

# CONCENTRATION AND CONTAGION RISKS IN

## *the Australian banking system*

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*This paper seeks to find answers to four questions on concentration and contagion risks in the Australian banking sector. First, what types of concentrations are observed in the banking sector and how do these compare internationally? Second, are these concentrations posing or exacerbating contagion and systemic risks? Third, how is the prudential supervisor addressing the systemic risks arising from the concentrations in the Australian banking sector? Finally, are there any remaining gaps in the policy response? The paper was presented at the 22nd Melbourne Money and Finance Conference, Monash University and Australian Centre for Financial Studies, 10 to 11 July 2017.<sup>2</sup>*

### Concentration and systemic risk

#### Concentration risk

The numerous bail-outs in other developed countries during the global financial crisis (GFC) have put a spotlight on a key category of concentration risk: individual bank concentration. Large banks pose the risk of becoming so large and interconnected that creditors assume that they will be saved by the government because their failure would lead to financial instability. Large banks thus gain competitive advantage as they can access cheaper funding. The result is a vicious circle of ever-increasing bank size, exacerbating concentration risk and creating moral hazard. It may also pressure smaller banks to take on more risk.

During the GFC, these 'too big to fail' (TBTF) banks became distressed and many authorities had to decide whether to use taxpayers' money to bail them out or risk further financial instability. Since then, an international consensus has emerged that policy makers need to be able to resolve large and complex institutions in an orderly manner. The first step is to identify these TBTF institutions. Once identified, supervision can be intensified and recovery and resolution policies can be implemented to address the TBTF problem.

The Basel Committee on Banking Supervision (BCBS) has developed a methodology to identify two types of institutions, those institutions that are systemic from a global perspective (G-SIBs) and those that are systemic from a domestic perspective (D-SIB). Both methodologies<sup>3</sup> consist of a set of principles and quantitative indicators for assessing the importance of individual banks. Accordingly, APRA has assessed the systemic importance of individual banks and concluded that there are four major D-SIBs in Australia (APRA 2013). Table 1 shows the number of G-SIBs and D-SIBs in a number of comparable countries.

**TABLE 1: G-SIBs and D-SIBs in Australia and international peers**

Individual bank concentration risk	Australia	EU	USA	Switzerland	Canada	China
<b>Number of systemically important banks, of which:</b>						
> globally systemic (G-SIB)	0	13	8	2	0	4
> domestically systemic (D-SIB)	4	70	8	3	6	N/A <sup>4</sup>

Source: BCBS (2016) for EU, US, Switzerland and China. APRA data for Australian banks, Office of the Superintendent of Financial Institutions (OSFI) data for Canadian banks.

Overall banking system concentration is a second type of concentration risk. Generally speaking, a banking system composed of large banks is thought to be more efficient and more stable (Beck et al. 2005). But it will also involve more bank market power and political influence than a less concentrated system, raising the risk that banks become ‘too big to discipline’, the supervisor becomes ‘captured’, and banks use their influence to shape banking regulations. Yet, size and profitability may also attract political attention. As Table 2 indicates, compared to its international peers, the Australian banking system is fairly concentrated at the top end.

**TABLE 2: Overall banking system concentration in Australia and international peers**

	Australia (%)	Euro zone (%)	USA (%)	Switzerland (%)	Canada (%)	China (%)
<b>Overall banking system concentration</b>						
Aggregate G-SIB as a percentage of total banking assets	-	49.0	51.5	46.0	-	44.2
Aggregate D-SIB as a percentage of total banking assets	80.0	(*)	51.5	55.8	90.1	44.2
Assets of the three largest banks as a percentage of GDP	68.8	70.2	34.9	49.3	60.6	38.7
<b>Strength indicators</b>						
Capital adequacy ratio of G-SIBs	-	15.4	17.0	23.4	-	14.6
Capital adequacy ratio of D-SIBs	14.3	(*)	17.0	17.5	15.1	N/A

(\*) Data is not available as some D-SIBs are subsidiaries of larger groups which report at the consolidated level.

Source: For aggregate G-SIB and D-SIB and capital ratios: BCBS (2016) for EU, US, Switzerland and China, data as at end-2015. APRA data for Australian banks, OSFI data for Canada, data as at end-2016. Data on assets of three largest banks from World Bank Global Financial Development Database, 2015/2016 (data as at end-2014).

A third way of looking at concentration is by examining the size of the banking system and the financial system as a whole relative to that of the overall economy. A large banking system relative to a country's GDP can raise concerns about the capacity of the government to save its banks and the likelihood that the banks would have to be resolved by imposing large losses on creditors, depositors and taxpayers (Demirgüç-Kunt and Huizinga 2010). Table 3 suggests that the size of the Australian banking system is not disproportionate compared to its international peers. The large superannuation sector explains much of the difference between the size of Australia's banking sector and its financial sector assets relative to GDP.

**TABLE 3: Approximate size of the banking and financial system compared to gross domestic product (GDP)**

	Australia (%)	EU (%)	USA (%)	Switzerland (%)	Canada (%)	China (%)
Banking assets as a percentage of GDP as at end-2014	128.5	138.2 <sup>5</sup>	58.1	176.1	140.7 <sup>6</sup>	138.7
Financial sector assets as a percentage of GDP at end-2015	370 <sup>7</sup>	610 <sup>8</sup>	480 <sup>9</sup>	-	500 <sup>10</sup>	310 <sup>11</sup>

Source: Banking assets as a percentage of GDP from The World Bank, Global Financial Development Database, 2015/2016 (data as at end-2014).

Authors' calculations and estimates for financial sector assets based on documents mentioned in the indicated footnotes. Switzerland figure unknown for now, but one of largest in the world.

The fourth and final type of concentration refers to an exposure or a group of exposures large enough (relative to a bank's capital, total assets or overall risk level) to threaten the bank's health or its ability to maintain its core operations. These concentrations may arise from excessive exposures to individual counterparties, groups of related counterparties, or groups of counterparties with similar characteristics (e.g. counterparties in particular industry sectors, countries or asset classes). Importantly, concentrations by counterparty or category can arise on both the asset and the funding sides. Since the GFC, the Australian banks have become less exposed to wholesale funding markets, having significantly increased their deposit funding to around 60 per cent of total funding.

Residential mortgage lending constitutes the largest credit exposure in the Australian banking system (APRA 2014c). The data in Table 4 suggest that Australian banks are more focused on mortgage lending than their international peers.

**TABLE 4: International comparison of residential mortgage concentration**

Residential mortgages	Australia (%)	EU (%)	USA (%)	Switzerland (%)	Canada (%)	China (%)
> as a proportion of total bank assets	40.1 <sup>12</sup>	23.3 <sup>13</sup>	26.9 <sup>14</sup>	30.4 <sup>15</sup>	25.5 <sup>16</sup>	10.6 <sup>17</sup>
> as a proportion of total loans and advances	60.9 <sup>12</sup>	38.1 <sup>13</sup>	46.9 <sup>14</sup>	75.1 <sup>15</sup>	51.7 <sup>16</sup>	17.1 <sup>17</sup>

Housing lending is generally considered low-risk banking (RBA 2014). Yet, several indicators point to increasing risk such as high levels of household debt, the threat of rising interest rates, relatively high house prices and subdued income growth.

### Systemic risk

‘Systemic risk is the risk of financial system disruption so widespread or severe that it causes, or is likely to cause, material damage to the economy’ (RBA 2014). When assessing if a large individual bank or market poses systemic risk, size is a determining factor. Apart from size, interconnectedness and correlation can also give rise to systemic risk. Interconnectedness is the degree to which banks or markets have connections to other financial institutions, markets or infrastructure. Correlation can cause even small entities or markets to experience financial distress at the same time, or behave in the same way in particular circumstances. Both interconnectedness and correlation can cause contagion or the ‘domino’ mechanism through which shocks spread. Contagion can occur even in the absence of direct exposures; a change in behaviour or sentiment is sufficient. A typical example of this type of contagion is the shrinkage of the Australian securitisation market caused by the dislocation of the US subprime market.

Contagion can occur across sectors, depending on the perception of actual or implied support. A simple example is contagion from banks to the sovereign or from banks to wealth management activities (or the other way around). Yet, banking groups involved in insurance and asset management are also exposed to conglomeration risks across their functional business lines. This means that in a situation of financial distress subsidiaries of a conglomerate may expect help from the holding company or parent bank. Similarly, the bank may expect help from its cash-rich subsidiaries. Members of conglomerates can thus be lured into taking on more risk than they would otherwise have done because they rely on the brand name. In addition, clients are often tempted by strong brand names and, absent proper consumer protection, can misunderstand the risks of the products they buy (Van Lelyveld and Schilder 2002).

The Australian housing market has been identified as systemic because of its size, importance to the real economy and interconnection with the financial system (RBA 2014). Most Australian banks have asset concentrations in the housing market. The four major banks are not only systemic because of their size, but are also more interconnected than the average deposit-taking institution (Tellez 2013) and correlated by their similarity in business models and their reliance on overseas funding. Uncertainty about the financial condition of one of these banks would probably quickly impact the other three and creditors might decide to ‘run’. Thus, in the case of one of the major banks getting into serious trouble, there is a very high probability of contagion causing ‘joint distress’ of a large share of banking assets (RBA 2014). This scenario then raises concerns about the government’s capacity as well as the combined impact of banks’ responses to a potential crisis. For instance, simultaneous capital raisings may test market capacity in an adverse environment. Similarly, tightening underwriting standards as a response to increasing non-performing loans could have an impact on collateral values and affect the real economy. (Byres 2014).

Importantly, systemic risk is not a static concept, but it is driven by circumstances. Whether a crisis affecting a particular institution is systemic or not, depends to a large extent on the circumstances under which it occurs. In other words, institutions or markets that are not considered systemic in normal times, may become so in a crisis (Dijkman 2010). Thus, there is a clear distinction to be made between the failure of a smaller bank because of a contained idiosyncratic event – for example, a bank failing because of management fraud or a fatal operational failure – and a full-blown systemic crisis. The authorities will have to consider their appropriate response in light of the specific circumstances, recognising that systemic problems are more likely to arise during relatively weak economic conditions with lower levels of confidence than with strong economic conditions. As pointed out in the Government's *Statement of Expectations* to APRA (Treasury 2014), it is not the objective of prudential regulation to guarantee a zero failure regime.

In summary, almost all banks in Australia have significant housing portfolios, and are thus exposed to adverse events in this systemic market. In addition, each of the major four banks poses a systemic risk in itself. Yet, they are also correlated by the similarity in business models, evidenced by their strong linkages to the housing market and their reliance on overseas funding, which raises the risk of joint distress. There are also market distortions as a result of the TBTF banks and conglomeration risk.

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### **Policy response**

Systemic risk cannot be eliminated, but it should be monitored, managed and mitigated by sound macroeconomic policies, prudential supervision and regulation, oversight and regulation of financial market infrastructure, robust crisis management and resolution, as well as sound policies in the areas of consumer protection and market integrity.

With regard to the housing lending concentration in banks' portfolios, APRA's stress tests provide comfort in terms of the banks' ability to withstand direct credit losses (Byres 2014). Still, it is possible that individual banks survive but the system in its current form does not; for example, large losses in housing portfolios could worry creditors and result in a withdrawal of funding.

For the TBTF banks, an international consensus has emerged that this problem needs to be mitigated by reducing the impact of systemically important institutions and the probability of them failing. The impact of a failure can be reduced by more effective resolution mechanisms and plans, and bail-in and higher loss-absorbing capacity. Identification of systemically important banks, capital surcharges, the preparation of recovery plans and increased supervisory intensity aim to reduce the likelihood of failure. In recent years, global policy development and supervisory activities have been stepped up in those areas.

For instance, APRA imposed a 1 per cent capital surcharge on the D-SIBs. Moreover, they are subject to a Level 3 conglomerate regime from 1 July 2017 and a heightened supervisory stance due to the likely large impact of their failure. Furthermore, APRA has lifted supervisory intensity for residential mortgage lending portfolios. This includes reinforcing stronger lending standards and seeking ways to moderate the rapid growth in investor lending by introducing macro prudential measures (see details in Appendix 1). These efforts have had an impact: there is more conservatism in terms of mortgage lending decisions today relative to a few years ago, and double-digit growth rates in lending to investors have returned to single figures (Byres 2017b). That said, only time will tell whether the macro prudential measures were timely, went far enough and did not create distortions in the financial system.

The Financial System Inquiry (FSI)<sup>18</sup> recommendations in the area of banking system resilience are aligned, and go beyond this international policy consensus. Significantly, the inquiry recognised the important concentrations in the Australian banking system and acknowledged that the safety of the banking system is of paramount importance. It highlighted the need to lower the probability of failure, including setting Australian bank capital ratios such that they are ‘unquestionably strong’ by being in the top quartile of internationally active banks. It also recommended that in order to reduce the cost of failure, authorised deposit-taking institutions (ADIs) should maintain sufficient loss absorbing and recapitalisation capacity to allow effective resolution with limited risk to taxpayer funds<sup>19</sup> (Commonwealth of Australia 2014). The government has agreed with these recommendations (Treasury 2015) and APRA is considering how to judge ‘unquestionably strong’ (Byres 2017a).

Regrettably, increased supervisory intensity, and good supervision practices in general, have received much less attention than the regulatory reforms globally. Implementation and oversight of complex regulations is difficult, but matters as much as the regulation itself. The importance of supervision is illustrated by the fact that most supervisors operated under broadly the same internationally agreed regulatory standards during the global financial crisis, yet the outcomes in terms of bank failures were very different (IMF 2010).

Hence, a precondition for an ‘unquestionably strong’ banking sector is an equivalently strong supervisor. Certainly, the inquiry acknowledged the role of supervision by recommending ‘regulators be provided with more stable funding, increase their capacity to pay competitive remuneration, boost flexibility in respect of staffing and funding and require them to perform periodic capability reviews’. The government responded positively to these recommendations, yet their implementation does not appear to be as high on the agenda and as fiercely debated as the implementation of ‘unquestionably strong’ capital ratios. Maybe this is because it is easier to compare bank capital ratios internationally than to benchmark the effectiveness of bank supervision against international standards.

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An assessment of the Basel Core Principles (BCP)<sup>20</sup> as part of the Financial Sector Assessment Program (FSAP)<sup>21</sup> aims to do exactly that. More than five years ago, the IMF performed a BCP assessment in Australia and raised concerns regarding APRA’s operational and budgetary independence. It noted that government approval of APRA’s budget left it exposed to cutbacks for political and budgetary reasons. Since then, there have been the occasional warning signs. For example, APRA used to target average remuneration at the 25th percentile of the market rate for like work in the financial sector. As APRA salaries have remained flat for the past couple of years, the gap with the banking sector, the key recruitment ground for APRA staff, has further widened (APRA 2014). Three years after the IMF assessment, the FSI continued to raise concerns that it had become difficult to meet that target.

Furthermore, efficiency dividends<sup>22</sup> have been imposed across the public sector, including on APRA. This mechanism is ill-suited for an agency funded by levies. Indeed, the efficiency gains imposed on APRA are returned to the regulated entities, in individually insignificant amounts, without making any contribution to the budget. Even so, the FSI final report stopped short of explicitly banning them.

It is also interesting to note that the supervisory resources APRA dedicates to the supervision of large and complex institutions are at the lower end of the scale compared to its international peers. For example, the Financial Stability Board (2010) states that on average supervisory teams for a large and complex institution range from 14 people to high of 100, with 40–50 people on average (Laker 2010).

These observations may sound trivial and anecdotal, but one needs to be mindful that their collective impact may sow the seeds for a slow and unnoted erosion of financial safety levels. Supervisory skills take a long time to build, yet can be lost very quickly. When governments run deficits, some general belt tightening is often the responsible thing to do. After all, the recent budget announcement imposed a bank levy<sup>23</sup> on the five largest banks while APRA received a range of special appropriations.<sup>24</sup> To put this into perspective though, the latter amounts to low single-digit millions of dollars, while the bank levy is expected to raise \$6.2 billion over four years. Nonetheless, it is not the most responsible policy choice to direct this levy towards general budget repair instead of earmarking it, at least partly, to help strengthen the resilience and oversight of the financial system (Davis 2017).

Finally, the cost-benefit ratio of 'unquestionably strong' supervision is attractive. When APRA raised the risk weights for mortgages from 16 to 25 per cent for banks using the internal ratings based approaches (APRA 2015), the four major banks had to raise around \$10 billion in equity. At a cost of equity of say, 10 per cent per annum, this equates to around \$1 billion. This is about 10 times what APRA spends on bank supervision each year (APRA 2016). It is highly debatable as to whether the Australian financial system has become significantly safer following this relatively small increase in risk weights. Instead, a substantial increase in supervisory capacity could have given more assurance on financial safety levels, and at a much lower cost.

## Conclusion

Australia has seen less financial instability than most developed countries. The quality of the regulatory system and the timely action by supervisors and the government contributed, among other factors, to this successful outcome.

Compared to its international peers, the Australian banking system is characterised by three interrelated forms of concentration risks: individual bank concentration risk; banking system concentration; and housing sector concentrations in individual banks. The FSI recognised that these concentrations pose systemic risk and have to be monitored, managed and mitigated carefully. It recommended the Australian banking system become 'unquestionably strong'. Even so, this objective cannot be achieved by regulation alone. It must be complemented by 'unquestionably strong' independent, adequately resourced and proactive supervision.

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## Notes

1. This paper's findings, interpretations, and conclusions are entirely those of the author and do not represent the views of the World Bank, its executive directors, or the countries they represent.
2. This paper focuses on bank safety and soundness; competition matters are outside of its scope.
3. The BCBS uses five indicators to assess globally systemically important banks: cross jurisdictional activity; size; interconnectedness; substitutability; and complexity. No Australian bank is a G-SIB. In the assessment methodology for D-SIBs, cross-jurisdictional activity is dropped and more discretion for the designation of D-SIB is granted to the domestic supervisor.
4. D-SIBs are yet to be designated in China.
5. Luxembourg stands out with assets representing 1,557 per cent of GDP, followed by Malta, Cyprus and the Netherlands 535 per cent, 420 per cent and 374 per cent of GDP, respectively, as at 31 December 2015.
6. The only data available is at end-2008.
7. RBA 2014, p. 15. Data is as at 31 December 2013.

8. The size of the overall financial sector ranges from almost 200 times GDP (Luxembourg) to slightly below 100 per cent of GDP (Lithuania). Other countries with a financial sector of more than 10 times GDP are Malta, Ireland, Cyprus and the Netherlands. At the other end of the spectrum, the size of the financial sector stood at about 200 per cent of GDP or less in most eastern European euro area countries. In most central euro area countries, such as France, Belgium, Germany or Austria, the ratio of total financial sector assets to GDP was between 400 per cent and 600 per cent. Data from the ECB report on financial structures, 2016.
9. US Financial Sector Assessment Program (FSAP), figures as at end-2014.
10. Canada FSAP, figures as at end-2014.
11. Author's estimate.
12. APRA 2017b, *Quarterly Authorised Deposit Taking Institutions Performance*, 31 March.
13. ECB 2017, *Supervisory Banking Statistics*, data as at 31 December 2016. Only lending to household figures are published.
14. Office of the Federal Reserve System, Statistical release, [Financial Accounts of the United States, page 164 — private depositary institutions](#) as at 31 March 2017.
15. [Swiss National Bank](#), bank data as of 30 April 2017.
16. [Office of the Superintendent for financial institutions](#), bank data as at 30 April 2017.
17. People's Bank of China, *Distribution of credit supply report*, March 2017.
18. The Financial System Inquiry (FSI) was tasked with examining how the financial system could be positioned to best meet Australia's evolving needs and support Australia's economic growth.
19. The FSI also recommended keeping in place the 'four pillars policy' preventing the four major banks from merging with one another. The inquiry argued that it confines concentration by limiting the size of the four major banks, and thus keeps the impact of their potential failure more limited. That said, the policy has not prevented the major banks becoming systemically important. Also, the resolution of one of the large banks following an idiosyncratic fatal event cannot be avoided by this policy. This course of events would also increase the systemic importance of the remaining three.
20. The Basel Core Principles for Effective Banking Supervision are the *de facto* minimum standard for sound prudential regulation and supervision of banks and banking systems. They are used by countries as a benchmark for assessing the quality of their supervisory systems and for identifying future work to achieve a baseline level of sound supervisory practices. The Basel Core Principles are also used by the International Monetary Fund (IMF) and the World Bank, in the context of the FSAP, to assess the effectiveness of countries' banking supervisory systems and practices.
21. The FSAP, established in 1999, provides a comprehensive and in-depth analysis of a country's financial sector. FSAP assessments are the joint responsibility of the IMF and World Bank in developing economies and emerging markets and of the IMF alone in advanced economies. G20 countries are committed to an assessment every five years and to publicly disclose the results.
22. Under the efficiency dividend, the government reduces agency funding with the objective of driving efficiency savings and improving its overall budget position. Agencies are required to meet reductions in their expenditure base as a set percentage amount per year. Over the period from 2011 to 2017 APRA's expenditure was reduced by \$21 million from its originally approved budget.
23. While the Treasurer did not provide a rationale for the new levy, several commentators justified it as part of the price to pay for 'the too big to fail' implicit subsidy and argued that its calibration at 0.06 per cent of a subset of liabilities was entirely reasonable.
24. APRA was granted \$4.2 million over four years to implement the new *Banking Executive Accountability Regime* (Treasury 2017). The Government will also provide APRA with \$1 million per annum for a fund to ensure it has the necessary resources to enforce breaches of the new civil penalty provisions.

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## APPENDIX 1: Supervisory actions and macro prudential measures communicated by APRA

Date and topic	Description	
2014	<b>Issuance of Prudential Practice Guide on Mortgage Lending</b> This document lays out supervisory expectations with regard to the risk management framework, loan origination, specific loan types, security valuation, hardship and collections, stress testing and lenders mortgage insurance.	
2014	Stress testing of Australia's 13 largest ADIs for a significant housing downturn.	
	<b>Letter of 14 Dec to ADIs</b>	<b>Letter of 17 March to ADIs</b>
Investor growth	Annual investor credit growth materially above a benchmark of 10 per cent will be an important risk indicator that supervisors will take into account when reviewing ADIs residential mortgage risk profile and considering supervisory actions. The benchmark is not intended as a hard limit, but ADIs should be mindful that investor loan growth materially above this rate will likely result in a supervisory response.	
Serviceability	Prudent serviceability policies should incorporate a serviceability buffer of at least 2 per cent above the loan product rate, with a minimum floor assessment rate of 7 per cent.	Review and ensure that serviceability metrics, including interest rate and net income buffers, are set at appropriate levels for current conditions.
Higher risk lending	In the current environment, where an ADI is undertaking large volumes of lending in these categories, or increasing this higher risk lending as a proportion of new lending, this will be a trigger for the consideration of supervisory action.	Continue to restrain lending growth in higher risk segments of the portfolio (e.g. high income loans, high LVR loans, and loans for very long terms).
Interest-only flow		Limit the flow of new interest only lending to 30 per cent of total new residential mortgage, and within that: <ul style="list-style-type: none"> <li>&gt; Place strict internal limits on the volume of interest only lending at loan to valuation ratios above 80 per cent; and</li> <li>&gt; Ensure there is strong scrutiny and justification of any instances of interest only lending at and LVR above 90 per cent.</li> </ul>
Warehouses		APRA has been monitoring the growth in warehouse facilities provided by ADIs and would be concerned if these were growing at a materially faster rate than and ADIs own housing loan portfolio.

Sources: APRA website, APRA's letters to ADIs, Macquarie Research, June 2017.