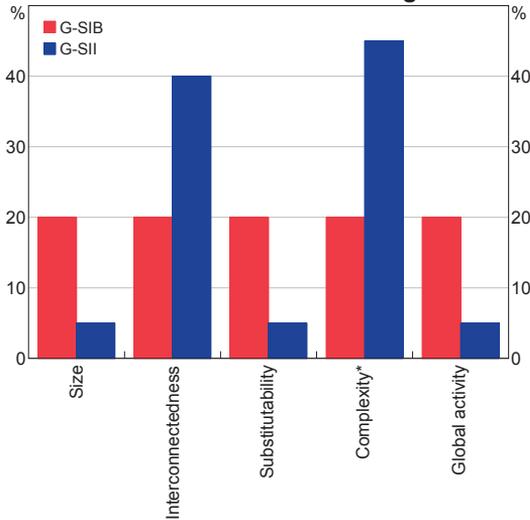


Global systemically important insurers (G-SIIs)

The IAIS’ methodology for identifying G-SIIs is similar to that for G-SIBs (IAIS 2013). Data are collected from selected insurers, via their national supervisors, that meet certain materiality thresholds on indicators in five broad categories (size, interconnectedness, substitutability, non-traditional insurance and non-insurance activities, and global activity). Insurers are then ranked according to their level of global systemic importance. Based on this methodology, nine insurers were designated as G-SIIs in July 2013, with the list unchanged in the 2014 update.

There are, nonetheless, a few key differences between the G-SII and G-SIB methodologies. While the BCBS methodology has an equal 20 per cent weight for each of the five impact categories, the IAIS’ G-SII methodology is more nuanced, allocating differing weightings (Graph 2). One difference is that while size is important for banks, it is much less important

Graph 2
Weights Used in the
G-SIB and G-SII Methodologies



* For G-SIIs, non-traditional insurance and non-insurance activities
 Sources: BCBS; IAIS

in the G-SII methodology (with only a 5 per cent weight compared with the 20 per cent weighting in the G-SIB methodology).⁵ This reflects the IAIS’ view that complexity and interconnectedness are relatively more important in assessing systemic risk for insurers, points that were highlighted during the crisis by global insurance company AIG, which had experienced severe financial stress from its activities in credit default swaps and subprime mortgages rather than difficulties arising from its insurance business. Subsequent US government support reflected its interconnectedness with other parts of the financial system.

Within this assessment methodology, different indicators are used for G-SIIs, compared with G-SIBs, reflecting differences between the business models of insurance and banking. In particular, traditional insurance does not involve activities in the payments system, credit intermediation or investment banking.

⁵ The contrast in weights for ‘size’ between the G-SIB and G-SII methodologies is even more stark if the focus is just on ‘total assets’ as an indicator. Within the G-SII size category, which has an overall 5 per cent weighting, ‘total assets’ only has a 2.5 per cent weight (with another 2.5 per cent accounted for by ‘total revenue’). This compares with ‘total assets’ (or more technically ‘total exposures’) accounting fully for the 20 per cent size category in the G-SIB methodology.

Moreover, different or additional indicators are necessary across the insurance industry to capture the differing insurer types (e.g. general insurers and life insurers), as well as the need to capture traditional insurance business, non-traditional insurance activities and non-insurance activities.

Another difference is that supervisory judgement played a much more significant role in the G-SII assessment process than was the case with G-SIBs. The G-SIB assessment process was largely quantitative, reflecting the relatively high degree of homogeneity of banks, at least in comparison with insurers. For G-SIIs, the process involved greater interaction with the supervisors of selected insurers to enhance the understanding of: the data on the various indicators; the extent and nature of risks associated with a particular type of non-traditional insurance activity and its systemic relevance; and the nature and extent of the firm’s interconnections with other financial counterparties.

Non-bank non-insurer (NBNI) G-SIFIs

The final set of G-SIFI methodologies relates to NBNI financial institutions. While generally much smaller than the banking and insurance sectors, the NBNI sector still accounts for a sizeable share of the financial systems in many countries, and there could be financial institutions in the NBNI sector with the potential to pose global systemic risk. Another motivation for the development of NBNI methodologies was the need to prevent banks and insurers avoiding the policy measures for G-SIBs and G-SIIs by changing their legal status or business models to become an NBNI financial institution.

Unlike the G-SIB and G-SII methodologies, which have been largely completed and already used to designate G-SIFIs, the NBNI methodologies remain under development. The FSB proposed a methodology for identifying globally systemic finance companies, while IOSCO proposed methodologies for identifying globally systemic market intermediaries (i.e. securities broker-dealers) and investment funds. These three entity types were

selected because of their relatively large size in the NBNI sector, as well as past examples of financial stress or failures in these three sectors that had an impact on the global financial system.

These three methodologies are similar to those for G-SIBs and G-SIIs in that they are indicator-based approaches to determining global systemic importance based on the expected impact of a NBNI entity's failure or distress on the financial system and the economy. Appendix A details the specific indicators that are used, with the indicators for finance companies similar to the G-SIB methodology, which is to be expected given their similar business models to traditional banks. There are, however, several differences between the G-SIB/G-SII approaches and the NBNI methodologies.

- The G-SIB and G-SII assessments are conducted by central bodies (the BCBS for banks and the IAIS for insurers), while the NBNI G-SIFI assessments would be conducted largely by national authorities. Given the substantial role to be played by national authorities, the FSB and IOSCO plan to establish an international oversight group that will be involved *during* the assessment process, to ensure a degree of consistency across countries.
- While weights are specified for the broad categories and the indicators in the G-SIB and G-SII methodologies, this is not the case with the NBNI methodologies. This may enhance flexibility for authorities to take into account particular national circumstances or entity-specific factors, but it may also lead to differences in the implementation of these methodologies across countries.
- The G-SIB/G-SII approaches rank banks/insurers according to their *degree* of global systemic importance. However, with the NBNI G-SIFI methodologies, the absence of a central body pooling data across countries and ranking entities accordingly, means that NBNI entities will likely be judged as either being globally systemic or not.

In their consultation paper, the FSB and IOSCO made two key proposals regarding the scope of application for the NBNI G-SIFI methodologies (FSB and IOSCO 2014).

- NBNI subsidiaries of banks and insurers assessed under the G-SIB and G-SII methodologies will be excluded from the scope of the NBNI methodologies, basically because the global systemic risk of such subsidiaries was already adequately assessed by the G-SIB and G-SII methodologies. This will be particularly relevant for securities broker-dealers, as many are owned by banks. However, this exclusion does not apply to investment funds, which will still be assessed even if they are the subsidiary/affiliate of a bank or insurer assessed under the G-SIB/G-SII approaches, since they are not normally prudentially consolidated with their parent bank/insurer.
- Regarding the asset management industry, the proposal is to focus on the individual fund. Economic exposures are created at the fund level as they arise from the underlying assets held by the fund. As such, it is the portfolio of assets that creates the exposures to the financial system and there is also a practical advantage given the availability of data at the fund level. However, the FSB and IOSCO recognise that it could also be appropriate to focus more broadly on the asset manager as well. Asset managers themselves may be of systemic importance because of their securities lending and repo activity, for example. Additionally, asset managers are exposed to operational and reputational risks.

Following feedback received on the proposals, the FSB and IOSCO plan to release a second consultation paper around the end of 2014. This will include near-final methodologies for finance companies and market intermediaries and a revised proposal on methodologies for asset management entities. Once the methodologies are finalised, the FSB and IOSCO propose to work on developing policy measures for NBNI G-SIFIs, which are likely to follow the comprehensive SIFI policy framework

developed by the FSB and endorsed by the G20, such as enhanced resolution regimes and more intensive supervision.⁶

Domestic SIFIs

The methodologies developed for identifying global SIFIs have been built upon by international and national efforts to identify domestic SIFIs, particularly banks, to partly address the risks posed by such institutions. The BCBS has issued high-level principles to guide the development of national domestic systemically important bank (D-SIB) frameworks, which are modelled to a large extent on its G-SIB methodology (excluding the ‘global activity’ category) (BCBS 2012). However, a major difference between the BCBS’ G-SIB and D-SIB approaches is that the latter focuses on the impact of failure of a bank using the domestic economy as the point of reference, rather than the global economy. Another difference is that, in contrast to the G-SIB methodology which is based on fixed equal weightings for its indicators, the D-SIB methodology provides for appropriate national discretion to determine the factors used to assess the impact of a bank’s failure on the domestic economy and the appropriate relative weights given to each factor, depending on national circumstances.

While identifying global SIFIs required broad international agreement on how to define such entities, there is greater scope for flexibility at the domestic level. As a result, definitions of, and methodologies for identifying, domestic SIFIs vary across different jurisdictions, and across different financial sectors.

- *Banks.* Several national D-SIB methodologies have been developed in recent years, with some based on the BCBS’ principles noted earlier, while other authorities have developed their own, more country-specific, methodologies. Many share elements with the G-SIB approach, including a focus on the impact of failure/distress (as opposed to the probability of failure),

and the use of key impact factors such as size and interconnectedness to determine systemic importance. In this context, the Australian Prudential Regulation Authority released its framework for dealing with D-SIBs in December 2013, and identified the four major domestic banks as D-SIBs (APRA 2013). These four banks will be subject to additional capital requirements.

- *Non-bank financial institutions (NBFIs).* Progress in identifying domestically systemic NBFIs is not as advanced as it is for D-SIBs, undoubtedly in part because banks are the dominant institutions in the financial systems of many countries and were the main entities receiving assistance during the crisis.

However, the United States has been a notable ‘early mover’ in this area. The US Financial Stability Oversight Council (FSOC) has identified three ‘non-bank financial companies’ (two insurers and one finance company) as being of systemic importance, based on factors similar to those used in the BCBS G-SIB/D-SIB frameworks (such as size and interconnectedness), though without specific reference to complexity and cross-border activity. The assessments also focused on the transmission channels through which companies posed a risk to the broader US financial system (such as the ‘asset liquidation’ channel), as well as considering the company’s resolvability and existing supervision and regulation. FSOC designated entities are subject to consolidated supervision by the Federal Reserve as well as enhanced prudential standards. The US Treasury’s Office of Financial Research has also examined the asset management industry, analysing how asset management firms and their activities can introduce vulnerabilities that could pose, amplify or transmit threats to financial stability. This work sought to better inform FSOC’s analysis of whether – and how – to consider such asset management firms for enhanced prudential standards and supervision.

⁶ For further details on the specific SIFI policy measures, see FSB (2011).

- *Financial market infrastructures (FMIs)*. In their consultation paper, the FSB and IOSCO explicitly state that the NBNI G-SIFI methodologies exclude FMIs such as central counterparties as these are already dealt with under a separate framework. Under the *Principles for Financial Market Infrastructures*, issued by IOSCO and the Committee on Payment and Settlement Systems (now the Committee on Payments and Market Infrastructures), there is a presumption that FMIs, as defined in the Principles, are systemically important, at least in the jurisdiction where they are located, typically because of their critical roles in the markets they serve. The United States has gone further, however, with FSOC designating eight ‘financial market utilities’ in July 2012 as being systemically important.

Future Work

The methodologies for identifying G-SIFIs are not fixed permanently. For example, the BCBS has committed to review the G-SIB approach every three years to capture changes in banking systems and progress in measuring systemic importance. And in July 2013, the BCBS released an updated version of its G-SIB methodology, which included several changes to better reflect the lessons learnt from applying the assessment methodology using data submitted by banks between 2009 and 2011 (BCBS 2013). These changes are nonetheless modest, suggesting that the G-SIB methodology is, in broad terms, relatively stable. This is likely to be the case also with the G-SII methodology. The IAIS has stated that its assessment methodology may be revised at least every three years. While changing the methodology too often would potentially disturb the business planning of insurers, the IAIS took the view that changes in the overall economy and insurance markets should be reflected in the assessment methodology. Also, it was noted in the 2014 G-SII list that the IAIS will further develop its identification methodology, ahead of a decision on the G-SII status of reinsurers.

More broadly, work remains ongoing to address the ‘too-big-to-fail’ problem associated with global SIFIs, with identified G-SIBs and G-SIIs being required to meet more stringent standards and subject to more intensive supervision. There is also considerable effort being made to improve the resolvability of G-SIBs. Most recently at the G20 Summit in November, leaders endorsed a proposal for a common international standard on the total loss-absorbing capacity for G-SIBs, as well as an industry agreement to prevent cross-border derivative contracts being terminated disruptively should a G-SIB enter resolution.

Conclusion

The global financial crisis showed that the failure of large complex cross-border financial institutions can have severe detrimental effects on the financial system and the economy, both domestically and globally. This prompted a major effort by international regulatory bodies to address the risks posed by such institutions. The global reach of these institutions necessitated international debate and agreement regarding how such institutions could, for the first time, be explicitly identified using commonly accepted methodologies. These methodologies typically have size, complexity and interconnectedness as key determinants of global systemic importance, notwithstanding other differences between specific G-SIFI methodologies. Once G-SIFIs are identified, regulators can apply additional policy measures to them, with the aim of reducing the risks they pose to the global financial system and wider economy. ✖

Appendix A

Table A1: Indicators for Identifying Global Systemically Important Financial Institutions (continued next page)

Developed by: Category	Banks (G-SIBs) BCBS Indicator ^(b) Weight %	Insurers (G-SIIs) IAIS Indicator ^(b) Weight %	Finance companies FSB Indicator	Market intermediaries IOSCO Indicator	Investment funds IOSCO Indicator
Size	Total exposures as defined for use in the Basel III leverage ratio 20	1. Total assets (2.5%) 2. Total revenues (2.5%) 5	1. Total globally consolidated balance sheet assets 2. Total globally consolidated off-balance sheet exposures	1. Total globally consolidated balance sheet assets 2. Total globally consolidated off-balance sheet exposures 3. Client assets outstanding	1. Net assets under management (AUM) or net asset value (NAV) for the fund 2. For hedge funds, gross notional exposures (GNE) as an alternative indicator
Interconnectedness	1. Intra-financial system assets (6.67%) 2. Intra-financial system liabilities (6.67%) 3. Securities outstanding (6.67%) 20	1. Intra-financial assets (5.7%) 2. Intra-financial liabilities (5.7%) 3. Reinsurance (5.7%) 4. Derivatives (5.7%) 5. Large exposures (5.7%) 6. Turnover (5.7%) 7. Level 3 assets (5.7%) 40	1. Intra-financial system assets 2. Intra-financial system liabilities 3. Borrowings, split by type 4. Leverage ratio	1. Intra-financial system assets 2. Intra-financial system liabilities 3. Leverage ratio 4. Short-term debt ratio 5. OTC derivatives assets and liabilities 6. Amount of margin required at clearing houses or central counterparties	1. Leverage ratio 2. Counterparty exposure ratio 3. Intra-financial system liabilities
Substitutability/ financial institution infrastructure (banks) Substitutability (insurers, NBNIs ^(b))	1. Assets under custody (6.67%) 2. Payments activity (6.67%) 3. Underwritten transactions in debt and equity markets (6.67%) 20	Premiums for specific business lines 5	Qualitative assessment of 'substitutability', which takes into account the firm's market share in various financing markets and ease of substitutability by other provider(s) of funding	1. Qualitative assessment on the services of the intermediary (for a critical function or service) 2. Market share, measured by (i) trading as a percentage of daily market volume on domestic exchanges, and (ii) if available, global market transaction volume in securities (including equities, bonds and futures)	1. Turnover of the fund related to a specific asset/daily volume traded regarding the same asset 2. Total fund turnover vs total turnover of funds in the same category/classification 3. Investment strategies (or asset classes) with less than 10 market players globally

Table A1: Indicators for Identifying Global Systemically Important Financial Institutions (continued)

Developed by: Category	Banks (G-SIBs) BCBS Indicator ^(a)	Weight %	Insurers (G-SIIs) IAIS Indicator ^(a)	Weight %	Finance companies FSB Indicator	Market intermediaries IOSCO Indicator	Investment funds IOSCO Indicator
Complexity (banks, NBNI ^(b))	1. Notional amount of over-the-counter (OTC) derivatives (6.67%)	20	1. Non-policyholder liabilities and non-insurance revenues (6.4%)	45	1. OTC derivatives notional amount	1. Structural complexity, measured by number of legal entities that are consolidated	1. OTC derivatives trade volumes at the fund/total trade volumes at the fund
Non-traditional insurance and non-insurance activities (insurers)	2. Level 3 assets (6.67%)		2. Derivatives trading (6.4%)		2. Difficulty in resolving a firm	2. Operational complexity, measured by Level 3 assets	2. Ratio (%) of collateral posted by counterparties that has been re-hypothecated by the fund
	3. Trading and available-for-sale securities (6.67%)		3. Short-term funding (6.4%)				3. Ratio (%) of NAV managed using high frequency trading strategies
			4. Financial guarantees (6.4%)				4. Weighted-average portfolio liquidity (in days)/weighted-average investor liquidity (in days)
			5. Minimum guarantee on variable insurance products (6.4%)				5. Ratio of unencumbered cash to gross notional exposure (or gross AUM)
Cross-jurisdictional activity (banks)	1. Cross-jurisdictional claims (10%)	20	6. Intragroup commitments (6.4%)	5	1. Size of cross-jurisdictional claims liabilities	1. Number of jurisdictions in which the market intermediary and/or its affiliates conduct operations	1. Number of jurisdictions in which a fund invests
Global activity (insurers)	2. Cross-jurisdictional liabilities (10%)		7. Liability liquidity (6.4%)		2. Size of cross-jurisdictional liabilities	2. Cross-jurisdictional claims and liabilities	2. Number of jurisdictions in which the fund is sold/listed
Cross-jurisdictional presence (NBNI ^(b))					3. Number of jurisdictions in which the finance company conducts operations	3. Cross-jurisdictional claims established in different jurisdictions	3. Counterparties established in different jurisdictions
					4. Assets or revenues in foreign jurisdictions		

(a) Individual weighting in brackets
 (b) Non-bank non-insurer (NBNI) entities
 Sources: BCBS; FSB; IAIS; IOSCO

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Sovereign Debt Restructuring: Recent Issues and Reforms

Tapas Strickland*

Over the past decade, 14 countries have undertaken a total of 18 debt restructurings. Concerns surrounding some of these restructurings have led policymakers and capital market participants to review their policies and practices on restructuring sovereign debt. In particular, court rulings as a result of litigation against Argentina have raised fears that a small minority of creditors could block or frustrate a restructuring deal even when it has been agreed to by a supermajority of creditors. This article outlines the case for strengthening the current approach to debt restructuring and assesses recent proposals put forward by the International Monetary Fund (IMF), sovereign governments and capital market participants.

Introduction

When a country is unable to service its debts, it is accepted practice in the international community that a country should negotiate with its creditors to restructure its debts, with the aim of returning debt to a sustainable level at the lowest cost to both the sovereign and its creditors.¹ For a country's creditors, a debt restructuring results in an upfront loss in their claims against the sovereign, but in cases where a country's economic conditions are likely to deteriorate further in the absence of a restructuring, a timely restructure may reduce the total magnitude of losses borne by creditors.

However, incentives also exist on both sides to delay a restructuring. A restructuring is an inherently costly exercise for a country to undertake as it may result in a sustained loss of access to capital markets. A country's political leaders may also be reluctant to undertake a restructuring for fear of the potential political consequences. Creditors may be reluctant

to participate as they would realise losses on their claims and they may also be concerned that some creditors may receive preferential treatment by refusing to participate in any debt restructuring.

The current framework for restructuring sovereign debt is termed the 'contractual market-based approach'. It relies on the use of collective action clauses (CACs) in sovereign bond contracts to increase creditor participation in a restructuring offer that has been negotiated by a sovereign and its creditors.² The clauses work by binding all creditors in a specific bond series to the decisions of a supermajority of creditors (usually 75 per cent) in that series. In effect, the supermajority of creditors exercise control over all creditors and this ensures that a small minority of creditors are unable to hold out and seek preferential treatment. An alternative framework that has been advocated at times by some academics and country authorities is a global legal mechanism to facilitate restructurings (termed the 'statutory approach'). IMF staff suggested such a mechanism in the early 2000s – the Sovereign Debt Restructuring Mechanism (SDRM) – but IMF

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1 Over the past decade, 14 countries have undertaken a total of 18 debt restructurings. These countries are Argentina (2005, 2010), Belize (2007, 2013), Cameroon (2005), Dominica (2004), Dominican Republic (2005), Ecuador (2009), Greece (2012), Grenada (2005), Côte d'Ivoire (2010, 2012), Jamaica (2010, 2013), Nicaragua (2008), Paraguay (2004), Seychelles (2010), and St Kitts and Nevis (2012).

2 The literature has used CACs to describe a number of contract terms designed to ease collective action problems. In this article, CACs refer to modification clauses that allow some percentage of creditors to approve a restructuring.

members rejected the proposal in favour of the contractual market-based approach.³

Although IMF members remain committed to the contractual market-based approach, the IMF concluded that experiences with sovereign debt restructurings over the past decade have exposed some weaknesses (IMF 2013b). In particular:

- the contractual market-based approach was becoming less effective in securing adequate creditor participation
- debt restructurings were often occurring ‘too little, too late’, thus failing to restore debt sustainability.

Concerns over securing adequate creditor participation in a debt restructuring and the need to reduce incentives for creditors to hold out from a restructuring are also shared by capital market participants (ICMA 2013). As a result, policymakers – including the IMF, individual country authorities and industry groups representing capital market participants – have been discussing potential changes to the sovereign debt framework over the past two years or so. The key priority among these groups has been to enhance the current contractual market-based approach by strengthening clauses included in sovereign bond contracts. IMF staff have also made preliminary proposals to reform the IMF’s lending framework to overcome concerns that debt restructurings were often occurring too little, too late.

Issues and Proposals around Holdout Creditors

For a debt restructuring to be effective in restoring debt sustainability, a sufficient majority of creditors must agree to a reduction in their claims. However, individual creditors may be reluctant to participate in a deal and so they will hold out in the hope of subsequently being able to recover their claims in

full, or at the very least in amounts greater than that presented in the restructuring offer. This hope results in the collective action problem – while it is in the best interests of creditors as a whole to participate in the debt restructuring, from the perspective of each individual creditor the best outcome is if everyone else participates and they successfully hold out.

Holdout creditors can attempt to recover their claims by taking, or threatening to take, legal action in the courts of the country whose laws govern the relevant sovereign bond contract. Bond contracts are either governed by the domestic law of the sovereign or a pre-specified foreign legal system. Domestic-law bonds can be subject to retrospective changes that may affect the ability of a creditor to bring legal action against a sovereign. In contrast, foreign-law bonds are unlikely to be modified and holdout creditors holding foreign-law bonds have historically attempted to take legal action in the relevant foreign legal system (usually the United States or the United Kingdom).⁴ In the extreme, distressed debt funds (often referred to as ‘vulture funds’) have used litigation as an investment strategy by purchasing distressed sovereign bonds on the secondary market at heavily discounted prices with the aim of litigating for the face value of the bonds following a country’s default or a debt restructure.

Limitations of collective action clauses

The IMF and capital market participants have encouraged the widespread use of CACs in foreign-law bonds since the early 2000s (although CACs had widespread use in English law bonds prior to 2000, they had more limited use in New York law bonds). CACs have been successfully used to increase creditor participation in a number of debt restructurings to date. However, as most CACs are only binding across a single bond series, and countries usually borrow through multiple bond series, it is still possible for holdout creditors to accumulate a sufficiently large share to block

3 See Richards, Flood and Gugliatti (2002) for a discussion of the SDRM proposal and the issues that were involved at the time. In September 2014, the United Nations General Assembly voted to establish a legal mechanism. However, a number of large developed countries voted against or abstained from the resolution (including Australia), and past initiatives to establish a legal framework have been unsuccessful.

4 IMF (2014b) analysis suggests that foreign-law bonds constitute US\$900 billion of sovereign debt (1½ per cent of global government debt), and it is estimated that 90 per cent of these are governed by New York or English Law.

the activation of the CAC in a particular series.⁵ Although it may only be a specific series in which holdouts are successful, if holdout creditors are paid out in full, it may encourage creditors in future debt restructurings to hold out.

The 2012 Greek debt restructuring is a recent case where a small number of creditors were able to hold out from a restructuring even in the presence of CACs. Greece attempted to restructure €206 billion of debt, of which €21.6 billion was subject to foreign law. Of that amount, 50 per cent failed to achieve the share needed to activate the CACs or no attempt was made, resulting in around €6.5 billion or around one-third of foreign-law bonds not being restructured. In the end, Greece decided to pay out these holdouts in full, while the creditors who agreed to the debt restructuring had the value of their claims reduced by up to 75 per cent in net present value terms.

In Greece's case, these holdout creditors did not present a problem to an effective debt restructuring because the foreign-law bonds constituted only a minority of debt outstanding. However, for countries with a higher proportion of foreign-law bonds, the inability to bind all creditors to the decisions of the supermajority may present more significant problems. The Greek debt restructuring also highlighted the fact that most domestic-law bonds do not contain CACs. While the absence of CACs in domestic-law bonds can be overcome by changing domestic legislation (which Greece did by retrospectively inserting CACs), retrospective actions have the potential to lead investors to prefer foreign-law bonds, whose terms are more difficult to modify, and may undermine the functioning of domestic-law sovereign debt markets (IIF 2012).

The *pari passu* clause

While the possibility of holdout creditors in a single bond series has always been a potential problem with CACs, recent successful litigation against Argentina

by holdout creditors on its New York law bonds based on the *pari passu* clause has heightened concerns. Future holdout creditors may succeed in having their claims paid out in full by preventing a country from making payments on its restructured debts.

The litigation against Argentina was based on the *pari passu* clause found in most sovereign bond contracts. *Pari passu* is a Latin phrase meaning 'in equal step' and is a promise by the borrower to ensure that a creditor's claim will rank equally with other creditors and not be subordinated in favour of another creditor. Despite the widespread use of the clause, the interpretation of the clause in a sovereign context is unclear and there is a rich academic literature debating this issue.⁶ In a corporate context, *pari passu* means creditors rank equally in their claims on a firm's assets in the event of insolvency. However, unlike a corporation, a sovereign's assets are not available to be liquidated and there is no global mechanism currently available for creditors to take possession of a sovereign's assets.⁷ Foreign sovereign immunity provisions in many countries may also limit the ability of creditors to gain information on where a foreign sovereign's assets are located and prevent the seizure of those assets by creditors.⁸

Prior to 2000, it was generally agreed that *pari passu* meant that the claims by creditors to a sovereign rank equally, but that this did not imply equal ranking in payment. This interpretation effectively meant that following a debt restructure, a sovereign was legally

6 Complicating the interpretation has been the different formulations of the clause in sovereign bond contracts.

7 This has not prevented holdout creditors from attempting to seize a country's assets for amounts due. In 2012, NML Capital, a holdout creditor in Argentina's debt restructuring, was successful in applying to Ghanaian Courts to impound the Argentine ship *Libertad*. It was later ruled by the UN International Tribunal for the Law of the Sea that the ship had sovereign immunity as it was a military vessel and Ghana released the ship in December 2012.

8 Many sovereign issuers have waived sovereign immunity through clauses in their bond contracts and some countries have relaxed their sovereign immunity provisions so that they are waived for a sovereign's commercial activities. However, these waivers are unable to overcome a number of limitations including: non-commercial sovereign assets being immune; the problem of seizing a sovereign's assets when they are located outside of the governing law of the bond; and when assets are subject to another country's sovereign immunity provisions (Weidemaier 2014).

5 Each bond series is governed by a separate bond contract. Typically, each bond series has a different maturity date and coupon rate, which is specified in the term sheet of the contract.

able to meet its repayment obligations to those who had restructured their debts, but it could stop or credibly threaten to stop servicing the debts of holdout creditors. The potential halting of payments to holdout creditors acted as a disincentive for them to hold out from a restructure. Holdout creditors could still litigate in the courts of the country whose laws governed the bond contract for payment.

However, recent decisions made by the New York District Court have strengthened an alternative interpretation of the clause. Under this interpretation (termed the rateable payment interpretation), the sovereign is required to make equal payment to all creditors in proportion to their claims.⁹ The Court ruled that Argentina had violated the *pari passu* clause found in New York law governed bonds by failing to make payments to holdout creditors when it had made payments to holders of Argentina's restructured bonds, and also by passing laws that prevented Argentina from settling with holdout creditors. The Court ordered Argentina to make a 'rateable payment' to holdout creditors prior to, or at the same time as, making payments on restructured bonds. It is estimated that the accumulated principal and interest payments due to these holdout creditors is worth US\$1.6 billion. To enforce the ruling, the Court also barred third parties from facilitating payment to Argentina's restructured creditors unless payment was also made to holdout creditors. In addition, to assist in enforcing the ruling, the Court allowed holdout creditors to subpoena third party banks to discover the location of Argentina's assets outside of the United States.

As Argentina was not willing to pay out holdout creditors, it was prevented from making payment on its restructured bonds and Argentina was placed on default by major rating agencies in July 2014

(though Argentina is attempting to make payments to restructured bondholders). There is speculation that some restructured creditors are considering accelerating the amounts due to them by demanding full payment to reduce payment uncertainty and counter holdout creditors (Scigliuzzo 2014).

Although developments in Argentina have had little impact on global bond yields to date (with volatility mostly restricted to Argentinian securities), it is unclear how courts will interpret the case in the future and what sort of precedent it creates for future debt restructurings. Some capital market participants argue that there are three special features of this case that potentially restrict its relevance as a precedent – that the specific wording of Argentina's *pari passu* clause lent itself to a rateable payment interpretation, that the court ruled that Argentina's actions violated the clause when it passed laws that effectively subordinated their claims, and that Argentina had waived sovereign immunity in its bond contracts. Analysis by the IMF also suggests that the rateable payments interpretation is unlikely to be adopted by English law courts (IMF 2014b). Nevertheless, until this becomes clear, the ruling increases the legal uncertainty around debt restructurings, which is likely to increase the incentives for creditors to hold out.

Proposed changes to sovereign bond contracts

The successful litigation against Argentina has concerned policymakers and many capital market participants. In response, the US Treasury convened a working group comprising country officials, multilateral institutions and academics to assess the implications of the litigation. Around the same time, the International Capital Markets Association (ICMA), the industry body that produces templates for bond contracts, undertook a review of its sovereign bond templates. These templates are used by sovereigns and their creditors as a basis for bond contract design, though the eventual terms are negotiated between a sovereign and its creditors. The informal working group and ICMA worked together closely

⁹ Other courts have previously ruled in favour of the rateable payment interpretation. In 2000, a Belgian Court of Appeal ruled that the *pari passu* clause in Peru's New York law bonds should have the effect that a sovereign should render equal payments to all creditors in proportion to their claim. The Court also prevented Peru from making payments on restructured debt unless it also met its obligations to holdout creditors.

and, reflecting these consultations, ICMA has recently published updated templates that clarify the interpretation of *pari passu* and provide for three aggregation options for sovereigns seeking to use CACs (ICMA 2014a, 2014b). To balance the rights of minority creditors, ICMA has also included provisions that sovereigns must disclose adequate information about their circumstances and the restructuring terms given to different creditor groups. To facilitate negotiations between sovereigns and creditors, creditor groups with at least 25 per cent of the vote are able to form committees to engage in negotiations with the sovereign.

To deal with holdout creditors that rely on *pari passu* clauses, ICMA's model clause has been changed to explicitly define *pari passu* to exclude the possibility of a sovereign having to make rateable payment to holdout creditors as a condition to meeting its obligations on restructured debts.¹⁰ To provide a sovereign with flexibility in determining the best way to aggregate creditors' claims, and possibly allow for differentiation among them, the revised CAC allows for three types of voting procedures:

1. The sovereign can choose an aggregation CAC, which would aggregate the claims across multiple bond series and thus bind all creditors in all bond series to the supermajority. Aggregation can be enforced in either of two ways:
 - (i) Using a 'two-limb' voting structure where at least half of the creditors in each bond series must accept the new terms and two-thirds of the total creditors agree to a restructure; or
 - (ii) The sovereign can choose a 'single-limb' voting structure, where the claims would be aggregated for voting purposes when 75 per cent of total creditors agree to a
2. Alternatively, the sovereign can choose the existing CAC (a supermajority of creditors in each individual bond series). The supermajority remains at 75 per cent and thus this option still retains the potential for a creditor who owns in excess of 25 per cent of a specific bond series to block that series from a restructuring and demand full payment.

The decision on whether to adopt ICMA's revised clauses will be made by sovereigns when they issue new debt. However, early signs are positive, with Kazakhstan issuing the first foreign-law bonds to include the clauses in early October 2014 with the clauses having little impact on pricing amid strong investor demand (Roy 2014). Mexico and Vietnam have also recently issued bonds containing ICMA's revised clauses, and innovatively Mexico has removed any ambiguity implied by the Latin phrase *pari passu* by replacing the Latin words with the English equivalent 'equally'.

Supporting the adoption of ICMA's proposals, in October 2014, the IMF Board stated its intention to encourage its members to use these provisions in foreign-law bonds. G20 Leaders at the Brisbane Summit in November 2014 also called for their use and encouraged the international community and private sector to actively promote their use. Euro area countries are expected to continue with their current CAC model, which was implemented in January 2013 and includes an aggregation CAC with a two-limb voting structure.

The IMF estimates that there are around US\$900 billion worth of foreign-law sovereign bonds outstanding, and around 29 per cent of these have maturities greater than 10 years. This means that it will take a number of years for the existing foreign-law sovereign debt stock to be completely replaced with bonds containing the new clauses, and holdout creditors could continue to frustrate

¹⁰ The clause reads: 'The Notes are the direct, unconditional and unsecured obligations of the Issuer and rank and will rank *pari passu*, without preference among themselves ... *Provided, however*, that the Issuer shall have no obligation to effect equal or rateable payment(s) at any time with respect to any such other External Indebtedness and, in particular, shall have no obligation to pay other External Indebtedness at the same time or as a condition of paying sums due on the Notes and vice versa' (ICMA 2014b).

debt restructurings for some time yet. The IMF has flagged some possible options if holdout creditors continue to be successful in frustrating future debt restructurings. For holdout creditors with New York law bonds, the United States could be encouraged to amend its *Foreign Sovereign Immunities Act* of 1976 to prevent rulings like that granted against Argentina from being granted by US courts in the future. A broader proposal could be for countries to undertake voluntary bond swaps to swap existing foreign-law bonds for bonds with the revised clauses.

Problems with Debt Restructurings Occurring ‘Too Little, Too Late’

The other weakness to the current restructuring framework is that recent restructurings have often occurred long after the time at which the debt was assessed as being unsustainable. And even where debt was restructured, in many cases debt sustainability was not restored, necessitating subsequent restructurings.

The IMF’s experience with Greece’s first assistance package in 2010, and its subsequent debt restructuring in 2012, was a pertinent example. Despite Greece receiving substantial financial assistance, the assistance program was unable to restore Greece’s debt sustainability and an IMF evaluation of the program concluded that an ‘earlier debt restructuring could have eased the burden of adjustment on Greece and contributed to a less dramatic contraction in output’ (IMF 2013a). Other recent debt restructurings have also occurred long after the IMF had noted in its surveillance that debt was unsustainable, including Belize where debt was assessed to be unsustainable in 2005 but a restructure did not occur until 2007, and St Kitts and Nevis where debt was judged to be unsustainable in 2006 but a restructure did not occur until 2012 (IMF 2013b).

For the IMF, restructurings occurring too little, too late are a concern since the IMF effectively serves as a lender of last resort to countries experiencing debt distress. Delays to restructuring a country’s debt mean that IMF resources are being used to meet

the unsustainable debt repayments of a country – effectively bailing out private creditors. This presents two problems. First, it raises concerns around moral hazard to the extent that it may increase the willingness of private creditors to lend to countries with questionable debt sustainability in the knowledge that they have been repaid in the early stages of an assistance program in the past. Second, although debt may be assessed to be sustainable, due to the difficult and subjective nature of such an assessment, there is the potential for IMF funds to be used to meet unsustainable debt obligations, which is against IMF policies on lending.

In response, the IMF is currently considering proposals to reform the IMF’s ‘exceptional access’ lending framework to address restructurings occurring too little, too late with the aim of reducing the cost of restructuring to the sovereign and its creditors as a whole (IMF 2014a). It is proposed that when the sustainability of a country’s debt is uncertain (i.e. it cannot be determined to be sustainable or unsustainable with a high probability), the IMF would require a country to negotiate with its creditors to extend the maturity of its debts (termed a debt reprofiling) as a condition for IMF lending. The maturity of a country’s debt would be extended by 1–3 years, buying time for a country to implement corrective policies, while resulting in only modest declines in the net present value of creditor claims because it does not reduce the undiscounted value of a country’s debt stock. For the IMF, a reprofiling would preserve resources that would have otherwise gone to repay private creditors. In situations where debt was subsequently determined to be unsustainable, a full debt restructuring would then be required. The IMF staff also propose removing the systemic exemption clause that had allowed the IMF to lend to a country without a high probability of debt sustainability, if there was a high risk of systemic spillovers. Prior to the systemic exemption clause, if a country’s debt was not sustainable with a high probability, the IMF required a country to undertake a debt restructuring that was sufficient to restore debt sustainability to a high probability.

Conclusion

An effective sovereign debt restructuring framework should allow for an orderly restructuring that is sufficient to restore debt sustainability at the lowest cost to a sovereign and its creditors. However, reforms to the framework should ensure that the potential consequences of a restructuring remain severe enough so that countries have adequate incentives to manage their debt sustainably and thereby not push up the cost of borrowing for sovereigns. To ensure an orderly debt restructuring, holdout creditors should not be able to credibly threaten to obtain preferential treatment relative to creditors that participate in the restructuring or be able to frustrate a restructuring deal that had been agreed to by a supermajority of creditors. The changes to sovereign bond templates by ICMA should lead to a smoother debt restructuring process by reducing the ability and incentives for individual creditors to hold out from a debt restructuring. As sovereigns still need to negotiate a restructuring deal with a supermajority of creditors, there should still be adequate incentives for a country to manage their debts prudently. However, with a large stock of foreign-law bonds still outstanding, it will take some time for these reforms to become effective and there is a risk that the holdout creditor problem could persist into the near future. ✎

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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.

Abstracts or introductions of all RDPs, and the full text of RDPs published since 1988, 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:

- *Financial Flows and Infrastructure Financing*, July 2014
- *Liquidity and Funding Markets*, December 2013

- *Property Markets and Financial Stability*, December 2012
- *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

Other Publications

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

- *Submission to the Inquiry into Digital Currency*, November 2014
- *Supplementary Submission to the Financial System Inquiry*, August 2014
- *Submission to the Inquiry into Financial Related Crime*, July 2014
- *Submission to the Inquiry into Foreign Investment in Residential Real Estate*, May 2014
- *Submission to the Financial System Inquiry*, April 2014
- *Submission to the Inquiry into Public Governance, Performance and Accountability Act 2013 Rules Development*, March 2014
- *Payment Card Access Regimes: Conclusions*, March 2014
- *Submission to the Inquiry into Affordable Housing*, February 2014

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Recent Speeches

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The Business Cycle in Australia, Christopher Kent, Assistant Governor (Economic), November 2014

The Securitisation Market, Chris Aylmer, Head of Domestic Markets Department, November 2014

Remarks to the Australian Housing and Urban Research Institute Panel Roundtable, Luci Ellis, Head of Financial Stability Department, October 2014

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Remarks to a panel discussion at the Thomson Reuters FX Benchmark Event, Guy Debelle, Assistant Governor (Financial Markets), October 2014

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Remarks to a panel discussion at the Australian Banking and Finance (AB+F) Financial Services Institute of Australasia (Finsia) Conference 2014, Malcolm Edey, Assistant Governor (Financial System), October 2014

Future Directions in Financial Stability Analysis: Learning from Others, Learning from the Past, Luci Ellis, Head of Financial Stability Department, September 2014

Opening Remarks – Inquiry into Affordable Housing, Malcolm Edey, Assistant Governor (Financial System) and Luci Ellis, Head of Financial Stability Department, October 2014

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The following Disclaimer applies to data obtained from the HILDA Survey and reported in the article 'Labour Movements during the Resources Boom' in this issue of the *Bulletin*.

Disclaimer

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