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Finsia acknowledges the contribution of the papers from the 20th Melbourne Money and Finance Conference to this issue of JASSA. The conference — The Australian Financial Sector and Global Integration — was held in July 2015 by the Australian Centre for Financial Studies.

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Balancing safety, stability, efficiency and competition: Finding the balance for Australia’s major banks
CHARLES LITRELL
This paper provides insight into the way APRA thinks about capital requirements for Australia’s major banks, in the context of its prudential mission.

Innovation and reform in Australia’s financial market infrastructure
OLIVER HARVEY, CALISSA ALDRIDGE and BEN COHN-URBACH
The global financial market infrastructure is in an unprecedented state of transition. Spurred by significant developments in technology and regulatory frameworks, market infrastructure across modern economies is becoming increasingly integrated, competitive, global and complex. The rapidly changing dynamics in global financial markets are being acutely felt in the Australian marketplace. To deliver most effectively for those they are designed to serve, markets need to reliably and effectively provide the infrastructure for companies to raise capital and for investors to invest and allocate risk. Using the example of recent developments in the over-the-counter (OTC) derivatives market, this paper highlights the challenges and opportunities in ensuring Australian financial markets continue to deliver these enduring benefits.
At a time of increased uncertainty in financial markets, some seven years after the onset of the global financial crisis, this issue of JASSA includes several papers on the issue of financial stability. These papers focus on the implications of the international linkages of Australian banks, the fast-growing global shadow banking system, and the need to balance safety, stability, efficiency and competition. Other papers address a range of themes on market regulation, outperformance and infrastructure.

This issue of the journal also contains a special section which includes a number of papers presented at the 20th Melbourne Money and Finance Conference — The Australian Financial Sector and Global Integration — held in July 2015. The conference was organised by the Australian Centre for Financial Studies. It was sponsored by APRA, Finsia and the Reserve Bank of Australia. While not subject to the usual double-blind process, each of these papers was reviewed by a member of the Editorial Board and by me prior to inclusion.

First, a timely paper by Nobel laureate Robert Engle, Fariborz Moshirian and Christopher S Wong examines the key factors driving the rapid growth in the shadow banking system and the implications for global risk. The paper highlights the increasing importance of the shadow banking industry in Asia and the factors that will contribute to its expansion in the immediate future. It also discusses the risks associated with shadow banking including leverage risk, maturity and liquidity mismatch, and regulatory arbitrage. With China's shadow banking system one of the fastest growing in the world, the authors indicate that stronger regulation of this system is crucial for the maintenance of financial stability and the prosperity of China and the world at large.

Next Bart Frijns F Fin examines the difficulty of generating positive alpha and the claim by many mutual funds that they are able to generate outperformance. Frijns notes that this claim is at odds with much of the academic literature on fund performance and he presents three academic arguments on the difficulty of generating outperformance by mutual funds. Frijns indicates that a fund manager who mistakes their ability for talent (and charges a high fee), but in reality is doing nothing more than taking exposures to known risk sources (which can be achieved at a much lower fee), will not only be overcharging customers for a skill that they do not possess but also exposing customers to risks that are not communicated to them, and are probably not well understood.

The paper by Neil Hartnett F Fin and Adrian Melia underlines the challenge for financial planners in understanding and suitably modelling an individual’s attitude to financial risk. Harnett and Melia suggest that although there appears to be a reasonable volume of guidance regarding the nature of financial risk, there is only limited direction on how best to model a client’s attitude towards such risk and that the available guidance is characterised by disparate terminology and confounded interpretation. They indicate that adviser understanding and expertise would be enhanced and the chance of unethical behaviour reduced by a stricter ‘prescriptive’ framework that precludes the type of error or abuse which currently occurs due to limited guidance.

Bob Li, Paul Lajbcygier and Cindy Chen reassess the relationship between default risk, return and the book-to-market ratio by incorporating negative book equity (BE) stocks into their study. The authors note that a paradox is created by the common practice in stock evaluation models of excluding stocks with a negative BE. They say this suggests that in interpreting the book-to-market ratio as a proxy for distress risk, it makes no sense to exclude these negative BE stocks since they are, prima facie, most prone to distress risk. They find that negative BE stocks carry higher default risks than their positive BE counterparts and that these risks are not totally offset by higher returns, suggesting that a default risk filter can be used in the investment universe selection process through which the portfolio return can be enhanced.
Turning to the special section of this issue of JASSA, the first paper by Grant Turner and James Nugent examines the international linkages of the Australian banking system and the implications for financial stability. Turner and Nugent note that the large Australian-owned banks maintain significant international assets, including a large exposure to New Zealand and that exposures within the Asian region have grown rapidly over recent years. The authors also indicate that while Australian banks fund a portion of their domestic activities offshore, the post-crisis balance sheet adjustments should enhance banks’ resilience to potential future global funding market disruptions. They welcome further research on these issues, particularly on how inward transmission of shocks through Australian-located banks might arise from post-crisis changes in international markets, including the growing use of central clearing for over-the-counter derivatives, new prudential rules and instruments and altered resolution regimes.

The paper by Charles Littrell focuses on the important need to find a balance between safety, stability, efficiency and competition within Australia’s banking system. It provides insight into the way APRA thinks about capital requirements for Australia’s major banks in the context of its prudential mission. The paper concludes that there are good reasons to think that the Australian economy would be better served by major banks that are unquestionably strong, to borrow a phrase from the Financial System Inquiry. Littrell argues that any increase in capital would make the major banks, and therefore the banking system, appreciably better positioned to deal with unexpected shocks. Furthermore, because the major banks are currently profitable, competitive, and efficient, increasing their capital requirements would be unlikely to unduly impair, and might marginally improve, the financial system’s competitiveness.

Finally, Oliver Harvey, Callisa Aldridge and Ben Cohn-Urbach indicate that the rapidly changing dynamics in global financial markets are being acutely felt in the Australian marketplace and that in order to deliver most effectively for those they are designed to serve, markets need to reliably and effectively provide the infrastructure for companies to raise capital and for investors to invest and allocate risk. Using the example of recent developments in the over-the-counter (OTC) derivatives market, the paper highlights the challenges and opportunities in ensuring Australian financial markets continue to deliver these enduring benefits. The authors indicate that a great deal of work will be needed in the next few years to implement requirements for counterparties to exchange margin for non-centrally cleared trades, on the back of internationally agreed principles agreed by IOSCO (International Organization of Securities Commissions) and the Basel Committee. They expect these requirements to bring in the need for margining across a range of firms that previously had limited or no need to margin, in particular corporates, superannuation funds and asset managers.

I would like to thank all of our contributors to this very broad ranging and topical issue of JASSA and encourage anyone interested in contributing to the journal to contact us at membership@finsia.com
GLOBAL SYSTEMIC RISK: What’s driving the shadow banking system?

ROBERT ENGLE, Professor of Finance at the Stern School of Business, New York University, New York and 2003 Nobel Laureate in Economics  
FARIBORZ MOSHIRIAN, Professor, Director of the Institute of Global Finance, UNSW Business School  
CHRISTOPHER S WONG, Research Associate, Institute of Global Finance, UNSW Business School

Driven by the tightening of banking regulations, the global shadow banking system continues to grow steadily in size and scope. This paper discusses issues related to the shadow banking system, focusing on Asia and China in particular. The paper highlights the increasing importance of the shadow banking industry in Asia and factors that will contribute to its expansion in the immediate future. The paper compares and contrasts shadow banking in the US and China. It also highlights the risks associated with shadow banking, including leverage risk, maturity and liquidity mismatch, and regulatory arbitrage.

Financial Stability Board (FSB) reports indicate that the global shadow banking sector (SBS) is increasing in size (see FSB 2013, FSB 2014a) and was estimated at US$71 trillion in 2013, equivalent to 117 per cent of the GDP of all jurisdictions studied by the FSB. This represented an increase of about $US5 trillion from the previous year (FSB 2013). In 2014, this sector grew to $US75 trillion, equivalent to 120 per cent of the GDP of all jurisdictions, however, the FSB notes that this is a conservative estimate (FSB 2014a). Advanced economies continue to have the largest non-bank financial systems, but emerging markets have experienced the most rapid increases in non-bank financial system assets (FSB 2014a). A recent study by Moshirian (2014) highlights the role of the shadow banking sector in an emerging new global financial system.

There are a number of forces that have been identified as driving the activity of the SBS. In response to tightened financial regulation, international shadow bank regulatory arbitrage may grow in the future (Adrian et al. 2012). The growth of the SBS is widely seen as a response to increased regulation, and increased regulation may also have the counter-effect of driving innovation in the SBS (Adrian and Ashcraft 2012).

The growth of the SBS has been driven by a number of different factors both before and after the financial crisis of 2007–08 (Tarullo 2012). A rise in demand by investors for safe, liquid assets as tools for precautionary or transactional liquidity, coupled with a rise in demand for short-term financial planning by certain borrowers, may have led to a surge in the volume of dollar-denominated seemingly ‘safe’ and ‘liquid’ financial instruments (Tarullo 2012). These instruments were created by shadow banking institutions in the form of asset-backed commercial paper (ABCP), repurchase agreements and the like (Tarullo 2012). While the financial crisis severely reduced the size of the SBS, it is likely that general economic growth will be accompanied by growth in existing shadow banking channels, as well as the creation of new channels in this sector (Tarullo 2012).

More traditional sources of risk, such as excesses in leverage and in maturity/liquidity transformation are still relevant when identifying problem areas within the SBS (Caruana 2014). Furthermore, rules and procedures themselves are credited with being causes of innovation in financial markets (Caruana 2014). Similarly, some commentators point to the growing importance of the capital market in the supply of credit, particularly in the US, as a consistent source of growth for the SBS (Adrian and Shin 2009).
The developing economies of Asia and China are by no means immune to the growth of shadow banking that is occurring in developed Western economies (Schwarcz 2013). Indeed, the shadow banking sector in China has been receiving particular attention from a wide range of sources (Adrian et al. 2013; FSB 2014a; Schwarcz 2013).

**Shadow banking in Asia**

In 2014, the FSB released a comprehensive report on shadow banking in Asia, derived from the work of its Regional Consultative Group for Asia. The report found that of selected Asian region nations, ‘non-bank financial intermediaries’ (NBFIs) represented approximately 12 per cent of total financial system assets in 2011 (FSB 2014a). Using data for a similar selection of Asian nations, this figure remained relatively unchanged at approximately 11 per cent as at the end of 2013 (FSB 2014b). However, due to the diverse nature of Asian economies, such averages do not necessarily reflect the situation within individual nations (FSB 2014a). Generally, the ‘other financial intermediary’ sector represents less than 25 per cent of total financial system assets across most Asian economies (FSB 2014a). The report also noted that in most Asian economies banks continue to hold a large share of financial system assets, accounting for at least half of financial system assets in most jurisdictions (FSB 2014a).

There have been a number of different estimates of the size of the shadow banking system in China. In 2015, Moody’s Investors Service estimated that China’s shadow banking assets reached 41 trillion yuan at the end of 2014. Other estimates include 30 trillion yuan (Yi 2013), 31 trillion yuan (Sheng et al. 2015), and 36.8 trillion yuan (Barboza 2013), among others. The FSB reported in 2014 that the Chinese shadow banking system was one of the fastest growing in the world, with annual growth rates in 2012 and 2013 reaching 42 and 34 per cent, respectively (FSB 2014b). Problematically, both the FSB estimates and the monitoring process for the Chinese SBS have come under criticism for their failure to address the opacity of the Chinese financial system, as well as the constantly changing regulatory environment of Chinese finance (Borst 2014). The different estimates of the size of the Chinese SBS from various sources point to inherent difficulties in estimating this market, and highlight the fact that each estimate must be interpreted with its methodology and dataset in mind (Borst 2014; FSB 2014a).

Interestingly, the FSB has reported that Chinese non-bank financial intermediaries make up only 4 per cent of the assets of non-bank financial intermediaries in 2012 (FSB 2014b). This pales in comparison to the 33 per cent share of the US and the 34 per cent share of the euro zone area (FSB 2014b). This can be partially explained by the fact that Chinese institutions are not wholly non-bank, but rather are regulated banks that operate as both shadow and regulated credit intermediaries (Adrian et al 2013). With regard to other Asian economies, the FSB has reported that ‘other financial intermediaries’ make up 15 to 30 per cent of total financial system assets in India, South Korea, Malaysia, Singapore and the Philippines (FSB 2014a). In Hong Kong the corresponding figure is over 30 per cent (FSB 2014a).

**FIGURE 1: Annual growth of non-bank financial intermediaries**

1. The basis of calculating 2012 growth rate of HK’s OFIs is different from that of calculating 2013 growth rate, due to the data unavailability of HK’s Finance Companies’ assets.
2. Weighted average of 20 jurisdictions and euro area.

Overall in Asia, shadow banking has been reported to be on the rise (Schwarcz 2013). Schwarcz (2013) notes that the nature of shadow banking in Asian economies is not as much about ‘long, complex, opaque chains of intermediation’, but rather about banking activities that are weakly regulated or falling outside the regulatory sphere altogether.

**FIGURE 2: Other financial intermediaries (OFIs) trends**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage (% of GDP)</th>
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<tbody>
<tr>
<td>2002</td>
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</tr>
<tr>
<td>2003</td>
<td>1.1</td>
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<tr>
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<td>2006</td>
<td>1.4</td>
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<tr>
<td>2007</td>
<td>1.5</td>
</tr>
<tr>
<td>2008</td>
<td>1.6</td>
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*Total for non-Japan Asia does not include data for Singapore between 2002–2004, which was unavailable; EA = euro area


**The shadow banking system in China**

The shadow banking system in China is described as having a different operational aspect from that in the US (Hsu and Li 2012; Schwarcz 2013). Also less diversified and complex than in the US (Schwarcz 2013), the Chinese SBS is characterised by shadow banks, trust companies, small loan companies, bonding companies, financial companies and financial leasing companies, as well as the informal financial system (Hsu and Li 2012).

Hsu et al. (2014) indicate that the Chinese shadow banking system operates on three levels:

- **commercial and investment banking**, including banks which sell trusts, wealth management, and other shadow banking products, financing leasing companies, and insurance brokerage firms
- **quasi financial institutions** such as micro loan companies, financial guarantee companies, and pawn shops
- **informal financial institutions**.

In this regard, the Chinese SBS is a mixture of regulated financial institutions operating in shadow finance and non-banking financial institutions (Hsu et al. 2014; Hsu and Li 2012). Schwarcz (2013) notes that the Chinese SBS encompasses property development trusts, credit associations, rural cooperative foundations, pawn shops and peer-to-peer business lending. The provision of financing by banks using non-traditional means (such as wealth management funds) is also included as part of shadow banking (Schwarcz 2013). Ghosh et al. (2012) indicate that the main forms of shadow lending include informal lending as well as underground intermediation, entrusted loans, trust loans and bank acceptance bills.
For example, trust loans are described by Adrian et al. (2013, p. 22) as a form of off-balance sheet lending by banks:

Here, bank loans are sold into trust companies, which in turn sell wealth management products to retail depositors. Banks earn fees on the origination of loans and management of these products, but since they are off balance sheet, they do not have to hold capital against them. While some of these products have principal guaranteed balances, most do not, and instead benefit from a perception of implicit support by the banks, and in turn by the official sector.

Li (2013, p. 2) contrasts the shadow banking system in China with that in the US:

The shadow banking systems in China and the United States differ in terms of composition, players and drivers. The US shadow banking system is comprised of securitized loans and obligations, asset-backed commercial paper, repurchase agreements, and money market funds. In contrast, China’s shadow banking system includes direct credit extension by nonbank financial institutions (especially trust companies and brokerage firms) and informal securitization through the pooling of proceeds from wealth management products provided by banks.

Shen (2013) suggests that the Chinese SBS performs a dual function in the Chinese economy: it channels vital capital to the private sector starved of debt financing and also allows savers to earn higher returns than through conventional bank deposits.

**Origins of shadow banking in China**

Shen (2013) points to the shadow banking system in China as being a result of China’s financial system, borne out of underground financing and unregulated off-balance sheet lending, led by China’s state banks. Shen argues that the progenitors of much of China’s shadow financing are state-owned enterprises (SOEs) which make up 90 per cent of shadow lenders, and have emerged due to the size of these SOEs and their ability to avoid regulatory requirements.

Li attributes the recent growth of China’s shadow banking sector to increased regulation and supervision of commercial banks following the global financial crisis (Li 2013). Adrian et al. (2013) also mention increased regulation as a principal driver of shadow banking in China. They point to higher interest rates, tougher reserve requirements and more conservative credit quotas as factors incentivising banks to originate credit off balance sheet activities (Adrian et al. 2013).

**Regulation and supervision**

Adrian et al. (2013) argue that shadow credit intermediation in China is less the result of financial innovation and more the result of responses to heightened restrictions on traditional intermediation activity. They also note that the Chinese SBS has become more localised in recent years, but that global propagation risks are still present. They recommend that containment of the global propagation of shocks can be implemented through enhanced monitoring of activities of the largest Chinese financial intermediaries.

In China, the Chinese Banking Regulatory Commission (CBRC) regulates banks and non-bank institutions, which includes trust companies (Hsu and Li 2012). Brokerage firms and insurance companies are regulated by the China Securities Regulatory Commission and the China Insurance Regulatory Commission respectively (Hsu and Li 2012).

Li (2013) also recommends stronger monitoring systems to regulate shadow banking activities, echoing recommendations made by the FSB in 2012. In 2011, the People’s Bank of China began issuing ‘total social financing statistics’ aimed at gauging the size of credit expansion (Li 2013). Li (2013) argues, however, that these statistics lack specificity and are unresponsive to the swift evolution of innovative credit intermediation methods.

Shen (2013) notes the tension between allowing the SBS to liberalise the financial sector and mitigating systemic risk and the potential for shocks to the economy. He argues that the Chinese Government must reform the lending system to offer more investment incentives to lenders in order to create regulated bonds and other financial products (Shen 2013). Other policy options include the introduction of properly functioning private sector long-term savings, mutual fund or pensions markets as well as a standardised and unified bond market (Shen 2013).
Borst (2014) summarises the main problem facing regulators as one of monitoring and transparency. He argues that it is ‘critically important for regulators to have accurate data on the entire financial system, spanning the whole range of bank, quasi-bank, and non-bank financial activities’ (Borst 2014, p. 71). He also notes that narrow approaches to measuring the shadow banking system adopted by the FSB among others will also lead to mis-measurement of the SBS in other emerging markets as they are also dominated by banks and thus approaches focusing on non-bank entities will fall short (Borst 2014).

More broadly, the FSB has a Regional Consultative Group for Asia which recently published its report into shadow banking in Asia (FSB 2014a). The FSB (2014a) reported that most jurisdictions surveyed have regulatory regimes in place which are able to collect data and information on non-bank financial intermediaries. However, it noted that only a few jurisdictions reported having a comprehensive resolution regime in place for all NBFIs, and that in some jurisdictions not all NBFIs are subject to ongoing supervisory inspections. The FSB notes, however, that many jurisdictions have taken steps to improve the regulation and supervision of NBFIs, ranging from enhancing existing or introducing new regulations for targeted non-bank financial entities/activities, enhancing inter-agency coordination and cooperation, to broader legislative changes empowering authorities to collect necessary data and information, and to implement other regulatory measures for NBFIs (FSB 2014a).

Future risks and issues

The FSB (2014a) highlights a number of potential risks emanating from shadow banking in Asia:

- **Leverage risk**: ‘The pro-cyclical nature of leverage means that firms will tend to increase their leverage during good times and when credit conditions change, highly leveraged firms may come under stress. This condition could lead to the fire-sale of assets’.

- **Maturity and liquidity mismatch**: Disruptions in market condition may adversely impact the shadow banking sector due to liquidity and funding risks faced by shadow banking institutions.

- **Indirect risks from interactions between shadow banking entities and regular banks**: Risks can take the form of direct credit exposures and interdependence in funding, which then allow for greater propagation channels through which systemic risk can impact both sectors.

- **Regulatory arbitrage**: Incentives may exist for financial activities to move from the regulated sector to the shadow banking sector to avoid more stringent bank regulations and oversight.

Ghosh et al. (2012) also point to the exposure to market, credit and maturity/liquidity risk by trust companies as another risk factor of the Chinese SBS. They indicate that trust companies are vulnerable due to the ‘dependence on underlying asset prices, which are subject to potential correction and the often risky pricing behaviour undertaken to attract investment’ (Ghosh et al. 2012, p. 5).

Schuman (2014) argues that while China’s financial system is not as connected to the global economy as those of Europe or the US, a crisis in shadow banking in China would severely damage its growth prospects, which in turn would dampen global growth.
Conclusion
The global SBS continues to grow in size and scope at a steady pace. The FSB estimates that in 2014, the global SBS reached 75 trillion USD, which is equivalent to 120 per cent of the GDP of all measured jurisdictions. Advanced economies have the largest SBS, while those of emerging economies showed the most rapid growth.

China’s SBS is one of the fastest growing in the world, and is estimated to have reached 41 trillion yuan by the end of 2014. Globally, the growth of the SBS has been driven by the tightening of regulation of the traditional banks. The same is true of China, where the recent growth of its SBS has been attributed to the increased regulation and supervision of commercial banks following the global financial crisis. Although it is less complex than its US counterpart, China’s SBS provides essential funding to Chinese businesses and provides Chinese investors with returns that are higher than those of conventional bank products. Its size, rapid growth, and importance to the Chinese economy demands that attention be given to the potential risks residing within China’s SBS, including those arising from leverage, maturity and liquidity mismatch, and interactions with regular banks.

The FSB, as well as other commentators, have recommended that a stronger regulatory system is needed to monitor and supervise China’s SBS. While China’s financial system is less connected to the global economy than that of the US or Europe, a shadow banking crisis in China would nevertheless dampen global growth. Stronger regulation of China’s SBS is therefore crucial for the maintenance of financial stability and prosperity for both China and the world at large.

Notes
2. Includes Australia, China, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Singapore and Thailand.
3. Includes Australia, China, Hong Kong, India, Indonesia, Japan, South Korea and Singapore.
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MUTUAL FUNDS AND OUTPERFORMANCE:

The difficulty of generating positive alpha

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Many mutual funds claim that they are able to generate outperformance. This claim is at odds with much of the academic literature on fund performance. This paper presents three academic arguments on the difficulty of generating outperformance by mutual funds — mathematical, theoretical and empirical. It also offers some explanations which help reconcile the contrasting views of academia and the funds industry on this issue.

One of the most successful developments in financial markets is the mutual fund industry, with US mutual funds holding nearly US$16 trillion in assets at the end of 2014 (ICI Factbook 2015). About 80 per cent of these funds are actively managed, i.e. using strategies whereby the fund manager aims to outperform the market (or their selected benchmark). In finance jargon, this is known as generating positive alpha. However, the claim by many of these active funds that they are able to generate outperformance is in stark contrast with much of the academic literature, which has documented little evidence of fund managers’ ability to generate outperformance.

A mathematical argument: The arithmetic of active management

The mathematical argument for the difficulty of generating outperformance is based on what Sharpe (1991) and Fama and French (2010) refer to as the arithmetic of active management, which goes as follows.

The return on the market as a whole represents the value-weighted average of all securities. Since the market as a whole cannot outperform itself, the outperformance of the market (i.e. the alpha of the market) is equal to zero. Investors in the market can be of two types, passive and active investors and, since these two types of investors make up the market, we must conclude that the two groups together have an average outperformance that is equal to zero (in the absence of any fees and costs).

Passive investors are those who replicate the market portfolio through optimal diversification. Since passive investors all follow the same optimal diversification strategy, they all expect to do no better or worse than the market, and so should obtain zero outperformance before taking fees and expenses into account. After fees and expenses, they would expect to underperform the market by an amount that is equal to their fees and expenses.
Active investors implement strategies based on security selection, market timing etc. and therefore deviate from an optimal diversification strategy. As the market only consists of two types of traders, and passive investors have an expected outperformance of zero, this means that active investors, on average (before fees and expenses), also must have an expected outperformance of zero. After fees and expenses, active investors, on average, expect to underperform, and since active investors have higher fees and expenses than passive investors (as they expend more resources on security analysis), after fees, active investors, on average, perform worse than passive investors. At the individual level, active investors can outperform or underperform the market, since active investors have different investment strategies. However, for every dollar of outperformance gained by an active investor, there must be a dollar of underperformance lost by another active investor. Mathematically, this can be described by the following formula:

\[ 0 = 0 + 1 - 1 \]  

(1)

where the zero on the left-hand side refers to the outperformance of the market as a whole; the zero on the right-hand side refers to the outperformance of passive investors, and the +1 and -1 refers to each dollar gained (winners) and lost (losers) by active investors. Since this equality must hold, it is clear that every dollar in outperformance gained by an active investor must be offset by a dollar lost. Stated differently, if there are winners among active investors, there must be losers among active investors. In addition, if there are persistent winners, then there must be (a group of) persistent losers. However, persistent losers should at some point run out of money and, if persistent losers cease to exist, persistent winners should also cease to exist.

The example above, of course, applies to the market as a whole and does not necessarily reflect the mutual fund industry. One can, however, apply the logic above to the mutual fund industry, where passive fund managers (before fees and expenses) should on average have zero outperformance. The question then becomes what the average outperformance of active managers would be. The equation above clearly demonstrates that it is very difficult for all active funds to persistently yield outperformance, since this outperformance must come from either another group of active investors who loses (and the question is which group of investors consistently underperforms so that active mutual funds are able to outperform) or from other actively managed funds (or a combination of both). It is questionable how long persistently losing actively managed funds or other active investors can stay alive in a competitive market.

One could perhaps think that retail investors, due to their behavioural biases, might be these persistent losers. However, the question is whether there are enough persistently losing retail investors to make all active managers winners.

One argument that is frequently raised in this discussion is that of market inefficiency, i.e. active fund managers are able to exploit certain market inefficiencies. However, even if the market is inefficient, Equation (1) still needs to hold. The argument of inefficiency merely suggests that there is one group of investors that is not responding to new information in a correct way and, therefore, they become persistent losers. Again the question is who these persistent losers are. One could perhaps think that retail investors, due to their behavioural biases, might be these persistent losers. However, the question is whether there are enough persistently losing retail investors to make all active managers winners. According to Black and Kirkwood (2010) direct equity ownership by Australian households is less than 20 per cent in 2010, while both institutional and foreign investors hold close to 40 per cent each.
A theoretical argument: Efficient allocation of capital
The second argument as to why it is so difficult to generate outperformance is based on the efficient allocation of capital. Berk and Green (2004) present a theoretical framework where active managers compete for fund flow. In this framework, some managers are assumed to be skilled and have the ability to generate risk-adjusted outperformance. Individual investors who invest in mutual funds are sensitive to the performance of a mutual fund (see, for example, Sirri and Tufano 1998), and allocate their investments to those funds that yield the highest outperformance. The excess demand, and consequently inflow to funds that are able to generate outperformance, implies that funds which do not outperform or generate underperformance see little inflow into their funds, and likely even see outflow as investors reallocate investment from losers to winners. The consequence of this will be that losers become smaller (or even cease to exist), while winners grow in size. But Equation (1) tells us that for every dollar of outperformance, there must be a dollar of underperformance and, thus, if some losers cease to exist, it must imply that some winners become losers.

This shift from winners to losers can happen in two ways. First, it can be due to the impact of inflow on the size of a mutual fund. When a fund is able to generate outperformance, the inflow into the fund will cause the fund to increase in size. However, generating outperformance may be more difficult when the fund increases in size, i.e. there are decreasing returns to scale in terms of managerial ability. Second, not all managers may have the same ability to generate outperformance, and those with lower abilities (who previously were able to generate outperformance by trading against losers) may no longer have the ability to generate outperformance as some of the losers have disappeared.

The process of reallocating money to those funds that are able to generate outperformance continues until a steady state is reached. In the framework of Berk and Green (2004) there are two possible steady states. First, if there are no decreasing returns to scale in managerial ability (i.e. managers can continue to exploit their talents regardless of the size of the fund), then the process of reallocation of capital from individual investors (i.e. investing in those funds that outperform and divesting from those that underperform) will continue until there is only one fund left, run by the manager with the greatest managerial ability. But if there is only one fund that invests all the money of individual investors, then Equation (1) tells us that the outperformance of that fund must be equal to zero. Second, if there are decreasing returns to scale, then the reallocation of capital will continue up to the point where all managerial talent is fully exploited. In that case, the outperformance of mutual funds after the reallocation of capital must be zero as well because, if a fund that could generate outperformance still existed, investors would allocate more money to this fund until its outperformance was comparable to other funds.

An empirical argument: 45 years of empirical evidence
The third argument for the difficulty of generating outperformance is based on the empirical evidence produced by academia over the past 45 years. This literature (Sharpe 1964; Lintner 1965) emerged rapidly after the introduction of the Capital Asset Pricing Model which, for the first time, presented a statistical means for evaluating the risk-adjusted performance of investments and investment strategies. The question of whether investors are able to outperform the market is an age-old question and the mutual fund industry provides an ideal case to explore this question. This is because: fund managers are professional investors, who should be highly skilled relative to other investors and, hence, if outperformance is to be observed anywhere, the fund industry should be a good starting point; and mutual funds report the returns of their investment strategies, making the evaluation of their performance relatively straightforward.

One of the first studies into the performance of mutual funds is that of Jensen (1968), who examines the risk-adjusted outperformance of 115 US open-end mutual funds over the period 1945-1964. He reports that:

The evidence on mutual fund performance discussed above indicates not only that these 115 mutual funds were on average not able to predict prices well enough to outperform a buy-the-market-and-hold policy, but also that there is little evidence that any individual fund was able to do significantly better than that which we expected from mere random chance. (p. 415)
A little less than a decade later, McDonald (1974) finds that:

For the mutual fund sample as a whole, the data clearly show neither significantly ‘superior’ nor ‘inferior’ performance over the decade 1960–1969. (p. 331)

Focusing more on the question of whether fund managers are able to time the market correctly by increasing their market exposure before the market rises and decreasing their exposure before the market drops, Henrikson (1984) concludes that:

The empirical results do not support the hypothesis that mutual fund managers are able to follow an investment strategy that successfully times the return on the market portfolio. (p. 73)

Making use of the Fama and French (1993) three-factor model and findings on the profitability of momentum strategies, Jegadeesh and Titman (1993) and Carhart (1997) examine whether there is persistence in the outperformance of mutual funds. Carhart finds that:

The only significant persistence not explained is concentrated in strong underperformance by the worst return mutual funds. The results do not support the existence of skilled or informed mutual fund portfolio managers. (p. 57)

More recently, Fama and French (2010) document that:

On a practical level, our results on long-term performance say that true $\alpha$ in net returns to investors is negative for most if not all active funds, including funds with strongly positive $\alpha$ estimates for their entire histories. (p. 1916)

While these quotes are just a snapshot of the literature on mutual funds; in general, the empirical evidence against managerial ability to outperform in mutual funds overshadows the literature that documents managers’ ability to outperform.

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Of course, the evidence presented above is all based on US mutual funds, but the evidence on fund performance in Australia and New Zealand is not very different. In Australia, Robson (1986) indicates that over the period 1969–1978, Australian mutual funds, on average, were not able to generate risk-adjusted outperformance. Hallahan and Faff (1999) similarly document very little evidence on outperformance and in addition find little evidence of market timing skills. Gallagher (2001) reiterates this finding for Australian superannuation funds and concludes that there is no evidence for positive market timing or security selection skills.

The research done on the New Zealand market paints a similar picture. Bauer et al. (2006) examine the performance of 143 funds in New Zealand over the period 1990–2003, and find that these funds on average have not been able to outperform the market. More recently, Frijns and Tourani-Rad (2015) find no evidence on outperformance for KiwiSaver funds.

**Reconciling the industry experience with the academic experience**

Given the arguments presented above that highlight the difficulty in generating outperformance, how is it possible that many funds claim the ability to generate outperformance? One of the factors that can explain this discordant view is that funds and academics may use very different benchmarks to assess outperformance. The mathematical argument would only hold if the performance of funds is measured against the same benchmark. Similarly, the fact that the empirical evidence demonstrates such a strong case against the possibility of generating outperformance sits in the definition of the benchmarks.
The academic literature has reached a consensus that outperformance is any return that is not due to risk taking. Hence a New Zealand mutual fund that benchmarks itself against the NZX50 can achieve ‘outperformance’ by allocating part of its investments to international markets. If the additional returns due to an allocation abroad were actually driven by a source of risk, then from an academic point of view this would not be outperformance, but a compensation for risk. Likewise, if an Australian investment fund that benchmarks itself against the ASX200 ‘outperforms’ its benchmark by seeking exposure to small caps, then again from an academic point of view, this might not be true outperformance, since small caps are generally known to carry an additional risk premium.

An even stronger example would be the case of a hedge fund, which for prolonged periods of time may report ‘outperformance’, while in reality it is taking exposure to some hidden risk factor (such as catastrophe or liquidity risk). Although this difference in definition of outperformance may sound trivial (whether an additional return is generated due to true outperformance or risk-taking, an additional return is generated), the implications are quite deep. True managerial talent and the ability to truly outperform are very rare, and should carry a premium in terms of fees charged to investors. Risk taking is cheap and easy to implement.

A fund manager who mistakes his ability for talent (and charges a high fee), but in reality is doing nothing more than taking exposures to known risk sources (which can be achieved at a much lower fee), will not only be overcharging his customers for a skill that he or she does not possess but also exposing customers to risks that are not communicated to them, and are probably not well understood.

The academic literature has documented various sources of risk to which one can seek exposure. A fund manager who mistakes his ability for talent (and charges a high fee), but in reality is doing nothing more than taking exposures to known risk sources (which can be achieved at a much lower fee), will not only be overcharging his customers for a skill that he or she does not possess but also exposing customers to risks that are not communicated to them, and are probably not well understood.

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FINANCIAL PLANNING AND MODELLING AN INDIVIDUAL’S ATTITUDE TO FINANCIAL RISK: Is everybody on the same page?

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Understanding and suitably modelling an individual’s attitude to financial risk remains a challenge for financial planners. We provide a snapshot of the issues involved and highlight the need for regulators, educators and practitioners to foster a far more professional treatment of client risk attitude through better guidance or mandates. We propose a clearer standardisation of industry terminology, understanding and regulatory direction.

For well over a decade now, the Australian financial services industry has repeatedly been the focus of disgruntled investors, regulators and the financial media. These concerns are largely the result of an inordinate degree of inappropriate financial advice and a catalogue of events can be documented in this context. These events include: high-profile collapses of investment companies or schemes (such as Fincorp, Westpoint, Opes Prime, Storm Financial, Timbercorp and Great Southern); ASIC’s ‘shadow-shopping’ investigations revealing a chronology of sub-standard financial advice (e.g. ASIC’s Reports REP18 (2003), REP69 (2006), REP279 (2012), REP413 (2014)); regulatory changes designed to discourage inappropriate financial planning behaviour (e.g. the 2010 Future of Financial Advice (FOFA) reform measures; and the release of section 961B(1)’s ‘best interest duty’ and consultation papers into the training and assessment of financial advisers (e.g. ASIC’s consultation papers CP153 (2011), CP212 (2013), CP215 (2013)).

Recent comments by ASIC Chairman Greg Medcraft (Collett 2014) also highlight the ongoing concerns of the regulator regarding the state of financial advisory services in Australia: ‘Australians want advice they can trust, it’s absolutely appalling ... and it’s heartbreaking to see people who have been advised to go into products that are completely inappropriate and they have no idea what they’re invested in’.

A common thread through these events can be discerned, with poor advice and outcomes invariably occurring due to a failure to properly consider clients’ attitude to financial risk. A casual observer might reasonably expect that since these events the modelling of client risk attitude would have been subject to significant remedial action across the industry, ensuring that this concept and method are now succinctly enunciated. Yet a review of current regulatory guidance suggests that a far less structured state of affairs persists. Oversimplified, naive techniques are in evidence and appropriate modelling of this attribute remains a challenge. The remainder of this paper provides a snapshot of the issues and we call for a clearer standardisation of industry terminology, understanding and regulatory direction.
The state of play: Disparate interpretation and guidance

Although there appears to be a reasonable volume of guidance regarding the nature of financial risk, there is only limited direction on how best to model a client’s attitude towards such risk. Moreover, the available guidance is characterised by disparate terminology and confounded interpretation. This can only serve to frustrate the client risk modelling process resulting in a ‘Pandora’s box’ of practitioner and legal issues. We outline several of the problems below.

Regulatory guidance

There appears a paucity of guidance here. The Corporations Act 2001 is the key legislative instrument used to regulate financial services in Australia and while it alludes to the foundations of good advice (such as through the section 961B-E best interests provisions), no detailed direction is provided. ASIC’s guidance documents normally assist with interpreting the Corporations Act yet current guidance is either silent on the importance of understanding a client’s attitude to financial risk or, at best, includes risk attitude in a checklist of potentially useful client information without further explication. As a case in point, Regulatory Guide 175 Licensing: Financial products advisers — Conduct and disclosure raises the importance of a client’s risk ‘appetite’ and ‘tolerance’ yet does not elaborate on this anywhere within the substantial 110-page guidance document. Other pertinent regulatory guides are similarly devoid of guidance (notably RG36 and RG244).

Industry practice standards exist and they require advisers to consider a client’s attitude to risk. For example, the Financial Planning Association’s (FPA’s) Code of Professional Practice (2013) includes Practice Standard PS4 with Rules 4.2 and 4.5 requiring consideration of ‘the client’s personal circumstances, including but not limited to the client’s attitude to, or tolerance for risk’. Yet no guidance is provided as to how such attitude or tolerance is to be modelled. The FPA’s publication The Trade-off — Understanding investment risk (2008) and ASIC’s Investing between the flags — A practical guide to investing (2009) provide a sound introduction for investors to better understand sources or types of risk. Again, however, the modelling of client risk attitude is not broached beyond fairly rudimentary references to one’s ‘appetite for risk’ and seeking an investment which allows one to ‘sleep easy at night’ (ASIC, p. 11).

Adding to the potential confusion, a disparate terminology is observed among the regulatory literature, including risk profile, risk tolerance, risk capacity, risk appetite and risk attitude.

Some terms have been further partitioned. For example, ASIC’s shadow shopping Report 279 refers to ‘psychological’ and ‘situational’ risk tolerances, with the former being intended to describe ‘preferences and attitudes towards risk’ and the latter being ‘the technical or actual risk exposure that might eventuate’ (Appendix 2). These definitions appear at odds with the literature. The ‘psychological risk tolerance’ seems a misnomer because by reflecting ‘preferences and attitude’ it will presumably also embrace factors additional to psychological (e.g. financial or other capacity ‘constraint’ factors that can influence attitude, such as wealth level and number of dependents). ASIC’s ‘situational risk tolerance’ appears to confound terms and concepts in that ‘tolerance’ is a personal attribute or trait exhibited by an individual regarding a risk — it is not the risk per se.
**Educational literature**

Compared with regulatory guidance, a review of tertiary educational literature generally reveals a more detailed discussion of client risk attitude yet overall it likely provides no clearer way forward. A diversity of definitions and explications of the concept suggests a financial planning environment conducive to problematic modelling techniques. A number of issues can be observed here. For brevity we simply outline the key points.

**Financial risk vis-à-vis other risk domains?**

A person’s propensity for risk-taking behaviour is multidimensional in nature and not necessarily correlated across such dimensions (Slovic 1964; Jackson et al. 1972; Rolison and Scherman 2003; Weber et al. 2002). Thus a person’s views about financial risk-taking do not necessarily imply anything about other risk-taking domains (such as physical, ethical or social). Nevertheless, some financial risk tolerance questionnaires illustrated in the educational literature appear to incorporate risk domains other than financial/monetary into the measure. For example, one sample questionnaire includes the item ‘I intensely dislike blind dates [True/False]’.

**Attitude vis-à-vis tolerance, capacity, aversion or other attribute?**

Some financial planning texts align such terms as ‘risk tolerance’ with ‘risk profile’ and ‘attitude towards risk’ while other texts distinguish these terms and assign distinctly different meanings to them. Some discuss the financial ‘risk capacity’ features of clients (e.g. characteristics affecting one’s ability to withstand financial shocks, such as wealth level, income and dependents) yet are silent as to the client’s psychological predisposition (or personality trait) regarding financial risk. In other instances, the modelled attribute is actually a ‘composite’ of current beliefs/fears about the state of financial markets, psychological traits, emotional states and capacity features of a client. For example, one question asks ‘Your investment suddenly goes down 15 per cent one month after you invest. Its fundamentals still look good. What would you do: Buy more ..., Hold on ... [or] Sell it ... ?’ The response to such a test item will be influenced by (at least) the client’s (i) motive for holding such a risky asset in the first place (ii) capacity to bear risk (iii) perception of recent market events and (iv) underlying personality trait regarding risk. Identifying what is actually being measured here is problematic.

In the finance (vis-à-vis financial planning) literature, detailed discussion of risk attitude or tolerance appears a rare thing and most tertiary finance/investment references use the term ‘risk aversion’ to help categorise investors and their choices about risk. Discussion is usually limited. For example, one text simply states that risk-averse investors ‘do not like risk’, perceive risk as ‘undesirable’ and thus have ‘a negative attitude towards risk’. In the parlance of modern portfolio theory, individual investors exhibit their own particular level of risk aversion and this ultimately determines their preferred asset allocation as they seek to maximise expected utility. Risk aversion in this context would therefore encapsulate all factors pertinent to the individual’s asset allocation and thus must presumably reflect the person’s psychological as well as all other factors pertinent to his/her response to risk (such as financial capacity constraints). A detailed discussion of factors associated with ‘risk-aversion’ or other modelling issues is not a feature of such texts.

**Research literature**

Numerous research studies have sought to better understand how individuals respond to financial risk. Unfortunately, as with the regulatory and educational literature, terms and constructs are invariably intertwined. For example, Shefrin (2002) considered the evidence at the time and concluded that ‘people are not uniform in their tolerance to risk. It depends on the situation ... [and] ... on several factors, one being recent experience facing risk (pp. 27–8)’.

Thus Shefrin’s concept of tolerance embraces not only an underlying ‘trait’ but perhaps also a ‘state’ component.
Grable et al. (2004) aligns tolerance to that of an attitude rather than purely a trait, coining a term ‘risk tolerance attitude’ whereby ‘tolerance appears to be an elastic and changeable attitude ... [and] ... stock market price data does influence risk tolerance attitudes’ (pp. 142, 145). A number of other studies have reported such associations between risk tolerance and market activity or mood/sentiment (e.g. Grable and Lytton 1999; Grable 2000; Yao et al. 2004; Pan and Statman 2010; Yao and Curl 2011). In contrast, others have reported risk tolerance to be a reasonably stable measure, not materially associated with short-term market movements, sentiment or mood, although likely subject to some moderation over longer time periods as a result of accumulated life experiences such as economic crises. Such studies include Yip (2000), Santacruz (2009), Roszkowski and Davey (2010), Hoffman et al. (2011), Malmendier and Nagel (2011), and Gerrans et al. (2015).

A confusing aspect of the research literature mirrors that of the educational literature: constructs are invariably derived from questionnaires and other test instruments whereby risk tolerance, risk capacity, risk perceptions and/or other attributes are often confounded to the extent that the test measure is open to question. The importance of questionnaire design has been widely discussed in the finance literature (e.g. Yook and Everett 2003; Davey 2004; Roszkowski et al. 2005; Marinelli and Mazzoli 2010; Valentine 2013). The potential for unreliable questionnaire outcomes is well illustrated by Yook and Everett (2003) who investigated the consistency of responses to six different questionnaires that all purported to measure a person’s financial risk tolerance yet the responses exhibited an average correlation of only 0.56 (p. 50). In another example, Marinelli and Mazzoli (2010) investigated different questionnaires devised by banks to assess client risk tolerance and concluded that ‘depending on the bank questionnaire that is used ... the same client could be classified by a bank as risk averse and by another bank a risk seeker’ (p. 2).

A closer examination of the literature indicates that where ‘financial risk tolerance’ has indeed been modelled as an underlying personality trait and measured with a psychometric instrument (e.g. the studies by Santacruz 2009; Roszkowski and Davey 2010; Gerrans et al. 2015), the measure certainly displays a reasonable stability across changing externalities such as market sentiment. While these metrics are typically associated statistically with various background factors (such as the investor’s age, investment experience, wealth, dependents) the variation in tolerance ‘explained’ by these factors is never large and thus each person’s tolerance appears mostly entrenched, as one would expect of a trait. In contrast, study instruments that combine risk capacity, risk perception or other transient attributes will, almost by definition, report fluctuating measures that nonetheless simply reflect a changing stance towards risk due to changing personal circumstances, market mood, etc. (such as the study by Yao et al. 2004).

Understanding how best to model an individual’s attitude to financial risk remains a work in progress and behavioural finance research has posed a number of pertinent, unresolved issues here. For example, the ‘traitedness’ of individuals has been considered in some studies — that is, some individuals might exhibit traits more consistently than others and, if so, measuring their risk tolerance is problematic without an accompanying test of traitedness (Roszkowski et al. 2009). More broadly, some research has even suggested investors might be loss averse rather than risk averse, or perhaps that these traits are manifested differently in different contexts such that an appropriate behaviour is something not readily predicted by simply gauging risk tolerance (for example, see prospect theory and associated matters discussed in Bodie (2014)).
Suggestions for moving forward

Clearly distinguish client attributes that, in combination, determine each individual’s ability to cope with financial risk

Whether tolerance is strictly determined by a stable personality trait or influenced to some extent by transient state effects is unclear and this point remains an issue for further research. The key point, however, is that a psychological element likely exists and should be recognised and modelled separately. Capacity constraints are also important considerations that can limit or extend a person’s appetite for risk and they too should be modelled separately — they are financial-related attributes peculiar to each person’s circumstances (e.g. wealth level, number of dependents and time horizon) that help to identify how much financial risk a person could cope with. Further, each client will have a ‘portfolio’ of objectives and time horizons, thus tolerance and capacity analyses should be undertaken in the context of each objective/horizon. This ‘micro level’ approach should provide a much finer, cleaner assessment of how ‘risky’ each objective is, relative to pertinent tolerance and capacity constraints and it avoids a blanket appraisal of the client which can lead to erroneous ‘portfolio-picker’ styled outcomes.

Rationalise terminology and promulgate consistency of terms and concepts

Throughout this paper we have identified various terms, but we have mostly used the term ‘attitude’ to risk to encapsulate all factors of influence: psychological and non-psychological constraints. Our usage of the term was convenient for exposition purposes but ultimately we simply call for a standardisation of terminology, method and regulatory direction.

The term tolerance could be used to describe the client’s suitable response to all factors i.e. reflect his/her psychological predisposition as well as financial constraint factors. Alternatively a narrower usage of the term could be more clearly encouraged, in a manner sympathetic to the body of work that already views tolerance as a personality trait and thus psychologically oriented.

Consistency is important and whatever the consensus view, the numerous other terms and concepts should be avoided so as to minimise potential ambiguity. For example, ASIC’s Consultation Paper CP212 refers to ‘risk profile/risk tolerance’ (e.g. paras 60, 85) and risk ‘appetite’ (e.g. paras 43, 92) but ultimately we believe such terms should be discouraged. Similarly, misnomers such as ‘psychological risk tolerance’ and ‘situational risk tolerance’ (discussed earlier regarding ASIC’s REP279) should be recast. The term ‘risk profiling’ might best be reserved to simply embrace the gamut of tasks associated with risk assessment e.g. assessing risk tolerance, capacity and prospective portfolio risk exposure.

Utilise psychometrically validated instruments where possible

In the psychology discipline and other behavioural sciences, personality traits are an accepted phenomenon and psychometric tests can be acceptable if carefully constructed. The issue of questionnaire design has been broached earlier in this paper and care is required to isolate measures of trait from measures of capacity or perception etc. ‘Composite’ test inventories are problematic. Our suggestion therefore is to utilise widely recognised, psychometrically validated instruments when gauging a person’s ‘financial risk tolerance’, not ‘home-grown’ instruments likely to lack validity.

Give more explicit recognition to financial risk tolerance and capacity in other less obvious realms of the financial planning process

While more readily discussed in the investment context, a person’s tolerance and capacity to cope with possible wealth diminution through an unfavourable event can be considered in other key financial planning contexts e.g. insurance planning and debt planning. For example, ASIC’s Report 413 (REP413) documents a ‘disconnect’ between the advice in these non-investment contexts (e.g. insurance) and the client’s ability to cope with possible losses and this provides one illustration of how explicit consideration of client risk tolerance or capacity in other contexts (and entrenching into regulation and procedure) could enhance the advisory process.
Concluding remarks

Resolving the issues broached in this paper regarding client risk would help to diffuse one of the more persistent and vexing issues associated with personal financial advice. Regulators, educators and practitioners have the opportunity to foster a far more 'professional' treatment of client risk attitude via revisions to RG146 and through other guidance or mandates. This view seems reflected through ASIC's ongoing review of RG146's training and knowledge thresholds, with moves to provide a clearer and more stringent assessment regime than currently exists in the areas of ethics and knowledge (ASIC Consultation Paper CP212, 2013). Adviser understanding and expertise would be enhanced and the chance of unethical behaviour reduced by a stricter 'prescriptive' framework that precludes the type of error or abuse which currently occurs due to limited guidance.

Adviser understanding and expertise would be enhanced and the chance of unethical behaviour reduced by a stricter 'prescriptive' framework that precludes the type of error or abuse which currently occurs due to limited guidance.

Notes

1. Not unlike other personality-based responses. For example, anxiety can be modelled as a trait or state condition (Spielberger 1983).
2. We acknowledge that methods other than questionnaires can be used to assess attitude towards risk, such as simulation risk/return experiments and self-reported investment preferences. For more discussion see Sheliebecker and Roszkowski (1993). Nevertheless, questionnaires appear to be the more common approach in both research and industry.
3. For example, the 25-item Financial Risk Tolerance Scale developed by FinaMetrica and featured in numerous studies (e.g. Faff et al. 2009). For more details of these tests, usability evaluation, norming tests and other information concerning the instrument, see the technical manual by Bright and Adams (2000) and FinaMetrica.
4. For example, studies report multiple regression adjusted-$R^2$ of around 0.25 or less (e.g. Grable 2000; Faff et al. 2009; Gerrans et al. 2015).

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FinaMetrica.


A paradox is created by the common practice in stock evaluation models of excluding stocks with a negative book equity (BE). If we interpret the book-to-market ratio as a proxy for distress risk, it makes no sense to exclude these negative BE stocks since they are, prima facie, most prone to distress risk. This paper reassesses the relationship between default risk, return and the book-to-market ratio by incorporating negative BE stocks into the study. We find that negative BE stocks carry higher default risks than their positive BE counterparts and that these risks are not totally offset by higher returns. This suggests that a default risk filter can be used in the investment universe selection process through which the portfolio return can be enhanced.

The relationship between default risk, the book-to-market ratio (BE/ME) and stock returns is of interest for both practitioners and academics. For the practitioner, the BE/ME is a supposed yardstick to differentiate value stocks from growth stocks in portfolio management, which in turn determines the share return difference. For the academic, it presents an asset pricing anomaly. In addition to the mixed results documented by prior studies regarding whether the BE/ME proxies the firm's default risk, the results obtained were from incomplete data samples from which conclusions were drawn in the absence of, or with little attention paid to, negative book equity (BE) shares. This creates a paradox. For example, if negative BE stocks represent potentially the most financially distressed firms (Fama and French 1993), how can these distressed negative BE stocks be excluded from the investigation of the relationship between default risk and BE/ME?

Superficially, there are strong grounds for such omission. Part of the reason is the belief that such stocks are too few to influence any modelling outcomes (Fama and French 1993). Another reason is that negative BE has no intuitive interpretation (Collins et al. 1999) since limited liability means that shares cannot have negative value. Further, negative BE stocks have no intuitive interpretation in terms of ‘value’. If high (low) BE/ME stocks represent value (growth) stocks, respectively, what do these negative BE/ME stocks represent?

We believe the omission of negative BE stocks from stock evaluation is a mistake. First, while it is true that negative BE stocks were rare prior to 1980, their numbers have gradually increased since the mid-1980s and stabilised at approximately 5 per cent of all traded stocks (Brown et al. 2008). Also, negative BE stocks are generally expected to be either young start-ups or old failing firms. Consequently, these stocks may potentially exert significant influence on results from any value-based asset pricing models such as the Fama-French three-factor model.
For these reasons, it appears that there is no longer any basis for researchers to conduct studies and draw conclusions in the absence of, or with little attention paid to, negative BE stocks. This is not only due to the increasing weight of negative BE stocks but also because the current debate about the interpretation of the value premium anomaly is restricted to positive BE stocks only. Therefore, this points to the need for an investigation into the role of negative BE stocks in the value premium debate regarding default risk and return, and the manner in which negative BE stocks should be assessed in conjunction with their positive BE counterparts.

**Data and some characteristics of negative BE stocks**

Book equity can be simply defined as the accounting value of a firm’s net assets (assets minus liabilities). In this study, book equity, as defined by Brown et al. (2008), is the COMPUSTAT-provided book value of stockholders’ equity plus balance-sheet deferred taxes and investment tax credit (if available), minus the book value of preferred stock. The dataset consists of firms traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) and the National Association of Securities Dealers Automated Quotations System (NASDAQ) recorded on the Centre for Research in Security Prices (CRSP) and COMPUSTAT. CRSP is the source for daily and monthly stock prices and returns and COMPUSTAT is the source for relevant accounting data.

To be included in our dataset, a stock must: (a) have COMPUSTAT book common equity for year \( t-1 \); (b) have appeared on COMPUSTAT for at least two years in order to avoid the survival bias inherent in the way COMPUSTAT adds firms to its database (Banz and Breen 1986); (c) have monthly CRSP prices for December of year \( t-1 \) and June of year \( t \); and (d) be an ordinary common equity.

The study period is from 1986 to 2014. As depicted in Figure 1, negative BE stocks are rare before 1980 (as Fama and French (1993) point out). The number of negative BE stocks does not exceed 100 until 1984, but dramatically increases after 1986. Hence, the years prior to that are relatively unimportant in the context of the study.

**FIGURE 1: Number of negative book equity stocks**

![Figure 1: Number of negative book equity stocks](image)

*Note: The number of negative book equity stocks is calculated based on the definition across the COMPUSTAT-provided data set. The shaded areas denote recession periods as defined by The National Bureau of Economic Research (NBER).*


To proxy the default risk on the company’s debt, we adopted an options-based Merton model (Merton 1974). Recent related work has tended to use either a traditional accounting-based Z-score (Altman 1968) or O-score (Ohlson 1980) to assess the default risk (Dichev 1998; Griffin and Lemmon 2002) or the option-based Merton model (Vassalou and Xing 2004; Campbell et al. 2008). An options-based default risk model is used in this study because many previous studies have found it outperforms accounting-based models in terms of default predictive power (Hillegeist et al. 2004). In addition, the Merton model (Moody’s KMV model) has been widely used by both academics and practitioners (Kealhofer et al. 1998; Hillegeist et al. 2004). Default risk in this study is measured by the default risk indicator which takes the form of:

$$\rho_{PD} = N(-DD) = 1 - N\left(\frac{\ln \left(\frac{VA}{B}\right) + (\mu - 0.5\sigma^2)T}{\sigma\sqrt{T}}\right)$$

(1)

where $\rho_{PD}$ is the default risk indicator, $VA$ is the current total market value of the firm, $\mu$ is the expected continuously compounded return on $VA$, $\sigma$ is the volatility of firm value, and $B$ is the current book value of the debt maturing at time $T$.

Since Figure 1 has shown that the number of negative BE stocks increased dramatically after the early 1980s, this seems to suggest that the growth of negative BE stocks is closely associated with the advent of the ‘new economy’. Our investigation shows that indeed over three quarters of the negative BE stocks are listed on NASDAQ. This inevitably links these stocks with the new economy.

Why are the majority of negative BE stocks listed on the NASDAQ? The primary reason is the relaxed listing requirements for NASDAQ. For instance, the initial listing standard for net tangible assets is $40m on the NYSE, whereas there is no specific requirement for this item under NASDAQ. Fama and French (2001) find that the rate of new listings, largely on NASDAQ, explodes after 1979, from about 140 per annum to more than 500 per annum. Ritter and Welch (2002) show that the percentage of ‘tech’ stocks increases from about 25 per cent of the IPO market in the early 1990s to an amazing 72 per cent during the ‘internet bubble’ (1999 to 2000).

This illustrates that there is a change in the market for new listings after 1980, allowing firms to list earlier in their life cycles, when they are smaller and financially unstable, growing rapidly, but still relatively unprofitable (Fama and French 2004). Further, it is no surprise to find that negative BE stocks indeed cluster around certain specific industry sectors which are synonymous with the new economy, such as the IT, pharmaceutical and telecommunication industries. In addition, other traditional industries, such as oil and gas extraction, also contain many negative BE stocks. The above depicts the heterogeneity of the negative BE stocks. It also suggests that some negative BE stocks are start-up firms who have a tendency to ‘eat’ into their equity. After examining some of the characteristics of negative BE stocks, the next question which arises is whether these negative BE stocks are prone to financial distress?
Results discussion

As the majority of negative BE stocks are associated with the new economy, this suggests that they are relatively small in size compared to their positive BE counterparts. Panel A of Table 1 shows that, on average, negative BE stocks are indeed much smaller than the positive BE stocks. On average negative BE stocks have statistically significantly higher default risk than the positive BE stocks.

It is expected that firms with high default risk earn higher returns than firms with low default risk as investors charge a return premium for bearing these high default risk stocks. (Fama and French 1993; Vassalou and Xing 2004). However, contrary to this, the evidence provided in the table is that the higher default risk for negative BE stocks is not compensated by higher return. Instead, both the raw return and the risk-adjusted return (the Sharpe ratio) are lower for negative BE stocks, though the differences are not statistically significant. This seems to suggest the existence of the ‘distress anomaly’ (Dichev 1998; Campbell et al. 2008), in which the stocks with the greater default risk deliver anomalously low average returns.

To assess further the implications for default risk and returns for both positive and negative BE stocks, we created 2 x 3 (size x BE/ME) portfolios following Brown et al. (2008). We split the stocks into two size groups, Small and Big. Three BE/ME groups are formed based on the NYSE breakpoints for positive BE stocks for the bottom 30 per cent (Low), middle 40 per cent (Medium), and top 30 per cent (High). Thus six value-weighted portfolios (SmallLow, SmallMedium, SmallHigh, BigLow, BigMedium and BigHigh) are created as the intersection of size and BE/ME groups. We applied a well-known procedure used in Brown et al. (2008), the generalised style classification, to then classify and add negative BE stocks into the value groups by considering how close past returns of negative BE stocks correspond to those of the preformed positive BE stocks value groups. For example, if a small negative BE stock whose monthly average return over the past year is closest to those stocks in the small size and high BE/ME portfolio, then it would be allocated to the SmallHigh portfolio.

The first noticeable observation from Panel B of Table 1 is that there is virtually no difference in average size between the positive and negative BE stocks in the three small-size portfolios. However, the size difference for the three big-size portfolios are highly significant. For each of the six portfolios, the negative BE stocks have significantly higher default risk than their positive BE counterparts. However, this higher default risk is not always rewarded by higher raw equity return. For instance, the negative BE stocks generate a lower return than the positive BE stocks in the SmallLow portfolio.
TABLE 1: Comparison of default risk and return profile for positive BE and negative BE stocks for US stocks from 1986 to 2014

<table>
<thead>
<tr>
<th>Panel A — at the aggregate level</th>
<th>Size</th>
<th>Default risk</th>
<th>Return</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive BE stocks</td>
<td>1432</td>
<td>0.030</td>
<td>0.130</td>
<td>0.051</td>
</tr>
<tr>
<td>Negative BE stocks</td>
<td>356</td>
<td>0.080</td>
<td>0.115</td>
<td>-0.006</td>
</tr>
<tr>
<td>(t) value</td>
<td>7.3***</td>
<td>3.3***</td>
<td>0.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B — at the portfolio level</th>
<th>Size</th>
<th>Default risk</th>
<th>Return</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmallLow Positive BE stocks</td>
<td>197</td>
<td>0.005</td>
<td>0.022</td>
<td>-0.109</td>
</tr>
<tr>
<td>Negative BE stocks</td>
<td>160</td>
<td>0.13</td>
<td>-0.033</td>
<td>-1.993</td>
</tr>
<tr>
<td>(t) value</td>
<td>1.1</td>
<td>4.1***</td>
<td>-0.15</td>
<td>4.36***</td>
</tr>
</tbody>
</table>

| SmallMedium Positive BE stocks  | 200    | 0.008        | 0.123  | 0.074        |
| Negative BE stocks              | 203    | 0.033        | 0.656  | -1.168       |
| \(t\) value                    | 0.1    | 1.9**        | 1.5*   | 2.1**        |

| SmallHigh Positive BE stocks    | 114    | 0.053        | 0.188  | 0.159        |
| Negative BE stocks              | 93     | 0.198        | 0.666  | -0.259       |
| \(t\) value                    | 1.3    | 2.0**        | 1.7*   | 1.7*         |

| BigLow Positive BE stocks       | 9467   | 0.002        | 0.112  | 0.12         |
| Negative BE stocks              | 302    | 0.085        | 1.006  | -0.431       |
| \(t\) value                    | 6.5*** | 2.8***       | 1.9**  | 1.5*         |

| BigMedium Positive BE stocks    | 5811   | 0.019        | 0.125  | 0.229        |
| Negative BE stocks              | 280    | 0.083        | 0.489  | 0.028        |
| \(t\) value                    | 9.2*** | 3.1***       | 1.5*   | 1.2          |

| BigHigh Positive BE stocks      | 4214   | 0.049        | 0.145  | 0.326        |
| Negative BE stocks              | 222    | 0.098        | 1.059  | 0.058        |
| \(t\) value                    | 10.1***| 2.2**        | 2.4**  | 1.1          |

Panel C — after filtering stocks with positive default risk indicator

| Positive BE stocks              | 0.133  |
| \(t\) value                    | 2.6**  |
| Negative BE stocks              | 0.076  |
| \(t\) value                    | 1.9**  |

Notes: Size of stocks in the table refers to total assets measured in USD millions. The default risks are computed at the end of each month based in Formula (1). Positive (negative) BE stocks at year 1 are stocks whose book values are positive (negative) if book equities are positive (negative). Within each portfolio, stocks are further divided into positive BE and negative BE stocks. For the six portfolios, SmallLow refers to stocks with both small size and low BE/ME ratio and BigMedium refers to stocks with both big size and a medium BE/ME ratio. The Return column reports the raw returns, which are calculated as value-weighted returns for all stocks within the portfolio. A stock return in year 1 is an annualised return from July of year 1 to June of year 1+1. We used the Treasury bill rate to proxy the risk-free rate in the Sharpe ratio calculation. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

This distress anomaly is more pronounced in terms of Sharpe ratios. Across the six portfolios, negative BE stocks deliver the lower risk-adjusted return compared to the positive BE stocks in the same portfolio. This observation seems to suggest that negative BE stocks are more volatile than their positive BE counterparts, which contributes to the noticeable negative risk-adjusted returns for negative BE stocks.

After assessing the relationship between default risk and the return for both positive and negative BE stocks, what is the main implication for practitioners in terms of return enhancement? The distress anomaly in our findings seems to suggest that returns can be enhanced if we install a default risk ‘filter’ to exclude those stocks with positive default risk scores in selecting the investment universe. Panel C of the table reports that after installing this filter, both positive BE and negative BE stocks deliver significant higher risk-adjusted returns. This finding suggests that a simple default risk filter can be used in practice to enhance the portfolio return.
The distress anomaly in our findings seems to suggest that returns can be enhanced if we install a default risk ‘filter’ to exclude those stocks with positive default risk scores in selecting the investment universe.

Conclusion
This research complements the extant literature in examining the relationship between default risk and return from both positive and negative BE stocks. Prior research draws inferences about the relationship between default risk and the return profile in the absence of negative BE stocks. An inconsistency arises when negative BE stocks are omitted because these stocks are the ones most prone to distress risk. For this reason we incorporated these stocks in this study.

We find that negative BE stocks have higher default risk than positive BE stocks but this high risk is not necessarily compensated by high return, particularly not by high risk-adjusted return. Using these most distressed stocks, we confirm the distress anomaly documented in the literature. The implication for portfolio management from this study is that default risk can be used as a filter in the investment universe selection process. After installing this filter, the risk-adjusted return for both positive and negative BE stocks are both economically and statistically significantly different from the portfolios without such a filter.

Notes
1. There have been three recessions since 1990. The early 1990s recession is from July 1990 to March 1991. The early 2000s recession is from March 2001 to November 2001. The most recent one is from December 2007 to June 2009.
2. It is worth noting that the default risk indicator obtained from the equation is not a default probability per se, unlike the default probabilities obtained from Moody’s KMV-Merton model. This is primarily due to the calibration of the KMV-Merton model itself. No attempt is made to claim that the default risk indicators obtained from this model would be equivalent to those of the KMV-Merton model.
3. A stock is considered to have a zero value of default risk if the default value is zero rounded to four decimal places.
Reference


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INTERNATIONAL LINKAGES OF THE AUSTRALIAN BANKING SYSTEM: Implications for financial stability

GRANT TURNER and JAMES NUGENT

This paper outlines the channels through which the Australian banking system is directly linked to international markets and the attendant financial stability implications. First, the large Australian-owned banks maintain a significant amount of international assets, including a large exposure to New Zealand and exposures within the Asian region that have grown rapidly over recent years. Second, Australian banks fund a portion of their domestic activities offshore, although post-crisis balance sheet adjustments should enhance banks’ resilience to potential future global funding market disruptions. Third, despite their small share of the commercial banking market, foreign banks operating in Australia can still influence financial stability. An earlier version of this paper was presented at the 20th Melbourne Money and Finance Conference.

Banks’ international business arises from the cross-border transactions of their home-country operations and the activities of their foreign-located operations. At a broad level, international banking may be beneficial for global economic growth through a number of mechanisms, including by facilitating trade, allocating savings to investment opportunities across economies, and increasing banking sector competition and efficiency in host countries. International banking may also help diversify country-specific risk and thus be a source of risk-sharing among banking systems (IMF 2007). However, history has shown that international banking activity can be a conduit through which financial stress is transmitted between countries (Peek and Rosengren 2000; Gianetti and Laeven 2012).

From a regulatory perspective, problems with internationally active banks are more difficult for individual countries to resolve and global efforts to improve cross-border resolution have proved challenging (IMF 2014). In light of these global issues, this paper focuses on the nature of the Australian banking system’s links to international markets and their implications for financial stability in Australia.
Australian-owned banks’ international exposures

The large Australian banks conduct a significant amount of their business internationally. Australian-owned banks’ aggregate international exposures were about one-quarter of their global consolidated assets as at March 2015, and were equivalent to around five times their Tier 1 capital (Table 1). These ratios were slightly higher than those of a decade earlier.

### TABLE 1: Australian-owned banks’ international exposures

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value ($ billion)</td>
<td>323</td>
<td>545</td>
<td>961</td>
</tr>
<tr>
<td>Growth — annual average (per cent)</td>
<td>n.a.</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Share of total consolidated assets (per cent)</td>
<td>22</td>
<td>20½</td>
<td>24½</td>
</tr>
<tr>
<td>Ratio to Tier 1 capital (times)</td>
<td>4½</td>
<td>4½</td>
<td>5</td>
</tr>
</tbody>
</table>

Sources: APRA; RBA.

The large Australian banks are often considered to be fairly domestic in their focus. International banking data indicate that, relative to domestic credit, Australian-owned banks’ international exposure is not particularly large by international standards; in particular it is well below a number of banking systems in Europe (Figure 1). Also relevant is that none of the internationally active Australian banks has been classified as a global systemically important bank (G-SIB). G-SIBs generally have a much larger international footprint than the Australian banks — for example, as at 2014, JP Morgan alone had international assets of US$673 billion, compared with US$752 billion of total international exposures for all Australian-owned banks.

### FIGURE 1: Selected banking systems’ international exposures

Ratio to domestic credit, immediate risk basis, December 2013

Sources: BIS; IMF; RBA.

A feature of Australian-owned banks’ international business is that their exposure is more geographically concentrated. Three countries account for more than 70 per cent of their international exposure, whereas other large banking systems are typically much less focused on a small number of core markets (Figure 2).
As is well known, the largest share of Australian-owned banks’ international exposures is to New Zealand (NZ), because all four major banks have substantial operations there (Figure 3). The major banks’ NZ subsidiaries are similar to their Australian commercial banking operations: they focus largely on (private sector) lending to households and businesses although, within this, lending to agriculture has a relatively high share because of the importance of the dairy industry in NZ.

Australian-owned banks also have significant exposures to the major markets of the United Kingdom (UK) and the United States (US). Among the four major banks, NAB has had the largest presence in both of these countries, mainly reflecting its commercial banking subsidiaries Clydesdale Bank and Great Western Bank. These operations have posted weaker returns than NAB Group over recent years. Most of the large Australian banks also have branch operations in both the UK and the US; these operations engage in intragroup funding, wholesale lending and financial market activities.

Sources: APRA; RBA.
Exposures to Asia represent about one-fifth of Australian-owned banks’ international exposures. Australian-owned banks have recorded strong growth in their exposures to a range of Asian countries over recent years, although the bulk of their exposures in the region are to the financial centres of Singapore and Hong Kong, as well as the two largest economies, China and Japan (Figure 4).

**FIGURE 4: Australian-owned banks’ exposure to Asia**

![Graph showing exposure to Asia](image)

Sources: APRA; RBA.

A key motivation for expansion into Asia has been to benefit from the growing trade and investment flows between Australia and Asia (RBA 2013). Accordingly, the major banks have been providing cross-border banking services (such as trade finance and foreign exchange) to Australian companies doing business in Asia, as well as to Asian companies with activity in Australia. Some of them are also targeting intra-Asian trade flows, or expanding into retail banking in certain jurisdictions (generally with a focus on more affluent customers or those with links to Australia). While all of the major banks have increased their activity in the Asian region over recent years, ANZ has accounted for a large part of the growth. Its overall exposure to Asia is also much bigger, including its local presence in terms of the size and number of foreign offices.

**Financial stability implications**

International expansion has the potential to increase and diversify a bank’s earnings, and thus benefit its overall business. However, historical experience suggests that operating under different market, legal and cultural circumstances can entail higher levels of financial risk, such as credit risk and market risk. In particular, operational risk may be heightened given that international expansion increases the complexity of a bank’s operations; there is also a tendency for a bank’s foreign offices to not receive risk management oversight comparable with that of the head office (APRA 2013). If financial risks were to significantly materialise in a bank’s international business they could weaken the parent bank, and therefore generate risk in the home market. Intuition would suggest that the chance of this occurring increases with the size and unfamiliarity of international exposures, as well as the strength of the interconnections between the parent and its foreign offices (RBA 2014).

Australian banks have had a mixed experience with international expansion over the past couple of decades. Consistent with the view that international expansion can pose higher risks, there have been numerous cases of disproportionate credit or operational losses in their international exposures, mainly to counterparties in the UK or US. Banks’ activities or products in these markets have often differed from those in Australia, adding to the complexity of their overall business.
Unlike some of the forays into the northern hemisphere, the major Australian banks’ NZ operations have tended to perform relatively well (Figure 5). Two contributing factors are the Australian banks’ longstanding presence in NZ and the similarity of the NZ operations to their Australian businesses. At the same time, the major banks derive a relatively small diversification benefit from these operations due to the positively correlated performance of the Australian and NZ economies.

FIGURE 5: Major banks’ return on assets*

![Figure 5: Major banks’ return on assets](image)

* Cash earnings is used where net profit is unavailable; financial years are end-June for CBA and end-September for ANZ, NAB and WBC.

Sources: Banks’ annual reports; RBA.

Regardless of past performance, the major banks’ ongoing significant aggregate exposure to NZ represents a risk concentration from the perspective of Australian financial stability. As a practical example of how strong banking connections with NZ could affect Australia, the major banks significantly increased funding of their NZ subsidiaries during the global financial crisis prior to the announcement of government guarantees in both countries. Of course, the Australian major banks are also important for financial stability in NZ, so banking supervisors engage through activities such as stress testing and supervisory colleges, and regulatory authorities meet regularly through the Trans-Tasman Council on Banking Supervision.

The impact on the Australian economy of the major banks’ expansion into Asia is not yet clear. If this expansion were to increase and diversify the banks’ earnings over the long term, or more generally facilitate greater trade and investment between Australia and Asia, then it could prove beneficial. From a risk management perspective, the majority of exposures are shorter term and trade-related (Figure 6); these exposures typically pose lower funding and credit risks than long-term lending. However, operational and legal risks could be relatively high, including in ‘offshored’ support functions or businesses where the bank does not have full managerial control. Moreover, disruptions in Asia, principally China, would be expected to impart significant indirect effects to the Australian banking system (through macroeconomic and global wholesale funding market channels) at the same time as any direct financial risks are realised.
FIGURE 6: Australian-owned banks’ exposure to Asia*

* Data by maturity are available for cross-border exposures and local exposures in foreign currency; they are not available for local exposures in local currency.

Sources: APRA; RBA.

Australian-owned banks’ offshore funding

Australian-owned banks use offshore credit markets to fund a portion of their domestic activities. Offshore funding currently accounts for around one-fifth of their total funding liabilities in Australia (Figure 7). A substantial portion of this is long-term funding, usually in the form of debt securities. Another aspect of Australian banks’ offshore funding is that it is mostly denominated in foreign currency, typically US dollars although, as described below, it is mostly swapped into domestic currency. The vast majority of offshore liabilities are to financial centres in the US and UK.

FIGURE 7: Australian-owned banks’ international liabilities*

* Excludes derivatives and working capital.

Sources: APRA; RBA.
**Financial stability implications**

Australian banks’ use of offshore funding is regarded in some quarters as a potential source of financial instability. Certainly, periodic bouts of volatility in global credit markets over recent years have created wholesale funding pressures for Australian banks. Moreover, there is a widely held assumption that offshore creditors are more likely to withdraw their funds in times of stress than domestic creditors. This could perhaps stem from the greater substitutes for global investors’ funds, offshore creditors’ risk appetite being more procyclical and/or home bias among investors in times of stress. In Australia, the stability of domestic deposits relative to offshore funding and other domestic funding is also boosted by specific depositor protection arrangements (Turner 2011).

Banks can lessen the liquidity risk arising from their (offshore) funding by ensuring that they do not have a significant portion that is maturing in the near term. Indeed, in the post-crisis period Australian banks have increased the average maturity of their short- and long-term offshore debt. They have also significantly expanded their holdings of high-quality liquid assets. These balance sheet adjustments have enhanced banks’ resilience to liquidity shocks, and APRA’s supervision should ensure further improvements to their liquidity risk management and funding profiles over time. However, the possibility that offshore funding markets stay closed for a lengthy period (e.g. longer than one month) in the future cannot be ruled out. To help ensure such an event does not significantly disrupt economic activity, a central bank like the Reserve Bank of Australia (RBA) may, consistent with its mandate, respond by liquefying a bank’s assets (provided the bank’s assets exceed its liabilities and the collateral securing liquidity is subject to appropriate haircuts). In this way a central bank can provide society with a low-cost form of insurance against (externally generated) liquidity shocks (Lowe 2015). The RBA’s Committed Liquidity Facility pre-specifies the amount of Australian dollar liquidity that can be provided to Australian banks subject to the full Liquidity Coverage Ratio requirement.

Banks in Australia manage foreign currency risk on their offshore funding by hedging nearly all of the debt using derivatives, typically matching the underlying cash flows (Rush et al. 2013). They are instead exposed to the risk that the counterparty to the transaction — typically a global bank — is unable to honour its obligations, requiring attainment of a replacement swap or foreign currency on the spot market at prevailing rates (IMF 2012). Collateralisation of these transactions should ensure effective management of counterparty credit risk and reduce the potential for derivative interconnections to be a channel by which offshore financial shocks are transmitted to Australia.

**Foreign-owned banks’ operations in Australia**

Most banking activity in Australia is undertaken by domestically-owned institutions: aggregate assets of foreign-owned banks represent only 11 per cent of banking system assets (Table 2). This share is slightly lower than a decade earlier, even though the number of foreign bank branches increased over this period.

Foreign banks’ share of business credit is higher than that for resident assets, whereas their shares of household lending and deposits are lower. These outcomes are consistent with the incumbency benefits of domestic banks in mass (retail) markets as well as the typical business model choices of foreign banks (it is natural for them to focus on servicing large business customers that also operate in their home country). The business models and penetration of foreign banks in Australia are also influenced by local prudential regulation.
TABLE 2: Foreign-owned banks operating in Australia

<table>
<thead>
<tr>
<th>By number</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>37</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>- Subsidiaries</td>
<td>10</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>- Branches</td>
<td>27</td>
<td>34</td>
<td>40</td>
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</table>

<table>
<thead>
<tr>
<th>By value, share of banking system(a) (per cent)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>14½</td>
<td>14</td>
<td>10½</td>
</tr>
<tr>
<td>- Subsidiaries</td>
<td>5</td>
<td>4</td>
<td>3½</td>
</tr>
<tr>
<td>- Branches</td>
<td>9½</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Household credit(b)</td>
<td>5</td>
<td>5</td>
<td>4½</td>
</tr>
<tr>
<td>Business credit(b)</td>
<td>13½</td>
<td>13½</td>
<td>16</td>
</tr>
<tr>
<td>Syndicated lending(c)</td>
<td>58½</td>
<td>61</td>
<td>59</td>
</tr>
<tr>
<td>Deposits(d)</td>
<td>9</td>
<td>6½</td>
<td>8½</td>
</tr>
</tbody>
</table>

(a) Banking system includes credit unions and building societies; data are resident domestic books basis.
(b) Credit data are non-break adjusted.
(c) Includes offshore banks, mostly loans to large non-financial corporations.
(d) Excludes certificates of deposits and intragroup deposits.

Sources: APRA; RBA.

Foreign-owned banks are more prevalent in the provision of other ‘banking services’ in Australia outside of traditional commercial banking. In particular, some global investment banks are major players in financial markets, such as markets for certain over-the-counter derivatives (including swaps), securities financing, asset custody and debt and equity underwriting. And global financial conglomerates have accounted for a significant share of credit extended by registered financial corporations (which are non-prudentially regulated entities or ‘shadow banks’), although their involvement has been wound back over recent years.

Financial stability implications

There is extensive literature on the potential benefits of foreign banks to host economies (Claessens et al. 2001; Claessens 2006). In Australia, foreign banks have been an important source of competition since banking sector deregulation in the mid-1980s, particularly in large business banking, but also in retail banking. Foreign banks have also helped deepen local financial markets and provide a range of more specialised financial market services.

Nonetheless, since the financial crisis there has been a more widespread appreciation of the financial stability risks that foreign banks pose. A key financial stability concern is that foreign banking activity can add to procyclicality; international evidence suggests that lending by non-resident banks and foreign branches expands at a relatively fast pace during buoyant conditions and contracts quickly during downturns (Hoggarth et al. 2013). A related issue is that foreign banks may be more likely to acquire marginal borrowers because of the difficulty in competing with domestic banks for established (higher quality) customers.

Aggregate lending by foreign banks in Australia has proved to be relatively procyclical over the past decade. Some European bank branches that expanded their balance sheets rapidly in the lead-up to the financial crisis subsequently pulled back (with several leaving altogether), in association with local loan quality problems and difficulties in their home jurisdictions (Figure 8). The lending behaviour of foreign branches has also influenced Australian asset prices (such as commercial property prices) over this period. It is noteworthy that a number of Asian-owned banks are currently expanding their business at a rapid pace (Debelle 2015), including their commercial property lending. It remains to be seen whether this activity will be sustained over the medium term.
Another concern is the potential for foreign banks to spread problems to the host economy from elsewhere. There were cases during the financial crisis where otherwise sound foreign-owned banking businesses operating in Australia were destabilised because of problems at a foreign parent (Laker 2010). Although problems can be transmitted through foreign subsidiaries, foreign branches are more likely to do so. Funding, lending and operational links with their banking group tend to be much stronger for branches because they are not legally separate from the parent banks. As a measure of the connections of foreign branches operating in Australia, four-fifths hold at least 20 per cent of their total assets as intragroup claims or fund at least 20 per cent of their assets through intragroup funds; for some, the comparable ratios are above 60 per cent.

The systemic risk posed by future external shocks being transmitted to Australia through foreign bank branches or subsidiaries is limited by their small size in Australia — the largest foreign bank accounts for only 2 per cent of domestic banking assets. However, the substantial involvement of global investment banks in certain financial markets suggests that problems elsewhere in their banking groups could have a larger adverse effect on the Australian economy. It would be hard for others to replace some of their financial market activity at short notice because it is specialised and/or complex. Another relevant consideration is that some of this business is being undertaken outside the Australian prudential regulatory perimeter. As the financial market activities of global banks in Australia are often a small part of their global operations, home-country supervision might not provide adequate oversight for the risks posed specifically in Australia.

Conclusion

The Australian banking system is linked to international markets through a number of channels. This activity provides benefits to the Australian economy, but also poses risks. As such, international banking linkages are the subject of ongoing monitoring by the RBA and other financial regulators. A range of policies in Australia act to mitigate risks associated with international banking. Notably, sound macroeconomic policies help to bolster the economy against international shocks. Also important is APRA’s prudential regulation and risk-focused supervision, including targeted on-site visits of Australian banks’ overseas operations and engagement with host regulators (APRA 2014). Other examples include public communication of risks and domestic crisis management arrangements, such as liquidity provision to the banking system.

Even though international banking linkages are a focus for Australian financial regulators, further consideration of these issues by the research community is welcomed. Future research might usefully focus on how inward transmission of shocks through Australian-located banks might arise from post-crisis changes in international markets, including the growing use of central clearing for over-the-counter derivatives, new prudential rules and instruments and altered resolution regimes.
Notes
1. The authors are from Financial Stability Department at the Reserve Bank of Australia. Views expressed in this paper are those of the authors and not necessarily those of the Reserve Bank of Australia. We thank Sharon Lai, Thomas Carr and other Reserve Bank colleagues for their comments and assistance with the preparation of this paper.

2. An international exposure is defined as an on-balance sheet cross-border claim on a non-affiliate, or an on-balance sheet claim of an affiliated foreign office. Claims can be measured on an ‘immediate risk’ basis — that is, based on the country where the immediate counterparty resides. Claims can also be measured on an ‘ultimate risk’ basis, which are immediate risk claims adjusted (via guarantees or other risk transfers) to reflect the country where the counterparty risk ultimately resides. Claims on both these measures are used throughout this section because of their differing breakdowns. There is typically only a small difference between the measures for Australian banks.

3. Since March 2015 NAB has divested Great Western Bank and it is currently in the process of divesting Clydesdale Bank.

4. This assumes some maturity transformation is undertaken. Banks could use some of their short-term offshore funding to match short-term assets. In such cases they might be willing to exit short-dated business lines if funding conditions deteriorate.

5. See RBA 2014 (p. 82) for a discussion of the mechanisms by which the Australian economy may adjust to lower demand for Australian bank paper.

6. This facility is provided for a 15 basis point point fee regardless of whether it is drawn upon (RBA 2011).

7. For example, foreign branches in Australia are prohibited from receiving deposits of less than $250,000 from individuals and non-corporate institutions.

8. A notable example was internet-only retail deposits offered by some foreign bank entrants in the early 2000s (Davis 2000). Their relatively attractive rates forced other banks with physical branch networks to increase their deposit rates.

9. However, by drawing on the financial strength and funding of their parent bank, foreign branches might more easily absorb purely domestic shocks.

10. The International Banking Research Network, in which the RBA participates, is one such initiative.

References


BALANCING SAFETY, STABILITY, EFFICIENCY AND COMPETITION:
Finding the balance for Australia’s major banks

CHARLES LITTRELL, Executive General Manager, Australian Prudential Regulation Authority

This paper provides insight into the way APRA thinks about capital requirements for Australia’s major banks, in the context of its prudential mission. An earlier version of this paper was presented at the 20th Melbourne Money and Finance Conference.

Under the APRA Act, APRA is required to balance safety with efficiency and competition, among other things and, in doing so, to promote financial system stability. This paper begins with a discussion of the degree to which the four Australian major banks (ANZ, Commonwealth Bank, NAB and Westpac) are systemically important. The paper then reviews the degree to which the major banks are financially sound, competitive and efficient. It also looks at how these characteristics influence the setting of capital requirements for the major banks.

Just how systemic are Australia’s major banks?
In summary, the major banks are very systemically important indeed and they have become more important over past two decades.

FIGURE 1: Major banks’ assets as a per cent of nominal GDP

Note: Data is presented on a domestic books basis for major banks and their bank subsidiaries.

Figure 1 demonstrates that, in aggregate, the major banks are quite large as a proportion of GDP and this share has grown substantially over time. There were surges of growth from 2000 to 2009, followed by a levelling off, and more recently there has been a resumption of major bank asset growth as a proportion of GDP.
Figure 2 shows that the major banks comprise over three quarters of the banking industry balance sheet, and control about 60 per cent of prudentially regulated assets. This pattern is not uncommon globally, with say three to six banks dominating the local financial system, although the degree of concentration varies somewhat. Australia’s financial system is probably more concentrated than average, but is not the most concentrated system. It is clear, however, that given their size relative to GDP, and their share of the total financial system, should the four major banks become seriously impaired in their ability to operate normally, Australia would no longer possess a fully functioning financial system.

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Inter-bank exposures
There are currently 158 banks, building societies, and credit unions in Australia; collectively called ‘Authorised Deposit-taking Institutions’ or ADIs. The numbers vary slightly over time, but APRA’s most recent statistical returns indicate that 138 ADIs report large exposures to at least one of the major banks. The majority of aggregate large intra-ADI exposures in Australia involve a major bank counterparty, which is unsurprising given the major bank share of the industry’s balance sheet. Again, there is some variance over time, but all the major banks typically maintain material exposures to each of the other major banks.

These figures simply confirm the intuition that should a major bank or banks become seriously stressed, there is a material risk that it or they would quickly transmit substantial stress to the rest of the Australian banking system.
There are many other measures of systemic importance, several of which APRA collated when implementing the Australian capital regime for domestic systemically important banks. In Australia, there are four systemic groups. As an example of the drop-off between the major banks and their competitors, the fourth largest bank, compared to the fifth largest bank:

- is more than five times larger in terms of resident Australian assets
- is more than three times larger in terms of loans to financial corporations
- has issued more than four times the level of securities
- is about six times larger in total loans and advances

In most of the above cases, the ‘fifth largest bank’ is not the same entity. That is, there is no obvious fifth bank in the system, but several banks which are much smaller than any of the major banks.

Given this level of concentration, it is clear that maintaining Australian financial and banking system stability requires close attention to maintaining the financial soundness of each of the major banks.

What does ‘financial system stability’ mean?

There is no single definition for financial stability, but there is a broad global consensus as to what this means. The Reserve Bank of Australia’s (RBA’s) definition is:

A stable financial system is one in which financial intermediaries, markets and market infrastructure facilitate the smooth flow of funds between savers and investors and, by doing so, help promote growth in economic activity. Conversely, financial instability is a material disruption to this intermediation process with potentially damaging implications for the real economy.

APRA considers that its financial stability strategy must recognise the inevitability that systemic institutions will from time to time, hopefully measured in terms of decades, face critical and potentially fatal financial shocks. In promoting financial system stability, as required by its mandate in the APRA Act and the Banking Act, APRA’s prudential expectations for the major banks include:

- They are financially sound, which in APRA’s context means they will meet their financial promises to depositors under any plausibly foreseeable adversity. APRA applies this standard to all regulated entities, not just systemic entities.
- They are resilient, which means they will continue to support their customers, and be able to support new customers, under any plausibly foreseeable adversity. This is a de facto higher standard for systemic banks. Put simply, the major banks need to be able to continue to meet Australia’s banking needs, when smaller and weaker competitors may not be able to do so.
- Should they no longer be able to meet conditions 1 and 2 above, there are arrangements in place to swiftly and effectively restore a major bank or banks to a sound and competitive footing (albeit potentially with new management and shareholders).

The fact that Australia relies so heavily upon four financial groups can be seen as a two-edged sword. On the one hand, should the Australian economy face material external shocks, but the four major banks remain sound, including remaining open for new business, then they function as a shock absorber for the financial system and the economy. A version of this story played out in Australia in 2008 through 2010, which is one reason why the major banks became larger in recent years.

On the other hand, should one major bank become seriously stressed, they might all quickly find themselves similarly impacted. This is akin to the situation in Ireland in 2008, with wide and adverse repercussions for broader economic activity.

APRA’s prudential strategy for promoting financial system soundness in Australia is founded on the premise that all regulated entities can at least meet their obligations. The four major banks, however, need to not only meet their obligations but remain able to take on new obligations, even in times of stress. APRA’s regulatory and supervisory approach flows from this aspiration. In the absence of any ability to guarantee that major banks will remain able to service their customers in all circumstances, it is important that they remain as strong as is reasonably achievable in normal times.
**Major bank strength**

Two key dimensions of ‘safety’ are the probability of failure, and the probability of illiquidity. This paper focuses on the former risk rather than the latter. APRA and the RBA have put in place arrangements to support Australia’s banking system during extremely challenging liquidity stresses, equivalent to late 2008 when global markets failed. APRA expects that the major banks will continue to improve their liquidity risk profiles, but that is a subject for another day.

As to the probability of failure, there is a broad consensus that the Australian major banks are financially sound. In debt ratings terms, the four major banks are mid- to low-AA rated, which makes Australia, along with Singapore and Canada, one of the highest rated banking systems in the world. In the post-crisis world, the majority of international banks tend to be rated either single A or BBB.

A major contributor to this relative ratings strength, however, derives from the rating agencies’ assessment that the Australian public sector, and in some circumstances the Australian taxpayer, will stand behind the Australian major banks in times of stress, thereby protecting bank creditors. From APRA’s perspective, a bank fails not only if it can’t pay its debts, but if the taxpayer must take losses to ensure that a bank’s debts are paid.

Accordingly, while APRA considers that the major banks are well-capitalised and financially sound, their relative strength may be less than that reflected in public debt ratings.

A bank’s financial soundness is concentrated in its asset quality, earnings capacity, capital quality and capital quantity, all backed by sound governance and management. APRA’s assessment is that Australian bank asset quality is among the strongest in the world, albeit highly concentrated in home lending, where risk is higher than has traditionally been the case. Earnings capacity is also among the best in the world, as is the quality of capital.

The quantity of capital held by the major banks, by contrast, is well above minimum regulatory requirements, and above the average of global peers, but short of the top quartile positioning recommended by the Financial System Inquiry. The FSI concluded: ‘...although Australian ADIs are generally well capitalised, further strengthening would assist in ensuring capital levels are, and are seen to be, unquestionably strong’.

The first recommendation from the FSI is that capital standards should be set to ensure Australia’s banking system is seen to be unquestionably strong. While APRA does not intend to tie Australian capital requirements directly to international capital percentiles, they do provide a useful ‘sense check’. Given the reliance of the Australian banking system on offshore funding, international comparisons will inevitably feature in any consideration of the appropriate Australian bank capital levels.

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In summary, Australia’s major banks are well-capitalised and financially sound, and should be able to act as shock absorbers should the Australian economy and financial system encounter unexpected external adversity. It would be fair to say, however, that this strength is primarily derived from bank asset quality and earnings, and less so from (relative) bank capital levels.
How competitive are Australia’s major banks?

The Herfindahl-Hirschman Index is often used when considering industry concentration. This index has increased for Australian banking in recent years, particularly after the major banks acquired two regional banks seven years ago.

**FIGURE 3: Herfindahl-Hirschman indices for ADIs by selected balance sheet items**

The U.S. Department of Justice has a long established rule of thumb that markets are considered concentrated when the HHI exceeds 1500, and highly concentrated above 2500. On that basis the Australian market for bank assets and deposits became moderately concentrated a few years ago.

The competitive position of the major banks can be considered in three contexts:

- compared to other ADIs
- compared to the unregulated sector
- compared to foreign-owned ADIs.

Relative to other ADIs

Figures 2 and 3 demonstrate that the major banks have a high and, over time, growing share of the total Australian banking market, and a high and growing share of the total financial market. Had this time series been extended back to, say, 1990, the results would have been even more striking. At that time, the Australian financial system included:

- large state banks
- large building societies
- large finance companies (often owned by banks)
- 16 recently licensed foreign banks
- merchant banks
- solicitors’ mortgage funds, among many other smaller investment schemes.

A remarkable proportion of these competitors to the major banks are no longer active. Many were absorbed or acquired by the major banks, and quite a few failed.

There is a meme in the banking world that safe banking is somehow ‘uncompetitive’. The facts seem contrary to this proposition: the four major banks have generally been the soundest and most sustained competitors in the Australian (and for that matter, the New Zealand) financial system over the past 20 years. Many competitors have come and gone, often unable to continue to serve the Australian community during times of financial stress. The lesson from Australia, and elsewhere in the world, is that the only reliably competitive banks are financially sound banks.
Relative to the unregulated sphere
In some countries, notably the United States, the banking system holds a relatively low share of business, relative to capital market/shadow banking sectors, both for lending and for deposits and near-deposits. This is not the case in Australia.

**FIGURE 4: Share of total lending by regulated status**

![Graph showing the share of total lending by regulated status](source)

Source: APRA data and RBA Statistical Table D2.

From the mid-1990s to the mid-2000s, unregulated lenders led by mortgage originators grew market share to approximately 20 per cent. When the global financial crisis hit, many of these unregulated competitors closed, failed, or were forced to change their business models. Currently, unregulated lending is of the order of 10 per cent of total lending, and falling.

If the prudentially regulated sector controls 90 per cent of total lending, this is rather strong evidence that prudential regulation is not making the regulated sector uncompetitive against unregulated lenders.
Comparison to foreign-owned ADIs

It is theoretically possible that foreign-owned ADIs could comply with the Australian prudential regime, but reverse elements of this regime through transactions offshore. If this were the case, and Australia’s bank regulation made local banks uncompetitive, then foreign-owned banks would be expected to grow their market share.

FIGURE 5: Resident assets of ADI sectors as a proportion of total ADI industry

Figure 5 makes clear, however, that foreign banks and branches have a small and static share of Australian banking assets. A similar case applies for Australian banking deposits. There is no evidence here that foreign-owned competitors are taking market share away from Australian owned ADIs.

In summary:

➢ Prudentially regulated ADIs dominate Australian lending.
➢ The four major banks dominate the ADI sector.
➢ There is no evidence that foreign-owned ADIs have any competitive advantage.
➢ All of these trends tend to indicate that the major banks are growing more rather than less dominant.

It is also a market in which the four major banks earn much higher returns on equity than their smaller competitors.
How efficient are Australia’s major banks?

As with safety and competition, efficiency can be measured in many ways. This paper considers two measures: cost efficiency and margin efficiency.

An uncompetitive industry is less likely to control costs, either over time or compared to more competitive industries. In Australia, major bank cost-to-income ratios have fallen steadily over time to reach around 45 per cent in 2010, and then have held around this level in the past five years. A 45 per cent cost-to-income ratio is quite low in global terms, where ratios of 60−70 per cent are more common.

Cost efficiency can also be considered across national borders, in which case the ratio of operating costs-to-assets is a standard measure. Table 1 demonstrates that Australia’s major banks perform very well against international peers on this measure. There are individual national banking groups that are more efficient than Australia in costs-to-assets terms, but very few in the developed world.
### TABLE 1: Cost efficiency (operating costs as a percentage of assets)

<table>
<thead>
<tr>
<th>Country</th>
<th>Operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.99</td>
</tr>
<tr>
<td>Canada</td>
<td>2.73</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.02</td>
</tr>
<tr>
<td>United States</td>
<td>3.58</td>
</tr>
<tr>
<td>Europe</td>
<td>1.88</td>
</tr>
</tbody>
</table>

In summary, cost measures suggest that the major banks are quite low cost, both when measured over time or against international peers. These cost figures, by themselves, do not prove that the major banks are efficient. Cost-to-income ratios could be low because income is very high, for example, due to a lack of competition. To test this, income-based measures need to be examined.

### Competition re-examined: from market share to margins

### TABLE 2: Major bank net interest margins

<table>
<thead>
<tr>
<th>Country</th>
<th>Net interest margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.96</td>
</tr>
<tr>
<td>Canada</td>
<td>1.74</td>
</tr>
<tr>
<td>Japan</td>
<td>1.03</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.75</td>
</tr>
<tr>
<td>United States</td>
<td>2.71</td>
</tr>
<tr>
<td>Europe</td>
<td>1.19</td>
</tr>
</tbody>
</table>

Table 2 suggests that the Australian major banks maintain relatively high net interest margins. Australia’s relative performance on this measure may be temporarily influenced by the fact that many peer nations are operating with official interest rates at or near zero. This makes it difficult for banks in these countries to earn a reasonable margin from their deposit businesses.

### TABLE 3: Major bank return on assets

<table>
<thead>
<tr>
<th>Country</th>
<th>Pre-tax return on assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.58</td>
</tr>
<tr>
<td>Canada</td>
<td>1.03</td>
</tr>
<tr>
<td>Japan</td>
<td>0.21</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.09</td>
</tr>
<tr>
<td>United States</td>
<td>1.74</td>
</tr>
<tr>
<td>Europe</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Return on assets is, in arithmetic terms, a profitability measure, but it also reflects competitive dynamics. Profitability is driven by a bank’s safety, efficiency and competitiveness. Australian major bank returns on assets are lower than in the pre-crisis period, but remain among the highest in the developed world. As with many other measures, the relative performance of the Australian banks may be temporarily flattered by adverse macroeconomic conditions in other parts of the world.

When considering a range of competition and efficiency metrics, the following picture emerges:

- Australian major banks are low cost. Both their cost-to-income and cost-to-assets ratios are low in international terms.
- The Australian major banks earn high margins and high returns in international terms.
- Despite the apparently very attractive conditions applicable to the major banks’ business in Australia, they continue to take market share, or at least hold market share, against unregulated competitors, foreign competitors and other ADIs.
Implications for setting the capital requirements for Australia’s major banks

Based on the evidence provided in this paper, the Australian major banks have been highly successful enterprises. They are simultaneously:

- generating higher returns than their local competitors, or almost any other developed economy banking system
- financially sound, and among the most highly-rated banks in the world
- operating at levels of efficiency that are rarely bettered in world terms.

The major banks have generated this outcome despite, or more probably because, they have been so competitive that they now dominate the Australasian banking and financial systems.

Faced with these conditions, what are the implications for setting an appropriate capital regime for banks, including major banks? The following issues are important considerations:

- The major banks have over time become increasingly systemically important, so their impairment would be more damaging to the Australian economy than has historically been the case.
- The global financial crisis demonstrated the need to think more deeply about systemic protection, as well as individual bank protection, when designing prudential capital regimes.
- APRA’s stress testing, in the context of an Australian economy 24 years removed from its last recession, suggests that a larger major bank capital cushion may become quite valuable when Australia eventually faces more adverse economic circumstances.
- Although APRA largely considers capital strength in an absolute rather than a relative context, international banks are continuing to increase their capital ratios. Given the degree to which Australia’s major banks rely upon international capital markets, it is important that the Australian banks are seen to remain leaders in financial strength, including capital strength.

In summary, there are good reasons to think that the Australian economy would be better served by major banks that, to borrow a phrase from the FSI, are unquestionably strong. Any increase in capital would make the major banks, and therefore the banking system, appreciably better positioned to deal with unexpected shocks. Furthermore, because the major banks are currently profitable, competitive, and efficient, increasing their capital requirements would be unlikely to unduly impair, and might marginally improve, the financial system’s competitiveness.

Notes

1. Section 8 of the APRA Act 1998.
2. A large exposure in this context exceeds 10 per cent of the relevant ADI’s total prudential capital base.
INNOVATION AND REFORM IN AUSTRALIA’S financial market infrastructure

OLIVER HARVEY is Senior Executive Leader, Financial Market Infrastructure, Australian Securities and Investments Commission

CALISSA ALDRIDGE is Senior Specialist, Financial Market Infrastructure, Australian Securities and Investments Commission

BEN COHN-URBACH is Senior Manager, Financial Market Infrastructure, Australian Securities and Investments Commission

The global financial market infrastructure is in an unprecedented state of transition. Spurred by significant developments in technology and regulatory frameworks, market infrastructure across modern economies is becoming increasingly integrated, competitive, global and complex. The rapidly changing dynamics in global financial markets are being acutely felt in the Australian marketplace. To deliver most effectively for those they are designed to serve, markets need to reliably and effectively provide the infrastructure for companies to raise capital and for investors to invest and allocate risk. Using the example of recent developments in the over-the-counter (OTC) derivatives market, this paper highlights the challenges and opportunities in ensuring Australian financial markets continue to deliver these enduring benefits. An earlier version of this paper was presented at the 20th Melbourne Money and Finance Conference.

Markets play a central role in the growth and prosperity of any economy. To perform this role, markets need to reliably and effectively provide the infrastructure for companies to raise capital and for investors to invest and allocate risk. While these traditional purposes of markets are well accepted, markets are in a constant state of evolution. They need to adapt and embrace political, sociological, ideological and technological developments to ensure they continue to deliver enduring prosperity for the economies they serve.

Spurred by developments in technology and regulation, market infrastructure around the world is in a period of rapid and unprecedented transition. Arguably, it has become more integrated, competitive, global and complex than at any other time in history.

Clearly, each of these dynamics provides the potential for exceptional benefits for the traditional and most important users of markets — those looking to raise capital to support their business enterprises and those looking to invest and manage risk. Greater integration and global access provides increased investment and capital raising opportunities. Greater competition has the potential to drive down costs and drive up service standards, and greater complexity provides opportunities to exploit niche markets and drive innovative ideas.

It is also important to recognise, however, that while innovation traditionally delivers benefits, there can sometimes be risks attached. The commercial realities of innovation mean that it is typically driven by a subset of market users and providers who stand to receive a direct financial benefit from that change or initiative, whereas the externalities of that change are of less interest to the proponent.

Frequently the interests of those proposing the changes and the interests of the wider market are tightly aligned. That is, innovation benefits all market users. However, history is also marked by changes that have not delivered this wider benefit and where they have in fact had a detrimental impact on the broader market by hindering capital raising or otherwise shaking the confidence of investors and their willingness to invest.
Where those changes create path dependencies, history has also shown that negative externalities can be difficult and sometimes impossible to unwind. For these reasons, an assessment of any change or innovation needs to be undertaken with a focus on ensuring that the direct benefits and collateral consequences of those initiatives, continue to foster an environment that also supports fair, orderly and transparent markets more broadly for the issuers, investors and consumers they serve.

The changes and issues affecting financial markets around the world are also being acutely felt in the Australian marketplace. Given the ongoing shift in Australia towards greater reliance on market-based financing, these changes have the potential to profoundly shape the future prosperity of businesses and investors in this country. Like elsewhere, competition and innovation in the Australian marketplace is intensifying at every level of our market infrastructure — from capital raising and secondary trading through to post-trade infrastructure, and across and between the exchange-traded and over-the-counter (OTC) markets. There has been enormous change across the entire spectrum and there is more change on the horizon.

The following diagrams highlight the wave of innovation that has been unleashed on Australia’s financial market infrastructure in the past few years. Figure 1 illustrates the landscape in 2010.

FIGURE 1: Market infrastructure 2010

At that time, infrastructure for public capital raising was largely confined to the Australian Securities Exchange (ASX), with brokers trading ASX-listed securities almost exclusively on ASX’s secondary trading platform and otherwise being internalised in a small number of broker-operated crossing systems (“dark pools”). Domestic futures trading took place on ASX, and clearing and settlement was provided by the ASX group’s post-trade infrastructure. Unlike the infrastructure for the exchange-traded market, market infrastructure in Australia for the OTC market was largely non-existent.

Perhaps most interestingly, the illustrative depiction of Australia’s financial market infrastructure in 2010 in Figure 1 broadly reflects the rather static state of this market at most points in the prior decade. Figure 2 illustrates the extraordinary change in the past few years.
New listings markets have launched, with a view to competing directly with ASX and developing niche target markets among small-to-medium enterprises and pan-Asian issuers. Other listing and quotation markets are likely to develop, and other forms of capital raising such as crowdfunding are gaining traction overseas and, more recently, in Australia as well. While ASX is still clearly the dominant Australian listings market, the trading of those ASX-listed securities now takes place on an increasing range of exchange and non-exchange platforms, including Chi-X Australia, broker dark pools and ASX’s own dark pool (known as Centrepoint).

The domestic infrastructure for futures trading is still predominantly provided by ASX, but a new domestic competitor is entering the fold. At the same time it’s worth remembering that the world’s largest futures exchanges such as the Chicago Mercantile Exchange and Germany’s Eurex hold licences to operate in Australia and have the scale and efficiency to compete effectively in any market. Given the revenues generated by futures trading for ASX (around double the revenue for equities trading) it is reasonable to anticipate that competition for that revenue stream will only increase.

At the same time, the distinction between the futures market and the OTC derivatives market is starting to blur. The ‘futurisation’ of the OTC market and the prospect of standardised OTC contracts being increasingly traded on liquid ‘non-traditional’ trading platforms are unfolding tensions and dynamics. More broadly, regulatory decisions and commercial incentives are increasingly drawing the OTC market onto financial market infrastructure historically associated with traditional ‘equities exchange’ type activity. In the clearing of OTC products for instance, ASX launched its OTC clearing service in 2013, where it competes directly with global monoliths such as LCH and, more recently, the Chicago Mercantile Exchange. Other global competitors also continue to eye off a stronger foothold in the Asian region as they look to deploy their international scale to compete in this marketplace.
The significant capital investment required to successfully operate financial market infrastructure means that further competition is more likely to come from an offshore base, where the scale of those foreign markets can be leveraged to compete with our home-grown operators. This offers the promise for Australia to import efficiencies and practices from the global marketplace more quickly than ever before. The benefits of this to Australian companies looking to access cheaper capital and investors looking for new ways to invest and manage risk are clear. The associated risks of having critical market infrastructure primarily regulated offshore are arguably less so.

A case study: Reforms to OTC derivatives markets

Last year, we published a paper1 which used the changes in the trading of ASX-listed equities as a case study for the changes taking place in the Australian market. The magnitude of the changes in the OTC derivatives markets is easily comparable to the changes that have occurred in the trading of ASX-listed equities and possibly even more significant given the global enormity of this market. The OTC derivatives market has faced dramatic disruption recently, driven by regulatory interventions and the increased use of global infrastructure. This is having a major impact on Australian users of OTC derivatives markets, particularly the major banks, asset managers, and corporate end users. The changes happening in OTC derivative markets are viewed by many as ‘once in a generation’, and parallel the profound structural change seen in markets for other asset classes, many years ago. As US Commodity Futures Trading Commission Chairman Tim Massad recently commented:

I see many parallels to the securities reforms launched in the 30s and 40s, and I believe we will look back on our current reform effort similarly: that is, today as then, we are putting in place a sensible framework built on the principles of transparency and market integrity.

Reforms to OTC derivatives markets have led to the creation, or increased importance, of OTC derivatives market infrastructure, including:

- new players — with trade repositories being set up to retain and distribute OTC derivatives data
- increased use and regulation of existing infrastructure — regulation resulting in increased use of CCPs and electronic trading platforms, which will increase the need for careful regulatory oversight of this infrastructure
- opportunities for new players and services — as OTC derivative markets become more electronic and centralised, there will be demand for providers and services who can make trading and clearing more efficient. This will include electronic confirmation services, portfolio compression to reduce counterparty risk, and communications systems to allow margin to be posted between counterparties and optimised to ensure collateral is most efficiently used.
Vitally, none of the reforms we will discuss will take place in isolation in Australia. Almost all OTC derivatives market infrastructure will either be based offshore, or will be based in Australia but need to operate and compete offshore. Therefore any reforms in Australia must be implemented with an eye on reform globally, and ensuring Australian OTC derivative market participants and infrastructure can compete globally while being effectively regulated locally. Deferring to equivalent foreign regulation is a key tool for regulators to avoid duplicate regulation while at the same time minimising risk to the Australian marketplace.

OTC derivatives and the GFC

By way of background, OTC derivatives markets grew substantially in the lead-up to the global financial crisis (GFC). This was the result of various factors, including substantial growth of global investment banking franchises, as well as increasing numbers of facilities and infrastructure being available to facilitate OTC derivatives trading. While the market value of OTC derivatives has fallen from its 2008 peak, it is still 10 times higher than it was just 15 years ago (see Figure 4 to see the substantial growth in OTC fixed income, credit and commodity derivative markets). To provide some context for this, the value traded in the Australian OTC derivatives market in 2013-14 was 65 times the value traded in the Australian equities market.
Now almost seven years after the onset of the GFC and the failures of Lehman Brothers and AIG, the central role that OTC derivatives played in exacerbating the crisis is sometimes forgotten. Some OTC derivative markets froze, counterparties cut each other off, and a global recession began.

In September 2009, the G20 leaders took steps designed to ensure OTC derivative markets were better regulated, and could never again contribute to a GFC. They committed to a range of reforms to increase the transparency of OTC derivative markets, reduce systemic risk, and improve market integrity. This reflected a desire to, in some ways, transplant a number of useful features of exchange-traded markets and bring them into the OTC world — recognising that exchange-traded markets fared comparatively well during the financial crisis.

Some of the characteristics of exchange-traded markets that would be of value to OTC markets include increased levels of real-time trade transparency and transparency to regulators, the use of central clearing as standard, and high levels of platform trading to assist in price formation and reduce the power of intermediating brokers. Of course, this all needs to be balanced against the generally much lower level of liquidity in OTC derivatives markets compared with, for example, the trading of listed equities.
With these drivers in mind, the G20 leaders consequently committed to implementing initiatives in their home markets that would result in:

- all OTC derivative transactions being reported to centralised databases known as trade repositories, fully accessible to regulators and to the public in aggregated form
- standardised OTC derivative transactions being centrally cleared through CCPs
- standardised OTC derivative transactions being executed on electronic trading platforms, where appropriate
- minimum amounts of margin being exchanged between counterparties when derivative transactions are not cleared through a CCP.

Regulators around the world have been working to implement these reforms over the past six years. The status of implementation of each of these reforms has varied but the aggregated impact of the reforms has been substantial.

**What’s been done so far?**

The most substantially implemented of the reforms is the requirement to report OTC derivative trades to trade repositories. This has now been implemented across a majority of the G20. Regulators now have a greater insight into the trading activity in OTC derivative markets, and are able to better investigate market abuse. In implementing these reforms within Australia, ASIC has been working with the other agencies in the Council of Financial Regulators. In doing so, ASIC has been keen to ensure our implementation of the reforms is as consistent as possible with implementation globally. This is critical given that the Australian market constitutes around only 2 per cent of the global OTC derivatives market. To this end, ASIC has licensed a Singaporean trade repository as the first, and currently only, Australian derivative trade repository licensee. This has allowed reporting entities to use globally consistent infrastructure, through ASIC substantially deferring to the existing supervision of this trade repository by the Monetary Authority of Singapore. The G20 leaders have recently pushed for deference to be increasingly used, and a number of international groups are working on how this could be achieved.

Recognising the desire of the G20 to bring surveillance of OTC derivative markets closer to what is currently in place in exchange-traded markets, ASIC has also recently upgraded its market surveillance system to make use of OTC derivatives data alongside our existing feed of data from exchanges. This will allow us, for the first time, to interrogate data from both exchanges and OTC derivatives markets using one system. Aggregated data is also now being published by the Australian licensed trade repository, and this information is shown in Figure 5.

**FIGURE 5**

<table>
<thead>
<tr>
<th>Derivative Type</th>
<th>Over The Counter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly ASIC Reports by Asset Class</td>
<td></td>
</tr>
<tr>
<td>Open Positions</td>
<td></td>
</tr>
<tr>
<td>Table 1: All OTC Open Positions by Asset Class</td>
<td></td>
</tr>
<tr>
<td>Credit</td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td></td>
</tr>
<tr>
<td>Interest Rate</td>
<td></td>
</tr>
<tr>
<td>Foreign Exchange</td>
<td></td>
</tr>
<tr>
<td>Table 2: All OTC Open Positions by Asset Class and Cleared</td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on DTCC website.

**DTCC Data Repository (Singapore) Pte Ltd**

**Global Trade Repository**

**Table 1: All OTC Open Positions by Asset Class**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Gross Notional (AUD)</th>
<th>Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMODITY</td>
<td>0</td>
<td>28,881</td>
</tr>
<tr>
<td>CREDIT</td>
<td>254,208,842,055</td>
<td>12,299</td>
</tr>
<tr>
<td>EQUITY</td>
<td>82,608,923,748</td>
<td>35,184</td>
</tr>
<tr>
<td>FOREIGN EXCHANGE</td>
<td>5,255,860,578,456</td>
<td>345,546</td>
</tr>
<tr>
<td>INTEREST RATE</td>
<td>24,445,809,398,637</td>
<td>282,673</td>
</tr>
<tr>
<td>Grand Total</td>
<td>30,038,487,242,895</td>
<td>704,583</td>
</tr>
</tbody>
</table>

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There has also been substantial progress in implementing a requirement to centrally clear trades through CCPs. ASIC and the Australian Government have recently consulted on regulations and rules that would implement a clearing obligation in certain OTC interest rate derivatives, and the clearing obligation is expected to come into effect in early 2016. This follows a similar requirement that has been implemented in the US and Japan, and is likely to come into effect in the coming years in the EU and a number of other Asian jurisdictions.

As a result of regulatory actions and a desire to reduce counterparty risk post-GFC, the volume of trades being cleared through CCPs is rapidly growing. To facilitate this, in the past two years, two large global CCPs have been licensed to operate in Australia, LCH.Clearnet and CME. In addition, ASX was given regulatory approvals to launch an OTC interest rate derivatives clearing facility, and this commenced operations in late 2013. While the growing use of CCPs for standardised OTC derivatives transactions is widely considered to be reducing systemic risks, the Financial Stability Board (FSB) has made it a priority to ensure that CCPs themselves are not too big to fail. To this end, the FSB and international standards-setting bodies are now implementing a coordinated work plan to promote CCP resilience, recovery planning and resolvability, including by:

- evaluating loss absorption capacity, liquidity and stress testing
- conducting a stock-take of CCP recovery mechanisms
- reviewing existing CCP resolution regimes and resolution planning arrangements
- considering whether there is a need for more granular standards
- analysing the interconnections between CCPs and the banks that are their clearing members, and potential channels for transmission of risk.

What’s next for OTC derivatives reforms?
A great deal of work will be needed in the next few years to implement requirements for counterparties to exchange margin for non-centrally cleared trades. This comes on the back of internationally agreed principles agreed by IOSCO (International Organization of Securities Commissions) and the Basel Committee in September 2013. We expect these requirements to bring in the need for marging across a range of firms that previously had limited or no need to margin, in particular corporates, superannuation funds and asset managers. Law reform is likely in the next year to remove some legal impediments to margining, and APRA is likely to consult on implementing these requirements for its regulated population in 2016.

At this stage, mandatory platform trading requirements have been implemented only in the US. Other jurisdictions, including Australia, are reviewing the liquidity of OTC markets, to determine if a trading mandate would be appropriate. We are expecting to make particular use of trade repository data to do this. The Australian regulators expect to invite feedback in late 2015 on the criteria that ought to be employed in determining if a product should be subject to this mandate.

Despite the lack of any formal platform trading requirements, there has been a substantial increase in the number of trading platforms operating in Australia that support products traditionally traded in the bi-lateral OTC derivatives market. The number of OTC trading platforms in Australia has quadrupled since the end of 2008 from six to 25, with almost all of this growth coming from platforms typically established outside Australia and primarily regulated by regulators in those home jurisdictions.
Conclusion
Regulators and industry need to embrace competition and innovation if the Australian financial market is to remain relevant and attractive in a global context. This is a key finding of the Johnson Report on building on our strengths to establish Australia as a financial centre in the region.²
In fulfilling this goal, it is equally important to ensure that the Australian financial market remains fair and efficient, and that it continues to operate with a high degree of integrity.

While these goals remain constant, Australia’s financial market infrastructure is in an unprecedented period of change. Arguably, it is subject to greater competitive pressures than at any other period in history and, like financial market infrastructure all around the world, it has become more globally integrated and complex than ever before. For the Australian financial industry and its regulators, the goal must always be to ensure our markets continue to support the abilities of Australian businesses to raise capital and the potential for Australian investors to invest and allocate risk. Developing a roadmap to success has rarely been more challenging or exciting.

Notes