

Concentration and contagion risks in the Australian banking system

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1. Introduction

This paper² 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?

2. 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 first 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. It gives the relevant banks a competitive advantage as they can get cheaper funding. The result is a vicious circle of ever increasing bank size, exacerbating concentration risk and the creation of 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 choose between using taxpayers' money to bail them out, or risking 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 should 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 methodologies³ consist of a set of principles and quantitative indicators for assessing

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 note focusses 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

the importance of individual banks. Accordingly, APRA has assessed the systemic importance of individual banks and concluded that the four majors D-SIBs in Australia (APRA, 2013). Table 1 states 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	US	Switzerland	Canada	China
Number of systemically important banks Of which:						
--globally systemic (G-SIB)	0	13	8	2	0	4
-domestically systemic (D-SIB)	4	70	8	3	6	N/A ⁴

Source: BCBS (2016) for EU, US, Switzerland and China. APRA data for Australian banks, OSFI data for Canadian banks.

Overall banking system concentration is second type of concentration risk. Generally speaking, a banking system composed of large banks is thought to be more efficient and more stable (Beck, Demirguc-Kunt and Levine, 2005). But it will also come with more bank market power and political influence than a less concentrated system, raising the risk that banks become "too big to discipline", capture the supervisor, and use their influence to shape banking regulations. Yet, size and profitability may also attracts 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

Overall banking system concentration	Australia	EURO zone	US	Switzerland	Canada	China
Aggregate G-SIB as percentage of total banking assets	-	49.0%	51.5%	46.0%	-	44.2%
Aggregate D-SIB as percentage of total banking assets	80.0%	(*)	51.5%	55.8%	90.1%	44.2%

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

	Australia	Euro zone	USA	Switzerland	Canada	China
Assets of the three largest banks as percentage to GDP	68.8%	70.2%	34.9%	49.3%	60.6%	38.7%
Strength Indicators						
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 of end 2015. APRA data for Australian banks, OSFI data for Canada, data as of end 2016.

Data on assets of three largest banks from World Bank Global Financial Development Database, 2015/2016 (data as of end 2014)

A third way of looking at concentration is by weighing up the size of the banking, and the financial system, as a whole relative to the size of the economy. Large banking systems compared to 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 putting 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 the difference between the banking sector and the financial sector data for Australia.

Table 3 Approximate size of the banking and financial system compared to GDP

	Australia	EURO zone	USA	Switzerland	Canada	China
Banking assets as a percentage of GDP as of end of 2014	128.5%	138.2% ⁵	58.1%	176.1%	140.7% ⁶	138.7%

⁵ Luxembourg stands out with assets representing 1,557% of GDP, followed by Malta, Cyprus and the Netherlands 535%, 420% and 374% of GDP respectively as of 31 December 2015.

⁶ Only data available is at end of 2008.

	Australia	Euro Zone	USA	Switzerland	Canada	China
Financial sector assets as a percentage of GDP end of 2015	370% ⁷	610% ⁸	480% ⁹	-	500% ¹⁰	310% ¹¹

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

Authors' calculations and estimates for financial sector assets based on documents mentioned in footnote. 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 ability to maintain its core operations. These concentrations may arise from excessive exposures to individual counterparties, groups of related counterparties, 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 the asset but also on the funding side. Since the GFC, the Australian banks are less exposed to wholesale funding markets, having significantly increased their deposit funding to around 60 percent of total funding.

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

⁷ As of 31 December 2013, RBA, 2014 page 15

⁸ The size of the overall financial sector ranges from almost 200 times GDP (Luxembourg) to slightly below 100% of GDP (Lithuania). Other countries with a financial sector of more than ten 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% 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% and 600%. Data from the ECB report on financial structures, 2016.

⁹ US FSAP, figures as at end of 2014.

¹⁰ Canada FSAP, figures as at end 2014

¹¹ Author's estimate

Table 4 International comparison of residential mortgage concentration

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

That said, housing lending is generally considered low risk banking (RBA, 2014). Yet, several indicators point to increasing risk such as high 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 behavior or sentiment is sufficient. A typical example of this type of contagion is the shrinkage of the Australian securitization 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 subsidiaries of a conglomerate may expect help from the holding company or parent bank in case of financial distress. Similarly, the

¹² APRA – Quarterly Authorized Deposit Taking Institutions performance statistics – 31 March 2017

¹³ European Central Bank – Supervisory Banking Statistics – data as at 31 Dec 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 depository institutions as at 31 March 2017, <https://www.federalreserve.gov/releases/z1/current/z1.pdf>

¹⁵ Swiss National Bank, bank data as of 30 April 2017, <https://data.snb.ch/en/topics/banken#!/cube/babilpoum>

¹⁶ Office of the Superintendent for financial institutions, bank data as of 30 April 2017, <http://www.osfi-bsif.gc.ca/Eng/wt-ow/Pages/FINDAT.aspx>

¹⁷ People's Bank of China, Distribution of credit supply report, March 2017 see <http://www.pbc.gov.cn/eportal/fileDir/defaultCurSite/resource/cms/2017/06/2017061617432336546.htm>

bank may expect help from its cash rich subsidiaries. Group members in conglomerates can thus be lured into taking on more risk than they would otherwise have done because they count on the brand name. Also, 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 majors are not only systemic because of their size, but 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 them would probably quickly impact the other three and creditors might decide to “run”. Thus, in case one of the major banks gets 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 nonperforming loans could impact 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 response depending on the specific circumstances keeping in mind that poor economic conditions and lower levels of confidence are more likely to create systemic problems than a booming economy and strong economic conditions. As pointed out in the Government’s Statement of Expectations to APRA, it is not the objective of prudential regulation to guarantee a zero failure regime.

To recap, 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 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 market distortions as a result of TBTF and conglomeration risk.

3. 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 give 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, 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 the past years, global policy development and supervisory activities have been stepped up in those areas.

For instance, APRA imposed a 1% 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 their large impact of failure. Furthermore, APRA has lifted supervisory intensity of residential mortgage lending. 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 Annex 1). These efforts have had an impact: there is more conservatism of mortgage lending decisions today relative to a few years ago, and lending to investors double growth rates have come back into single figures (Byres, 2017b). That said, it is early days and only time will tell if the macro prudential measures were timely, went far enough and did not create distortions in the financial system.

The Financial System Inquiry's¹⁸ recommendations in the area of banking system resilience are aligned, and go beyond, this international policy consensus. Significantly, the Inquiry recognized the important concentrations in the Australian banking system and acknowledged that the safety of the banking system is of paramount importance. It recommended 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. Additionally, to reduce the cost of failure, ADIs should maintain sufficient loss absorbing and recapitalization capacity to allow effective resolution with limited risk to taxpayer funds¹⁹ (FSI, 2014). The Government has agreed with

¹⁸ The Financial Systems Inquiry was tasked with examining how the financial system could be positioned in order to best meet Australia's evolving needs and support Australia's economic growth.

¹⁹ The Murray Inquiry also recommended keeping the "four pillars policy" preventing the four major banks from merging with one another, in place. The Inquiry argued that it confines concentration by limiting the

these recommendations (Australian Government, 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 does acknowledge 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.

An assessment of the Basel Core Principles (BCP)²⁰ as part of the Financial Sector Assessment Program (FSAP)²¹ 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 the 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 last 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, the Murray Inquiry continued to raise concerns that it had become difficult to meet that target.

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 Financial Sector Assessment Program (FSAP), to assess the effectiveness of countries’ banking supervisory systems and practices.

²¹ The Financial Sector Assessment Program (FSAP), established in 1999, is 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 committed to an assessment every 5 years and to publicly disclose the results.

Furthermore, efficiency dividends²² 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 Murray report stops 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 on average 40-50 people (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 levy²³ on the five largest banks while APRA received a range of special appropriations²⁴. To put this into perspective though, the latter amounts to low single digit millions, while the bank levy is expected to raise \$6.2 billion over four years. Nonetheless, using this levy towards general budget repair instead of earmarking it, at least partly, to help strengthen the resilience and oversight of the financial system is not the most responsible policy choice (Davis, 2017).

Finally, the cost benefit of “unquestionably strong” supervision is attractive. When APRA raised the risk weights for mortgages from 16 to 25 percent for banks using the internal ratings based approaches (APRA, 2015), the four majors had to raise around \$10 billion in equity. At a cost of equity of say, 10 percent per annum, this costs them about \$1 billion. This is about ten times what APRA spends on bank supervision per year (APRA, 2016). It is highly debatable if 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.

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 2011 to 2017 APRA's expenditure was reduced by AUD 21 million from its originally approved budget.

²³ While the Treasurer did not provide a rationale for the new charge, 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 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. 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.

4. 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 characterized by three interrelated forms of concentration risks; individual bank concentration risk, banking system concentration and housing sector concentrations in individual banks. The Murray Inquiry recognized 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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Annex 1: Supervisory actions and macro prudential measures communicated by APRA

Date and topic	Description	
2014	Issuance of Prudential Practice Guide on Mortgage Lending This document lays out supervisory expectations with regards 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	
	Letter of 14 Dec to ADIs	Letter of 17 March to ADIs
Investor growth	Annual investor credit growth materially above a benchmark of 10% 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 percent above the loan product rate, with a minimum floor assessment rate of 7percent	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 percent of total new residential mortgage, and within that: <ul style="list-style-type: none"> - Place strict internal limits on the volume of interest only lending

		<p>at loan to valuation ratios above 80 percent; and</p> <ul style="list-style-type: none"> - Ensure there is strong scrutiny and justification of any instances of interest only lending at and LVR above 90 percent
Warehouses		<p>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.</p>

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