Pegasus Economics

Reconciling Prudential Regulation with Competition

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Introduction

- The Australian Prudential Regulation Authority (APRA) is expected to shortly release a draft revised capital framework for authorised deposit-taking institutions (ADIs). The draft revised capital framework will propose changes to the credit risk based capital requirements for ADIs using advanced and standardised approaches to the assessment of credit risk.
- This will have a profound impact on the level of competition between ADIs, especially in relation to the largest bank lending market – lending for residential mortgages.

Adverse Competition Consequences from Prudential Regulation

- The internal ratings basis (IRB) method for calculating risk weights provided for under Basel II has been described by some as essentially self-regulation. The IRB approach relied on the self-interest of the banks to lead them to use the best possible estimates of risk in their own management of assets (Elliott, 2010, p. 5).
- APRA downplayed as well as dismissed competition concerns during its implementation of Basel II and did not follow due process by completing the required competition assessment checklist in the Regulation Impact Statement it prepared for Basel II.
- The actions of APRA in turn implies the competition-fragility view of banking is endemic to the organisation. The outcomes arising from the interaction of the global financial crisis (GFC) coupled with the implementation of Basel II vindicates the criticisms of Basel II from a competition perspective.
- Under Basel II, credit and operating risk weights determined under the standard approach were much higher than those under the IRB method used by the major banks. In this regard, the Reserve Bank of Australia (RBA) (2015, pp. 54-55) found that at the end of June 2015 the average risk weight of residential mortgage exposures using the IRB method was 17 per cent as compared to 40 per cent using the standardised approach.
- Higher risk weights mean more capital is allocated to the lending, which leads to a higher cost of funds for ADIs using the standardised approach. The higher cost of funds for ADIs using the standard approach in turn influences their pricing of lending products, thus reducing their competitiveness with IRB banks for lending.
- The funding advantage provided to IRB banks over ADIs using the standardised approach is substantial, as outlined by the Productivity Commission (2018, p. 239).
- The use of lower capital weights under the IRB method raises the return on capital for a given mortgage asset, and the corollary of this is that greater concentration in low-capital-weighted mortgages improves the overall bank return (Blundell-Wignall, Atkinson, & Lee, 2009, p. 16).
- Through its implementation of Basel II, APRA put smaller ADIs at a major competitive disadvantage and undermined competitive neutrality.
- The available evidence suggests the interaction of the GFC combined with the implementation of Basel II provided a major fillip to the major banks to the detriment of other ADIs.
- The market share of interest income earned on housing loans by the major banks dramatically spiked as well as permanently increased in the second half of 2008 onwards. The advantage gained by the major banks at that time has largely remained intact.
- APRA (2014, p. 73) has attributed this dramatic change entirely upon the drying-up of funding from the residential mortgage-backed securities market on which some of the other ADIs had previously relied during the GFC. However, this change also coincided with the

major banks being able to hold much less regulatory capital for credit risk thus lowering their cost of funds, providing them with the scope to reduce their relative prices on home loan products by virtue of the IRB method.

- The introduction of Basel II enabled the major banks to generally hold less regulatory capital for credit risk from the beginning of 2008 until the end of 2012. In real terms, the amount of regulatory capital for credit risk held by the major banks has still not exceeded the level attained in the December quarter 2007 prior to the implementation of Basel II.
- The 2014 Financial System Inquiry (Murray Report) completely rejected APRA's position and recognised the IRB approach had usurped competitive neutrality by tilting the playing field against financial institutions using the standardised approach.
- The Murray Report suggested the average minimum risk weight on IRB banks for housing loans in the range of 25 and 30 per cent would be appropriate (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 65). In July 2015 APRA (2015) announced that it would raise the average risk weights on IRB banks to at least 25 per cent from an average level of 16 per cent, at the lowest end of the range suggested by the Murray Report.
- While average risk weights for the major banks initially rose following the imposition of average risk weight on IRB banks by APRA, two of the major banks have since dramatically reduced their risk weights on residential mortgages with the lowest risk of default. The average risk weights on such loans is now currently on average less than 6 per cent across the major banks.
- Despite the imposition of an average risk weight on residential home loans, it appears some of the major banks have decided to engage in cream skimming by targeting home loans with the lowest risk of default. Cream skimming occurs when the competitive pressure focuses on the high-demand customers (the *cream*) and not on low- demand ones (the *skimmed milk*) (Laffont & Tirole, 1990, p. 1042). Cream skimming has adverse consequences as it skews the level of risk in house lending away from the major banks and towards other ADIs who have to deal with an adversely selected and far riskier group of home loan applicants.

Prudential Regulation Policy Solutions

- There are a range of policy measures that could be implemented to ensure prudential regulation does not continue to operate in such a manner as to stifle competition in the Australian banking system.
    1) To address the lack of coordination between prudential regulation and competition policy and overcome the *competition-fragility* view of banking that appears endemic to APRA, ensure that competition considerations are given due deliberation in prudential regulatory policy decisions through a statutory secondary competition objective for APRA.
    2) Compelling IRB banks to hold more capital will not only reduce the fragility of the banking system, but will also ensure benefits achieved from injecting greater competition into the banking system can be realised.
    3) Increased granularity for risk weights for banks using the standardised approach would improve competition in home lending.
- While the adoption of these policy measures may go some way towards ameliorating some of the previous negative impacts on competition arising from the decisions of prudential regulators, they will by no means solve all the competition problems currently experienced by the Australian banking system such that a level of workable competition is achieved. There is overwhelming evidence of information market failures within the Australian

banking system arising from information asymmetries that would also need to be addressed before a level of workable competition could be attained.

Background Information

Nature of Banking and its Risks

- Banks are *financial intermediaries* as they are standing in the middle of two groups – savers and borrowers.
- A bank typically engages in three main activities: providing transaction services to households and corporations primarily through deposit accounts; extending credit; and trading and investment banking (Hughes & Manning, 2015, p. 68).
- Promises form the basis of the financial system (Carruthers & Kim, 2011, p. 240). One party promises to pay a sum of money to another. Modern banking holds out two promises (Levitin, 2016, p. 359):
    - Banks promise safekeeping of and ready access to depositors' funds – the deposit function. The taking of deposits is what makes a bank a bank (Levitin, 2016, p. 366). Before an entity can accepts deposits from the public in Australia, it must be authorised under the *Banking Act 1959* (Cwth) by the Australian Prudential Regulation Authority (APRA) – hence the term authorised deposit-taking institutions (ADIs).
    - Banks also promise to be a ready source of funding for borrowers – the lending function (Levitin, 2016, p. 359).
- The promises created by the banking system means that banks face a number of risks in managing their activities.
- Credit risk is the risk of losses arising from a borrower or counterparty failing to meet its obligations to pay as they fall due (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 9).
- Banks' promises of redemption of deposits on demand mean they are able to engage in maturity transformation – lending long-term against short-term liabilities.
- The process of maturity transformation is inherently risky, for if depositors withdraw their funds en masse and/or other short term funding is not renewed, and if the long-term loans cannot easily be converted into cash, a bank may run into potentially serious liquidity problems (Admati & Hellwig, 2013, p. 52).
    - If depositors seek to redeem their holdings en masse, a bank run ensues.
- The maturity transformation performed by banks leaves them vulnerable to a liquidity risk – the risk of not being able to raise cash when needed (Bessis, 2015, p. 3).
- Market risk is the risk of losses due to adverse market movements depressing the value of the positions held by market players (Bessis, 2015, p. 3).
- The solvency risk is the risk that a bank cannot meet maturing obligations because it has a negative net worth; that is, the value of its assets is smaller than the amount of its liabilities (Almarzoqi, Naceur, & Scopelliti, 2015, p. 11).
- A run on a bank can lead to contagion and a systemic problem within the financial system.
- Systemic risk is where the risk of financial system disruption so widespread or severe that it causes, or is likely to cause, material damage to the economy (Reserve Bank of Australia, 2014, p. 73).
    - The disruptions associated with a systemic risk materialising can have significant implications for employment, wages, prices and activity, including for people and firms outside of the financial system (Reserve Bank of Australia, 2014, p. 73).

    - Systemic risk and financial system disruptions can impose large negative spillovers across the entire economy because of the central position of the financial system in a monetary economy (Vives, 2016, pp. 41-42).
- Some banks may contribute more to systemic risk than others (Vives, 2016, p. 42). Large banks are of particular importance because their failure could pose significant risks to other financial institutions and the financial system as a whole (Moch, 2013, p. 2908).
- The Financial Stability Board (2013, p. 2) has defined systemically important financial institutions (SIFIs) as those of such size, market importance and interconnectedness that their distress or failure would cause significant dislocation in the financial system and adverse economic consequences. The *too-big-to-fail* (TBTF) problem arises when the threatened failure of a SIFI leaves public authorities with no option but to bail it out using public funds to avoid financial instability and economic damage.
    - The major banks in Australia have been designated as domestically systemically important banks (D-SIBs).
- Contagion risk refers to the risk that financial difficulties at one or more banks spill over to large number of banks or the financial system as a whole (Schoenmaker, 1996).
- Operational risks are those of malfunctions of the information system, of reporting systems, of internal risk monitoring rules, and of procedures designed to take corrective actions on a timely basis (Bessis, 2015, p. 4).
- Reputational risk is the risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debt-holders, market analysts, other relevant parties or regulators that can adversely affect a bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding (eg through the interbank or securitisation markets) (Basel Committee on Banking Supervision, 2009, p. 19).
- Concentration risk in a financial institution's portfolio is the risk arises from an excessive exposure to a single sector or to several highly correlated sectors (i.e. 'sector concentration') as well as from an excessive exposure to certain names (which is often referred to as 'name concentration' or 'granularity') (Düllmann & Masschelein, 2006).

Managing Risk in the Financial System

- The management of risks are a major activity of banks (Freixas & Rochet, 1997, p. 221).
- However, careless lending can occurs if bankers do not have the right incentives to engage in due diligence when making loans (Admati & Hellwig, 2013, p. 56).
- It appears to be the case that banks have excessive incentives to take risk in the presence of limited liability for shareholders and also for managers due to contracts that limit their downside and moral hazard due to non-observable risk positions on the asset side (Vives, 2016, p. 109).
- The 2008 Nobel Laureate for economic Paul Krugman (2009, p. 63) has described moral hazard "as any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly."
    - Moral hazard infers a disposition on the part of individuals or organisations to engage in riskier behaviour, than they otherwise would, because of a tacit assumption that someone else will bear the costs and consequences if the incurred risk turns out badly (Wolf, 1999, p. 60).
- The problem of excessive risk taking is particularly acute for banks close to insolvency and/or bankruptcy (Vives, 2016, p. 109).

- As the chance that a weak bank will recover dwindles, its managers have strong incentives to either gamble for resurrection or grab something for themselves before the bank fails (Chen & Hasan, 2011, p. 1048). This is a serious real world problem and motivates many countries, including Australia, to require regulators take prompt corrective actions when banks' financial conditions deteriorate.
- The regulatory objective of prudential regulation over the financial system is to reduce risk (Productivity Commission, 2018, p. 14).
- Prudential regulation of the banking system focuses on ensuring that individual financial institutions are able to withstand external shocks and can continue to meet their obligations to depositors that in turn supports the resilience of the banking system as a whole (Productivity Commission, 2018, p. 63).
- The basic underlying objective of prudential regulation is to increase the probability of a promise being honoured, and since this relates to the creditworthiness of the promiser, it follows that the focus of regulation must be on the promising entity (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 303).
- APRA is responsible for prudential supervision of the Australian financial system.
- *Capital* represents the portion of a bank's assets which have no associated contractual commitment for repayment and is therefore available as a cushion in case the value of the bank's assets declines or its liabilities rise (Elliott, 2010, p. 3). Banks attempt to hold the minimum level of capital that supplies adequate protection, since capital is expensive, but all parties recognise the need for such a cushion even when they debate the right amount or form.
    - A bank's capital essentially represents its ability to withstand losses without becoming insolvent (Gorajek & Turner, 2010, p. 43).
- The Basel Committee on Banking Supervision (Basel Committee) (2016) was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervisory matters.
- In 1988 the Basel Capital Accord (now referred to as Basel I) was approved by the Basel Committee and set capital requirements for banks in proportion to risk metrics referred to as *risk weights*. Initially these risk weights were set by regulators (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 2).
- Basel I stipulated that banks should hold minimum capital in the amount of eight per cent of their risk-weighted assets (Düllmann & Masschelein, 2006). Under Basel I, loans secured by residential mortgages were assigned a risk weight of 50 per cent, whereas all other loans were given a risk weight of 100 per cent (Terry, 2009, p. 26).
- Basel I gave banks the ability to control the amount of capital they required by shifting between assets with different weights on the balance sheet, and by securitising assets and shifting them off the balance sheet (Blundell-Wignall, Atkinson, & Roulet, 2014, p. 53). Banks quickly accumulated capital well in excess of the regulatory minimum, and capital requirements, in effect, had no constraining impact on banks' risk taking.
- To link capital more closely to banks' own risk estimates, the Basel II agreement in 2004 made provision for some banks to use their own internal models (IRB method) to calculate risk weights (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 2). Basel III was agreed in 2010 amid growing concerns about the operation of risk weights.
- Under the Basel II agreement, banks can use either the IRB methods or the standardised (externally set) risk weights for calculating minimum capital requirements.

- Under the standardised approach, the risk weights are prescribed by APRA and are generally based on directly observable characteristics of each exposure (Gorajek & Turner, 2010, p. 44).
- In late 2017, the Basel Committee finalised its Basel III reforms, the most significant of which related to revisions to the risk-weighted asset framework and the introduction of a leverage ratio framework (Australian Prudential Regulation Authority, 2018, p. 14).
- To reduce excessive variability of risk-weighted assets and to enhance the comparability of risk-weighted capital ratios, the Basel III framework will impose upon banks using internal models a floor requirement applied to their risk-weighted assets (Basel Committee on Banking Supervision, 2017, p. 137). The output floor will ensure that banks' capital requirements do not fall below a certain percentage of capital requirements derived under standardised approaches.

Does Regulation Necessarily Reduce Risk?

- Because of the maturity transformation performed by banks, they are always vulnerable to runs that can have ripple effects and trigger full blown contagion (Anginer & Demirguc-Kunt, 2018, p. 7). A common solution to this problem has been the introduction of deposit insurance schemes in various guises.
- Governments provide deposit insurance in the hope of reducing the risk of systemic failure of the financial system (Cull, Senbet, & Sorge, 2005, p. 44). The introduction of deposit insurance is presumed to stabilise the financial system by forestalling hasty fire-sale losses on assets that could bring down other banks and disrupt financial markets and the payments system.
- In Australia during the midst of the GFC in October 2008 when international interbank markets froze, the Commonwealth Government announced guarantee arrangements for deposits and wholesale borrowing for ADIs (Reserve Bank of Australia and Australian Prudential Regulation Authority, 2009, p. 1).
- It has been suggested that deposit insurance schemes improve the efficient management of the banking system by reducing systemic liquidity risk (Calomiris & Jaremski, 2016, p. 2).
- While government deposit insurance has proven very successful in protecting banks from runs, it does so at a cost because it leads to moral hazard (Santos, 2000, p. 8). By offering a guarantee that depositors are not subject to loss, the provider of deposit insurance bears the risk that the depositors would otherwise have borne.
- Aside from deposit insurance schemes that now more or less operate explicitly around the world, concerns have been raised in relation to the provision and potential impact of implicit government guarantees for particular banks.
- Part of the answer to minimising the prospect of moral hazard in relation to the provision of an implicit guarantee lies in keeping the likelihood of a bank rescue highly uncertain (Goodhart & Schoenmaker, 1995, p. 542). Such an approach has been dubbed as *constructive ambiguity*.
- Constructive ambiguity has been taken to mean that central banks reserve the right to intervene to preserve stability but give no assurances, explicit or implicit, to individual institutions (Crockett, 1997, p. 18). Such an approach is intended to make institutions act more prudently by making them uncertain whether they would in fact be rescued in the event of a crisis.
- It appears that constructive ambiguity has become standard practice for central banks around the world.
- However, a policy problem arises in the event of the failure of a SIFI and the subsequent contagion it envelops creates large negative spillovers. This situation creates a dilemma for policymakers, particularly at a time when the wider financial system is also under stress

(Dudley, 2013). At that point in time, the expected costs to society of failure are very large compared to the short-run costs from providing the extraordinary liquidity support, capital, or other emergency assistance necessary to prevent catastrophic failure.

- Concerns have been raised that constructive ambiguity may turn out to be a cloak for TBTF if the lender of last resort is more willing to take the risk of allowing a small institution to go under than a large one (Crockett, 1997, p. 18). Essentially, constructive ambiguity is fundamentally compromised by banks that are TBTF (Russell, 2010, p. 5).
- There is no shortage of evidence to suggest that TBTF banks are operating in Australia with an implicit government guarantee as the major rating agencies add an uplift to their credit ratings for the major banks due to the prospect of government support.
- While constructive ambiguity has been pursued in order to ameliorate the effects of moral hazard on the financial system, ironically the knowledge by a SIFI that they are TBTF encourages them to engage in excessive risk taking (Financial Stability Board, 2013, p. 2). While constructive ambiguity may ameliorate the moral hazard of smaller financial institutions, it appears to exacerbate moral hazard in relation to SIFIs that are TBTF.

Competition and Banking

- Competition is a process of rivalry between individuals or firms in the sale and purchase of goods and services (Murray, Davis, Dunn, Hewson, & McNamee, 2014, p. 2.3).
- The primary objective of competition policy is to promote economic efficiency which in turn boosts and stimulates economic growth.
- For merchants the retail price of a product they charge is brought into some kind of relationship with cost through the competitive process (Adelman, 1957, p. 266). Through this process, competition forces prices down towards the cost of production which enhances allocative efficiency.
- Competition promotes productive efficiency by forcing firms to cut their costs in order not to lose sales to more efficient rivals (Kolasky & Dick, 2003, p. 208). If firms cannot maintain productive efficiency with their rivals, they risk losing market share and possibly going out of business altogether.
- Competition also provides a spur for dynamic efficiency. Firms undertake innovation through research and development (R&D) to improve their competitiveness. R&D can help a firm lower its costs of production and/or produce better products giving it a competitive advantage over its rivals in the market place.
    - The benefits which firms seek to capture through R&D, namely lower costs, higher productivity and better products, if realised, will ultimately generate higher rates of economic growth.
- In banking competition can benefit consumers by improving choice, lowering borrowing rates and raising deposit rates (de-Ramon, Francis, & Straughan, 2018, p. 2).
- The basic building block of microeconomics is the theory of perfect competition which is essentially used as a benchmark by which to assess r*eal world* outcomes.
- Few, if any, markets are perfectly competitive and the key product markets within the Australian financial system are certainly not (Productivity Commission, 2018, p. 70). Given the extent to which the Australian financial system is regulated to maintain system stability and improve community outcomes, most markets in it will never be perfectly competitive.
- American economist John Maurice Clark (1940, p. 241) contended that the economic model of perfect competition was an inappropriate benchmark by which to assess real world outcomes because it "does not and cannot exist and has presumably never existed." Instead, Clark was the first to articulate the concept of workable competition, also known as effective competition.

- While it is not possible to attain the standard of perfect competition, it is still possible to achieve a level of workable competition, with market outcomes that tend more toward competitive outcomes than toward outcomes that would be likely under a monopoly structure (Productivity Commission, 2018, p. 70).
- The four systemically important major banks dominate banking in Australia.
- While the final report of the Murray Report found that competition was *generally adequate*, it warned the high concentration and steadily increasing vertical integration had the potential to limit the benefits of competition in the future.
- More recent assessments on the state of competition in Australian banking have found that the risks to competition posed by a high level of concentration in banking have in fact been realised and indeed come to fruition.
- The Productivity Commission (2018, p. 4) has observed that the four major banks dominate retail banking. In turn, the Productivity Commission (2018, pp. 10-11) has found that the risk to competition posed by the major banks has been realised in relation to poor competitive outcomes attained in the Australian financial system. In turn, the borrowers' of the major banks have been forced to endure higher interest rates as a consequence.
- While other ADIs have held themselves up as competitive alternatives to the major banks, the Productivity Commission (2018, p. 8) has expressed scepticism as to the extent of the competitive constraint imposed by other ADIs as they tend to follow the pricing decisions of the major banks.
- However, the Productivity Commission (2018, p. 8) has identified one group that has engaged in competitive pricing by offering lower home loan interest rates but who suffer from size and scale constraints in mutual ADIs.
- Mutual ADIs are able to offer lower home loan interests rates because their business model relies primarily on deposits, which are a cheaper source of funding, and also because they do not need to meet the expectations of shareholders in relation to return on equity (Productivity Commission, 2018, p. 110), unlike the major banks and the regional banks.

Prudential Regulation and Competition

- Section 8 of the *Australian Prudential Regulation Authority Act 1998* (Cwth) sets out the legislative purpose for establishing APRA. According to APRA (2014, p. 15), section 8 makes clear that APRA's primary purpose in exercising its prudential powers is to protect depositors and other members of the community holding financial promises issued by regulated financial institutions.
- Section 8(2) requires APRA to balance financial safety with efficiency, competition, contestability and competitive neutrality, subject to an overarching requirement to promote financial stability.
- Implicit within APRA's legislative charter is the notion that competition is a secondary consideration – along with the related concepts of efficiency, contestability and competitive neutrality – as something that can be traded off against financial safety and the overarching objective of promoting financial stability.
- The notion that APRA sees its role as engaging in a careful balancing act that seeks to preserve financial stability as an overarching objective while potentially trading off secondary objectives such as efficiency, competition, contestability and competitive neutrality raises the possibility it is susceptible to take the so-called *competition-fragility* view of banking in exercising its functions.
- Out of concern for stability, competition policy has not always been applied in the banking system (Vives, 2016).

- Concern that competition in the provision of financial services could lead to a situation where risk is underpriced and in turn institutions could fail with systemic consequences has given rise to the so-called *competition-fragility* view of banking whereby more competition erodes market power, decreases profit margins, and results in reduced franchise value – the market value of the banks beyond their book values (Berger, Klapper, & Turk-Ariss, 2009, p. 100). Competition in turn encourages banks to take on more risk in order to increase returns.
- Under the *competition-fragility* view of banking the accretion of market power is seen as desirable from standpoint of preserving stability in the financial system. As banks gain market power, their franchise value increases (Berger, Klapper, & Turk-Ariss, 2009, p. 103). Because franchise value represents intangible capital that will only be captured if the bank remains in business, such banks face high opportunity costs of going bankrupt and hence they become more reluctant to engage in risky activities. They tend to behave prudently by holding more equity capital, by holding less risky portfolios, and/or by originating a smaller loan portfolio.
- The *competition-fragility* view of banking has had enormous influence over the thinking of financial regulators and central bankers (Boyd & De Nicoló, 2005, pp. 1332-1333). There is also evidence to suggest that such attitudinal dispositions on the part of Australian financial regulators have had a deleterious impact on competition.
- APRA has made no secret of its intention to sacrifice competition in order to protect financial system stability in representations it made to the Productivity Commission inquiry into competition in the Australian financial system.
- However, the competition-fragility view of banking that purports that the exercise of market power leads to more stability in the financial system has not gone unchallenged.
- According Professor Dean Corbae from the University of Wisconsin and Professor Ross Levine from the University of California at Berkley (2018) policymakers can mitigate the fragility repercussions of lowering barriers to competition by tightening leverage (capital) requirements and enhancing bank governance.

1. Introduction

The Australian Prudential Regulation Authority (APRA) is expected to shortly release a draft revised capital framework for authorised deposit-taking institutions (ADIs). The draft revised capital framework will propose changes to the credit risk based capital requirements for ADIs using advanced and standardised approaches to the assessment of credit risk. This will have a profound impact on the level of competition between ADIs, especially in relation to the largest bank lending market – lending for residential mortgages. In light of this, Customer Owned Banking Association (COBA) has commissioned Pegasus Economics to examine the state of play on the interaction between prudential regulation and competition within the Australian financial system. It will consider the impacts on competition arising from prudential regulation, with a particular focus on lending for residential mortgages. It will build on and update the previous report Pegasus Economics undertook for COBA in 2017 (Davey, 2017), and provide recommendations to improve the level of competition between ADIs.

The views and opinions expressed in this report are entirely those of the author.

2. Nature of risk in the Banking System

2.1 What is risk?

Risk often appears ubiquitous in modern life (Haines, 2017, p. 181). From the moment we get up in the morning, drive or take public transportation to get to school or to work until we get back into our beds (and perhaps even afterwards), we are exposed to risks of different degrees (Damodaran, 2008, p. 3). At the more extreme end, we are inundated with news of terrorist attacks, environmental catastrophe and the emergence of diseases such as swine flu and Ebola, brought to us through a never-ending media stream (Haines, 2017, p. 181).

Risk is a fundamental concept for most scientific disciplines, but no consensus exists on how to define and interpret risk (Aven, 2011, p. 28). Given the ubiquity of risk in almost every human activity, it is surprising there is little consensus about the definition of risk (Damodaran, 2008, p. 5). Multiple definitions have evolved in multiple professions (Hubbard, 2009, p. 79).

According to Professor Terje Aven (2011, p. 29) of the University of Stavanger, there are three main categories through which to define risk:

(a) risk as a concept based on events, consequences and uncertainties
(b) risk as a modelled, quantitative concept
(c) risk descriptions.

Professor Aven (2011, p. 32) contends that if you are searching for widespread agreement on one definition then you have to look at those belonging to category (a) above. According to Professor Aven (2011, p. 36), risk is more than probabilities, probability distributions and expected values as the uncertainty dimension of risk extends beyond the probabilities.

Consistent with Professor Aven, the definition of risk we will adopt here is:

> *A state of uncertainty where some of the possibilities involve a loss, injury, catastrophe, or other undesirable outcome (i.e., something bad could happen). (Hubbard, 2009, p. 80)*

This definition is in accord with the common usage of the term that refers to any sort of uncertainty viewed from the standpoint of the unfavourable contingency (Knight, 1964, p. 233). For risk managers and the regulators of banks, risk refers to the uncertainty of outcomes and to the negative consequences that it may have on a firm, and both aim at enhancing the resiliency of firms to adverse situations (Bessis, 2015, p. 1).

2.2 The Nature of Banking and its Risks

Banks are known as *financial intermediaries*. The term *intermediary* reflects the nature of a bank as standing in the middle of two groups – savers and borrowers. Banks are businesses specialising in the pooling of savings and then distributing those funds to people who use the money to build homes or create businesses. They are central to the role of getting money from savers to borrowers – the core function of a financial system.

A bank typically engages in three main activities: providing transaction services to households and corporations primarily through deposit accounts; extending credit; and trading and investment banking (Hughes & Manning, 2015, p. 68).

In Australia, the provision of banking services is dominated by four banks: the Australian and New Zealand Banking Corporation (ANZ), the Commonwealth Bank of Australia (CBA), the National Australia Bank (NAB), and Westpac Banking Corporation (Westpac). They will be collectively referred to as the major banks.

Promises form the basis of the financial system (Carruthers & Kim, 2011, p. 240). One party promises to pay a sum of money to another. Much financial activity involves, one way or another, the design, production, distribution, evaluation, acceptance (or rejection), enforcement, and modification of promises. Promises can be simple or complex. A simple loan involves money paid at one point in time, in exchange for a promise to repay the money (plus interest) later on.

The financial system provides the framework within which these promises are created and exchanged (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 179). Unlike the markets for most other goods and services, the exchange of many financial contracts takes into account both the explicit contractual promise and the varying risk that the promise will not be kept. Identifying, allocating and pricing risk is a key role of the financial system.

Modern banking holds out two promises (Levitin, 2016, p. 359). First, banks promise safekeeping of and ready access to depositors' funds – the deposit function. The taking of deposits is what makes a bank a bank (Levitin, 2016, p. 366). The deposit function is about the protection of value. Bank deposits are simply a record of how much the bank itself owes its customers, hence they are a liability of the bank, not an asset (McLeay, Radia, & Thomas, 2014, p. 16). Before an entity can accepts deposits from the public in Australia, it must be authorised under the *Banking Act 1959* (Cwth) by the Australian Prudential Regulation Authority (APRA) – hence the term authorised deposit-taking institutions (ADIs).

Excluding equity, around one-third of Australian major banks' funding is sourced from retail deposits from households and small- to medium-sized businesses (Black & Titkov, 2019, p. 3). Another third of non-equity funding is sourced from wholesale deposits, such as those from large corporations, pension funds and the government. Short and long-term wholesale debt account for most of the remaining third of funding.

Consumers and businesses also like to have ready access to their deposit funds (Levitin, 2016, p. 367). Because withdrawals are typically for the purpose of transferring funds to third parties, consumers and businesses also want payment services linked to their deposits. Associated with deposit-taking is the provision of a range of payment services such as the provision of cash through over-the-counter withdrawals at a bank branch or automatic teller machines (ATMs), and electronic payments such as through credit cards and internet banking.

Second, banks also promise to be a ready source of funding for borrowers – the lending function (Levitin, 2016, p. 359). The lending function is not necessarily unique to banks as anyone can provide lending (Levitin, 2016, p. 367). However, banks specialise in providing funding, which they do in the form of loans. Bank deposits are the major source of funding for bank lending.

Banks often also provide trading, investment banking and agency services to clients, intermediating access to capital markets for both issuers and investors (e.g. through origination, underwriting, market-making and brokerage activities) (Hughes & Manning, 2015, pp. 68-69).

The promises created by the banking system means that banks face a number of risks in managing their activities, the most significant of which are described below.

2.2.1 Credit Risk

The lending function of banks gives rise to the most basic risk in the banking system which is credit risk. Associated with providing loans is the credit risk that some borrowers will experience financial difficulties and will not be able to repay their loans in full, so causing the bank to experience some bad debt losses (Allan, Booth, Verrall, & Walsh, 1998, p. 709). As such, credit risk is the risk of losses arising from a borrower or counterparty failing to meet its obligations to pay as they fall due (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 9).

Credit risk is related to 'creditworthiness' and whether or not a person or institution making a financial promise can be trusted to keep it (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 181). Creditworthiness depends on the honesty, financial standing and operational systems of the promisor.

The failure to meet a financial promise is quite common in any market economy and there is an inevitable presumption that some loans will fail from time to time (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1996, pp. 95-96). As credit risk materialises and borrowers fail to make repayments, banks are forced to recognise the reduction in current and future cash inflows this represents (Rodgers, 2015, p. 1). These credit losses reduce a bank's profitability and can affect capital.

2.2.2 Underlying Fragility in Banking, Liquidity Risk, Market Risk and Solvency Risk

The institutional combination of deposit-taking and lending is known as *fractional reserve banking*, because only a fraction of deposits are retained as reserves; the rest are reloaned (Levitin, 2016, p. 359).

Banks transform short-term liabilities (deposits) into longer-term liabilities (loans) for their borrowers as being able to obtain loans with appropriate maturities is critical for borrowers (Levitin, 2016, p. 428). If a maturity is too short, a borrower might not be able to repay a loan and will be dependent on being able to refinance the obligation. Banks' promises of redemption of deposits on demand mean they are able to engage in maturity transformation – lending long-term against short-term liabilities.

This means that banks hold assets, such as loans, that extend over several years and cannot be easily sold during this time, and they borrow by taking deposits that can be withdrawn at short notice, whenever the depositors want to make payments or to get cash (Admati & Hellwig, 2013, p. 51). As a consequence, there is a fundamental mismatch between the two sides of banks' balance sheets. Banks rely on depositors not seeking to redeem their holdings en masse which is generally the case.

This is the root cause of an underlying fragility in banking in that there is a coordination problem with investors, who may decide to call-back their short-term deposits and make a bank that is solvent fail (Vives, 2010, p. 13). Because some of the money that banks loan out is depositors' funds rather than the bank's own equity capital, banks have always been fragile and prone to trouble (Admati & Hellwig, 2013, p. 148).

The process of maturity transformation is inherently risky for if depositors withdraw their funds en masse and/or other short term funding is not renewed, and if the long-term loans cannot easily

be converted into cash, a bank may run into potentially serious liquidity problems (Admati & Hellwig, 2013, p. 52).[1]

The maturity transformation performed by banks leaves them vulnerable to a liquidity risk. Liquidity risk is broadly defined as the risk of not being able to raise cash when needed (Bessis, 2015, p. 3). Banks are highly focused on the problems of having insufficient liquid assets to compensate the cash needs or withdrawals from depositors and loan demands (Türsoy, 2018, p. 5). Faced with liquidity problems, the banks need to borrow funds immediately with extra cost in order to meet their cash needs. This kind of funding is usually done by the lender of last resort LOLR or interbank markets.

If depositors seek to redeem their holdings en masse, a bank run ensues. Traditional bank runs involve massive withdrawals by individual depositors queuing at the door of banks (Vives, 2016, p. 106). In the early 1990s in Australia, there were a number of traditional bank runs on some financial institutions, including a couple of banks (Bank of Melbourne and Metway Bank) (Gizycki & Lowe, 2000, p. 183). In general, these runs were stopped by public sector intervention. Modern bank runs are typically the outcome of the nonrenewal of short-term credit in the interbank market or of certificates of deposit by large wholesale investors (Vives, 2010, p. 106)

Vulnerability to runs may appear to be a necessary consequence of the promise banks make to depositors that they can get at their money whenever they wish (Admati & Hellwig, 2013, p. 150). This promise exposes banks to the risk that all depositors might want their money at the same time. A solvent bank may be victim of purely speculative panic, with depositors withdrawing their funds, and the bank being forced to quickly liquidate assets and incurring a fire sale penalty (Vives, 2016, p. 38).

Market risk is the risk of losses due to adverse market movements depressing the value of the positions held by market players (Bessis, 2015, p. 3). For banks market risks arise from:

- the risks pertaining to interest rate related instruments and equities in the trading book
- foreign exchange risk and commodities risk throughout the bank (Basel Committee on Banking Supervision, 2006, p. 157)..

The solvency risk is the risk that a bank cannot meet maturing obligations because it has a negative net worth; that is, the value of its assets is smaller than the amount of its liabilities (Almarzoqi, Naceur, & Scopelliti, 2015, p. 11). This may happen when a bank suffers some losses from its assets because of the write-offs on securities, loans, or other bank activities, but then the capital base of the institution is not sufficient to cover those losses. In such a case, the bank unable to meet its obligations defaults and loses its franchise value. In order to avoid such risk, banks need to keep an adequate buffer of capital, so that in case of losses, the bank can reduce capital accordingly and remain solvent. Most bank runs are triggered by negative information about a bank's solvency (Admati & Hellwig, 2013, p. 52).

2.2.3 Systemic Risk and Contagion

A run on a bank can lead to contagion and a systemic problem within the financial system. The Organisation for Economic Co-operation and Development (OECD) (2011, p. 20) has summed up the problem in the following terms:

> *.. the financial system can become unstable, largely because banks, funded in large part by withdrawal-on-demand liabilities and holding longer term risky*

[1] Liquidity refers to how easily one can turn assets into cash.

> *assets, are themselves inherently unstable, and that instability can generate sizeable negative spill-over effects.*[2]

There is no consensus definition of systemic risk, but a reasonable working definition is that it is the risk of financial system disruption so widespread or severe that it causes, or is likely to cause, material damage to the economy (Reserve Bank of Australia, 2014, p. 73). A more comprehensive definition comes from Professor Steven Schwarcz (2008, p. 204) of Duke University:

> *Systemic risk is the risk that (i) an economic shock such as market or institutional failure triggers (through a panic or otherwise) either (X) the failure of a chain of markets or institutions or (Y) a chain of significant losses to financial institutions, (ii) resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility.*

The disruptions associated with a systemic risk materialising can have significant implications for employment, wages, prices and activity, including for people and firms outside of the financial system (Reserve Bank of Australia, 2014, p. 73). Systemic risk and financial system disruptions can impose large negative spillovers across the entire economy because of the central position of the financial system in a monetary economy (Vives, 2016, pp. 41-42).

Systemic risk needs to be distinguished from downturns that are caused by normal market swings (Schwarcz, 2008, p. 204). Although these downturns are sometimes conflated with systemic risk, they are more appropriately labelled *systematic risk* in that the associated risk cannot be diversified away and therefore affects most, if not all, market participants.

Some banks may contribute more to systemic risk than others (Vives, 2016, p. 42). Large banks are of particular importance because their failure could pose significant risks to other financial institutions and the financial system as a whole (Moch, 2013, p. 2908).

The Financial Stability Board (2013, p. 2) has defined systemically important financial institutions (SIFIs) as those of such size, market importance and interconnectedness that their distress or failure would cause significant dislocation in the financial system and adverse economic consequences. The *too-big-to-fail* (TBTF) problem arises when the threatened failure of a SIFI leaves public authorities with no option but to bail it out using public funds to avoid financial instability and economic damage.

The International Monetary Fund, the Bank for International Settlements and the Financial Stability Board has previously adopted three main categories for their assessment criteria for determining SIFIs:

- Size: The importance of a single component for the working of the financial system generally increases with the amount of financial services that the component provides.
- Lack of substitutability: The systemic importance of a single component increases in cases where it is difficult for other components of the system to provide the same or similar services in the event of a failure.
- Interconnectedness: Systemic risk can arise through direct and indirect interlinkages between the components of the financial system so that individual failure or malfunction has repercussions around the financial system, leading to a reduction in the aggregate amount of services. (Staff of the International Monetary Fund and the Bank for International Settlements, and the Secretariat of the Financial Stability Board, 2009, p. 9)

[2] Spillovers, also known as externalities (external costs), occur when participants in an activity do not necessarily bear all of the costs or reap all of the benefits from an activity

In defining a global systemically important bank (G-SIB), the Basel Committee on Banking Supervision (Basel Committee) (2018, p. 6) has added another two categories to the above assessment criteria:

- Global (cross-jurisdictional) activity: The idea is that the international impact of a bank's distress or failure would vary in line with its share of cross-jurisdictional assets and liabilities. The greater a bank's global reach, the more difficult it is to coordinate its resolution and the more widespread the spillover effects from its failure.
- Complexity: The systemic impact of a bank's distress or failure is expected to be positively related to its overall complexity – that is, its business, structural and operational complexity. The more complex a bank is, the greater the costs and time needed to resolve the bank.

No Australian bank have been designated as a G-SIB, however, the TBTF problem is not just isolated to G-SIBs as it is also relevant in the case of domestically systemically important banks (D-SIBs). The Basel Committee (2012, p. 3) has suggested the impact of a D-SIB's failure on the domestic economy should be assessed as having regard to: (a) size; (b) interconnectedness; (c) substitutability/financial institution infrastructure (including considerations related to the concentrated nature of the banking sector); and (d) complexity (including the additional complexities from cross-border activity). Essentially the same assessment criteria as G-SIBs with the exception of global activity.

The Peer Review of Australia by the Financial Stability Board (2011, p. 19) concluded the four major banks were SIFIs and that their size and nature of activities meant that they could pose systemic and moral hazard risks in Australia. Similarly, APRA (2013) has designated the major banks operating as D-SIBs:

> *APRA's assessment methodology has regard to the Basel Committee's four key indicators of systemic importance: size, interconnectedness, substitutability and complexity. Based on its assessment of these indicators, APRA has determined that the following authorised deposit-taking institutions are D-SIBs:*
>
> *Australia and New Zealand Banking Corporation*
>
> *Commonwealth Bank of Australia*
>
> *National Australia Bank*
>
> *Westpac Banking Corporation.*

The Reserve Bank of Australia (RBA) (2014, p. 73) has also commented:

> *The four major banks are important sources of systemic risk in Australia because of their size and interconnections with the real economy and the rest of the financial system.*

The high level of concentration within the Australian banking sector has exacerbated the problem of systemic risk within the Australian financial system, as outlined in the final report of the 2014 Financial System Inquiry (Murray Report):

> *… the banking sector is concentrated, with the four major banks being the largest players in virtually all respects. This concentration, combined with the predominance of similar business models focused on housing lending, exacerbates the risk that a problem at one institution could cause issues for the sector and financial system as a whole. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 34)*

Contagion risk refers to the risk that financial difficulties at one or more banks spill over to large number of banks or the financial system as a whole (Schoenmaker, 1996). Within a contagion, there is a mechanism for transmission from one infected entity to another (Kolb, 2011, p. 3). According to Amil Dasgupta (2004, pp. 1049-1050) from the London School of Economics, there are two broad classes of transmission mechanisms of contagion in an economy:

- adverse information that precipitates a crisis at one institution also implies adverse information about another
- financial institutions are often linked to each other through direct portfolio or balance sheet connections.

Contagion can occur even in the absence of direct exposures as a change in behaviour or sentiment is sufficient (D'Hulster, 2017, p. 5). In this case, confidence in the financial system can evaporate altogether, causing contagion to spread from distressed institutions to the rest of the financial system (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 5).

Banks can impose great harm on society (Admati & Hellwig, 2013, p. 78). If a large bank fails, the contagion effects can be disastrous. The costs of not letting it fail can also be very large. If banks are kept going even though they are distressed or insolvent, the rest of the economy may still suffer because distressed banks tend to make poor lending decisions, which may restrict innovations and growth. If banks expect to be bailed out, the situation is that much worse because bankers may be induced to take more risk, which will increase the likelihood that their distress and insolvency will damage the rest of the economy.

Before 2007, banking crises tended to be limited in scope, and most of them did not cross national boundaries, and as such contagion did not play much of a role (Admati & Hellwig, 2013, p. 65). However, that changed with the onset of the global financial crisis (GFC) between mid 2007 and early 2009 where contagion in the financial system played a much greater role.

2.2.4 Operational and Reputational Risk

Operational risks are those of malfunctions of the information system, of reporting systems, of internal risk monitoring rules, and of procedures designed to take corrective actions on a timely basis (Bessis, 2015, p. 4). According to the Basel Committee (2006, p. 144), operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.

Potential sources of operational risk include:

- human processing errors (e.g., mishandling of software applications, reports containing incomplete information, or payments made to incorrect parties without recovery)
- human decision errors (e.g., unnecessary rejection of a profitable trade or wrong trading strategy due to incomplete information)
- (software or hardware) system errors (e.g., data delivery or data import is not executed properly, and the software system performs calculations and generates reports based on incomplete data)
- process design error (e.g., workflows with ambiguously defined process steps)
- fraud and theft (e.g., unauthorized actions or credit card fraud)
- external damages (e.g., fire or earthquake) (Kühn & Neu, 2003).

Unauthorised trading may be the best-known type of loss associated with operational risk, having caused numerous financial scandals including the failure of Barings Bank in 1995 (de Fontnouvelle, Dejesus-Rueff, Jordan, & Rosengren, 2006, p. 1819).

The importance of understanding and measuring operational risk is heightened by the fact that an operational event's impact frequently extends well beyond the bank where the loss occurs (de

Fontnouvelle, Dejesus-Rueff, Jordan, & Rosengren, 2006, p. 1820). Customers may be affected if the operational event involves deceptive sales practices or a breach of fiduciary duties.

Problems with operational risk have afflicted Australia's largest bank in CBA (Laker, Broadbent, & Samuel, 2018). The Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry has also highlight operational risks and failures amongst the major banks (Hayne, 2019).

Operational events can also have consequences beyond their direct financial impact. For example, an operational event may damage a firm's reputation if it is seen as an indicator of weak controls or ethical lapses (de Fontnouvelle, Dejesus-Rueff, Jordan, & Rosengren, 2006, p. 1820).

Reputational risk is the risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debt-holders, market analysts, other relevant parties or regulators that can adversely affect a bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding (eg through the interbank or securitisation markets) (Basel Committee on Banking Supervision, 2009, p. 19). Reputational risk is multidimensional and reflects the perception of other market participants. Furthermore, it exists throughout the organisation and exposure to reputational risk is essentially a function of the adequacy of the bank's internal risk management processes, as well as the manner and efficiency with which management responds to external influences on bank-related transactions.

The Group of Thirty (2015, p. 11) has highlighted reputational risk in regard to large banks around the world:

> *Unhealthy cultural norms, or subcultures within large banks, including in some cases criminal behaviour, have hurt the public, caused reputational damage and loss of public trust, and have been financially costly in terms of fines, litigation, and regulatory action; economically costly to society at large; and have been a major distraction for both senior management and boards.*

Reputational risk has also come to the fore in Australia during the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry. The Royal Commission highlighted that very large reputational consequences were now being seen in the banking industry (Hayne, 2019, p. 15). Following the release of the interim Royal Commission report, Fitch Ratings (2019) observed:

> *… the major banks will continue to face elevated reputational risk, which could erode their strong franchises.*

2.2.5 Concentration Risk

Concentration risk in a financial institution's portfolio is the risk arises from an excessive exposure to a single sector or to several highly correlated sectors (i.e. 'sector concentration') as well as from an excessive exposure to certain names (which is often referred to as 'name concentration' or 'granularity') (Düllmann & Masschelein, 2006). Name concentration happens when the idiosyncratic risk cannot be perfectly diversified due to large (relative to the size of the portfolio) exposures to individual borrowers (Grippa & Gornicka, 2016, p. 4). Idiosyncratic risk represents the effects of risks that are particular to individual borrowers (Basel Committee on Banking Supervision, 2006a, p. 4). Sector concentration emerges when the portfolio is not perfectly diversified across sectoral factors, corresponding to systematic components of risk (Grippa & Gornicka, 2016, p. 4). According to the Basel Committee (2006a, p. 3):

> *Historical experience shows that concentration of credit risk in asset portfolios has been one of the major causes of bank distress. This is true both for individual institutions as well as banking systems at large.*

A housing crisis combined with concentrated mortgage portfolios was a major contributing factor to the GFC (Grippa & Gornicka, 2016, p. 4).

Lending secured by mortgages over residential property (residential mortgage lending) constitutes the largest credit exposure in the Australian banking system, and for many ADIs constitutes over half their total credit exposures (Australian Prudential Regulation Authority, 2014a, p. 7). According to APRA this concentration of exposure warrants ADIs paying particular attention to residential mortgage lending practices.

3. Managing Risk in the Financial System

3.1 Risk Management by Banks

The management of risks are a major activity of banks (Freixas & Rochet, 1997, p. 221). As such, banks engage in a range of risk management strategies in order to manage and mitigate the risks they face.

Arguably the most critical of all risk management tasks for banks is assessing and managing credit risk. One of the major cause of serious banking problems has always been lax credit standards for borrowers and counterparties (Basel Committee on Banking Supervision, 2000, p. 1).

Assessing the creditworthiness of borrowers is a specialised task which can consume considerable resources, time and expertise (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 182). It can be undertaken within a financial institution or outsourced to specialist firms, such as a ratings agency. The difficulty of assessing credit risk is exacerbated by information asymmetry whereby the borrower may have a better understanding of the risk associated with their intended investment than does the lender.

In assessing loan applications, a bank must try to assess the default risk of any borrower by using some measure of financial strength of the applicant as well as taking a view on economic conditions in the near future (Allan, Booth, Verrall, & Walsh, 1998, p. 710). A bank can then choose to decline a request for a loan, or, if the request is acceptable, must decide at what level to set two key parameters: the interest rate charged on the loan; and the amount of capital set aside to back the loan. Capital is required to protect a bank against insolvency in the event of the assets declining in value (Allan, Booth, Verrall, & Walsh, 1998, p. 709). The capital will be made up of equity and debt capital.

However, careless lending can occurs if bankers do not have the right incentives to engage in due diligence when making loans (Admati & Hellwig, 2013, p. 56). In real estate lending, a boom may actually feed on itself, because rising house prices make bankers feel safer in lending and induce them to lend more, allowing home buyers to bid up prices even more until the *bubble* bursts.

In targeted reviews undertaken by APRA in 2016 and 2017, it identified a number of deficiencies in the processes that banks used to verify borrower expenses, including insufficient controls to verify information and a significant rate of default to the Household Expenditure Measure (HEM) (Hayne, 2019, p. 55).[3] Subsequently, CBA, ANZ and Westpac have all made changes introducing additional inquiries about a borrower's financial situation and by taking some further steps to verify that situation.

It appears to be the case that banks have excessive incentives to take risk in the presence of limited liability for shareholders and also for managers due to contracts that limit their downside and moral hazard due to non-observable risk positions on the asset side (Vives, 2016, p. 109). Limited liability refers to a widespread legal principle that limits the accountability of shareholders-owners for the

[3] A measure of what families spend on different types of household items, calculated quarterly by the Melbourne Institute of Applied Economic and Social Research (Hayne, 2019, p. xxv).

debts of their companies to the current value of their shareholding (Blankenburg, Plesch, & Wilkinson, 2010, p. 823). For any amount beyond their investment, shareholder-owners are exempt from any claims by creditors whatever the cause of their company's indebtedness. Limited liability creates incentives for firms to take excessive risk because owners do not incur the full cost; instead the risk is largely borne by creditors (Acheson, Hickson, & Turner, 2010, p. 248).

The 2008 Nobel Laureate for economic Paul Krugman (2009, p. 63) has described moral hazard "as any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly." Moral hazard infers a disposition on the part of individuals or organisations to engage in riskier behaviour, than they otherwise would, because of a tacit assumption that someone else will bear the costs and consequences if the incurred risk turns out badly (Wolf, 1999, p. 60). The inadequate control of moral hazards often leads to socially excessive risk taking (Dowd, 2009, p. 143).

The problem of excessive risk taking is particularly acute for banks close to insolvency and/or bankruptcy (Vives, 2016, p. 109). When the equity base is low, limited liability effectively truncates the probability distributions of income among which a bank can choose and thus creates an artificial type of risk-loving behaviour, which has been called a gamble for resurrection or resuscitation (Sinn, 2003, p. 307).[4]

A bank close to insolvency or bankruptcy can increase neither its market share nor its profits by taking more risk in a well-informed market because investors will discount it and will demand compensation (Vives, 2016, p. 109). However, adverse selection can occur in banking markets due to a lack of information when consumers looking to deposit their savings are unable to assess the credit worthiness of a financial institution.

Most entities are incapable of discerning the risk of default by banks because they cannot easily observe or interpret the amount of capital held by banks or the riskiness of loan portfolios or risk management practices (Wylie, 2009, p. 6). Entities that place deposits with a bank that offers the highest deposit interest rate could potentially choose the bank that has the lowest amount of shareholder capital and riskiest loan portfolio, and in turn the bank that can afford the highest deposit rates (Wylie, 2009, p. 7). Being unable to differentiate the quality of banks ensures an entity is likely to make a selection from the competing banks that is adverse to their interests.

While it has been suggested that limited liability in banking shifts some of the costs of monitoring managers onto creditors, this is a completely unrealistic proposition given the opaque nature of bank assets, the free-rider problem, and high depositor risk-aversion imply that depositor monitoring is unlikely to constrain managerial opportunism in the banking industry (Acheson & Turner, 2006, p. 327).

According to the Governor of the RBA, Dr Philip Lowe (2008, p. 88):

> *It is all too clear that most episodes of financial disturbances have their roots in the build-up of risk in good times.*

In turn, when things turn bad in a downturn, the risk built up in the good times quickly crystallises (Lowe, 2008, p. 88).

As the chance that a weak bank will recover dwindles, its managers have strong incentives to either gamble for resurrection or grab something for themselves before the bank fails (Chen & Hasan, 2011, p. 1048). This is a serious real world problem and motivates many countries, including Australia, to require regulators to take prompt corrective actions when banks' financial conditions deteriorate.

[4] The gamble for resurrection has also been referred to as "zombie lending," "evergreening," "forbearance lending," or "extending and pretending" (Bruche & Llobet, 2014, p. 923).

3.2 Risk Management Through Prudential Supervision

Traditional economic theory suggests there are three main reasons to regulate:

1. to constrain the use of monopoly power and the prevention of serious distortions to competition and the maintenance of market integrity
2. to protect the essential needs of ordinary people in cases where information is hard or costly to obtain, and mistakes could devastate welfare
3. where there are sufficient externalities that the social, and overall, costs of market failure exceed both the private costs of failure and the extra costs of regulation (Brunnermeier, Crocket, Goodhart, Persaud, & Shin, 2009, p. 2).

The first reason has not often featured prominently in the regulation of the financial sector. The second reason has come to mean that bank deposits have become implicitly, or explicitly, fully insured and guaranteed, at least up to some upper limit (Brunnermeier, Crocket, Goodhart, Persaud, & Shin, 2009, p. 2) and is dealt with in more detail below in subsection 4.1. Reason 3 is by far the most important reason why banks need regulation.

Banking markets intensively display the whole array of classical market failures: externalities (fragility with coordination problems and contagion), asymmetric information (both between customer and bank and between firm and bank, with moral hazard and adverse selection generating excessive risk taking), and market power (e.g., because of the presence of switching costs) (Vives, 2016, p. 47). This has led to regulation in order to protect the system and the small investor. Biases in consumer behaviour and cognitive limitations of investors have added another reason for regulation in order to protect the small investor as well as the system.

The regulatory objective of prudential regulation over the financial system is to reduce risk (Productivity Commission, 2018, p. 14). Prudential regulation of the banking system focuses on ensuring that individual financial institutions are able to withstand external shocks and can continue to meet their obligations to depositors that in turn supports the resilience of the banking system as a whole (Productivity Commission, 2018, p. 63).

The basic underlying objective of prudential regulation is to increase the probability of a promise being honoured, and since this relates to the creditworthiness of the promiser, it follows that the focus of regulation must be on the promising entity (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 303). Institutions offering payment services or conducting the general business of deposit taking are clear candidates for prudential regulation (Wallis, Beerworth, Carmichael, Harper, & Nicholls, 1997, p. 304). The nature of deposit taking, particularly the transformation of illiquid assets into liquid liabilities, the information asymmetry for depositors and the fact that institutional failure has the potential to cause systemic instability, warrants intense prudential regulation.

APRA is responsible for prudential supervision of the Australian financial system. APRA is an integrated prudential regulator responsible for ADIs.

Section 8 of the *Australian Prudential Regulation Authority Act 1998* (Cwth) sets out the legislative purpose for establishing APRA. Section 8 makes clear that APRA's primary purpose in exercising its prudential powers is to protect depositors and other members of the community holding financial promises issued by regulated financial institutions (Australian Prudential Regulation Authority, 2014, p. 15).

Deposit-taking institutions are regulated by APRA under a single licencing regime and are all covered by the same *depositor protection* provisions of the *Banking Act 1959* (Cwth). This legislation gives APRA the power to act in the interests of depositors, including revoking licences, making prudential standards or issuing enforceable directions, to appoint an investigator or statutory manager to an ADI in difficulty or take direct control of the institution itself. If the difficulties prove intractable, APRA can apply to the courts to wind-up an ADI.

Under the *depositor protection* provisions of the *Banking Act 1959*, depositors have first claim to the assets of an ADI in a wind-up. To support depositors' interests, all ADIs are required to hold assets in Australia at least equal to their deposit liabilities in Australia.

3.2.1 Existing regulatory framework

Capital is one of the most important concepts in banking (Elliott, 2010, p. 3). In its simplest form, capital represents the portion of a bank's assets which have no associated contractual commitment for repayment. It is, therefore, available as a cushion in case the value of the bank's assets declines or its liabilities rise. Banks attempt to hold the minimum level of capital that supplies adequate protection, since capital is expensive, but all parties recognise the need for such a cushion even when they debate the right amount or form. A bank's capital essentially represents its ability to withstand losses without becoming insolvent (Gorajek & Turner, 2010, p. 43).

The Basel Committee (2016), which is headquartered at the Bank for International Settlements at Basel in Switzerland, was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervisory matters.

In 1988 the Basel Capital Accord (now referred to as Basel I) was approved by the Basel Committee and set capital requirements for banks in proportion to risk metrics referred to as *risk weights*. Initially these risk weights were set by regulators (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 2). According to Basel I:

> *Two fundamental objectives lie at the heart of the Committee's work on regulatory convergence. These are, firstly, that the new framework should serve to strengthen the soundness and stability of the international banking system; and secondly that the* ***framework should be in fair and have a high degree of consistency in its application to banks in different countries with a view to diminishing an existing source of competitive inequality among international banks****. (Basel Committee on Banking Supervision, 1988)*[5]

Basel I stipulated that banks should hold minimum capital in the amount of eight per cent of their risk-weighted assets (Düllmann & Masschelein, 2006). Under Basel I, loans secured by residential mortgages were assigned a risk weight of 50 per cent, whereas all other loans were given a risk weight of 100 per cent (Terry, 2009, p. 26).

Basel I gave banks the ability to control the amount of capital they required by shifting between assets with different weights on the balance sheet, and by securitising assets and shifting them off balance sheet (Blundell-Wignall, Atkinson, & Roulet, 2014, p. 53). Banks quickly accumulated capital well in excess of the regulatory minimum, and capital requirements, in effect, had no constraining impact on banks' risk taking.

To link capital more closely to banks' own risk estimates, the Basel II agreement in 2004 made provision for some banks to use their own internal models to calculate risk weights (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 2). Basel III was agreed in 2010 amid growing concerns about the operation of risk weights.

The core of the Basel rules on capital reflects a belief that the necessary level of capital depends primarily on the riskiness of a bank's assets (Elliott, 2010, p. 4). Since capital exists to protect against risk, more capital is required to be held when greater risks are being taken.

[5] Emphasis added by the author of this report.

The Basel Capital Accord has been applied to Australian banks since 1988 (Australian Prudential Regulation Authority, 2014, p. 39). APRA implemented the Basel II agreement at the beginning of 2008 and has been progressively implementing the Basel III agreement since 2013.

There are three 'Pillars' of the Basel II framework: Pillar 1 sets out minimum capital requirements to address credit, operational and market risk; Pillar 2 outlines the supervisory review process (including supervisory discretion to set higher capital requirements where necessary); and Pillar 3 seeks to impose market discipline through disclosure requirements.

An Australian bank's regulatory capital is the sum of its 'Tier 1' and 'Tier 2' capital, net of all specified 'deductions' (Gorajek & Turner, 2010, p. 43). Tier 1 capital consists of the funding sources to which a bank can most freely allocate losses without triggering bankruptcy. This includes, for example, ordinary shares and retained earnings, which make up most of the Tier 1 capital held by Australian banks. Tier 2 capital is made up of funding sources that rank below a bank's depositors and other senior creditors, but in many cases are only effective at absorbing losses when a bank is being wound up (Gorajek & Turner, 2010, p. 44). In this way, Tier 2 capital provides depositors with an additional layer of loss protection after a bank's Tier 1 capital is exhausted. Both Tier 1 and Tier 2 capital are measured net of deductions, which are adjustments for factors that lessen the loss absorption capabilities of capital.

The Reserve Bank of New Zealand (2019, p. 10) has characterised Tier 1 capital as *going concern* capital and Tier 2 capital as *gone-concern* capital. When the loss occurs, the value of the bank's going-concern capital absorbs the loss and falls in value. On the other hand, unlike going-concern capital, the value of gone-concern will typically only absorb losses once the bank is close to insolvency (i.e. there is no value in Tier 1 capital left to absorb losses) and it is being wound up.

For capital adequacy purposes, Australian banks are required to quantify their credit, market and operational risks (Gorajek & Turner, 2010, p. 44). The most significant risk of these is typically credit risk. Credit risk is measured as the risk-weighted sum of a bank's individual credit exposures, which gives rise to a metric called *risk-weighted assets*.

Under the Basel II agreement, there were three methods for calculating minimum capital requirements:

1. the standardised (externally set) risk weights
2. foundation internal ratings basis (FIRB)
3. advanced internal ratings basis (AIRB) (Terry, 2009, p. 27).

Under the standardised approach, the risk weights are prescribed by APRA and are generally based on directly observable characteristics of each exposure (Gorajek & Turner, 2010, p. 44). For example, if a residential mortgage has a loan-to-valuation ratio of 70 per cent, full documentation and no mortgage insurance, APRA specifies a risk weight of 35 per cent. The value of the loans in each category is multiplied by the prescribed risk weight and the product is multiplied by 8 per cent to determine the minimum capital requirement (Terry, 2009, p. 27). Corporate exposure risk weights are based on external credit ratings and are generally higher than for residential mortgages because the exposures are usually riskier (Gorajek & Turner, 2010, p. 45).

APRA (2007, p. 3) has categorised the FIRB and AIRB methods as advanced approaches which rely on an ADI's own internal risk-assessment and measurement methodologies. The FIRB method uses internal estimates of the probability of loan defaults (PD) and feeds this into a more complex probability-based formula (that relies on the supervisor's estimates of the other risk components) to determine the risk weight to be used to calculate the amount of capital to be held against the loan (Terry, 2009, p. 28). The AIRB method uses internal estimates of loss given default (LGD) and the other risk components (effective maturity and the exposure at default) in a prescribed formula to determine the risk weight and hence the capital charge against a loan.

Three banks, CBA, Westpac and ANZ, were initially given approval to use the AIRB method from January 2008 while NAB was given permission to use the FIRB (Terry, 2009, p. 29). NAB (2008) subsequently received approval to use AIRB as from 1 July 2008. Macquarie Bank (2007) also received accreditation for FIRB in December 2007. In March 2018 ING Bank also received approval from APRA (2018a) to use internal models to determine capital requirements for credit and market risk. ING Bank (2018, p. 1) uses AIRB method for residential mortgages and the FIRB method for other types of loans on its books.

In December 2013 APRA (2013) announced its decision to impose an additional capital charge of 1 per cent (referred to as the higher loss absorbency (HLA) capital requirement) on Australia's major bank D-SIBs . According to the APRA (2013) media release:

> *Based on a range of considerations, APRA has determined that a one per cent HLA requirement will apply to the four D-SIBs. This must be met by Common Equity Tier 1 capital and will be implemented as an extension of the capital conservation buffer as defined in Prudential Standard APS 110 Capital Adequacy.*
>
> *The D-SIB framework will come into effect from 1 January 2016.*

In response to recommendation 2 from the Murray Report, in July 2015 APRA (2015) announced that it would raise the risk weights on banks using internal rating basis (IRB) methods to at least 25 per cent, at the lowest end of the range suggested by the Murray Report.

Recommendation 1 from the Murray Report was for:

> *Set capital standards such that Australian authorised deposit-taking institution capital ratios are unquestionably strong. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 41)*

In response to the Murray Report recommendation 1, in July 2017 APRA (2017c) announced

> *For ADIs that use the internal ratings-based approach to credit risk, APRA has concluded that it is necessary to raise minimum capital requirements by around 150 basis points from current levels to achieve capital ratios that would be consistent with the goal of 'unquestionably strong'.*
>
> *…*
>
> *In the case of the four major Australian banks, APRA expects that the increased capital requirements will translate into the need for an increase in [Common Equity Tier 1] capital ratios, on average, of around 100 basis points above their December 2016 levels. In broad terms, that equates to a benchmark [Common Equity Tier 1] capital ratio, under the current capital adequacy framework, of at least 10.5 per cent.*

For ADIs that use the standardised approach to credit risk, APRA (2017c) concluded that it was only necessary to only raise minimum capital requirements by approximately 50 basis points from current levels to achieve capital ratios that would be consistent with the goal of 'unquestionably strong'.

In late 2017, the Basel Committee finalised its Basel III reforms, the most significant of which related to revisions to the risk-weighted asset framework and the introduction of a leverage ratio framework (Australian Prudential Regulation Authority, 2018, p. 14).

To reduce excessive variability of risk-weighted assets and to enhance the comparability of risk-weighted capital ratios, the Basel III framework will impose upon banks using internal models a floor requirement applied to their risk-weighted assets (Basel Committee on Banking Supervision, 2017, p.

137). The output floor will ensure that banks' capital requirements do not fall below a certain percentage of capital requirements derived under standardised approaches. An aggregate output floor will be imposed to ensure the risk-weighted assets generated by internal models are eventually no lower than 72.5 per cent of the risk-weighted assets as calculated by the Basel III framework's standardised approaches (Basel Committee on Banking Supervision, 2018a, p. 2). This will take effect from 1 January 2022 with the output floor phased in over a five year period as outlined in Table 1 below.

Table 1: Phase-in of the Risk-Weight Asset Output Floor for Banks using Internal Models

Date	Output Floor Calibration
1 January 2022	50 per cent
1 January 2023	55 per cent
1 January 2024	60 per cent
1 January 2025	65 per cent
1 January 2026	70 per cent
1 January 2027	72.5 per cent

Source: Basel Committee on Banking Supervision (2017, p. 139).

The Basel III framework will also introduce a simple, transparent, non-risk-based leverage ratio to act as a credible supplementary measure to the risk-based capital requirements (Basel Committee on Banking Supervision, 2017, p. 140). The leverage ratio is intended to:

- restrict the build-up of leverage in the banking sector to avoid destabilising deleveraging processes that can damage the broader financial system and the economy
- reinforce the risk-based requirements with a simple, non-risk-based *backstop* measure.

Banks will be required to meet at least a 3 per cent leverage ratio minimum requirement at all times (Basel Committee on Banking Supervision, 2017, p. 140). There were also higher minimum standards to be imposed on G-SIBs.

Consistent with the Basel III reforms, APRA (2018d, p. 15) is intending to introduce a floor to limit the potential reduction in risk-weighted assets associated with internal models relative to the standardised approaches. In doing so this will remove the ability of internal model outputs to vary from prescribed standardised risk weights beyond a maximum threshold (Australian Prudential Regulation Authority, 2018d, p. 48). In implementing the floor, APRA does not intend to adopt the Basel III phase-in arrangements, and instead expects to implement the floor in line with the other proposed changes to risk weights.

In relation to a leverage ratio, APRA (2018c, p. 4) initially proposed a minimum leverage ratio of 4 per cent for banks using internal models and 3 per cent for banks using the standardised approach. However, in response to a strong pushback to the proposal from banks using internal models, APRA (2018f, p. 9) now proposes to set the minimum leverage ratio for banks using internal models at 3.5 per cent.

4. Does Regulation Necessarily Reduce Risk?

In order to reduce the risk of a banking crisis and to protect small depositors in banks, central banks in most countries operate with some form of financial safety net for banks in distress and their

depositors (Enoch, Stella, & Khamis, 1997, p. 4). Such financial safety net arrangements comprise central banks operating as lender-of-last-resort (LOLR) as well as deposit insurance schemes.

However, a banking system that operates with a safety net arrangement creates the prospect of moral hazard. According to an International Monetary Fund (IMF) Working Paper:

> *… the existence of safety net also leads to problems. In particular, there is the possibility of moral hazard – i.e., managers, owners, creditors, and depositors of banks may be less prudent in their behaviour than if they expect to bear the full consequences of a bank failure. This possibility becomes particularly pronounced the more the more the safety net implies complete protection from losses. (Enoch, Stella, & Khamis, 1997, p. 4)*

The provision of blanket guarantees against all possible risks insulates individuals and organisations from the consequences of their own actions.

4.1 Deposit Insurance Schemes

Because of the maturity transformation performed by banks, they are always vulnerable to runs that can have ripple effects and trigger full blown contagion (Anginer & Demirguc-Kunt, 2018, p. 7). A common solution to this problem has been the introduction of deposit insurance schemes in various guises.

In a narrow sense deposit insurance refers to the insurance that depositors, typically retail, receive in case of a bank's failure (Allen, Carletti, & Leonello, 2011, p. 464). More broadly, deposit insurance can also include other forms of interventions in terms of ex post bailouts, general guarantee schemes, and other forms of support of banks in distress.

Governments provide deposit insurance in the hope of reducing the risk of systemic failure of the financial system (Cull, Senbet, & Sorge, 2005, p. 44). The introduction of deposit insurance is presumed to stabilise the financial system by forestalling hasty fire-sale losses on assets that could bring down other banks and disrupt financial markets and the payments system.

Out of 189 member countries of the International Monetary Fund (IMF), 112 countries (or 59 per cent) had explicit deposit insurance by year end 2013, having increased from 84 countries (or 44 per cent) in 2003 (Demirgüç-Kunt, Kane, & Laeven, 2014, p. 11). The GFC contributed to this trend, with 5 countries adopting deposit insurance during 2008 alone including Australia. Deposit insurance is particularly widespread amongst high income countries with about 84 per cent of countries with high incomes having explicit deposit insurance by year-end 2013.

In Australia during the midst of the GFC in October 2008 when international interbank markets froze, the Commonwealth Government announced guarantee arrangements for deposits and wholesale borrowing for ADIs (Reserve Bank of Australia and Australian Prudential Regulation Authority, 2009, p. 1). There were two aspects to the Australian guarantee arrangements:

- under the Financial Claims Scheme (FCS), all deposits under $1 million with Australian banks, building societies and credit unions and Australian subsidiaries of foreign-owned banks were automatically guaranteed by the Government, with no fee payable
- under the Guarantee Scheme (GS) for Large Deposits and Wholesale Funding, eligible ADIs could, for a fee, obtain a government guarantee on deposits greater than $1 million, and wholesale funding with maturity out to 5 years. Unlike the FCS, the GS was also available, with some restrictions, to branches of foreign-owned banks (Reserve Bank of Australia and Australian Prudential Regulation Authority, 2009, p. 2).

As from February 2010 the cap on the FCS was dropped to its current level of $250,000 per person per institution while the GS finished at the end of March 2010.

It has been suggested that deposit insurance schemes improve the efficient management of the banking system by reducing systemic liquidity risk (Calomiris & Jaremski, 2016, p. 2).

While government deposit insurance has proven very successful in protecting banks from runs, it does so at a cost because it leads to moral hazard (Santos, 2000, p. 8). By offering a guarantee that depositors are not subject to loss, the provider of deposit insurance bears the risk that they would otherwise have borne.

According to Dr Sam Wylie (2009, p. 7) from the Melbourne Business School:

> *The Government eliminates the adverse selection problem of depositors by insuring them against default by the bank. In doing so the Government creates a moral hazard problem for itself. The deposit insurance gives banks an incentive to make higher risk loans that have commensurately higher interest payments. Why?, because they are then betting with taxpayer's money. If the riskier loans are repaid the owners of the bank get the benefit. If not, and the bank's assets cannot cover liabilities, then the Government must make up the shortfall.*

4.2 Constructive Ambiguity and Too Big To Fail

Aside from deposit insurance schemes that now more or less operate explicitly around the world, concerns have been raised in relation to provision and potential impact of implicit government guarantees for particular banks. According to the Murray Report:

> *Government actions required to stabilise financial sectors both overseas and in Australia during the GFC reinforced perceptions that some institutions are implicitly guaranteed. The private sector accrued gains from financial activities in the run-up to the GFC, but losses and risk were shared with taxpayers when failures occurred or were threatened. These implicit guarantees create market distortions, altering the risk-reward equation and conferring a funding cost advantage on financial institutions perceived as guaranteed. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 33)*

Part of the answer to minimising the prospect of moral hazard in relation to the provision of an implicit guarantee lies in keeping the likelihood of a bank rescue highly uncertain (Goodhart & Schoenmaker, 1995, p. 542). According to the Bank for the International Settlement:

> *The high cost to society at large of a collapse of the banking system is a principal reason why authorities in virtually all countries provide a safety net involving the potential outlay of public funds in the event that the stability of the banking system is threatened. Such arrangements inevitably create moral hazard because they hold out the prospect that stakeholders will be at least partially indemnified for losses from failing institutions. In order to minimise this moral hazard it is essential to design and implement safety net arrangements so that incentives are not seriously distorted by the policies pursued. In general this will also reduce the likelihood of having to use public funds to support the banking system. In any case, any pre-commitment to a particular course of action in support of a financial institution should be avoided by the authorities, who should retain discretion as to whether, when and under what conditions support would be provided. (Report of the Working Party on Financial Stability in Emerging Market Economies, 1997, p. 44)*

Such an approach has been dubbed as *constructive ambiguity* with term first used in the context of the banking system by Jerry Corrigan (1990), then president of the US Federal Reserve Bank of New York in his testimony before the United States Congress:

> *With any troubled financial institution, but especially in the case of large institutions, I believe that the workings of both the safety net and market discipline will be better served in a context in which the authorities maintain a policy of what I like to call "constructive ambiguity" as to what they will do, how they will do it, and when they will do it. In saying this, I recognize that financial market participants do not like uncertainty, but that is just the point! Moreover, while I fully understand the yearning in some quarters for the cookbook approach to problems in financial markets or institutions - large institutions especially - I regret to say that in my judgment such a cookbook does not and never will exist. The circumstances associated with a particular case, the setting in which it occurs, and the assessment of the relative costs and benefits of alternative courses of action will always have to be looked at case by case. But in no case should it be prudent for market participants to take for granted what actions the authorities will take and certainly in no case should owners and managers of troubled institutions - large or small - conclude that they will be protected from loss or failure.*

Constructive ambiguity has been taken to mean that central banks reserve the right to intervene to preserve stability but give no assurances, explicit or implicit, to individual institutions (Crockett, 1997, p. 18). Such an approach is intended to make institutions act more prudently by making them uncertain whether they would in fact be rescued in the event of a crisis. According to an IMF Working Paper:

> *Many central banks, in an effort to reduce moral hazard – as well as to retain some scope for discretion and confidentiality when a situation of potential failure emerges – maintain some constructive ambiguity with regard to how, when and whether they will employ their safety nets. Ambiguity is particularly an issue in regard to the provision of LOLR assistance. (Enoch, Stella, & Khamis, 1997, p. 4)*

> *Ambiguity in the provision of LOLR is also a response to the desire to minimise moral hazard among bank owners, managers, and depositors. Ambiguity is associated with expected variance in outcomes, which will lead risk-averse agents to be more cautious than they would if they were confident of being bailed out by the authorities. This in turn should reduce the risk of bank failure, and hence the expected cost to the authorities. (Enoch, Stella, & Khamis, 1997, p. 11)*

It appears that constructive ambiguity has become standard practice for central banks around the world:

> *In many countries, therefore, ambiguity – apart from times of crisis, when explicit promises of blanket coverage of bank liabilities are common – has become standard central bank practice with regard to financial sector safety nets. (Enoch, Stella, & Khamis, 1997, p. 5)*

Despite APRA's (2013) designation of the four major banks as D-SIBs, it still steadfastly clings to the notion of constructive ambiguity:

> *APRA emphasises that the designation of a bank as a D-SIB does not make it immune from failure. Rather, the designation is intended to ensure that banks perceived to be 'too-big-to-fail' are subject to more intense supervisory oversight and have greater capacity to absorb losses, to increase their resilience to failure.*

However, a policy problem arises in the event of the failure of a SIFI and the subsequent contagion it envelops creates large negative spillovers. This situation creates a dilemma for policymakers,

particularly at a time when the wider financial system is also under stress (Dudley, 2013). At that point in time, the expected costs to society of failure are very large compared to the short-run costs from providing the extraordinary liquidity support, capital, or other emergency assistance necessary to prevent catastrophic failure. The Murray Report outlined this dilemma in the following terms:

> *Government should not generally guarantee the ongoing solvency and operations of individual financial institutions. However, there may be instances — particularly where system-wide failure is threatened — where public sector support of the basic functions of the financial system is warranted, such as liquidity support by the Reserve Bank of Australia (RBA). In determining whether to intervene in the event of a failure, Government should be guided by the anticipated effect of failure on the wider economy and seek to minimise taxpayer exposure (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 38)*

The TBTF problem arises when the threatened failure of a SIFI leaves public authorities with no option but to bail it out using public funds to avoid financial instability and economic damage (Financial Stability Board, 2013, p. 2). Large-scale financial crises can impose substantial costs on the real economy and thus make a public bailout inevitable (Völz & Wedow, 2011). According to the former Chairman of the US Federal Reserve System, Ben Bernanke (2010, p. 20):

> *Governments provide support to too-big-to-fail firms in a crisis not out of favouritism or particular concern for the management, owners, or creditors of the firm, but because they recognize that the consequences for the broader economy of allowing a disorderly failure greatly outweigh the costs of avoiding the failure in some way. Common means of avoiding failure include facilitating a merger, providing credit, or injecting government capital, all of which protect at least some creditors who otherwise would have suffered losses.*

The role of SIFIs that were too big to fail was recognised in the Australian context by the 1996-97 Financial System Inquiry (Wallis Inquiry):

> *This source of systemic instability has given rise to the doctrine of 'too big to fail', an unwritten rule adopted by most banking regulators around the world. In essence, the doctrine acknowledges that such institutional failure can be extremely disruptive of the financial system and, through it, the real economy. (Wallis, Beerwirth, Carmichael, Harper, & Nicholls, 1996, p. 96)*

Concerns have been raised that constructive ambiguity may turn out to be a cloak for TBTF if the lender of last resort is more willing to take the risk of allowing a small institution to go under than a large one (Crockett, 1997, p. 18). Essentially, constructive ambiguity is fundamentally compromised by banks that are TBTF (Russell, 2010, p. 5). Since the failure of an SIFI is likely to provoke contagion effects which may jeopardise the financial system in general, there is little ambiguity that some form of emergency bailout will be forthcoming in the event such banks are at risk of failure. While bailing out TBTF banks may not be the intended the policy objective of constructive ambiguity, it becomes the *de facto* policy measure when failure of a TBTF bank is imminent in order to prevent contagion to the broader financial system and the real economy.

On the other hand, it has been argued that even if there is a common presumption that financial regulators may consider some banks TBTF, there may still be some ambiguity over which banks would be considered "too big" (Enoch, Stella, & Khamis, 1997, p. 10n). However, in the Australian context where reference is often made to the "big four" banks, there is little scope to maintain the pretence of any ambiguity. As Farouk Soussa (2000, p. 22), a former senior economist with the Bank of England, has pointed out:

> *… constructive ambiguity does not appear to work – markets still believe that support would be forthcoming for certain large banks should they encounter difficulties.*

There is no shortage of evidence to suggest that TBTF banks are operating in Australia with an implicit government guarantee as the major rating agencies add an uplift to their credit ratings for the major banks due to the prospect of government support. According to the RBA (2017, p. 13):

> *The ratings agencies have given the four major banks (as well as Macquarie Bank) an uplift to their credit ratings to reflect the perceived likelihood of government support in times of distress. Any uplift to smaller banks' ratings has been minimal or non-existent.*

The RBA has estimated the funding advantage and the associated subsidy related to the implicit guarantee provided to the major banks at around $1.9 billion a year (Productivity Commission, 2018, p. 184). In its recent review of competition in the financial system, the Productivity Commission (2018, p. 184) observed in relation to the provision of implicit government guarantees:

> *The views of ratings agencies and capital markets persist despite the absence of direct policies or statements from the Australian Government to confirm support of any kind would be provided. However, the Australian Government's conduct in the wake of the GFC did little to disavow ratings agencies, capital markets and depositors of the notion that support would be supplied. Though ratings agencies' uplift for major banks partly reflects government actions, they nevertheless exacerbate perceptions of 'too big to fail'.*

In turn, the Productivity Commission (2018, p. 184) found:

> *The major banks in Australia benefit from a 'too big to fail' status reflecting an expectation of government intervention if one or more of these banks were in financial difficulties. This status lowers the cost of funds for these banks.*
>
> *By incorporating perceived government support in their relative ratings of Australia's banks, rating agencies further embed the major banks' 'too big to fail' status.*

While constructive ambiguity has been pursued in order to ameliorate the effects of moral hazard on the financial system, ironically the knowledge by a SIFI that they are TBTF encourages them to engage in excessive risk taking (Financial Stability Board, 2013, p. 2). While constructive ambiguity may ameliorate the moral hazard of smaller financial institutions, it appears to exacerbate moral hazard in relation to SIFIs that are TBTF. Ben Bernanke (2010, pp. 20-21) has outlined how TBTF can lead to severe moral hazard:

> *… too-big-to-fail generates a severe moral hazard. If creditors believe that an institution will not be allowed to fail, they will not demand as much compensation for risks as they otherwise would, thus weakening market discipline; nor will they invest as many resources in monitoring the firm's risk-taking. As a result, too-big-to-fail firms will tend to take more risk than desirable, in the expectation that they will receive assistance if their bets go bad. Where they have the necessary authority, regulators will try to limit that risk-taking, but without the help of market discipline they will find it difficult to do so, even if authorities are nominally sufficient. The buildup of risk in too-big-to-fail firms increases the possibility of a financial crisis and worsens the crisis when it occurs.*

According to a Bank of England Financial Stability Paper, a pernicious spiral can develop, where the existence of an implicit guarantee encourages banks to take more risk, raising the likelihood and cost of bank failure, thus increasing the subsidy (Noss & Sowerbutts, 2012, p. 4). One of the outcomes of such process is that bank executives and investors will capture the upside benefits, while taxpayers will bear the downside risk (Fisher, 2013).

5. Competition and Banking

5.1 Benefits of Competition

According to the interim Murray report (Murray, Davis, Dunn, Hewson, & McNamee, 2014, p. 2.3):

> *Competition is a process of rivalry between individuals or firms in the sale and purchase of goods and services. It is the cornerstone of a well-functioning financial system, driving efficient outcomes for price, quality and innovation. Competition is desirable because it generally leads to better consumer outcomes.*

The primary objective of competition policy is to promote economic efficiency which in turn boosts and stimulates economic growth. According to the 1993 independent committee of inquiry into National Competition Policy (Hilmer Report):

> *Competition policy is not about the pursuit of competition per se. Rather, it seeks to facilitate effective competition to promote efficiency and economic growth while accommodating situations where competition does not achieve efficiency or conflicts with other social objectives. (Hilmer, Rayner, & Taperell, 1993, p. xvi)*

According to the recent Competition Policy Review (Harper Report):

> *Competition policy is aimed at improving the economic welfare of Australians. It is about meeting their needs and preferences by making markets work properly. (Harper, Anderson, McCluskey, & O'Bryan, 2015, p. 7)*

For merchants the retail price of a product they charge is brought into some kind of relationship with cost through the competitive process (Adelman, 1957, p. 266). Through this process, competition forces prices down towards the cost of production which enhances allocative efficiency.

Competition also promotes productive efficiency by forcing firms to cut their costs in order not to lose sales to more efficient rivals (Kolasky & Dick, 2003, p. 208).[6]. If firms cannot maintain productive efficiency with their rivals, they risk losing market share and possibly going out of business altogether. It has long been recognised in the economic literature that competition plays an important role in reducing managerial slack. Adam Smith (1961) recognised as far back as 1776 that "monopoly ... is a great enemy to good management". Prominent British economist Sir John Hicks (1935, p. 8) opined "[t]he best of all monopoly profits is a quiet life."

Harvey Leibenstein (1966; 1973) believed that a lack of competitive pressures may lead firms with monopoly power to neglect the pursuit of productive efficiency and tolerate what he described as x-inefficiency. X-inefficiency represents the gap between actual and minimum possible production costs. While x-inefficiency can affect both monopolists and firms operating in competitive markets alike, it will impose a far greater cost burden on a monopolist as they will have no discipline imposed upon them externally through competition with rival firms.

Allocative along with productive efficiency are static concepts of efficiency. Static efficiency refers to holding society's technological know-how constant (Kolasky & Dick, 2003, p. 247). On the other

[6] Productive efficiency, also referred to as technical efficiency, means that production takes place using the least costly amount of resources for a given level of technology.

hand, dynamic efficiency refers to the efficiency benefits achieved through research, development, and innovation, including the diffusion of technology to produce new products and processes (Fox, 2008, p. 78). Dynamic efficiency brings benefits to consumers either through the introduction of improved new products that buyers value more highly ("product innovations"), or through the use of new, lower cost ways of producing existing products ("process innovations") (Commerce Commission, 2003, p. X).

Competition also provides a spur for dynamic efficiency. Firms undertake innovation through research and development (R&D) to improve their competitiveness. R&D can help a firm lower its costs of production and/or produce better products giving it a competitive advantage over its rivals in the market place. The benefits which firms seek to capture through R&D, namely lower costs, higher productivity and better products, if realised, will ultimately generate higher rates of economic growth.

According to Professor Xavier Vives (2016, p. 71) of the University of Navarra:

> *The imperfections of the banking markets do not imply that the benefits of competition for static and dynamic efficiency, well established since Adam Smith, do not apply to banking. The benefits of competition for productive efficiency include the reduction of managerial slack in cost reduction or preference-expense behaviour (X-inefficiency). Monopoly power induces inefficiency and waste as stated by Adam Smith and John Hicks ("the quiet life" of the monopolist that forgoes some monopoly profit). Indeed, competitive pressure provides information to design appropriate incentive schemes for managers and incentivises good performance. The importance of X-inefficiency in explaining deadweight losses in banking does not seem to be less than in other industries, and may even surpass scale and product mix efficiency.*

In banking competition can benefit consumers by improving choice, lowering borrowing rates and raising deposit rates (de-Ramon, Francis, & Straughan, 2018, p. 2).

5.2 Is Australian Banking Competitive?

5.2.1 Competition Assessment Criteria

The basic building block of microeconomics is the theory of perfect competition which is essentially used as a benchmark by which to assess r*eal world* outcomes. The underlying assumptions of perfect competition are:

- Lots of buyers and sellers.
- The product is homogenous. That is, consumers cannot distinguish between the products produced by different firms.
- Perfect information. All firms are fully informed about their production possibilities and consumers are fully aware of their alternatives.
- There are no entry or exit barriers.

Under perfect competition, every participant is a ***price taker*** as they can sell or buy as much or as little as they want without affecting the price.

The polar opposite of perfect competition is monopoly where there is only one firm supplying the entire market. A monopolist is ***price maker*** and the basic result under monopoly is production is cutback and the price is raised by the monopolist in order to maximise their profit. A monopoly is objectionable on economic grounds because it reduces output and increases price, in turn creating a deadweight or efficiency loss. The outcome under monopoly is that an inefficient level of output is produced because some of the consumers who would have purchased the product in a competitive market do not choose to do so at the higher price, which is referred to as a loss of allocative

efficiency. Monopoly pricing also results in a wealth transfer from consumers to the seller of a product (Depoorter, 1999, p. 501). The power to behave as a price maker is referred to as monopoly power as well as market power.

The economic and legal literature has provided several different definitions of market power. One commonly used definition is that provided by American economist Abe Lerner which is the ability of a firm to push its price above marginal cost (Lerner, 1934). However, the problem with this definition is that it is often difficult to measure marginal cost in the real world.

Another definition of market power comes from prominent American competition law experts Carl Kaysen and Donald Turner (1959, p. 75):

> *A firm possesses market power when it can behave persistently in a manner different from the behaviour that a competitive market would enforce on a firm facing otherwise similar cost and demand conditions.*

This definition has been used by the Australian Competition and Consumer Commission (2002, p. 64) and in a prominent Australian legal judgement.[7] Another definition of market power provided by prominent American competition law experts William Landes and Richard Posner (1981, p. 937) is "the ability of a firm to raise price above the competitive level without losing so many sales so rapidly that the price increase is unprofitable and must be rescinded".

According to the Productivity Commission (2018, p. 70):

> *Few, if any, markets are perfectly competitive and the key product markets within the Australian financial system are certainly not. Given the extent to which the Australian financial system is regulated to maintain system stability and improve community outcomes, most markets in it will never be perfectly competitive. Regulators will restrict rivalry that they perceive as creating serious risk. Market sanction in the form of takeover of any large poorly-performing entities will be managed by regulators, not driven by rivalry. Entry will remain restricted, even if barriers are lowered. 'Too big to fail' perceptions will persist regardless of arguments to the contrary; or the imposition of additional costs.*

American economist John Maurice Clark (1940, p. 241) contended that the economic model of perfect competition was an inappropriate benchmark by which to assess real world outcomes because it "does not and cannot exist and has presumably never existed." Instead, Clark was the first to articulate the concept of workable competition, also known as effective competition.

In the Australian context, the definition of workable competition has generally been taken from the decision by the former Trade Practices Tribunal (TPT):

> *As was said the United States Attorney-General's National Committee to Study the Antitrust Laws in its Report of 1955 (at p 3320): "The basic characteristic of effective competition in the economic sense is that no one seller, and no group of sellers acting in concert, has the power to choose its level of profits by giving less and charging more. Where there is workable competition, rival sellers, whether existing competitors or new potential entrants into a field, would keep this power in check by offering or threatening to offer effective inducements…." Or gain, as if often said in United States antitrust cases, the antithesis of competition is undue market power, in the sense of the power to raise price and exclude entry. That*

[7] Cited with approval by Dawson J in *Queensland Wire Industries Proprietary Limited v The Broken Hill Proprietary Company Ltd and Anor* (1989) 167 CLR 177 at 200

> *power may or may not be exercised. Rather, where there is significant market power the firm (or group of firms acting in concert) is sufficiently free from market pressures to "administer" its own production and selling policies at its discretion…8*

According to the Productivity Commission (2018, p. 70), while it is not possible to attain the standard of perfect competition, it is still possible to achieve a level of workable competition, with market outcomes that tend more toward competitive outcomes than toward outcomes that would be likely under a monopoly structure.

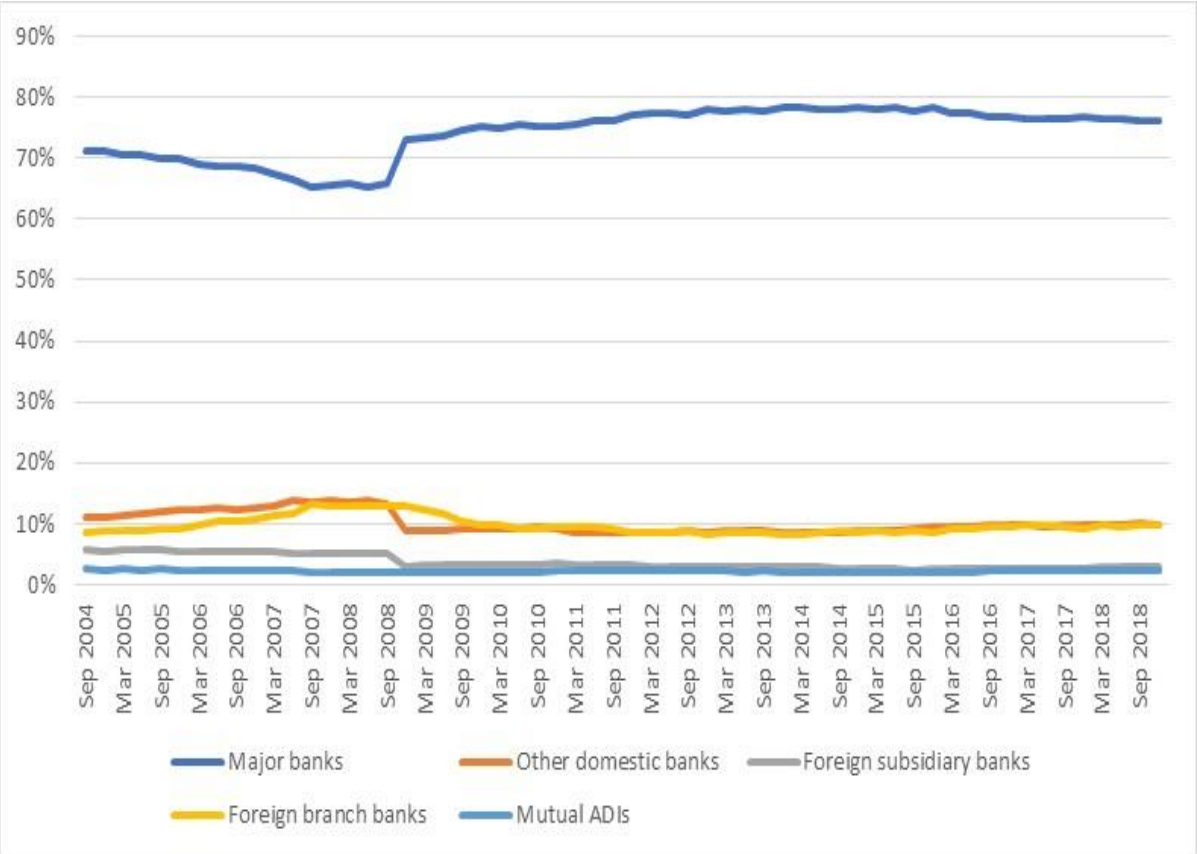
5.2.2 Assessing the State of Competition in Australian Banking

According to the Murray Report:

> *While competition is generally adequate in the financial system at present, the high concentration and steadily increasing vertical integration in some sectors has the potential to limit the benefits of competition in the future. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 255)*

The four systemically important major banks dominate banking in Australia, as revealed by examination of major indicators. The major banks hold in excess of 76 per cent of all assets held by ADIs operating in Australia as outlined in Figure 1 below.

Figure 1: Percentage of Assets held by Category of Authorised Deposit-Taking Institution – September Quarter 2004 to December Quarter 2018

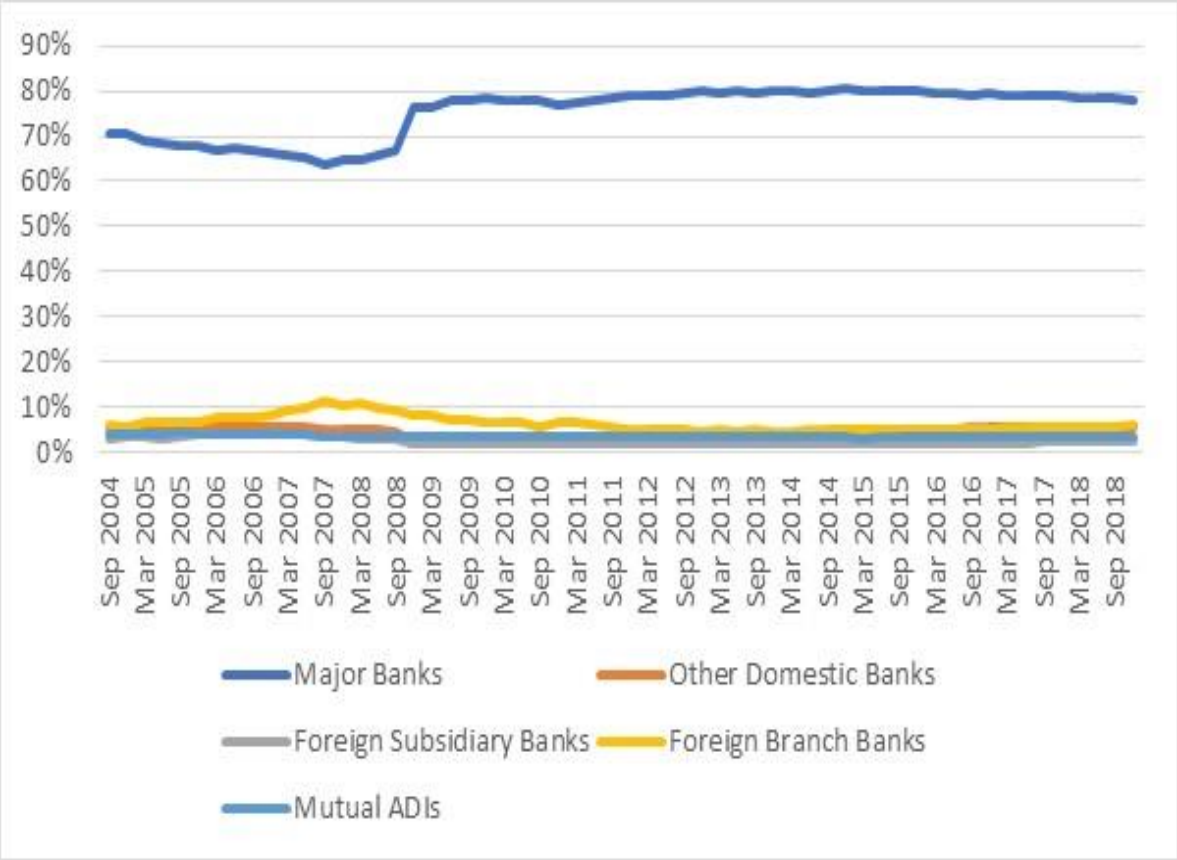


Source: APRA (2019a).

[8] *Re Queensland Co-operative Milling Association Ltd* (1976) 8 ALR 481 at [515]

The major banks hold in excess of 78 per cent of all deposits by ADIs operating in Australia, as outlined in Figure 2 below.

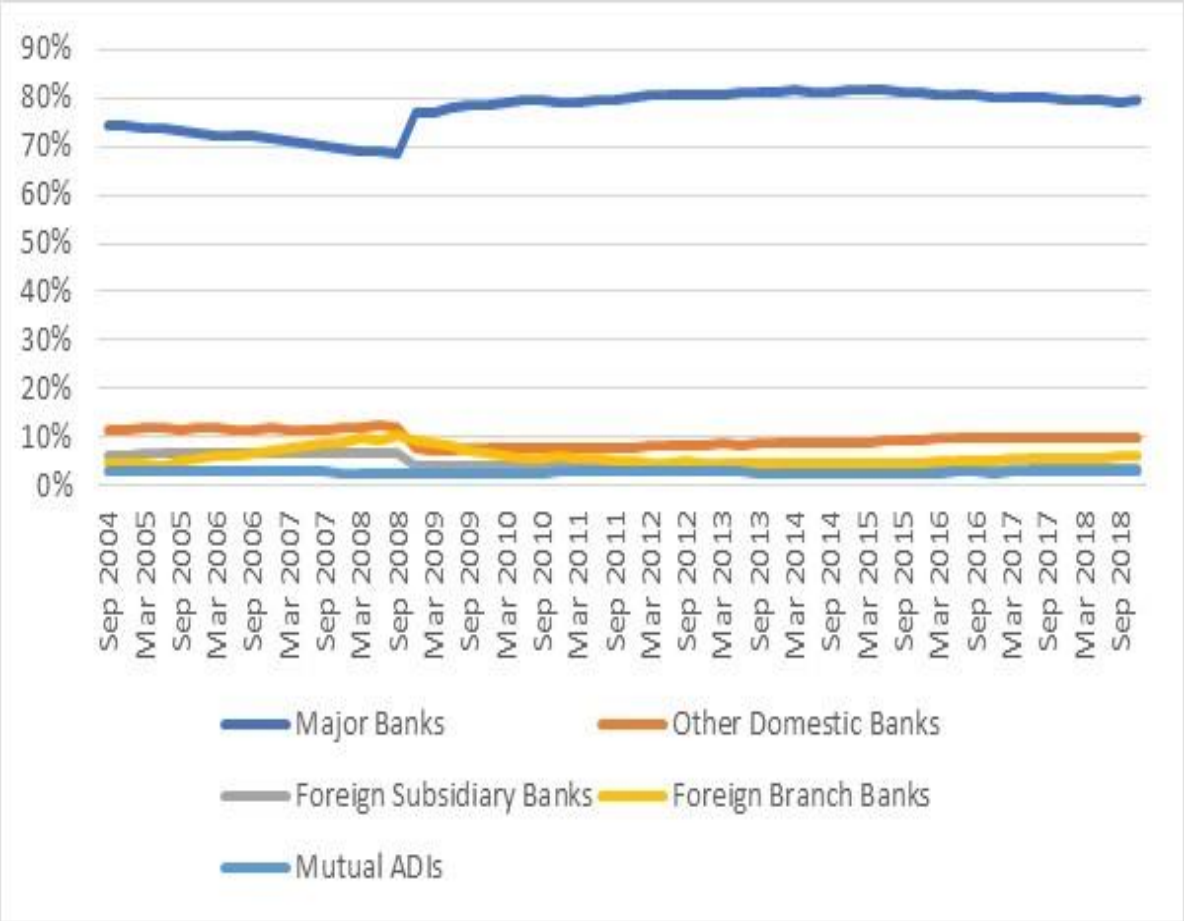
Figure 2: Percentage of Deposits held by Category of Authorised Deposit-Taking Institution – September Quarter 2004 to December Quarter 2018



Source: APRA (2019a).

The major banks are responsible for in excess of 79 per cent of total lending by ADIs, as outlined in Figure 3 below.

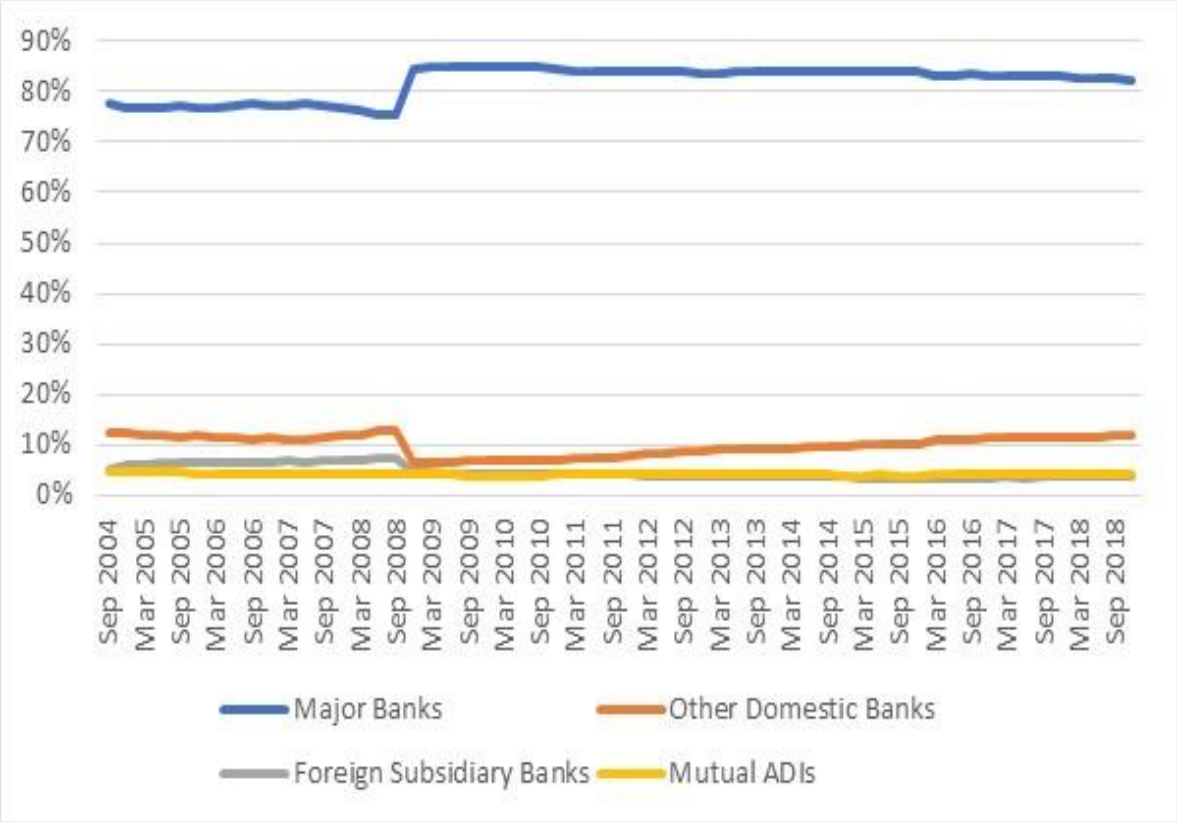
Figure 3: Percentage of Total Lending by Category of Authorised Deposit-Taking Institution – September Quarter 2004 to December Quarter 2018



Source: APRA (2019a).
Note: Total lending is categorised as gross loans and advances.

During 2018 housing lending represented around 57 per cent of total ADI lending. The dominance of the major banks is even greater with respect to housing lending than it is in relation to total lending, accounting for over 82 per cent of housing lending as outlined in Figure 4 below.

Figure 4: Percentage of Housing Lending by Category of Authorised Deposit-Taking Institution – September Quarter 2004 to December Quarter 2018



Source: APRA (2019a).

An oligopoly is a market structure characterised by a few participants. It may include a *competitive fringe* of numerous smaller sellers who behave competitively because each is too small individually to affect prices or output (Areeda, Solow, & Hovenkamp, 2002, p. 9). The provision of financial services in Australia – that is dominated by the four major banks – could be characterised as an oligopoly that is supplemented by a competitive fringe that includes regional banks and customer owned banking institutions (mutual banks, credit unions and building societies). This is consistent with the findings of the Productivity Commission (2018, p. 118):

> *Australia's banking sector is an established oligopoly with a long tail of smaller providers.*

Within economic theory, there is no single determinate solution to the problem of oligopoly with many possible outcomes being postulated. The range of solutions runs the full gamut of possible outcomes from that reminiscent of perfect competition to that of a monopoly. The reason there is no single unique solution to the problem posed by oligopoly is because of the interdependency of market participants.

A number of theories of oligopoly predict that once firms recognise their interdependency, their most rational course of action would be to behave in a manner reminiscent of a monopoly. The outcome from these models has been described as tacit collusion, also known as conscious parallelism. While firms are not part of a cartel arrangement that are seeking to formally collude by

cutting back on production and raising prices, the firms are able to coordinate their conduct so that an outcome similar to a cartel or monopoly is achieved.[9]

However, just because a market is characterised as having an oligopolistic market structure does not necessarily mean that it will be prone to tacitly collusive behaviour. While market concentration can certainly provide guidance as to which markets are likely to raise competition concerns, it is certainly not the be-all and end-all of the matter. Market concentration is only one of a number of factors that should be relied upon in determining whether a market is likely to result in any abuse of market power.

Economic theory would caution that the level of market concentration alone may not necessarily be the prime determinant for the actual state of competition in a market. In this regard, RBA Assistant Governor Michele Bullock (2017) has observed:

> *… concentration of itself does not necessarily imply a lack of competition. Indeed, indicators of market structure such as measures of concentration are not regarded as a very accurate measure of competition. In principle, four large banks could still compete very actively among themselves.*

On this basis a competition analysis focusing solely on market concentration could be fundamentally flawed because it ignores other critical factors. These other factors include the height of barriers to entry and the extent of sunk costs incurred by new entrants.

An entry barrier is a structural characteristic of a market that protects the market power of incumbent operators by making new entry unprofitable (Church & Ware, 2000, p. 11). Prominent American economist Joseph Bain (1956) considered the force of potential competition as a regulator of price and output of comparable importance to that of actual competition and focused on the height of barriers to entry as the critical determinant of the price level. According to Professor Vives (2016, p. 80), entry barriers are pervasive in banking. According to the Murray Report:

> *Licencing provisions and regulatory frameworks can impose significant barriers to the entry and growth of new players, especially those with business models that do not fit well within existing regulatory frameworks. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 255)*

The theory of contestable markets is a reformulation of Bain's work on barriers to entry whereby oligopolistic behaviour can be explained by means of the constraint imposed by potential competition. Under this theory, an entry barrier has been defined as "anything that requires an expenditure by a new entrant into an industry, but that imposes no equivalent cost upon an incumbent" (Baumol & Willig, 1981, p. 408).

From this definition, a distinction is drawn between fixed costs and sunk costs. Fixed costs do not necessarily constitute a barrier to entry because they affect incumbents and entrants alike. However, any entry cost that is unrecoverable is a sunk cost. The need to sink costs into a new firm imposes a difference between the incremental cost and the incremental risk that are faced by an entrant and an incumbent (Baumol & Willig, 1981, p. 418). In the case of an incumbent, such funds have already been expended and they are already exposed to whatever risks the market entails. In contrast, the new firm must incur any entry costs on entering the market that incumbents don't bear. Entry will occur in the event the profits expected by a successful entrant outweigh the

[9] A cartel is where there is a formal agreement amongst competing firms to collude to fix prices or cutback on production. The objective of a cartel is organise firms so they behave in manner similar to the outcome achieved by a monopoly. Within market economies, there are generally competition laws (also known as antitrust laws) prohibiting cartel arrangements.

unrecoverable entry costs that will be lost in the case of failure. Hence, the need to sink costs can therefore constitute a barrier to entry.

In banking, sunk costs could include investment in a branch network, automatic teller machine (ATM) network, advertising, investing in communications networks/technology, and the development of specialised human capital.

Despite the Murray Report's finding that competition was *generally adequate*, more recent assessments on the state of competition in Australian banking have found that the risks to competition posed by a high level of concentration in banking have in fact been realised and indeed come to fruition.

The Productivity Commission (2018, p. 4) has observed that the four major banks dominate retail banking. In turn, the Productivity Commission (2018, pp. 10-11) has found that the risk to competition posed by the major banks has been realised in relation to poor competitive outcomes attained in the Australian financial system:

> *Banks, and in particular the major banks, exhibit substantial pricing power. The major banks' market power has allowed them to set interest rates to borrowers and depositors that enable them to remain highly profitable — without significant loss of market share. This has continued to occur even in the face of market shocks (such as the global financial crisis) and notable regulatory changes that have increased their costs and would otherwise have eroded the return on equity.*

In turn, the borrowers' of the major banks have been forced to endure higher interest rates as a consequence:

> *… it appears that achieving [return on equity] targets is an important factor in major banks' interest rates decisions, and one that has tended to lead to higher rates charged to existing borrowers, rather than aggressive discounting intended to expand market shares. (Productivity Commission, 2018, p. 11)*

According to the Productivity Commission (2018, p. 12), if banking markets were workably competitive, keeping prices high in order to deliver profits would cause a significant number of consumers to switch and encourage a lower price provider, with profits shifting along with shareholder expectation. However, the Productivity Commission (2018, pp. 12-13) found that consumers face a blizzard of barely differentiated products and suffer from a choice overload. For example, it was found there were nearly 4000 different residential property loans on offer. Despite the pretence of choice, the Productivity Commission (2018, p. 13) found that outcomes for existing customers were in fact poor:

> *The huge product variety combined with price obfuscation provides latitude for exploitative price discrimination, with associated profit opportunities for the relevant financial institutions. Typically, it is existing customers that get a poor offer, as institutions jostle to attract new customers with products that offer temporary benefits (such as discounted interest rates and fee-free periods) to consumers — relying on their lassitude for switching to generate high margins off them in the years to come.*[10]

[10] Price discrimination occurs when like goods or services are provided to different persons at different prices, the difference in price being unrelated to the cost of providing the goods or services (Dawson, Segal, & Rendall, 2003, p. 89).

Following the imposition of the Major Bank Levy on the major banks along with Macquarie Bank in the 2017 Commonwealth Budget, the Commonwealth Treasurer also directed the Australian Competition and Consumer Commission (ACCC) (2018, p. 4) to undertake an inquiry into the prices charged by ADIs affected by the Major Bank Levy in relation to the provision of residential mortgage products (referred to collectively as the Inquiry Banks). In its Interim Report, the ACCC (2018a) found:

> *The documents reviewed to date reveal a lack of vigorous price competition between the Inquiry Banks, and the big four banks in particular. The pricing behaviour of each of the Inquiry Banks appears consistent with 'accommodating' a shared interest in avoiding disruption of mutually beneficial pricing outcomes, rather than consistently vying for market share by offering the lowest interest rates.*

In its final report, the ACCC (2018, p. 6) concluded:

> *Building on the signs of a lack of vigorous price competition set out in the Interim Report, we observe that opaque discretionary pricing by the Inquiry Banks stifled price competition during the price monitoring period. Opaque discretionary pricing inflates borrowers' costs (including their time and effort) to discover better offers. This adversely impacts their willingness to shop around, either for a new residential mortgage or when they are contemplating switching their existing mortgage to another lender. The unnecessarily high cost of price discovery is likely a key reason why 70 per cent of recent borrowers surveyed on behalf of an Inquiry Bank said they had obtained just one quote before taking out their residential mortgage. We consider that the big four banks profit from the suppression of borrower incentives to shop around and lack strong incentives to make prices more transparent.*

Other ADIs have held themselves up as competitive alternatives to the major banks. For example, according to the regional banks:

> *The regional banks bring essential competitive tension to the market through an extensive and complete range of quality products and services for consumers, businesses and regional communities. Regional banks provide genuine and credible choice for customers and there is a clear link between the banks' performance and good customer outcomes. (Bendigo Bank, Bank of Queensland, Suncorp, AMP Bank and ME Bank., 2017, p. 8)*

However, Productivity Commission (2018, p. 8) has expressed scepticism as to the extent of the competitive constraint imposed by other ADIs as they tend to follow the pricing decisions of the major banks:

> *In setting prices in the Australian banking system, smaller institutions generally behave as market 'followers' and mirror the major banks' pricing decisions.*
>
> *While some small institutions offer consistently higher interest rates to attract deposits, history suggests that even when Australia's smaller ADIs are given a regulatory advantage over the major banks, they do not noticeably take advantage of rises in major bank loan interest rates by holding down their own loan interest rates in an attempt to gain market share. Rather, they seek to also raise prices in near lock-step, and improve margins earned from their existing customer base. That this occurs is evident in the margins earned.*

According to the Productivity Commission (2018, p. 110), many smaller ADIs reference the actions of the major banks — rather than their own marginal costs — for pricing decisions.

However, the Productivity Commission (2018, p. 8) has identified one group that has engaged in competitive pricing by offering lower home loan interest rates but who suffer from size and scale constraints:

> *An exception may be the mutual ADIs, which do not face the same shareholder pressures as other ADIs. The Customer Owned Banking Association reports its members' standard variable rate on home loans averages 0.4 to 0.8 percentage points lower than the major banks' rates. However, their scope to lower lending rates further is potentially more limited than other ADIs simply due to narrower sources of funding.*

Mutual ADIs are able to offer lower home loan interests rates because their business model relies primarily on deposits, which are a cheaper source of funding, and also because they do not need to meet the expectations of shareholders in relation to return on equity (Productivity Commission, 2018, p. 110), unlike the major banks and the regional banks.

6. Prudential Regulation and Competition

6.1 APRA's Competition Mandate

Section 8 of the *Australian Prudential Regulation Authority Act 1998* (Cwth) sets out the legislative purpose for establishing APRA. According to APRA (2014, p. 15), section 8 makes clear that APRA's primary purpose in exercising its prudential powers is to protect depositors and other members of the community holding financial promises issued by regulated financial institutions.

Section 8(2) requires APRA to balance financial safety with efficiency, competition, contestability and competitive neutrality, subject to an overarching requirement to promote financial stability.[11] Implicit within APRA's legislative charter is the notion that competition is a secondary consideration – along with the related concepts of efficiency, contestability and competitive neutrality – as something that can be traded off against financial safety and the overarching objective of promoting financial stability. In this regard, the interim Murray Report observed that regulators are required to make judgements in balancing sometimes competing objectives (Murray, Davis, Dunn, Hewson, & McNamee, 2014, p. 3.121). Similarly, APRA (2014, p. 15) has observed that its legislative purpose provides it with "a clear mandate but one that requires a careful balancing act."

The notion that APRA sees its role as engaging in a careful balancing act that seeks to preserve financial stability as an overarching objective while potentially trading off secondary objectives such as efficiency, competition, contestability and competitive neutrality raises the possibility it is susceptible to take the so-called *competition-fragility* view of banking in exercising its functions. In this regard, the Murray Report observed:

> *Conduct and prudential regulators have a natural tendency to prioritise fairness or stability over competition and long-term efficiency. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 19)*

As a consequence of this natural tendency of prudential regulators, the final Murray Report raised concerns that broader competition issues would *fall between the cracks* as regulators focus on their

[11] Competitive neutrality occurs where no entity operating in an economic market is subject to undue competitive advantage or disadvantage (Organisation for Economic Co-operation and Development, 2012, p. 17).

specific mandates for stability and consumer protection (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, pp. 255-256).

To address this problem, the interim Murray Report suggested that APRA could do more to emphasis competition matters (Murray, Davis, Dunn, Hewson, & McNamee, 2014, p. 3.121). To address this problem in the final Murray Report, it recommended the state of competition in the financial system be reviewed every three years and that there should be improved reporting of how APRA balanced competition against its core objective (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 254).

6.2 Tension between Prudential Regulation and Competition

Out of concern for stability, competition policy has not always been applied in the banking system (Vives, 2016). It is primarily in markets where liquidity is at risk, that the impact of competition on stability is potentially an issue (Productivity Commission, 2018, p. 73).

Competition may influence stability through the liability or asset side of the balance sheet of a financial intermediary (Vives, 2016, p. 106). On the liability side, competition may increase instability by exacerbating the coordination problem between depositors/investors, and consequently fostering runs and/or panics, which may become systemic.

On either the liability or asset sides, competition may increase the incentives to take risk and correspondingly the probability of failure of banks (Vives, 2016, p. 106). Competition can lead to a riskier bank portfolio and higher probability of failure due to the adverse selection problem (Vives, 2016, p. 111). Also, increased rivalry may reduce incentives to screen and monitor borrowers.

However, competition is not responsible for the inherent fragility within the banking system since vulnerability to runs and panics can emerge independently of competitive tensions (Vives, 2016, p. 106).

Concern that competition in the provision of financial services could lead to a situation where risk is underpriced and in turn institutions could fail with systemic consequences has given rise to the so-called *competition-fragility* view of banking whereby more competition erodes market power, decreases profit margins, and results in reduced franchise value – the market value of the banks beyond their book values (Berger, Klapper, & Turk-Ariss, 2009, p. 100). Competition in turn encourages banks to take on more risk in order to increase returns.

Under the *competition-fragility* view of banking the accretion of market power is seen as desirable from standpoint of preserving stability in the financial system. As banks gain market power, their franchise value increases (Berger, Klapper, & Turk-Ariss, 2009, p. 103). Because franchise value represents intangible capital that will only be captured if the bank remains in business, such banks face high opportunity costs of going bankrupt and hence they become more reluctant to engage in risky activities. They tend to behave prudently by holding more equity capital, by holding less risky portfolios, and/or by originating a smaller loan portfolio.

RBA Assistant Governor Michele Bullock (2017) has summarised the *competition-fragility* view of banking in the following terms:

> *One view is that a concentrated banking system promotes financial stability in a number of ways. It is sometimes argued, for example, that if a concentrated banking system implies less competition, the large banks will be more profitable and able to generate capital organically, increasing their resilience. This argument therefore suggests that a concentrated banking system will promote financial stability. Having a few large banks might also promote financial stability in other ways. Larger banks might be more diversified in the risks they take on and have more sophisticated risk management systems. It could also be argued that it is easier for our prudential regulator, the Australian Prudential Regulation Authority (APRA), to supervise and regulate a small number of large banks.*

Empirical support for the *competition-fragility* view of banking originally came from Michael Keeley (1990) who found that increased competition and deregulation in the United States during the 1980s reduced monopoly rents and resulted in a surge of bank failures.[12] A large academic literature provides support to the *competition-fragility* view of banking (Berger, Klapper, & Turk-Ariss, 2009, p. 102). For example, Thorsten Beck and Asli Demirguc-Kunt from the World Bank and Ross Levine from Brown University (2006) find that crises are less likely in economies with more concentrated banking systems.

According to Professor John Boyd of University of Minnesota and Gianni De Nicolo of the IMF (2005, pp. 1332-1333), the *competition-fragility* view of banking has had enormous influence over the thinking of financial regulators and central bankers:

> *We believe that the body of research … has had a material impact on bank regulators and central bankers. Specifically, we believe there is a widely held view among policy makers that reduced competition in banking is not necessarily bad because, other effects not withstanding, reduced competition results in a more stable banking industry…*
>
> *For obvious reasons, policy spokespersons are loath to publicly state that they encourage monopoly rent earning by banks so as to stabilise that sector. However, there is a historical track record of events that is strongly suggestive... There is also much suggestive evidence based on the treatment of banks in the many banking crises around the world. Local and international agencies have pursued aggressive merger policies in almost all crisis situations, even in bank markets that were already highly concentrated by any standard.*

Similarly, the Productivity Commission (2018, p. 524) has observed:

> *It is common for regulators here and overseas to see genuinely rivalrous behaviour as a risk, believing that it may erode standards of conduct across the banking industry and lead to systemic instability. This regulatory culture is based on the notion that constraining competition has the potential to insulate financial institutions from crises.*

There is also evidence to suggest that such attitudinal dispositions on the part of Australian financial regulators have had a deleterious impact on competition. The then Chairman of the ACCC, Graeme Samuel (2009), commented following the ACCC's decision not to oppose CBA's acquisition of BankWest:

> *With the advice that we had at the time, remember this was almost at the peak of the near global panic in terms of the banking system and the financial system worldwide towards the end of last year. This advice that we had at the time from both APRA and the Reserve Bank, I think, gave us absolutely no choice, we had to approve that merger. Now if we had that over again, I'm not sure that we would have any different of – or any different result based on the advice that we received from APRA and the Reserve Bank.*

In these comments, Mr Samuel appears to be insinuating the ACCC subverted its usual competition assessment process in mergers at the behest of APRA and the RBA.

APRA has made no secret of its intention to sacrifice competition in order to protect financial system stability in representations it made to the Productivity Commission inquiry into competition in the

[12] A monopoly rent is the excess distribution earned by any factor of production in a production process above the amount required to draw the factor into the process or to sustain the current use of the factor.

Australian financial system. The Chairman of APRA, Wayne Byers, commented at a Productivity Commission hearing:

> *… there are times when it's important for APRA to actively temper competitive spirits within the financial sector. (Productivity Commission, 2017, p. 3)*

In its submission in response to the Productivity Commission's draft inquiry report, APRA (2018g, p. 4) commented:

> *APRA's pursuit of system stability, even if it at times may, at the margin, reduce competitive pressures, is predicated on delivering the important community benefit of a stable financial system.*

The Productivity Commission (2018, p. 14) has observed on the question:

> *… while there is much hand-wringing about competition, there has been little shift in the regulatory culture. The emphasis on stability — best represented by the repeated use of the phrase 'unquestionably strong' — persists.*

However, the competition-fragility view of banking that purports that the exercise of market power leads to more stability in the financial system has not gone unchallenged. According to Tommaso Padoa-Schioppa (2001, p. 16), a former executive board member of the European Central Bank:

> *… if banks were strengthened by the gymnastics of competition, the banking system would be stronger and more resilient to shocks.*

Professor Franklin Allen of the University of Pennsylvania and Professor Douglas Gale of New York University (2004, p. 455) have suggested that subordination of competition policy to financial stability may be unwise for a number of reasons. First, the extent to which there is a negative trade-off between competition and financial stability may be questioned in that while the costs of financial crises are high, it does not follow that it is necessary to reduce competition to avoid those costs. Second, the wide range of estimates of the efficiency costs from concentration is at least consistent with a high efficiency gain from greater competition. Third, the costs of financial crises occur infrequently, perhaps every decade or few decades, whereas the inefficiency cost from a lack of competition are borne continuously.

Professor Franklin Allen, Professor Elena Carletti of the European University Institute and Professor Robert Marquez of the University of California at Davis (2011) have argued that when credit markets are competitive, market discipline coming from the asset side induces banks to hold positive levels of capital as a way to commit to monitor and attract borrowers.

More recent studies have provided empirical support for the benefits of competition in improving stability in the financial system. Professor Klaus Schaeck of Bangor University and Martin Cihak of the International Monetary Fund (2012) have found that competition goes hand in hand with higher capital ratios based on a study of 2,600 banks across 10 European countries. This led Schaeck and Cihak (2012, p. 861) to draw the following conclusions:

> *We conclude that the most important contribution of this study is the evidence supporting the notion that competition incentivises banks to increase capital holdings…*
>
> *In light of the recent crisis, these results have important implications for policymaking, as they suggest that a critical re-examination of the idea that restricting competition (e.g., via activity and entry restrictions) is a way to achieve sounder banking systems.*

In a follow-up study, Schaeck and Cihak (2013) investigated the relationship between competition, productive efficiency and stability and tested whether improvements in productive efficiency is the mechanism through which competition enhances stability in the financial system. Schaeck and Cihak found that competition robustly improves stability via the channel of productive efficiency.

Assistant Professor Deniz Anginer of Virginia Tech and Asli Demirguc-Kunt and Min Zhu from the World Bank (2014) investigated the relationship between bank competition and systemic stability and found a robust positive relationship between the two. They found that greater competition encourages banks to take on more diversified risks, making the banking system less fragile to shocks. Anginer, Demirguc-Kunt, and Zhu (2014, p. 21) conclude:

> *Our paper has important policy implications. Unlike most of the earlier literature, our findings suggest that market power is associated with greater systemic fragility, which suggests the importance of ensuring a competitive environment in banking.*

A study by Dr Aurélien Leroy of the University of Nantes and Associate Professor Yannick Lucotte of the Paris Business School (2017) on the existence of a trade-off between competition and stability among European listed banks has found that while competition encourages bank risk-taking and thus increases individual bank fragility, that competition also enhances financial stability by decreasing systemic risk. Leroy and Lucotte (2017, p. 210) thus conclude:

> *… our results suggest that pro-competitive policy should be undertaken in the European banking system to maintain macro-financial stability.*

A study on the influence of competition on the financial stability of the commercial banks in the ASEAN-5 countries found that competition is positively related to financial stability and capitalisation, and negatively related to credit risk, leading the authors' to following policy conclusions:

> *These results demonstrate that increase in competition and decrease in market power influence banks to hold more capital and take less credit risk which enhance their financial stability. (Noman, Gee, & Isa, 2017)*[13]

Two recent studies have arrived at mixed findings on the *competition-fragility* view of banking.

A recent Bank of England Working Paper has found that while asset portfolio risk decreases in a more competitive environment, overall stability also decreases in a more competitive environment (de-Ramon, Francis, & Straughan, 2018, p. 4). This is apparent anomaly is explained by conflicting results at the individual firm level. While on the one hand competition encourages relatively less sound banks (closer to insolvency) to reduce costs, lower portfolio risk and increase capital ratios, strengthening their stability, on the other hand it lowers the incentives of relatively more sound banks (farther from insolvency) to build capital ratios, weakening their stability (de-Ramon, Francis, & Straughan, 2018, p. 1).

Professor Dean Corbae from the University of Wisconsin and Professor Ross Levine from the University of California at Berkley (2018) have also found support for both sides of the debate on the *competition-fragility* view of banking. On the one hand, they find there is a competition-stability trade-off in that the removal of regulatory impediments to competition increases the fragility of the banking system. By squeezing bank profit margins and lowering franchise values, competition boosts risk as banks increase lending to riskier firms. On the other hand, they also find support for the other side of the trade-off in that competition boosts bank efficiency.

[13] ASEAN-5 refers to Indonesia, Malaysia, the Philippines, Thailand and Vietnam member states of the Association of Southeast Asian Nations (ASEAN).

Corbae and Levine (2018) suggest that policymakers can mitigate the fragility repercussions of lowering barriers to competition by enhancing bank governance and tightening leverage (capital) requirements. In order to improve bank governance, they suggest the pursuit of regulatory policies that either directly or indirectly encourage bank executives to focus more on the long-run value of the bank and less on shorter-run concerns, including compelling bank decision makers to have material skin-in-the-game, so that those determining bank risk have a sufficient proportion of their personal wealth exposed to those risks.

Corbae and Levine (2018) also find that tightening leverage requirements (i.e., raising non-risk-based capital requirements) reduces bank risk taking. According to Corbae and Levine the rationale behind this result is as follows:

> *If tightening leverage requirements increases the amount of personal wealth that owners have at risk, then owners will have stronger incentives to constrain excessive bank risk taking.*

7. Adverse Competition Consequences from Prudential Regulation

7.1 Implementation of Basel II

Basel II took effect in Australia from 1 January 2008. According Andrew Haldane (2013, p. 25), the Chief Economist of the Bank of England:

> *These design features of Basel II were intended to provide incentives to banks to move to internal models and thereby improve their risk management. The link from the use of models to improved risk management is at best tenuous. But more fundamentally, this design feature may also have potentially perverse consequences for systemic risk and competition.*

According to Adrian Blundell-Wignall and Caroline Roulet from the OECD (2013, p. 8), OECD research has consistently argued the Basel system is excessively complex, rendering it ineffective, and that a simple leverage ratio should be the primary regulatory tool for bank capital.[14]

The internal rating basis (IRB) method for calculating risk weights provided for under Basel II has been described by some as essentially self-regulation. The IRB approach relied on the self-interest of the banks to lead them to use the best possible estimates of risk in their own management of assets (Elliott, 2010, p. 5).

According to then Prime Minister Kevin Rudd (2009, p. 23):

> *… the Basel II guidelines, published in June 2004, have now been demonstrated to be inadequate because they left the determination of risk to flawed credit-ratings processes and the banks' own "self-regulated" internal assessment models.*

Andrew Haldane (2013, p. 18) has observed the IRB approach – like other attempts at self-regulation – has arguably been gamed or arbitraged:

> *Under a self-assessed standard, banks may have both the incentive and the ability to shade downward risk weights, or to switch to lower risk-weighted asset categories, thereby boosting reported capital ratios. The aggregate evidence is consistent with this having occurred secularly and on a significant scale.*

[14] Leverage – or gearing as it is sometimes called, is the extent to which a business funds its assets with borrowing rather than equity (Ingves, 2014). Leverage ratios measure the extent to which a bank has financed its assets with equity.

In the Australian context, the Murray Report observed:

> *Concerns have also been raised that banks may have the capacity —and incentive — to manipulate IRB models to achieve a lower capital requirement. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 85)*

7.2 Competition Issues with the Implementation of Basel II

APRA downplayed as well as dismissed competition concerns during its implementation of Basel II and did not follow due process by completing the required competition assessment checklist in the Regulation Impact Statement it prepared for Basel II. The actions of APRA in turn implies the "competition-fragility" view of banking is endemic to the organisation. The outcomes arising from the interaction of the GFC coupled with the implementation of Basel II vindicates the criticisms of Basel II from a competition perspective.

When Basel II was published in 2004 banks were informed the capital weight given to mortgages would fall from 50 per cent under Basel I to 35 per cent under Basel II, and to as little as 15-20 per cent depending on whether and how a bank would use the IRB method (Blundell-Wignall, Atkinson, & Lee, 2009, pp. 15-16). Thus, under Basel II, credit and operating risk weights determined under the standard approach were much higher than those under the IRB method used by the major banks. In this regard, the RBA (2015, pp. 54-55) found that at the end of June 2015 the average risk weight of residential mortgage exposures using the IRB method was 17 per cent as compared to 40 per cent using the standardised approach.

Higher risk weights mean more capital is allocated to the lending, which leads to a higher cost of funds for ADIs using the standardised approach. The higher cost of funds for ADIs using the standard approach in turn influence their pricing of lending products, thus reducing their competitiveness with IRB banks for lending. The funding advantage provided to IRB banks over ADIs using the standardised approach is substantial, as outlined by the Productivity Commission (2018, p. 239):

> *For otherwise identical ADIs, the advantage of a 25 [per cent] average risk weight (APRA's minimum for IRB banks) compared to the 39 [per cent] average risk weight of standardised ADIs is a reduction of approximately 0.14 percentage points in the cost of funding the loan portfolio. This difference translates into an annual funding cost advantage of almost $750 on a residential mortgage of $500 000, or about $15 000 over the 30 year life of a residential mortgage (assuming an average interest rate of 7 [[per cent] over that period).*[15]

The use of lower capital weights under the IRB method raises the return on capital for a given mortgage asset, and the corollary of this is that greater concentration in low-capital-weighted mortgages improves the overall bank return (Blundell-Wignall, Atkinson, & Lee, 2009, p. 16). As former Group Executive of Business Banking at NAB Joseph Healy (2010) observed:

> *Basel II has been a big boost to banks with a strong Retail Banking franchise, enhancing returns on what was an already very profitable segment by lowering the cost of capital required to be funded out of margins. Fact.*

The adoption of the IRB method also meant the major banks could engage in excessive leveraging and in turn increase their capacity for lending. Based on the average risk weight of residential mortgage exposures for banks using the IRB method in June 2015 implies a leverage multiple of

[15] $15 000 estimate based on amortising $500 000 loan over 360 months at 7 per cent annual interest, of which the IRB ADIs have a 0.14 percentage point cost advantage over standardised ADIs (Productivity Commission, 2018, p. 239n).

almost 74 times the amount of capital held, more than double the implied leverage for those using the standardised approach.

Through its implementation of Basel II, APRA put smaller ADIs at a major competitive disadvantage and undermined competitive neutrality. Professor Christine Brown and Professor Kevin Davis of Monash University warned of this possibility as far back in 2002 that Basel II could threaten competitive neutrality in the banking system:

> *Basel 2 has significant potential to affect structure, conduct and performance in three distinct areas or the economy. First, it may alter the industrial structure of the banking industry if capital incentives do provide a competitive advantage to banks using advanced risk management techniques. (Browne & Davis, 2002)*

Rather presciently, Professor Davis (2005) further warned:

> *If the internal risk weights for IRB banks for housing mortgages and retail lending are as low as the Quantitative Impact Studies have indicated, there is the potential for such banks to make significant inroads into those markets at the expense of other banks operating under the standardised approach. It would be quite anomalous if a capital accord developed primarily to suit the sophisticated activities of very large banks in international markets, had the effect of giving them a competitive advantage in the 'bread and butter' markets where smaller local banks can, arguably, assess and manage risk equally well.*

It appears that APRA was well aware of competition concerns before the implementation of Basel II but chose to downplay their potential impact. According to then APRA Executive General Manager Charles Littrell (2003):

> *There are material competition issues associated with Basel II…*
>
> *The main domestic competition issue is the split between [internal ratings based] banks and standardised ADIs, including smaller banks. We recognise the potential for competitive disequilibrium between [internal ratings based] and standardised approach users, particularly in home loans. Doubtless this will be a matter for considerable industry discussion and possibly some angst, but our calculations indicate that the larger bank's current capital advantages will not widen materially as a result of Basel II's introduction.*

The then Chairman of APRA, Mr John Laker (2006), dismissed concerns of smaller financial institutions at an overseas conference in the following terms:

> *Many smaller ADIs have expressed concerns that this outcome will, nonetheless, change their competitive position vis-à-vis the larger banks. We in APRA, however, do not view Basel II as a vehicle for changing the competitive landscape but rather as an opportunity to better align regulatory capital with the risks that ADIs assume and how well those risks are managed. It is also worth noting that there have long been differences in the average capital ratios of different sectors of the ADI industry in Australia.*

While Mr Laker's observations that there had long been differences in the average capital ratios of different sectors of the ADI industry is probably correct, he did not address whether implementation of Basel II would open up further differences between the major banks and other ADIs and thus dramatically alter the competitive landscape, thereby undermining competitive neutrality.

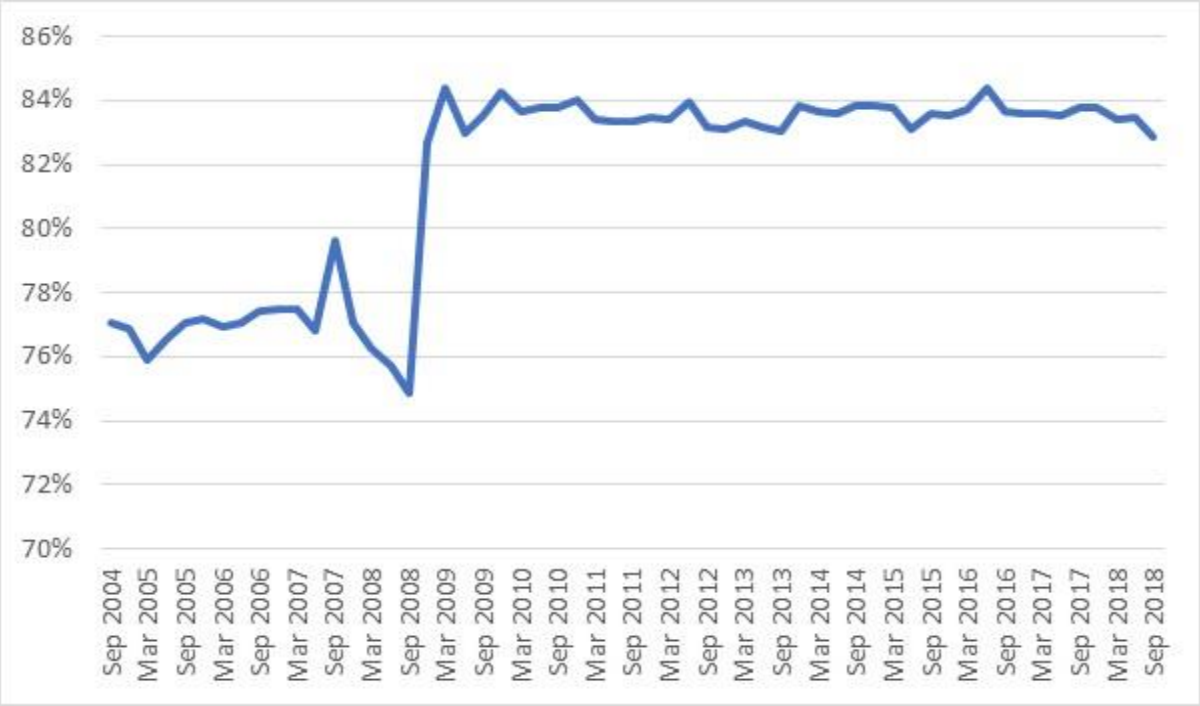
The final Regulation Impact Statement (RIS) for the implementation of Basel II was prepared by APRA (2007) in November 2007 and was silent on the potential competitive disadvantage of smaller ADIs under Basel II despite the requirement to complete a competition assessment checklist.[16] Despite the potential for smaller ADIs being placed at a competitive disadvantage under Basel II not being addressed, the RIS was assessed as adequate by the Office Best Practice Regulation (2008). This suggests the RIS was more of a *tick all of the boxes* exercise rather than a serious examination of potential regulatory flaws within the Basel II framework.

Furthermore, APRA (2007, p. 7) declared advanced methods were the exclusive domain of the major banks:

> *The larger Australian banks are among the global banks that commenced developing sophisticated risk management systems and internal economic capital models prior to the release of Basel II. This gives those banks a foundation on which to base the advanced Basel II methodologies. The small ADIs do not have the resources, or indeed the need, to implement the advanced approaches and will implement the standardised approaches.*

The available evidence suggests the interaction of the GFC combined with the implementation of Basel II provided a major fillip to the major banks to the detriment of other ADIs. This can be seen in Figure 5 below that shows the market share of interest income earned on housing loans by the major banks dramatically spiked as well as permanently increased in the second half of 2008 onwards. The advantage gained by the major banks at that time has largely remained intact.

Figure 5: Percentage Market Share of Interest Income Earned on Housing Loans by the Major Banks – September Quarter 2004 to September Quarter 2018



Source: APRA (2019a).

APRA (2014, p. 73) has attributed this dramatic change entirely upon the drying-up of funding from the residential mortgage-backed securities market on which some of the other ADIs had previously relied during the GFC. However, this change also coincided at a time when the major banks were able to hold much less regulatory capital for credit risk thus lowering their cost of funds, providing

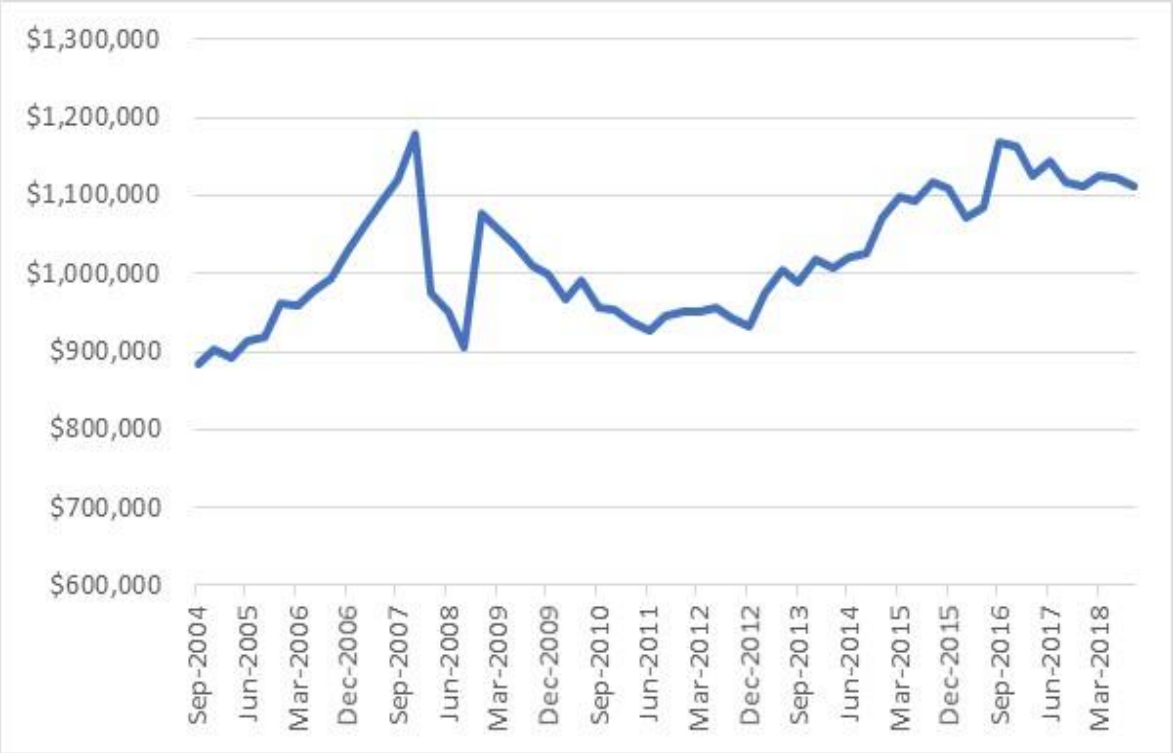
[16] See Office of Best Practice Regulation (2007, p. 30).

them with the scope to reduce their relative prices on home loan products by virtue of the IRB method. As a matter of economic theory, even a monopolist will generally be expected to pass along at least some portion of a reduction in marginal costs (Frankel, 2007, p. 47). As business commentator Alan Kohler (2015) has observed, the IRB method:

> *… represents a built-in regulatory bias towards the banking oligopoly in Australia, and makes it much harder for the smaller players to take market share off them because their interest rates have to be higher to pay for the capital.*

The introduction of Basel II enabled the major banks to generally hold less regulatory capital for credit risk from the beginning of 2008 until the end of 2012. The only brief reversal to this trend occurred during the December quarter 2008 when the major banks carried out capital raisings. In real terms, the amount of regulatory capital for credit risk held by the major banks has still so far not exceeded the level attained in the December quarter 2007 prior to the implementation of Basel II. This is illustrated in Figure 6 below.

Figure 6: Regulatory Capital Held for Credit Risk by the Major Banks in Real Terms (2007-08 constant prices $ million) – September Quarter 2004 to September Quarter 2018



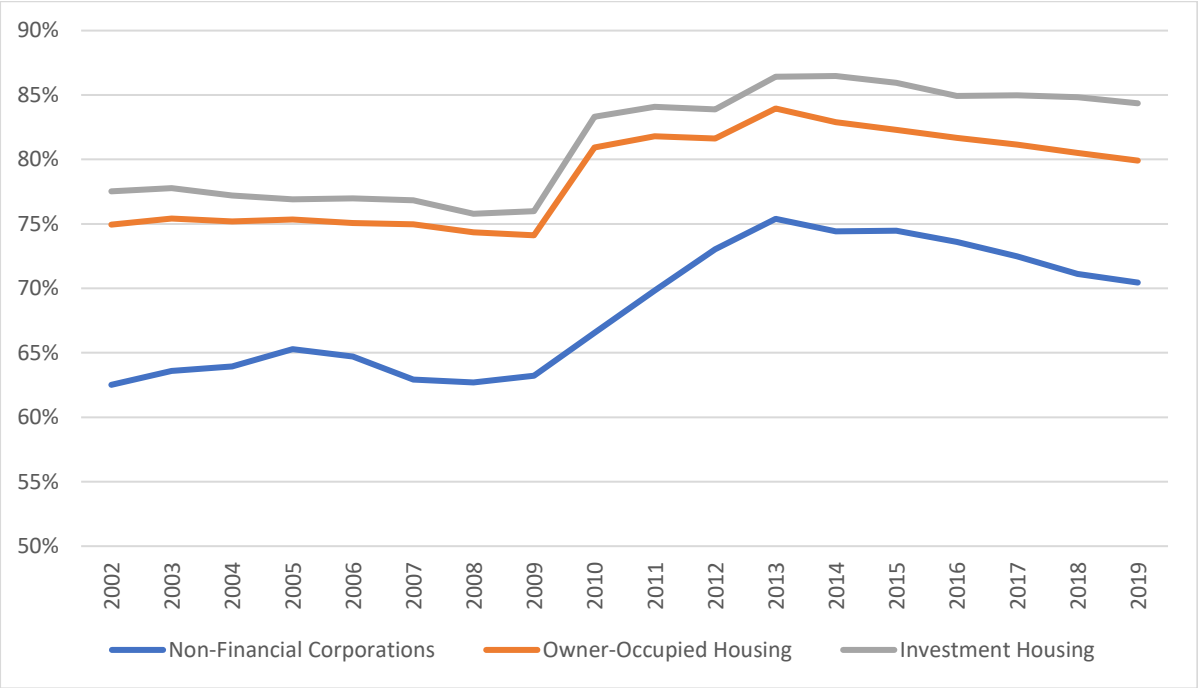
Source: APRA (2019a)
Note: Deflated by the consumer price index (Australian Bureau of Statistics, 2019).

During period of implementation for Basel II, the major banks increased their market share across the three main bank lending categories of:

- owner occupied housing
- investment housing
- lending to non-financial corporations.

This is outlined in Figure 7 below.

Figure 7: Percentage Market Share of the Major Banks for Bank Lending for Owner Occupied Housing, Investment Housing and Non-Financial Corporations – 2002 to 2019



Source: APRA (2019).
Note: Figures for 2019 only related to the calendar to the end of February 2019.

In its initial submission to the Murray Report inquiry, APRA (2014) was antithetic to the suggestion that differing approaches in risk weights under Basel II could be tilting the playing in favour of banks using the IRB approach and thereby stifling competition:

> *APRA's prudential requirements may affect the relative position of competitors in particular regulated industries by imposing differential capital costs, but other factors – such as scale, business models and operating and funding costs – are likely to have larger impacts on the competitiveness of smaller institutions. (Australian Prudential Regulation Authority, 2014, p. 15)*
>
> *APRA does not see any compelling reasons to depart from the Basel II capital framework, now well-established globally, to seek to deal with residual competition issues in housing lending. Comparing the specific risk-weight for a particular loan under the two approaches will give a misleading impression of the competitive impact of Basel II. (Australian Prudential Regulation Authority, 2014, p. 76)*

APRA dug its heels in to support the lack of competitive neutrality under Basel II even though the Chief Economist of the Bank of England, Andrew Haldane (2013, p. 25), had commented the previous year that:

> *A second unintended consequence of the move to a model-based regulatory framework is that it has tended to work in quasi-discriminatory ways. In particular, it has tended to discriminate both between small and large banks and between new entrants and existing incumbents in the amounts of capital they are required to hold even against identical exposures.*
>
> *The reason for this is that small or new entrant banks will generally adhere to … simple standardised approaches for measuring risk. In general, they will have*

> *neither the data nor the technology to support internal model approaches. But simpler, standardised approaches tend to require much higher amounts of capital than internal model approaches. Indeed, this was a design feature of Basel II.*
>
> *These design features of Basel II were intended to provide incentives to banks to move to internal models and thereby improve their risk management. The link from the use of models to improved risk management is at best tenuous. But more fundamentally, this design feature may also have potentially perverse consequences for systemic risk and competition.*

It is also evident from research across the world that Basel II and the introduction of the IRB method provided an unfair competitive advantage to those financial institutions that could take advantage of it. In relation to the United Kingdom, a Bank of England Staff Working Paper recently concluded:

> *The switch to Basel II gave lenders using internal (IRB) models a comparative advantage in capital requirements (compared to lenders using the standardised approach, or SA), particularly at low loan-to-value (LTV) ratios, and this was reflected in prices and quantities. Lenders in general reduced their prices by more for low (versus high) LTV lending. (Benetton, Eckley, Garbarino, Kirwin, & Latsi, 2017, p. 26)*

The Murray Report completely rejected APRA's position and recognised the IRB approach had usurped competitive neutrality by tilting the playing field against financial institutions using the standardised approach:

> *In the Inquiry's view, the relative riskiness of mortgages between IRB and standardised banks does not justify one type of institution being required to hold twice as much capital for mortgages than another. This conclusion is supported by the findings of APRA's recent stress test, which found regulatory capital for housing was more sufficient for standardised banks than IRB banks.*
>
> *The gap between average IRB and standardised mortgage risk weights means IRB banks can use a much smaller portion of equity funding for mortgages than standardised banks. Because equity is a more expensive funding source than debt, this translates into a funding cost advantage for IRB banks' mortgage businesses to the extent that the riskiness of mortgage portfolios is similar across banks.*
>
> *Given that mortgages make up a significant portion of the assets of almost all Australian ADIs, competitive distortions in this area could have a large effect on their relative competitiveness. This may include inducing smaller ADIs to focus on higher-risk borrowers. Restricting the relative competitiveness of smaller ADIs will harm competition in the long run. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 61)*

APRA dragged the chain on this matter until it was forced to act in response to Recommendation 2 of the Murray Report which recommended that APRA should:

> *Raise the average internal ratings-based (IRB) mortgage risk weight to narrow the difference between average mortgage risk weights for authorised deposit-taking institutions using IRB risk-weight models and those using standardised risk weights. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 60).*

The Murray Report suggested the average minimum risk weight on IRB banks for housing loans in the range of 25 and 30 per cent would be appropriate (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 65). In July 2015 APRA (2015) announced that it would raise the average risk weights on

IRB banks to at least 25 per cent from an average level of 16 per cent, at the lowest end of the range suggested by the Murray Report. This change came into effect on 1 July 2016.

While average risk weights for the major banks initially rose following the imposition of average risk weight on IRB banks by APRA, two of the major banks in ANZ and CBA have since dramatically reduced their risk weights on residential mortgages with the lowest risk of default (those with a probability of default of between 0 and 0.1 per cent). This can be seen in Figure 8 below.

Figure 8: Major Bank Risk Weights for Mortgage Holders with the Lowest Risk of Default - March 2016 to December 2017*

Sources: ANZ (2018), CBA (2019), NAB (2018), Westpac (2018).
*Lowest risk of default are those residential mortgage holders with a probability of default between 0 and 0.1 per cent.

Despite the imposition of an average risk weight on residential home loans, it appears some of the major banks have decided to engage in cream skimming by targeting home loans with the lowest risk of default. Cream skimming occurs when the competitive pressure focuses on the high-demand customers (the *cream*) and not on low- demand ones (the *skimmed milk*) (Laffont & Tirole, 1990, p. 1042). Cream skimming has adverse consequences as it skews the level of risk in house lending away from the majors banks and towards other ADIs who have to deal with an adversely selected and far riskier group of home loan applicants. The RBA (2018) board minutes from June 2018 noted:

> *… lenders had been competing for high-quality borrowers, which had led to a decline of around 15 basis points in the average mortgage interest rate on outstanding loans since August 2017.*

In February 2019 the RBA (2019) noted:

> *… the effect of rising standard variable rates had been partly offset by borrowers refinancing at lower rates, given the strong competition for low-risk borrowers.*

In April 2019 the RBA Governor (Reserve Bank of Australia, 2019a) observed:

Mortgage rates remain low and there is strong competition for borrowers of high credit quality.

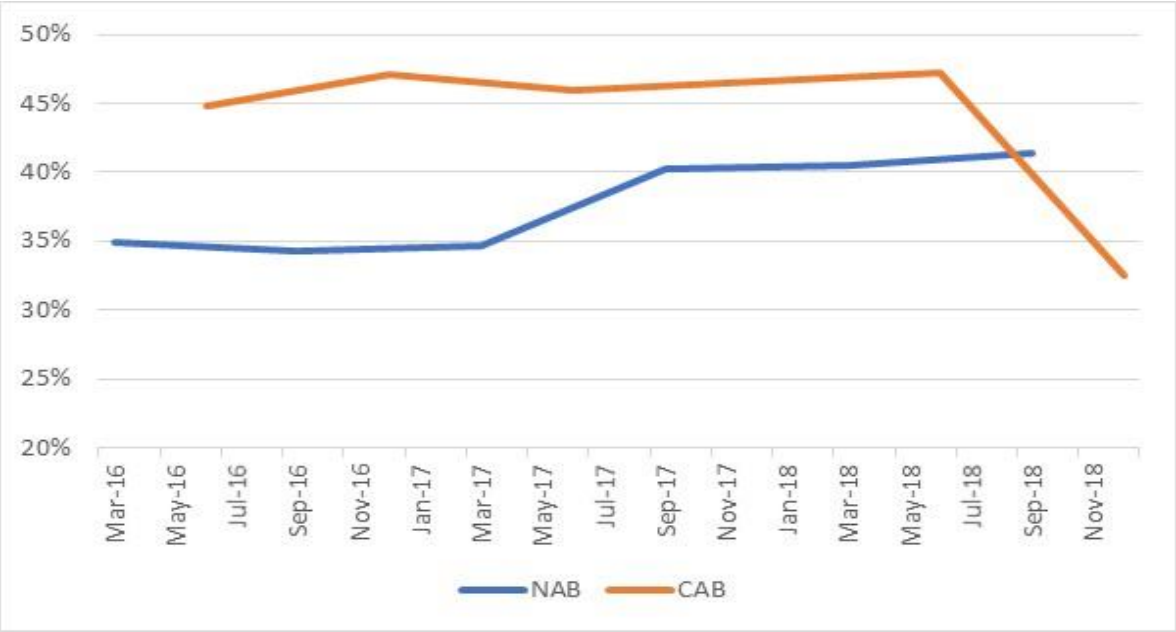
In particular, it appears CBA has recently been especially aggressive in increasing the relative percentage of its residential mortgage portfolio made-up of mortgage holders with the lowest risk of default. This can be seen in Figure 9 below.

Figure 9: Percentage of Major Bank Residential Mortgage Portfolio Made-up of Mortgage Holders with the Lowest Risk of Default – March 2016 to December 2018

Sources: ANZ (2018), CBA (2019), NAB (2018), Westpac (2018).

While it appears that CBA set out on an aggressive path to increases its relative holding of the residential mortgage holders with the lowest risk of default, it appears that NAB during 2017 chose to pursue different strategy. NAB sought to increase its relative holding of residential mortgage holders with the second lowest probability of default (between 0.1 and 0.5 per cent risk of default) while at the same time, CBA chose to decrease it relative holding of this group. This is outlined in Figure 10 below.

Figure 10: Percentage of NAB Residential Mortgage Portfolio Made-up of Mortgage Holders with between 0.1 and 0.5 per cent Risk of Default – March 2016 to September 2018



Source: CBA (2019), NAB (2018).

Based on Figures 9 and 10, it appears that NAB took a conscious decision to shed customers in the lowest risk category to take on more customers in its second lowest risk category. On the other hand, CBA has taken a different approach by targeting customers in the lowest risk category and shedding customers with between 0.1 and 0.5 per cent risk of default. CBA (2019) has also increased its overall mortgage portfolio share of customers with between 0.5 per cent and 3 per cent risk of default from around 22 per cent in June 2018 to 30 per cent in December 2018.

Risk weights should, in principle, only reflect the risks of underlying assets and risks inherent to the predictive capacity of IRB or standardised systems (Productivity Commission, 2018, p. 174). One of the reasons cited for the recommendation by the Basel Committee for the introduction of an output floor on risk weights is to guard against excessively optimistic assessments of risk, which may arise due to a lack of stress in historical data or incentives for banks to underestimate their risk-weighted assets when using internal models (Coen, 2017).

However, for banks using the IRB method the calculation of risk weights has become a major source of competitive advantage in attaining lower funding costs. This can be seen in Table 2 below comparing composition of the cost advantage from current risk weighting for the major banks against a bank using the standardised method for a mortgage of $400,000 with the lowest probability of default.

*Table 2: Composition of the Cost Advantage from Current Risk Weightings for the Major Banks versus a Bank using the Standardised Method for a $400,000 Residential Mortgage (Owner-Occupier) with the Lowest Probability of Default**

	Standardised ADI	ANZ, NAB and Westpac	CBA
Common Equity Tier 1 Required	8%	8%	8%
Risk Weight	35%	6%	5%
Equity Funding	$11,200	$1,920	$1,600
Deposit & Debt Funding	$388,800	$398,080	$398,400
Pre-Tax Cost of Equity	$1,600	$274.29	$228.57
Cost of Deposits and Debt	$9,720	$9,952	$9,960
Total Funding Costs	$11,320	$10,226	$10,189
Cost of Funds	2.83%	2.56%	2.55%

* Lowest risk of default are those residential mortgage holders with a probability of default between 0 and 0.1 per cent.
Assumptions: the standardised and IRB ADI have: an average cost of debt and deposits of 2.50%; a 10% post-tax cost of regulatory capital; a 30% tax rate; and equal operating costs and impairment charges. These assumptions were based on the Australian Bankers' Association (Australian Bankers' Association, 2017, p. 48) and the Productivity Commission (Productivity Commission, 2018, p. 240).

In the above scenario, the major banks enjoy a funding cost advantage in excess of $1,000 on a residential mortgage of $400 000. According to the William Coen (2017), the Secretary General of the Basel Committee, one of the reasons why the Basel Committee is introducing an output floor on risk weights:

> *… is to even up the playing field by limiting the differences in capital requirements between banks using internal models and those of banks using standardised approaches.*

Based on Table 2 above, an output floor on risk weight cannot come soon enough in order to restore some semblance of competitive neutrality, although it is only being introduced at the aggregate level, and thus may not be effective in closing the gap in risk weights in relation to low risk loans.

Based on Table 2 above, an output floor on risk weight cannot come soon enough in order to restore some semblance of competitive neutrality, although if it is only introduced at the aggregate level it may not be effective in closing the gap in risk weights in relation to low risk loans.

8. Prudential Regulation Policy Solutions

There are a range of policy measures that could be implemented to ensure that the operation of prudential regulation that does not continue to operate in such a manner as to stifle competition in the Australian banking system. These policy measures are explored below.

8.1 Provide APRA with a Secondary Competition Objective

According to Professor Vives (2016, p. 4), competition policy and prudential regulation need to be coordinated. Consistent with this, previous reviews of the Australian financial system have highlighted the lack of coordination between prudential regulation and competition policy. According to the Murray Report:

> *… there is currently no process for regularly assessing the state of competition in the financial system, as there is for assessing stability in the form of the Financial Stability Review. This creates the risk that broader competition issues will 'fall between the cracks' as regulators focus on their specific mandates for stability or consumer protection. (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, pp. 255-256)*

In a similar vein, the Productivity Commission (2018, p. 541) has observed that:

> *There is no current requirement for competition to be considered, beyond the suggestion in APRA's legislation that it should take competition into account, which has resulted in the prudential regulator internalising the debate in what would, at times, be an unrealistic balancing act.*

To address the lack of coordination between prudential regulation and competition policy, the Productivity Commission (2018, p. 556) made the following recommendation in its report on competition in the Australian financial system:

> *To address gaps in the regulatory architecture related to lack of effective consideration of competitive outcomes in financial markets, the ACCC should be given a mandate by the Australian Government to champion competition in the financial system, including in decisions taken by regulators that have or may have the outcome of restricting competition.*

Under the Productivity Commission's concept, the ACCC, as competition champion, would be tasked with identifying existing gaps in competition policy within the regulatory system and financial system as required (Productivity Commission, 2018, p. 550). It is also envisaged the ACCC would publish a bi-annual financial system competition report that would contribute towards holding other regulators to account, as a comprehensive review on competition will also touch on the effects of regulatory intervention on competition.

The major flaw with the Productivity Commission's concept is that will lack any legislative mandate, and will rely on the goodwill of APRA to listen to arguments put by the ACCC on competition grounds:

> *The ACCC has no power to affect the regulatory decisions made by the financial regulators … We do not propose changing this. Rather, we ask regulators to listen, a highly desirable but relatively cheap concession to improving the quality of interventions. (Productivity Commission, 2018, p. 545)*[17]

In the absence of any legislative mandate, the Productivity Commission (2018, p. 539) rather naively contends:

> *The Commission is confident APRA can give the competition champion a fair hearing.*

[17] Underlined in the original text.

It is difficult to envisage how the appointment of a competition champion will suddenly change APRA's consistent pattern of wilful disregard for competition considerations as previously outlined. In order to ensure APRA is fully cognisant of the competition implications of its decisions regarding prudential regulation, reform will need to come from within. Such an approach has been adopted in the United Kingdom through legislative reforms to its prudential regulatory system.

The UK Prudential Regulation Authority (PRA) of the Bank of England has two primary objectives: to promote the safety and soundness of the firms it regulates, focusing on avoiding and minimising adverse effects that they can have on the stability of the UK financial system; and an objective specific to insurance firms, to contribute to the securing of an appropriate degree of protection for those who are or may become policyholders.

In March 2014, the PRA was given a statutory secondary competition objective which states that:

> *When discharging its general functions in a way that advances its objectives, the PRA must so far as is reasonably possible act in a way which, as a secondary objective, facilitates effective competition in the markets for services provided by PRA-authorised persons in carrying on regulated activities.*

This Secondary Competition Objective (SCO) requires the PRA to take a more proactive stance towards competition than had previously been the case for the Financial Services Authority, the PRA's regulatory predecessor (Independent Evaluation Office - Bank of England, 2016, p. 5).

The PRA was originally established as part of the Bank of England by the UK Financial Services Act 2012. Not dissimilar to APRA's current legislative purpose, the PRA originally commenced with a 'have regard' duty with respect to competition, namely to "the need to minimise any adverse effect on competition in the relevant markets that may result from the manner in which the PRA discharges those functions" (Parliamentary Commission on Banking Standards, 2013, p. 473). In essence, this regulatory principle sought to ensure that competition considerations were at least a factor the PRA should consider when taking actions to meet its primary objectives (Dickinson, Humphry, Siciliani, Straughan, & Grout, 2015, p. 337).

During the passage of the UK Financial Services Act 2012, the House of Commons Treasury Committee (2012, p. 33) recommended the PRA be given a secondary competition objective:

> *It remains our view that competitive markets need both freedom to exit and freedom to enter. The Bill contains no proposal for specific objectives related to competition for the Prudential Regulation Authority. We recommend that the House of Lords consider amending the Bill to make competition an objective of the Prudential Regulation Authority.*

While this suggestion was not taken up at the time during the passage of the original legislation, the UK Parliamentary Commission on Banking Standards (2013, p. 474) made a similar recommendation the following year:

> *The Commission has concluded that the PRA should be given a secondary competition objective. A 'have regard' to competition simply does not go nearly far enough. As the experience of the FSA shows, a 'have regard' duty in practice means no regard at all. With only a 'have regard' duty given to the PRA, the risk is high that it will neglect competition considerations. This would be of great concern, given the potential for prudential requirements to act as a barrier to entry and to distort competition between large incumbent firms and new entrants. The current legislation strikes an inadequate balance in this area.*

In 2013, the UK Government agreed with the UK Parliamentary Commission on Banking Standards' recommendation and introduced the SCO (Dickinson, Humphry, Siciliani, Straughan, & Grout, 2015, p. 337).

The SCO does not require the PRA to act in a manner that is incompatible with its primary objectives (Bank of England Prudential Regulation Authority, 2016, p. 8). The existence of the SCO means the PRA should consider, but is not necessarily required to adopt, those options which would deliver greater benefits to competition for a given objective of safety and soundness or policyholder protection. An added advantage of looking at prudential regulation through a competition lens is that it provides a check on whether prudential interventions are being applied proportionately, and to guard against the risks of unintended consequences. The SCO does not mean that the PRA is a 'competition regulator'.

The PRA (2016, pp. 10-13) has adopted a four-pronged approach to the implementation of the SCO:

1. Structural changes and increasing capability – the PRA has undertaken a series of measures to embed the SCO in its ways of working, to ensure that competition issues are considered wherever relevant.
2. Research agenda – the PRA is undertaking a number of research projects on the relationship between prudential regulation, financial stability and effective competition.
3. Internal and external communication of the PRA's approach to the SCO – the PRA has made progress in communicating the SCO and its practical implications both internally and externally.
4. Working with external stakeholders – the PRA has built strong and effective working relationships with competition regulators.

As part of its research agenda, the PRA (2017, p. 14) has already completed two research projects focusing on:

- the impact of IRB models on the pricing of mortgages
- developing indicators of effective competition in the UK deposit-taking sector.

To address the competitive disadvantage faced by firms using the standardised approach in the residential mortgage lending market, the PRA (2017, p. 5) undertook a review in 2016 of its approach to IRB credit risk model applications from smaller banks and building societies. The findings showed that many of the specific issues raised by IRB aspirants were linked to an overarching perception the PRA did not welcome IRB applications from smaller firms. As part of this review, the PRA (2017, pp. 6-7) has proposed measures that should enable firms that wish to obtain IRB permissions to understand better the PRA's expectations for IRB applications, and therefore enable firms to take investment decisions with greater confidence.

The PRA (2018, p. 33) has subsequently clarified its expectations on firms applying for IRB model approval. Since 2017, three applications have been received by the PRA, with at least six more expected over the next two to three years.

The PRA (2018, p. 33) has also taken measures to reduce the likelihood that capital standards are overly prudent for firms using the standardised approach for the assessment credit risk. The PRA estimates as a result that around a third of UK banks and building societies will have lower minimum capital requirements.

The UK Government also requires the PRA to publish an annual report on how it is delivering against its competition objective across financial services, to set out clearly the steps being taken to drive more competition and innovation and to help ensure the right incentives exist for new banks to enter the market (HM Treasury, 2015, p. 57).

A far better solution to coordinating prudential regulation with competition policy and overcoming the *competition-fragility* view of banking that appears endemic to APRA is to ensure that competition considerations are given due deliberation in prudential regulatory policy decisions through a statutory secondary competition objective as has been adopted in the United Kingdom.

8.2 Compel IRB Banks to Hold More Capital

According to the Productivity Commission (2018, p. 174), differences in the costs of funds faced by banks that have invested in IRB risk models and those that have not, was not a desirable target for policy. In this particular instance, the Productivity Commission was taking issue with the decision by APRA to raise the risk weights on IRB banks to at least 25 per cent on mortgage lending following the recommendation of the Murray Report that raised the funding costs of the major banks. The Productivity Commission (2018, p. 174) further commented on the matter:

> *The simple truth is that, in market circumstances that exist for home loans in Australia, cost rises are not pro-competitive.*

The principal cost of raising the average IRB mortgage risk weights is that greater use of equity, which is typically more expensive than debt, and would raise the average cost of funding for IRB banks (Murray, Davis, Dunn, Hewson, & McNamee, 2014a, p. 64).

However, the available evidence suggests that forcing SIFIs to hold more regulatory capital creates a win-win situation in that it not only improves macroprudential stability but also improves competitive outcomes in the banking system. Increasing the requirement of SIFIs to hold more regulatory capital ameliorates the problem of moral hazard in the banking system.

Tightening the capital requirements on banks reduces their fragility as it focuses on the banks' ability to absorb losses without becoming insolvent and makes sure they do not have too little equity (Admati & Hellwig, 2013, p. 94). Capital regulation also improves the incentives of bankers with respect to risk taking (Admati & Hellwig, 2013, p. 95). If a bank has more equity and less debt, more of the downside of its activities will be borne by the bank and its shareholders rather than by creditors or taxpayers. This increased equity gives bankers better incentives to manage the risks in their investments, and it gives shareholders better incentives to make sure managers do not take too much risk. The decisions made by banks with more equity will therefore take better account of risks.

According to Sir John Vickers (2018)[18]:

> *How well banks and their functional equivalents are capitalised is one of the fundamental policy questions for an economic system. It is a question on which there is an astonishing gap between the mainstream "official" view and the mainstream "economist" view. They cannot both be right, but how to resolve the difference?*

To that end, a group of 20 leading financial economists, led by Professor Anat Admati of Stanford University, warned on the eve of the G20 meeting in 2010 that:

> *Banks' high leverage and the resulting fragility and systemic risk contributed to the near collapse of the financial system. Basel III is far from sufficient to protect the system from recurring crises. If a much larger fraction, at least 15 per cent, of banks' total, non-risk-weighted, assets were funded by equity, the social benefits*

[18] Sir John Vickers is the former Chairman of the UK Office of Fair Trading from 2000 to 2005 and was Chair of the UK Independent Commission on Banking during 2010-11.

> *would be substantial. And the social costs would be minimal, if any. (Admati, et al., 2010)*

This group of financial economists argued that if banks had considerably more skin in the game in the form of equity held against their loan book, then banks would in turn behave more prudently:

> *Ensuring that banks are funded with significantly more equity should be a key element of effective bank regulatory reform. Much more equity funding would permit banks to perform all their useful functions and support growth without endangering the financial system by systemic fragility. It would give banks incentives to take better account of risks they take and reduce their incentives to game the system. And it would sharply reduce the likelihood of crises. (Admati, et al., 2010)*

According to Nassim Taleb (2018, p. 45):

> *… if bankers' profits accrue to them, while their losses are somewhat quietly transferred to society (the Spanish grammar specialists, assistant schoolteachers …), there is a fundamental problem by which hidden risks will continuously increase, until the final blowup. Regulations, while appearing to be a remedy on paper, if anything, exacerbate the problem as they facilitate risk-hiding.*

The Reserve Bank of New Zealand (RBNZ) (2019, p. 39) has proposed a Tier 1 capital ratio requirement of 16 percent for systemically important banks and a Tier 1 capital ratio requirement of 15 per cent for non-systemically important banks. According to RBNZ (2019, p. 13):

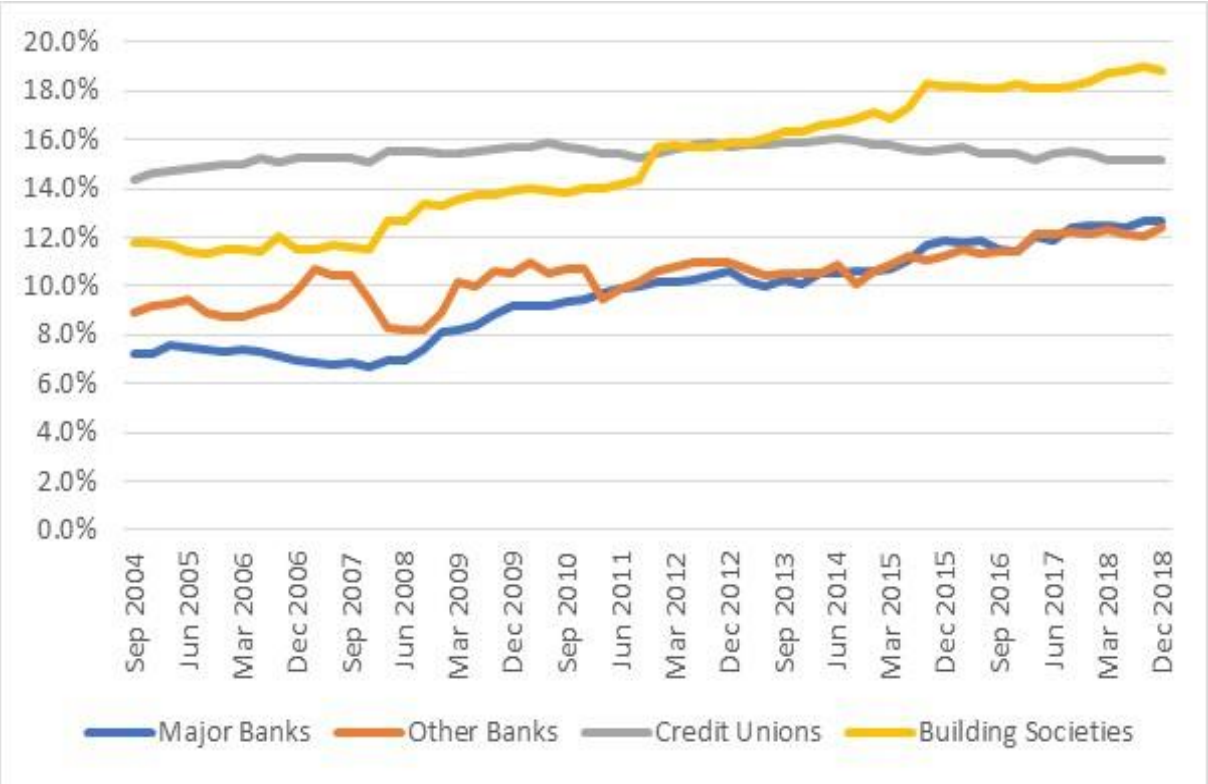
> *The literature suggests that up to relatively high levels of capital the benefits of increasing capital are expected to outweigh the costs. In this case, it makes sense to target higher capital, because doing so increases the stability and expected output (as the likelihood of banking crises fall).*

According to the economics correspondent for *The Australian* newspaper, Adam Creighton (2018):

> *And the award for the best public policy decision of 2018 goes to: the Reserve Bank of New Zealand. To be fair, I can't say I'm across every such decision everywhere, but the unexpected announcement in Wellington earlier this month that bank would bear more of the costs of their risk-taking, rather than benighted taxpayers, was surely the best decision south of the equator for some time.*
>
> *It was a breath of fresh air in a year the royal commission has illustrated how ineffective —or less politely, captured —our own regulators have been. And it stands out among a series of backdowns and timid proposals by financial regulators since the crisis.*

In Australia the major banks currently have a Tier 1 capital ratio of only 12.7 per cent as compared to building societies with 18.8 per cent and credit unions with 15. 2 per cent. This is outlined below in Figure 11.

Figure 11: Tier 1 Capital Ratio of the Major Banks, Other Banks, Building Societies and Credits – September Quarter 2004 to December Quarter 2018



Source: APRA (2019a).

The RBNZ (2019, p. 39) is also currently considering whether Tier 2 capital requirements should be removed. Tier 2 capital will typically only absorb losses once the bank is close to insolvency (Reserve Bank of New Zealand, 2019, p. 10).

While the RBNZ is considering abandoning Tier 2 altogether, in order to provide additional loss absorbency APRA (2018b) is considering allowing the major banks to increase it. APRA is considering increasing the total capital requirement on D-SIBs by between four and five percentage points of risk-weighted assets, with four years to meet the new requirement with APRA anticipating this requirement would predominantly be satisfied with additional Tier 2 capital. According to APRA (2018b, p. 13):

> *Adjusting the Total Capital [Prudential Capital Requirement] would provide flexibility for ADIs to meet the requirement via the issuance of any instrument that qualifies for inclusion in Total Capital.*

Banks much prefer Tier 2 capital because in a genuine crisis its likely governments would come to the rescue far before investors bore any losses (Creighton, 2018). In comparing and contrasting the differing approaches of APRA to that of RBNZ, Adam Creighton (2018) opined in relation to APRA that "[i]t's a wonder it bothered, really."

As has been suggested by COBA (Customer Owned Banking Association, 2019, p. 2), providing additional loss absorbency for D-SIBs should be achieved by increasing the amount of the highest quality form of capital in the banking system in Tier 1 capital. The requirement to hold more Tier 1 capital better targets the moral hazard facing D-SIBs and the TBTF problem for as RBNZ (2019, p. 10) has characterised it, Tier 1 capital represents *going concern* capital whereas Tier 2 capital represents *gone-concern* capital. Allowing the major banks to increase their Tier 2 capital to provide additional loss absorbency is akin to closing the stable door after the horse has bolted. COBA has suggested increasing minimum Tier 1 capital requirement for D-SIBs from 6 per cent to 7.5 per cent.

However, the major banks have already signalled their opposition to APRA's modest proposal, with *The Australian Financial Review* reporting:

> *The big four Australian banks will try to convince the prudential regulator to reconsider its proposal to force them to raise an additional $75 billion of so-called Tier II bonds to meet "too big to fail" capital requirements.*
>
> *They are likely to argue that the global market for Tier II bonds may not be large enough for them to raise up to 7 per cent of their risk weighted assets via this type of debt, in responses to an Australian Prudential Regulation Authority consultation paper that are due at the end of January. (Shapiro, 2019)*

However, whenever bankers complain that banking regulation is expensive, they typically do not take into account the costs of their harming the rest of the financial system and the overall economy with the risks that they take (Admati & Hellwig, 2013, p. 82). Professor Admati and Professor Martin Hellwig of the Max Planck Institute for Research on Collective Goods (2013, pp. 81-82) have observed:

> *In the last few years, many proposals have been made to address the risks that the banking system imposes on society. Very few, however, have been implemented. Most proposals have been rejected, diluted, or delayed, some of them endlessly it appears, because the banks have convinced policy-makers, regulators, and sometimes the courts that the regulations might be too expensive.*

Consistent with the research and policy implications arising from Corbae and Levine (2018), the requirement to hold more regulatory capital will not just reduce the fragility of the banking system, but will also ensure the benefits achieved from injecting greater competition into the banking system can also be then realised if also coupled with appropriate governance reforms. According to Corbae and Levine (2018):

> *… policymakers can mitigate the fragility repercussions of lowering barriers to competition by tightening leverage requirements and enhancing bank governance. Thus, policymakers can get the efficiency benefits of intensifying competition without increasing banking system fragility.*

Requiring the major banks to hold more regulatory capital will also reduce the funding advantage and implicit subsidy they receive from their TBTF status, and in turn will improve competitive neutrality within the Australian banking system.

8.3 Increased Granularity for Risk Weights

The risks of the home loan book can be quantified using measures such as loan-to-value ratios (LVR) or the extent of use of lenders mortgage insurance (LMI) (Productivity Commission, 2018, p. 172). High LVR borrowers are more likely to default as they tend to have a higher proportion of their incomes devoted to debt servicing, typically have lower net worth if owner-occupiers, and have a lower equity buffer to withstand any fall in housing prices (Coleman, Esho, Sellathurai, & Thavabalan, 2005, p. 10).

According to the Productivity Commission (2018, p. 174):

> *Unjustifiable differences in risk, of course, are a legitimate target for policy change.*

In turn, the Productivity Commission (2018, p. 174) commented:

> *Accordingly, the Commission supports measures implemented by APRA to ensure that the way that risk weights are set for all banks accurately reflects risk.*

The Productivity Commission (2018, p. 35) has acknowledged that increased granularity for risk weights would improve competition in home lending:

> *From a competition perspective, increased granularity for risk weights would reduce the gap between IRB and non-IRB banks, as well as help achieve better competitive outcomes through lower costs for safer, low LVR loans.*

To that end, APRA (2018g, p. 22) has commenced consultation on proposals for a more granular approach for determining the regulatory capital requirement for residential mortgage exposures under the standardised approach for credit risk, including for exposures with an LVR ratio less than 80 per cent. Under APRA's proposed changes, mortgages with LVRs lower than 80 per cent will require risk weights of only 20-30 per cent, down from the 35 per cent currently required under the standardised approach. According to the Productivity Commission (2018, pp. 175-176), APRA's move in this regard will lower costs for standardised banks:

> *APRA's proposed alterations to risk weight policy allow for more targeted risk signals, helping prevent both the over-provisioning of safe assets and under-provisioning of riskier assets. Moreover, increased granularity for risk weights can lower costs for standardised banks (when competing for low LVR loans).*

However, this is still a far cry from an average of less than 6 per cent currently used by the major banks in relation to the home loans with only 0 to 0.1 per cent risk of default using the AIRB method. In order to facilitate competitive neutrality across home lending for the mortgages at the lowest risk of default as well as competition in general, APRA should be looking to close the gap in risk weights under the standardised approach as compared to IRB banks.

One means of closing the gap could come if APRA decided to implement the output floor on risk weights recommended by the Basel Committee at a granular level rather an aggregate level. The implementation of an output floor at a granular level could be achieved either through:

- an exposure-by-exposure floor whereby the value of the floor is calculated so that an average outcome for risk exposure for the portfolio is achieved and would have the effect of putting a kink into the risk weight curve, increasing capital requirements for the lower end of the distribution, and leaving the higher end unchanged
- an asset class floor whereby the IRB outcome for the portfolio is effectively scaled up across the curve by a factor to produce the desired average risk weight (Reserve Bank of New Zealand, 2018, p. 13).

The problem with implementing an output floor at an aggregate level is that the major banks will still be able to engage in cream skimming by targeting home loans with the lowest risk of default, and in turn will do little to improve competition and competitive neutrality in relation to low risk loans.

8.4 Conclusions

While the adoption of these policy measures may go some way towards ameliorating some of the previous negative impacts on competition arising from the decisions of prudential regulators, they will by no means solve all the competition problems currently experienced by the Australian banking system such that a level of workable competition is achieved. There is overwhelming evidence of information market failures within the Australian banking system arising from information asymmetries that would also need to be addressed before a level of workable competition could be attained. Problems arising from information asymmetries fall outside the remit of prudential regulation.

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