

Banking Concentration, Financial Stability and Public Policy<sup>\*</sup>

Kevin Davis

Commonwealth Bank Chair of Finance, The University of Melbourne  
Director, Melbourne Centre for Financial Studies

Ph: 61 3 9613 0930

Fax: 61 3 9613 0900

[Kevin.davis@melbournecentre.com.au](mailto:Kevin.davis@melbournecentre.com.au)

[www.melbournecentre.com.au](http://www.melbournecentre.com.au)

**ABSTRACT**

Most national banking systems are highly concentrated, and widespread industry consolidation over recent decades has seen a decline in the number of smaller banks but little increase in indicators of concentration. Technological and regulatory change suggest that ongoing consolidation will reduce the number of smaller banks, and that large multinational banks will play an increasing role in domestic banking markets. More foreign and mid-sized domestic competitors may reduce concerns about the effects of concentration on competition, but raise important policy issues for prudential policy and financial stability. Unfortunately, academic research on bank concentration provides limited guidance for policy makers in the majority of countries, such as Australia, where a handful of banks dominate the financial sector. Some of those policy issues and their interrelated nature, as they apply to Australia, are examined in this paper in the light of the available evidence.

**KEYWORDS:** Bank concentration, financial stability, mergers, economies of scale

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## **Banking Concentration, Financial Stability and Risk**

Banking sector structure has long been an issue of policy interest focused largely around a presumed tendency towards concentration and its effects upon economic efficiency, bank profitability, and macroeconomic stability. There has been greater tolerance of concentration in banking than in other industries, because of a presumed benefit of increased financial stability. Of 105 countries for which data on bank concentration was available for 2005,<sup>1</sup> 85 had three-firm concentration ratios above 50 per cent, 53 above 75 per cent, and 31 above 90 per cent.

The topic has remained at the forefront of debate in recent years for several reasons.<sup>2</sup> Within many national banking markets there has been substantial consolidation, reflecting influences such as regulatory and technological change. There has been substantial merger activity among large banking groups (including cross-border expansion) raising the issue of the impact of increased concentration both at a global and national level. At the same time, Central Banks and prudential regulators, have responded to recent international experience of financial crises with an increased focus upon financial stability. Academic research into the implications for efficiency, stability and economic growth of alternative financial system structures has grown markedly, both at the theoretical level and through empirical analyses based on recent development of relevant cross-country databases.

A focus upon banks is not surprising, given their central role in financial systems. However, for several decades the boundaries between banks and other parts of the financial markets have been blurring as banks have expanded into other activities including securities market activities, funds management, and insurance. Other types of financial institutions have emerged, most recently hedge funds and private equity groups, with significant involvement with large banks. These developments have served to further focus attention on the role of large banking groups in financial sector stability.

This paper addresses several questions with an objective of contributing to policy formulation towards financial sector concentration in Australia. First, what does the

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<sup>1</sup> Based on data in World Bank (2006).

<sup>2</sup> For example, a major study of trends in financial consolidation was undertaken by the G10 (Group of Ten, 2001)

empirical evidence suggest about trends in banking sector concentration? Second, do the economics and technology of banking mean that high concentration is inevitable? Third, what does the extant literature say about the impact of banking sector concentration and financial sector structure on financial sector stability? Fourth, how should Australian policy-makers approach the issue of concentration in banking?

The main premise of the paper is that increasing contestability of domestic banking markets by multinational banks is changing the nature and policy implications of banking sector concentration for many countries. Large foreign banks, if permitted to compete in domestic retail and business banking markets, can provide an effective competitive counterweight to large domestic banks. Since Basel 2 (or the competitive advantages arising from sophisticated internal risk rating models being implemented by large banks) may reduce the (already tenuous) competitive ability of small ADIs, removing remaining impediments to access by foreign banks should be a prior step to any review of bank merger restrictions currently applying in Australia.

An increased role for large multinational banks in domestic banking markets requires a number of issues to be addressed by financial regulators. These include protection of depositors and resolution processes for large banks in financial distress. Since these issues would become more pressing were large Australian banks to merge, they also warrant attention prior to any review of bank merger restrictions.

Unfortunately, should a review of bank merger restrictions be warranted, there is relatively little policy guidance to be gained from either theory or evidence for (the large number of) countries such as Australia with high bank concentration ratios (such that a handful of banks dominate domestic banking).

### *1. Trends in Banking Concentration*

Banking sector concentration can be considered at global, national or regional levels. Analysis is complicated because banks operate in multiple product markets which can have geographical boundaries ranging from small communities to the world economy. In

both traditional banking products and other activities they are subject to varying degrees of competition from other types of institutions.

Table 1 illustrates the dramatic growth in size of the world's largest banks over the past two decades. The "top ten" institutions have varied substantially over time, reflecting both individual fortunes and developments (including exchange rate movements) in their home economies. Between 1985 and 1995, the ratio of the top ten banks' assets/world GDP fell from 25.7 to 22.5 per cent. However, between 1995 and 2004, it increased to 35.3 per cent as the banks' asset growth rate of 8.8 per cent p.a. outstripped world GDP growth of 3.8 per cent p.a.<sup>3</sup> The largest bank's size increased from assets of 2.6 to 6.0 per cent of world GDP.<sup>4</sup> In 2005 the two largest banks (as measured by assets) were banks which had not featured in the top ten the previous year.

**Table 1: World Largest Banks: Assets \$US bill**

	<b>Bank</b>	<b>2005</b>	<b>Bank</b>	<b>2004</b>	<b>Bank</b>	<b>1995</b>	<b>Bank</b>	<b>1985</b>
1	Barclays Bank	1,587	UBS	1,553	Deutsche Bank	503	Citicorp	167
2	Mitsubishi UFJ	1,585	Citigroup	1,484	Sanwa Bank	501	Dai-Ichi Kangyo	158
3	UBS	1,563	Mizuho	1,296	Sumitomo Bank	500	Fuji Bank	142
4	HSBC	1,499	HSBC	1,277	Dai-Ichi Kangyo	499	Sumitomo Bank	136
5	Citigroup	1,494	Credit Agricole	1,243	Fuji Bank	487	Mitsubishi Bank	133
6	BNP Paribas	1,484	BNP Paribas	1,234	Sakura Bank	478	Banque Nationale de Paris	123
7	Groupe Cr�dit Agricole	1,380	JP Morgan Chase	1,157	Mitsubishi Bank	475	Sanwa Bank	123
8	Royal Bank of Scotland Group	1,334	Deutsche Bank	1,144	Norinchukin Bank	430	Credit Agricole	123
9	Bank of America	1,294	Royal Bank of Scotland	1,119	Credit Agricole	386	BankAmerica	115
10	Mizuho	1,268	Bank of America	1,110	ICBC (China)	374	Credit Lyonnais	111
	<i>Total</i>	<i>16494</i>		<i>14621</i>		<i>6628</i>		<i>3316</i>
	Largest bank's assets /G7 GDP	5.9%		6.0%		2.6%		2.1%
	Top 10 banks' assets / G7 GDP	60.9%		56.2%		33.9%		41.3%
	Top 10 banks' assets /world GDP	36.9%		35.3%		22.5%		25.7%

Sources: Bank assets: *The Economist* 5/20/06, *Euromoney* August 2006  
World GDP - IMF World Economic Outlook Database, April 2007  
<http://www.imf.org/external/pubs/ft/weo/2007/01/data/index.aspx>

<sup>3</sup> These calculations use current price GDP in US dollars sourced from the IMF's WEO Database. Similar trends exist if PPP based figures or GDP for the G7 countries are used.

<sup>4</sup> The growth rate of the largest bank at 2004 (UBS) was substantially more – since it did not even rank in the top ten at 1995.

This increase in relative size has outstripped the growing importance of the financial sector overall, and suggests increased global concentration in the financial sector. For example, between 1995 and 2004 the “top ten’s” ratio of assets to world GDP increased by 57 per cent while total bank assets to GDP for the G7 countries increased by 15.5 per cent.<sup>5</sup> Some of the difference could reflect expansion into other activities but this does not appear to be the complete explanation. For example, in the USA the increase in assets/ GDP of all financial institutions was only 19 per cent higher than the 13 per cent increase for banks.

The data thus suggests that there has been an increase in the concentration of financial wealth under the control of the world’s largest banks in the last decade.<sup>6</sup> While they still have a relatively small share of global bank assets and there are continual re-rankings in size their importance for competition and stability in both global and multiple local financial markets creates an ongoing policy challenge involving a need for increasing coordination between, multiple national regulatory authorities.

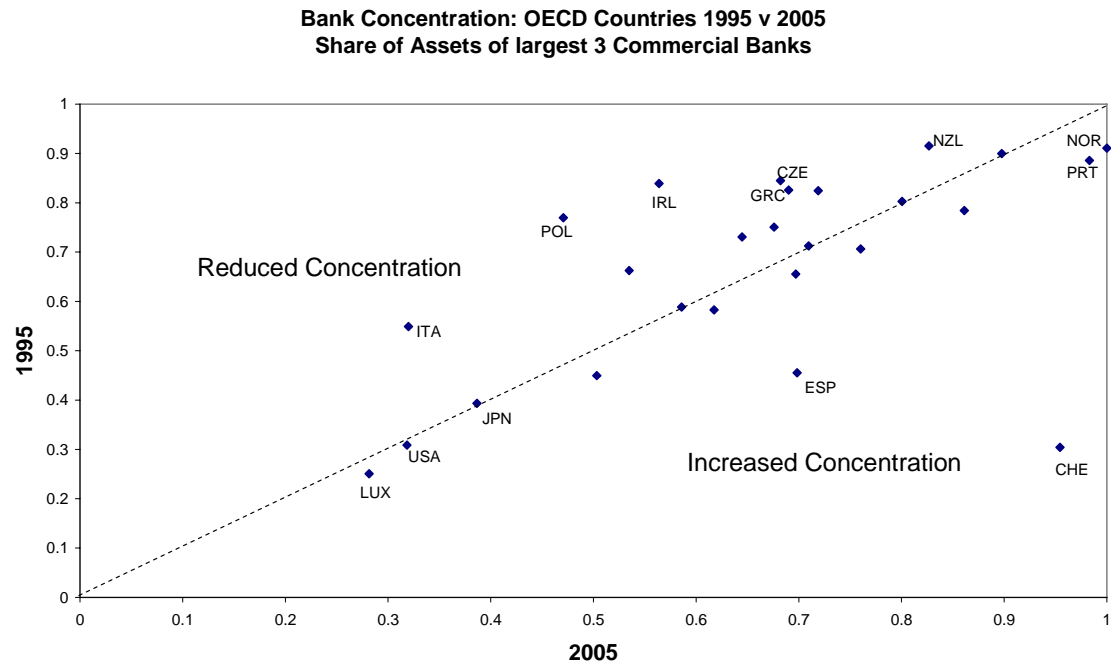
Turning to domestic banking markets there is no apparent general trend towards increased concentration. Figure 1 plots the three-bank concentration ratios for groups of countries for 1995 and 2005. For the OECD countries (Panel A) significant increases in concentration are observable in Switzerland and Spain, and to a lesser extent in Portugal and Norway (which were already highly concentrated), but a number of countries also experienced significant declines in concentration. One factor contributing to this development has been the growth in cross-border banking, particularly in Europe as a result of the EEC initiatives towards developing a unified financial market. In the emerging markets of Central/South America and Central/East Asia (panels B and C), there are also no general signs of increased concentration over this period.

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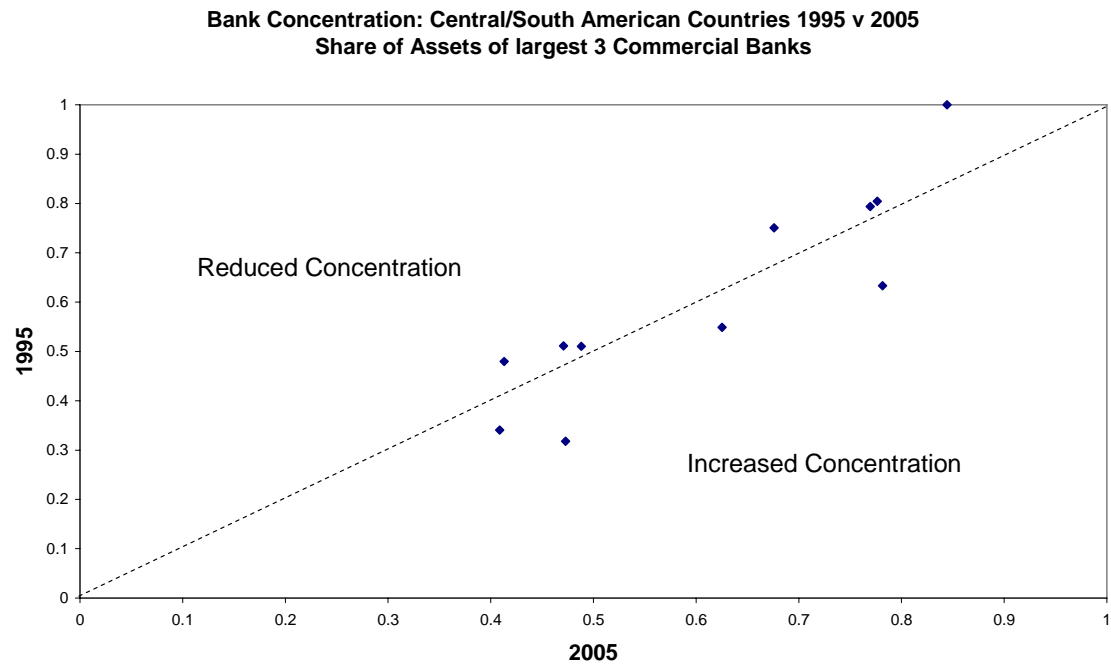
<sup>5</sup> An (unweighted) average using data sourced from World Bank (2006).

<sup>6</sup> Also significant is the fact that the asset totals include those arising from activities such as wealth management. Indeed, two of the three largest banking groups in 2005 (Barclays and UBS) rank significantly lower (14th and 16th) when measured by equity, reflecting the relative importance to them of such “low capital intensity” activities.

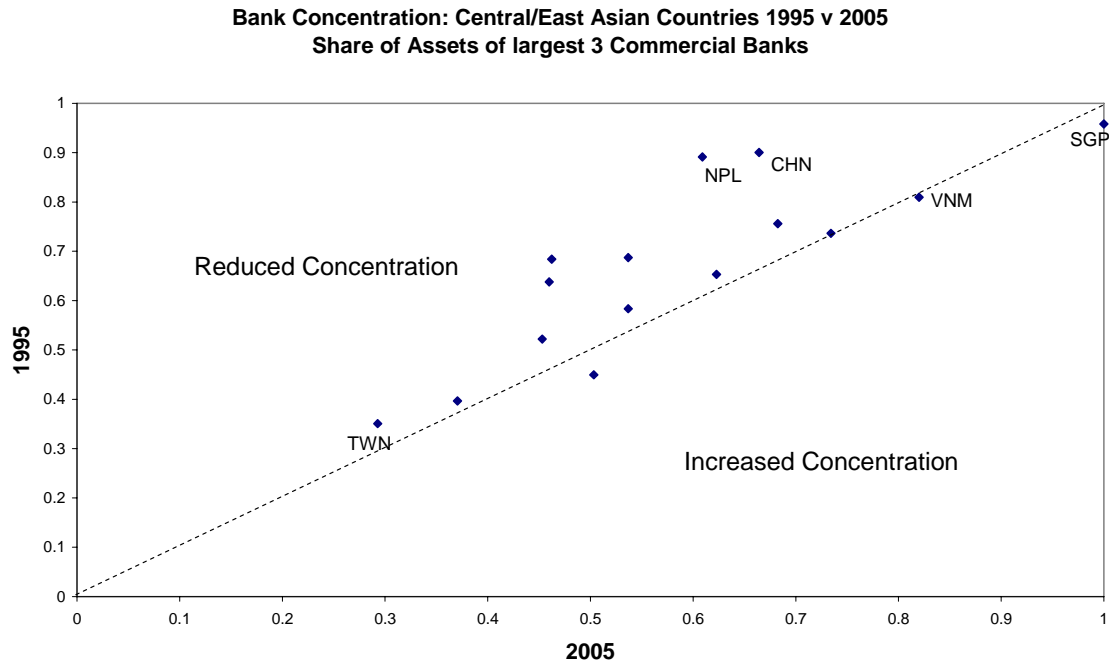
**FIGURE 1: Panel A**



**FIGURE 1: Panel B**



**FIGURE 1: Panel C**

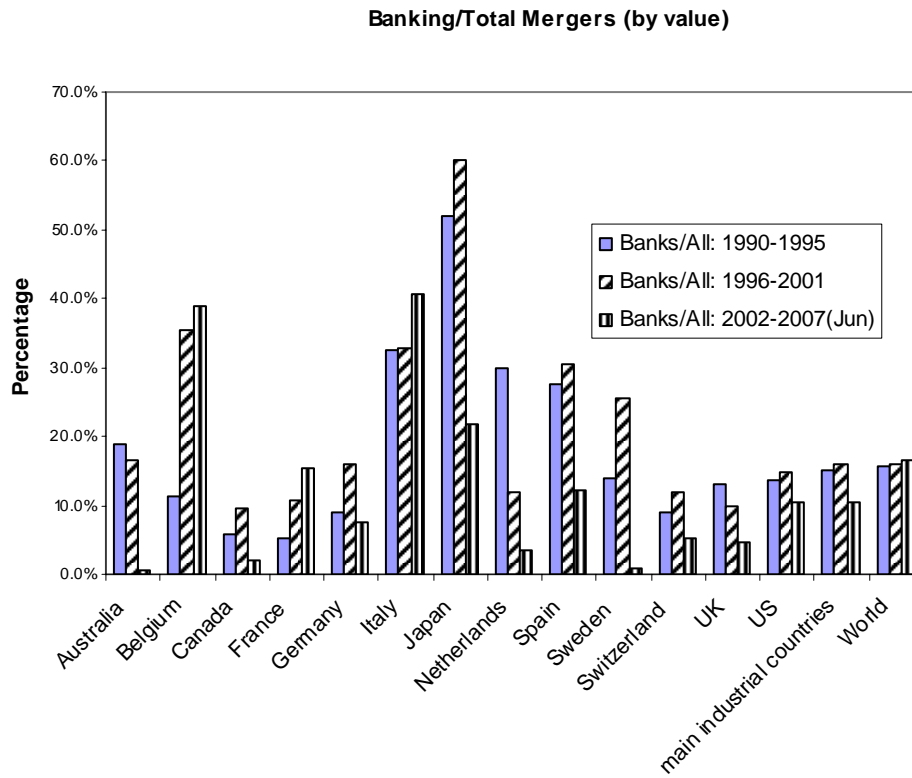


Source: World Bank (2006)

Three three-firm concentration ratios provide only limited information but it is apparent from Figure 1 that national banking sectors around the globe are typically highly concentrated. The USA (where the bulk of academic research on banking structure has been undertaken) is an outlier, with low concentration partly reflecting past restrictions on interstate banking. While the three firm concentration ratio for the USA has not increased, this disguises significant consolidation in the US banking market. Between 1990 and 2005, the share of the industry's assets held by the top 100 banks increased from 68 per cent to 83 per cent, with the top 10 share of assets (domestic deposits) increasing from 25 (17) per cent to 55 (45) per cent. Around 50 per cent of commercial bank holding companies existing in 1985 disappeared by 2005. (Jones and Oshinsky, 2007).

Figure 2 and Table 2 indicate the significance of mergers and takeovers in the banking sector world wide over the past two decades, and demonstrate a number of interesting phenomena.<sup>7</sup>

**FIGURE 2: Consolidation Trends in Banking<sup>(a)</sup>**



(a) Includes: commercial banks, bank holding companies, saving and loans, mutual savings banks, credit institutions, real estate; mortgage bankers and brokers.

Source: Thomson Financial SDC Platinum

First, if the share of banking in total mergers shown in Figure 1 is compared to banking's share of GDP (or employment) it is apparent that there has been relatively greater merger activity in the financial sector than in other industries. Second, the volume of banking sector merger activity has declined since its peak at the turn of the century, but there has been a much smaller decline in the aggregate value of mergers. There have been fewer

<sup>7</sup> Amel et al (2004) present similar data for the period ending 2001.



smaller institutions available as merger partners, and a greater role for larger scale mergers, including an increase in cross-border mergers.<sup>8</sup> As a broad generalization, the changing size distribution of banking firms in national markets is largely the result of mergers rather than “organic” growth, showing up as fewer small and more mid-sized banking firms, but not in concentration ratios.

One important feature of recent bank merger activity has been the importance of cross border acquisitions. For the 106 (out of 143) countries for which data was available in a recent World Bank survey (World Bank, 2007) there were 321 applications for foreign bank entry by acquisition over the five years to 2006. This compares to 592 applications for entry by establishing a branch or new subsidiary for the same set of countries.

**Table 2: Banking Merger Trends<sup>(a)</sup>**

	Number of Mergers			Value (\$bill) of Mergers		
	1990-1995	1996-2001	2002-2007	1990-1995	1996-2001	2002-2007
Australia	129	389	31	9.3	25.2	1.5
Belgium	10	32	8	1.2	33.5	24.8
Canada	40	248	17	3.7	30.0	6.3
France	56	82	36	4.7	56.8	60.6
Germany	24	69	27	5.5	66.4	21.5
Italy	50	99	72	14.6	79.1	94.6
Japan	14	117	81	36.4	198.4	61.9
Netherlands	20	66	17	12.6	25.3	6.9
Spain	24	168	22	6.3	42.5	27.6
Sweden	27	80	7	7.1	25.7	0.9
Switzerland	17	19	10	3.5	27.1	5.6
United Kingdom	255	937	77	38.6	154.5	40.2
United States	1,946	3,091	1,004	151.8	876.3	450.9
Total main industrial countries	2,612	5,397	1,409	295.3	1,641.0	803.4
World	3,024	6,472	4,538	343.2	1,786.5	1,480.5

(a) The figures for 2002-2007 are to June 2007. Includes: commercial banks, bank holding companies, saving and loans, mutual savings banks, credit institutions, real estate; mortgage bankers and brokers.

Source: Thomson Financial SDC Platinum

<sup>8</sup> In Australia, for example, a large proportion of the mergers reported in Table 2 were between small institutions such as credit unions.

There is little obvious evidence of any relationship between concentration and foreign penetration of domestic banking markets.<sup>9</sup> Table 3 presents data for 98 countries, grouped by foreign bank market share.<sup>10</sup> For a significant number of countries, foreign banks have a large market share, but there is no obvious correlation between concentration ratios and foreign bank share. There does, however, appear to be a negative relationship between Government-owned bank market share and foreign bank market share (except for those countries where foreign banks have zero presence).

**Table 3: Foreign Bank Share and Concentration<sup>(a)</sup>**

<i>Foreign Share</i>	<i>Number of Countries</i>	<i>Average foreign bank share</i>	<i>Average government bank share</i>	<i>Average 5 firm concentration ratio</i>
Equals 0	4	0%	4%	78%
0-10%	18	7%	25%	67%
10-30%	24	20%	20%	75%
30-50%	17	42%	13%	71%
50-70%	14	59%	13%	79%
70-100%	21	92%	2%	73%

(a) Market shares and concentration measured in terms of commercial bank assets

Source: World Bank (2007)

Turning to Australia, where the four “majors” dominate, Table 4 suggests that, if anything, concentration has been declining slightly.<sup>11</sup> Between 2004 and 2007, all indicators of the share of the four majors declined marginally, and the increased share between 2000 and 2004 can be primarily attributed to the takeover of the Colonial State Bank by the Commonwealth Bank in 2001. The share of the four majors in the fast growing securitization market is relatively low, suggesting that the on-balance sheet figures understate the increasing role of other participants in lending markets. In domestic loan markets (excluding securitization) there have emerged four banks each with portfolios of \$30 bill plus (compared to the majors at sizes of \$170 bill plus) and another

<sup>9</sup> While advances in technology may make historical evidence of limited current relevance, the question of whether threat of foreign bank entry affects incumbent behavior in concentrated domestic banking markets is clearly an important one warranting further research.

<sup>10</sup> These were countries for which data was available on each of banking sector concentration, foreign bank and government bank shares at end 2005.

<sup>11</sup> The Australian figures illustrate the dangers of relying on coarse measures of concentration such as the 3-firm concentration ratios. For many countries, the relatively tolerable 3-firm ratios tend to disguise the fact that there are one or more additional large banks, and thus may understate the true extent of industry concentration. For example, at the end of 2005, only 15 (14) countries out of 114 for which data were available had a five firm concentration ratio for commercial banking deposits (loans) of less than 50 per cent, while 31 (28) had ratios in excess of 90 per cent (based on data from World Bank (2007)).

five each with portfolios of around \$10 bill plus. In domestic deposit markets, those four banks each exceed \$25 bill (the majors are at \$115 bill plus) and another nine banks each exceed \$10 bill. While the four majors still dominate the markets, a significant group of competitors of moderate size now exists.

**Table 4: Banking Concentration Trends: Australia**

	Mar-00	Mar-04 <sup>(a)</sup>	Mar-07
<b>Total Resident Assets</b>			
All banks \$bill	700.02	1,107.20	1,649.80
share of 4 majors	65.4%	68.5%	64.8%
<b>Amount Securitised</b>			
All banks \$bill		57.10	109.90
share of 4 majors		24.4%	23.2%
<b>Gross Loans &amp; Advances</b>			
All banks \$bill		729.90	1,064.40
share of 4 majors		71.8%	71.0%
<b>Total Deposits</b>			
All banks \$bill	392.40	604.70	843.00
share of 4 majors	63.9%	68.2%	62.2%
<b>Number of licensed banks</b>	50	53	54

(a) The takeover of Colonial State Bank by the Commonwealth Bank in 2001 accounts for virtually all of the increase in the 4 major's share of assets between March 2000 and March 2004, and for around 75 per cent of the increase in deposit share.

*Source:* APRA Banking Statistics

These figures reflect both the growing role of foreign banks and smaller domestic banks in the Australian finance sector, with the impact of the former group being particularly significant for policymakers. Even though consolidation of domestic entities may occur, successful entry by foreign banks may, in the longer term, offset trends towards increased concentration. Domestic banking sectors appear likely to be increasingly shared between a larger number of very large multinational banks, together with smaller specialist domestic entities.

These figures also caution against reliance on ratios based on total banking assets (such as in the readily available databases commonly used). Four firm concentration ratios for Australia calculated using domestic assets or loans or deposits (see Table 4) are

substantially lower than when calculated using total assets of the banking groups.<sup>12</sup> Two factors are relevant. First, the biggest banks have larger international operations than their smaller domestic competitors.<sup>13</sup> As can be seen from Table 5, loans and advances on the Australian books of the banks range between 68 and 84 per cent of total loans and advances of the banking group. Second, the large banks have expanded their activities well beyond the boundaries of “traditional” banking. The ratio of total loans and advances to total assets of the large Australian banking groups in 2006 varied between 58 per cent (for NAB which has significant life insurance business) to 78 per cent.<sup>14</sup>

**Table 5: Major Australian Banks: Selected Financials: \$ bill. Sept 2006**

<b>Bank</b>	<b>Loans and Advances</b>			<b>Assets</b>
	<b>Australia: Bank</b>	<b>Australia: Consolidated</b>	<b>Total: Consolidated</b>	<b>Total: Consolidated</b>
ANZ	165.6	180.5	255.4	335.8
CBA	208.5	219.8	262.0	369.1
NAB	192.4	193.9	283.8	484.8
WBC	195.4	195.7	234.5	299.6

**Source: Bank Annual Reports**

## 2. *Bank Concentration and Competition*

Because concentration measures do not necessarily provide a good indication of market contestability, a number of recent studies of banking markets have applied techniques such the Panzar-Rosse (1987) H-statistic. This is a measure of competition based on the estimated responsiveness of firm revenue to changes in factor input prices.<sup>15</sup> There is little relationship between this statistic and standard measures of concentration. Casu and Girardone (2006) examine banking markets for 15 European Union countries over the period 1997-2003 and find no evidence that their calculated H-statistics are related to

<sup>12</sup> For Australia, that latter figure was around 80% for 2004 (around ten per cent or more higher than the figures in Table 4).

<sup>13</sup> It also appears to be the case that the figure for banking sector total assets used in the denominator of the calculations uses only the domestic assets of branches and subsidiaries of multinational participants.

<sup>14</sup> Comparisons between the banks’ activities within Australia are also complicated by the fact that two of the banking groups (ANZ and CBA) have non-bank subsidiaries accounting for around 10 per cent of their lending, while the other two majors (NAB and Westpac) undertake most lending through the bank itself.

<sup>15</sup> The H-statistic is calculated by summing the estimated elasticities of revenue to factor prices, with a value of 1 indicating perfect competition, a value of zero (or less) indicating monopoly, and intermediate values indicating the degree of monopolistic competition.

concentration measures. Similar results are found by Claessens and Laeven (2004) in a study of 50 countries over the period 1994-2001.<sup>16</sup> Yildirim and Philippatos (2007) find no significant link between concentration and competition (using the H-statistic) for eleven Latin American countries for the period 1993-2000, but do find evidence that openness to foreign entry increases competition.<sup>17</sup>

For Australia, Claessens and Laeven calculate an H-statistic of 0.80,<sup>18</sup> which implies that the market is relatively competitive, despite the high degree of concentration.. Bikker and Haaf calculate H-statistics for large Australian banks of 0.63 and 0.68 in 1991 and 1997 respectively. While these results are suggestive of a situation in which high concentration does not impede competition in domestic banking markets, data limitations mean that the results should perhaps be treated with some caution. Consolidated data is used, thus incorporating offshore and non-traditional banking activities of the banks. Proxies for factor input costs, such as the use of labor expenses / total assets to measure unit wage costs, may be poor measures in a time of significant changes in bank service delivery methods. The robustness of the calculated H-statistic which is based on estimation techniques which assume cost minimization may also be questionable, when existing research (Avkiran, 1999, Saythe, 2001, Neal, 2004) indicates quite low levels of average cost efficiency in Australian banking (relative to an estimated best-practice frontier).

Another concern is that the H-statistic was developed for single product market industries, but in the case of banking is applied to multi-product firms. It may not adequately reflect the state of competition (or contestability) in specific financial markets viewed as important by merger authorities such as retail and small business finance. In

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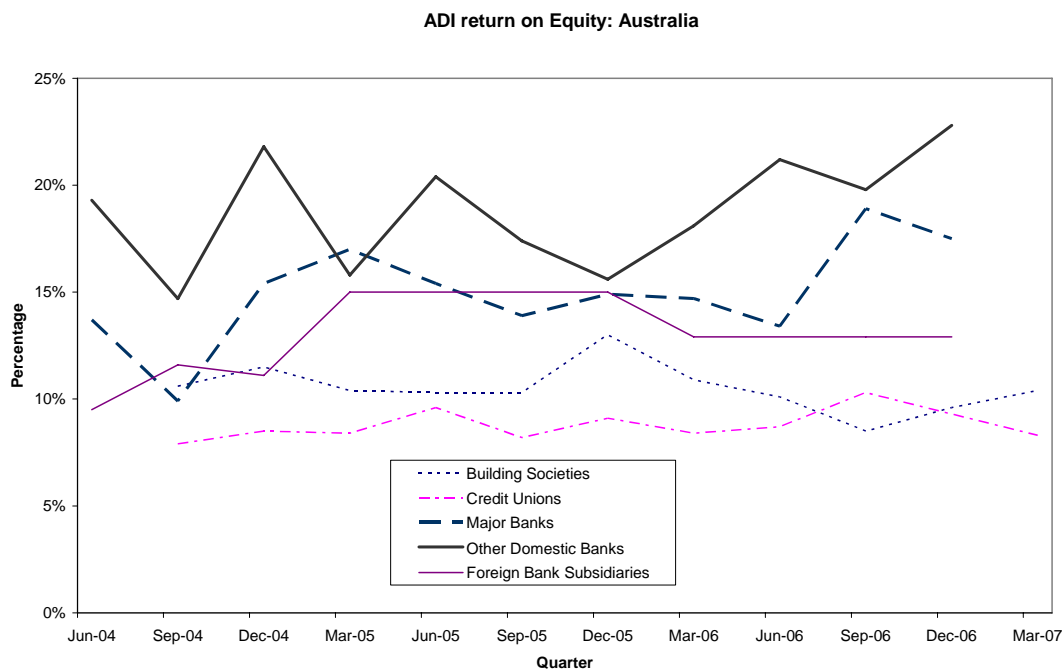
<sup>16</sup> While Bikker and Haaf (2002) in a study of 23 industrialized countries using data from the 1990s report a negative relationship between their calculated H-statistics and concentration ratios, they do not control for variables relevant to competitive conditions such as activity and entry restrictions which Claessens and Laeven find important.

<sup>17</sup> This apparent lack of relationship between measures of concentration and of competition is consistent with the ambiguous results from a large literature examining whether concentration and efficiency measures such as net interest margins, operating costs and profits are related (once other relevant variables are controlled for). Northcott (2004) reaches such a conclusion from a recent survey, although Canoy et al (2001) draw a cautious conclusion that studies based on the 1980s and 1990s do suggest a negative relationship between concentration and competition. Demigurc-Kunt, Laeven, and Levine (2004) in a cross-country study find no role for concentration in explaining net interest margins once regulatory impediments to competition and indicators of an economy's institutional characteristics, such as property rights, are controlled for. They also find that net interest margins are higher for banks with larger market share which they suggest is consistent with such banks extracting rents by use of market power.

<sup>18</sup> This is the 7<sup>th</sup> highest value among the 50 countries studied.

Australia, retail deposit and loan markets are dominated by the four majors and a small number of other domestic banks and foreign bank subsidiaries, with competition from an increasingly concentrated sector of small credit unions and building societies (CUBs), mortgage originators and securitizers and credit card providers. The CUBs are specialized in retail (and some small business) financing, and it is instructive to compare their recent profitability with that of the banks, as shown in Figure 3.

**Figure 3: Australian ADI's: Return on Equity<sup>(a)</sup>**



(a) Annual averages are used for foreign bank subsidiaries for calendar years 2005 and 2006 due to excessive quarterly volatility in reported profits.

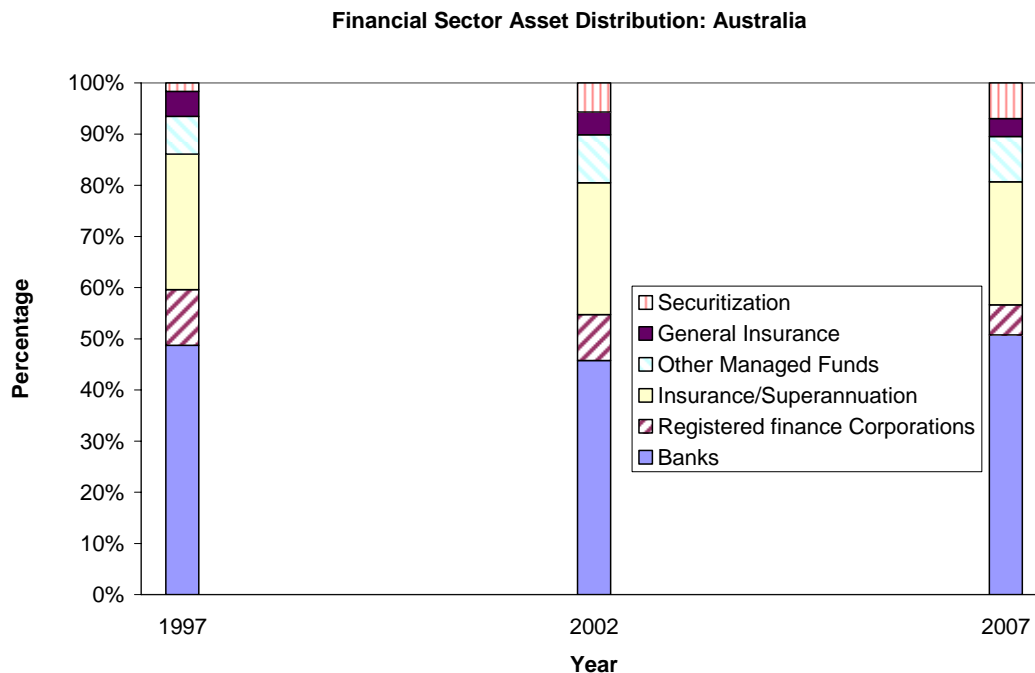
Source: APRA, Quarterly Statistics

There are a number of possible explanations for the substantial gap between the rates of return of banks and CUBs. Most of the latter group are mutuals, may not aim to maximize profits, and operate with higher capital ratios than the banks. Higher bank *roe* may be due to higher profitability in other markets.<sup>19</sup> The small scale of CUBs (only four of them (just) exceed \$5 bill in assets) may lead to higher average costs. However, the data are also compatible with an interpretation that Australian banks have been able to

<sup>19</sup> The Australian Bankers Association (ABA, 2004) estimates that retail business generates 56 per cent of the profit of the major banks (and that 66 per cent of profit is from Australian activities).

exploit a degree of market power in retail markets, possibly due to factors such as limited competitive ability of the smaller CUBs, some impediments to foreign bank entry into retail finance, and customer switching costs. At the same time, however, bank interest margins have been declining (Battellino, 2006) and fees charged to retail customers (while increasing in aggregate value due to increased use of banking services) do not appear to have involved increased fee rates (RBA, 2007).<sup>20</sup>

**Figure 4: Financial Sector Asset Distribution: Australia<sup>(a)</sup>**



(a) Building Societies and Credit Unions are omitted from the figure because of their small scale.

Source: Reserve Bank Bulletin: Table B01

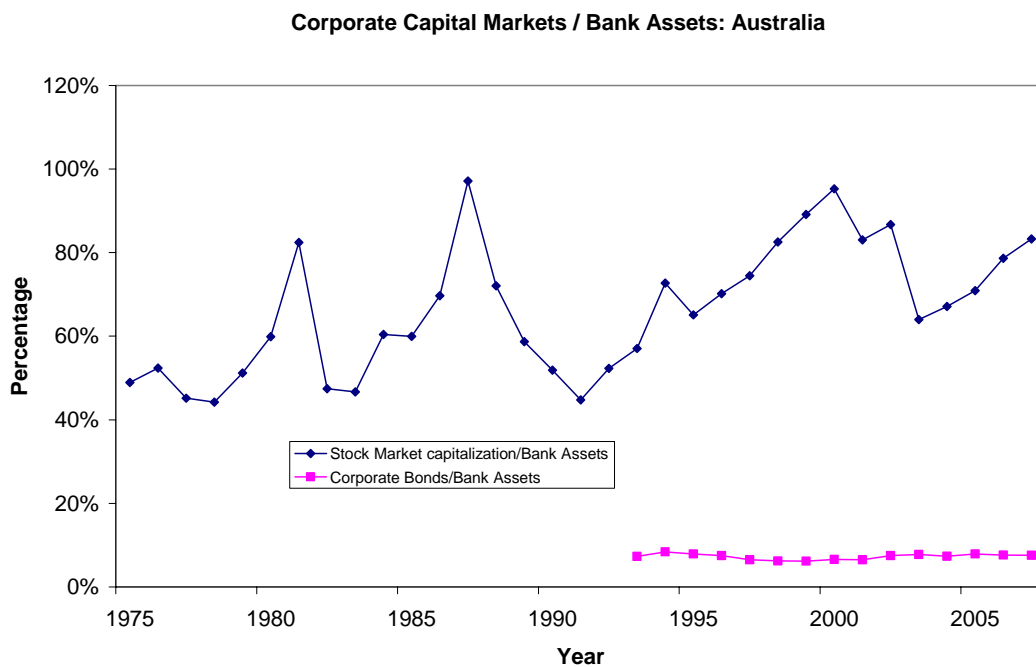
There have been significant structural developments in Australian (and international) financial markets in recent years which are relevant in considering bank performance and competitive conditions. However, trends such as growth in funds management activities, increased importance of capital markets, marked growth in credit transfer mechanisms, a growing role of private equity, and increased prominence of hedge funds have done little to reduce the relative importance of banking firms (and particularly the four majors) in Australian financial markets. Over the past decade, the banking sector share of total

<sup>20</sup> Whether changes in margins and fees have fully reflected reductions in the cost of providing banking services due to technological advance is another question.

assets of financial institutions (including managed funds), has remained at around 50 per cent (Figure 4).<sup>21</sup>

And while the relative importance of capital markets as a form of financing has increased over time, its growth has not been as significant vis a vis the banks as might be imagined. As Figure 5 shows, stock market capitalization (reflecting external and internal equity funding as well as valuation changes) as a ratio to bank assets has trended upwards, but bank financing clearly remains highly important.<sup>22</sup> It is also apparent that the use of corporate bond markets by Australian non-financial companies has not increased relative to the size of the banking sector.

**Figure 5: Corporate Capital Markets/ Bank Assets: Australia<sup>(a)</sup>**



(a) The Corporate Bond figure is calculated as short and long term debt securities issued in Australia by non-financial Australian companies. It excludes securitizations and international issuers.

Source: Reserve Bank Bulletin: Tables B01, D04, and F07.

<sup>21</sup> These figures represent the assets on the banking books, so that if the consolidated banking position were considered (including significant interests in funds management activities, insurance etc) the relative share of the banking groups would be higher.

<sup>22</sup> Increased use of equity finance rather than debt would be expected following the introduction of dividend imputation in 1987, which removed (for Australian investors) the double taxation of dividends.



These figures indicate that the importance of banks in the overall financial sector is not declining, and is most likely increasing given the activities of the banking groups in non-bank financial markets. This creates two problems for public policy. First, the influence of large banks permeates the entire financial sector, meaning that issues of safety and financial sector stability must be viewed from a much broader context than purely banking markets. Second, ascertaining the state of competition in retail deposit and lending markets, and potential implications of increased concentration is only one part of the difficult task confronting any merger authority.

### 3. *Is Bank Concentration Inevitable?*

There have long been concerns that economies of scale and scope will lead to concentration in the banking sector and dominance of the financial sector by a few large entities. Significant consolidation in the banking industry world wide, accompanying the application of new electronic technology, has reinforced those concerns.

Anticipated cost savings or reduced risk due to diversification, are generally advanced as the rationale for bank mergers, but potential to exploit increased market power and depositor perceptions of increased safety (due to government unwillingness to allow failure of large banks) are also relevant. Managerial hubris and personal preferences for growth and larger size may also play a role,<sup>23</sup> and although capital markets should inhibit excessive expansion and inefficiency, it is well documented that substantial levels of operating inefficiency do persist in banking markets.<sup>24</sup>

There is a voluminous empirical literature investigating the characteristics of bank production processes to measure economies of scale and scope and levels of inefficiency. Amel et al (2004) provide a recent review of the literature and conclude that there is consensus on the existence of economies of scale but only up to a relatively small scale,

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<sup>23</sup> Hughes et al (2003) find that good performance is more closely associated with internal growth than with growth via acquisitions for a sample of US bank holding companies for the period 1992-94, and that while banks with non-entrenched management generally benefit from acquisitions, the reverse outcome occurs when management is entrenched – consistent with managerial self interest and consumption of agency goods.

<sup>24</sup> The impact of maximum bank share ownership restrictions (which are common internationally) on either market discipline or incentives to expand by way of merger do not appear to have been studied in the literature.

and little evidence in support of significant economies of scope. Short term gains from mergers are not readily apparent, either in terms of cost saving or stock market reactions.<sup>25</sup>

Berger et al (2007) argue that technological developments have changed the underlying economics of banking in such a way that some of the negative effects of increased size have diminished. These include changes in service delivery methods and information processing techniques which may offset advantages smaller institutions possess in closeness and relationships with customers. While suggesting that recent research indicates that average cost savings may still occur at sizes of up to \$25 billion or more and that large multi-market banks may have superior risk adjusted performance, they also note that there is (US based) evidence of some (albeit declining) diseconomies associated with geographical dispersion of activities across multiple markets. By examining how the performance of small single market US banks is affected by the presence of large multi-market banks for both the 1980s and the 1990s, they conclude that "...technological progress allowed large, multi-market banks to compete more effectively against small single-market banks..." and suggest "... the possibility that the efficiency improvements in banking may have been primarily important for banks to expand geographically, rather than increasing scale per se...". Whether these conclusions apply for multi-national expansion, or for concentrated branch banking systems is an important question for future trends in national banking market structures.

Some insights into these issues for a concentrated national, branch banking system are given by the study of Allen and Liu (2007), who estimate scale economies and efficiency measures for the big six Canadian banks over the period 1983 - 2003. They find evidence of scale economies (a one percent increase in output would increase costs by 0.94 percent), inefficiency (relative to a best practice frontier) of between 10 – 20 per cent, and with larger banks having slightly better efficiency ratings.

Contrasting results on scale economies are found by Bos and Kolari (2005) in a study of 985 large European and US banks (of USD 1 billion assets or more, and average size of

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<sup>25</sup>They do caution that gains may only be realized over the longer term, and that merger waves create difficulties in disentangling consequences of individual mergers from underlying forces (such as technology changes) which reshape the industry structure.

over USD 50 billion) for 1995-1999. Cost function estimates indicate diseconomies of scale on the cost side, although profit function estimates suggest economies of scale exist on the revenue side. They find no evidence of economies of scope, and X-inefficiency appears to be somewhat higher for the European banks than for US banks. They also conclude that geographical dispersion of a bank's activities has a negative effect on profits, but that while international expansion reduces cost efficiency it increases profit efficiency.

One source of potential benefit from increased scale (or scope) may be if the bank's risk is reduced. The ability to implement more sophisticated and costly risk management systems is one possible benefit, while another lies in the diversification effect – although whether any such benefit is priced by the market is an open question. The available evidence on the relationship between size and risk is somewhat mixed. Carletti and Hartmann (2002) review some of the earlier studies on this topic which typically examine whether variables such as volatility of bank earnings or stock prices, or z-scores (probability of failure), are related to bank size or change following bank mergers. They conclude that there is some evidence that size and risk are inversely related, but note that the study of US bank failures between 1971 and 1994 by Boyd and Graham (1996) indicates a higher failure rate of larger banks than smaller banks. Demsetz and Strahan (1997) find evidence that larger US bank holding companies were more diversified than their smaller counterparts over the period 1980 to 1993, but that this did not translate into lower risk due to greater leverage and larger commercial and industrial loan portfolios.<sup>26</sup>

Overall, there appears to be little evidence (Allen and Liu (2007) excepted) that very large banks gain substantial cost savings from increased scale or product diversification either from mergers or organic growth. There is, though, no evidence that larger banks are less efficient than their smaller counterparts, and the net benefits from geographical diversification appear unclear particularly given technological change of recent years. Size, and ability to exploit market power, may however lead to economies of scale on the revenue side and higher profits. Looking forward, the relatively lower capital ratios envisaged for large sophisticated banks under Basel 2 may alter the relationship between

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<sup>26</sup> Their measure of diversification is the  $R^2$  of a regression of bank stock returns on market returns (and other factors).

profitability and size – although the net effect will depend upon the costs incurred by banks in developing sophisticated risk management systems to achieve IRB status.

#### 4. *Concentration, Competition and Stability in Banking: A Trade-off?*

For over two decades, following the work of Diamond and Dybvig (1983) and Bryant (1980) economists have had rigorous analytical models to support the long held view that banking is susceptible to runs and crises. Since those analytical breakthroughs, there has been substantial effort directed at deepening our understanding of the nature and causes of instability in banking, both in terms of its origination and propagation (including contagion).<sup>27</sup> Lai (2002), Canoy et al (2001) and Allen and Gale (2007) provide overviews.

Historically, relatively high levels of concentration in banking have been tolerated, or even encouraged by governments, based on a view that a less competitive banking sector may be less prone to banking failure and crises, and more conducive to financial stability. There has thus been an (often unstated) view that there is a trade-off between the efficiency benefits of increased competition and the risk of instability in the financial sector arising from reduced concentration.

There have been a number of arguments advanced in support of that view. First, larger banks may tend to be more diversified (in terms of both geography and products) reducing the inherent risk of failure. Second, larger banks may be better able to implement sophisticated risk management systems which increase their ability to measure and manage risk-taking *vis a vis* smaller banks. Third, higher profitability arising from lessened competition generates a *franchise* or *charter value* of market value exceeding book value (Keeley, 1990) which, because it depends on the ongoing survival of the bank, acts as a disincentive to excess risk taking. Fourth, a smaller number of larger banks may be easier for regulatory authorities to effectively monitor, and may involve less risk of contagion.

As Beck, Demigurc-Kunt and Levine (2003) point out, there are equally plausible counter-arguments. The systemic importance of large banks may induce a “too big to

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<sup>27</sup> Rapid growth of derivative and risk transfer markets has added new dimensions to the interrelationships within the financial system relevant to financial stability.

fail” attitude in governments, with the implied guarantee of survival leading to incentives to excessive risk-taking. Market power may also enable banks to charge higher loan interest rates, possibly inducing greater risk-taking by their borrowers. Big banks may be more opaque, and internal control systems may become less effective with large scale.

There have been many empirical and theoretical studies examining one or more of these aspects. Allen and Gale (2004, 2007) review (and develop) various models of banking markets which focus upon the implications of inherent characteristics such as imperfect information, incomplete markets and incomplete contracts for the optimal characteristics and structure of the financial sector. Given the limitations imposed by those inherent characteristics, “constrained efficient” outcomes can involve financial sectors characterized by some degree of concentration and probability of financial instability. Different models they consider produce a variety of conclusions, but there is no general conclusion that greater competition increases financial instability nor that regulatory measures aimed at reducing financial instability increase welfare (since by distorting financial market structure and activities they can reduce static efficiency associated with the constrained efficient market structure).

The empirical literature has produced mixed results, partly reflecting the fact that there is relatively little correspondence between measures of bank concentration and competition or contestability. Because a concentrated market may be highly competitive, hypotheses about stability based on arguments about competition effects, cannot be satisfactorily tested using data on market concentration.

One alternative is to consider the effect of banking consolidation on both individual bank risk and systemic risk as was done in the major study by the G10 (2001). They conclude (p3) that the “potential effects of financial consolidation on the risk of individual institutions are mixed, the net result is impossible to generalize”, but that most risk reduction potential would appear to stem from geographic (including international) diversification. At the systemic level, the net effects of consolidation are also difficult to identify, but they point to increased importance of issues such as: greater difficulties in achieving orderly exit of large complex banking organizations (LCBOs) and the risks of implicit adoption of a too big to fail (TBTF) approach; increased interdependencies

between large institutions; increasing opaqueness of LCBOs and thus potential for a reduced role for market discipline (despite increased disclosures). They also note apparent evidence of increased interdependencies between LCBOs in the USA reflected in increased correlation between bank stock prices (accompanying increased concentration and consistent with other indicators of interdependency such as interbank lending and derivatives activities). Increased correlation between stock prices of the major banks has also been identified in Australia (RBA 2006, Graph 31), but attributed there to common profit experience rather than being interpreted as reflecting increased interdependencies.<sup>28</sup>

Beck, Demirgüç-Kunt, and Levine (2006) focus on the relationship between concentration and crises. They estimate how the likelihood of a financial crisis depends upon various banking system, regulatory, and country characteristics for a sample of 69 countries over the period 1980-1997. They find no evidence that increased concentration leads to greater banking sector fragility, but that stability is also higher in countries where regulations preventing entry or range of activities are lower and where institutional conditions are conducive towards higher competition. While their findings are consistent with the concentration – stability view, they suggest that the importance of competition indicates that it is something other than a possibility of higher profitability in a concentrated banking system (and Keeley’s “charter value” hypothesis) which is responsible.

Another recent study (Schaeck et al, 2006) has focused on the relationship between competition and stability using cross-country data on the occurrence of crises and estimates of the Panzar-Rosse H-statistic discussed earlier. Their results, using both a duration model and logistic probability model to predict the occurrence (and timing of crises) for 38 countries over the period 1980-2003, suggest that greater competition is associated with lower risk of crisis, higher concentration *per se* does not increase the risk

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<sup>28</sup> Increased diversification by banks, by reducing idiosyncratic risk and increasing the correlation of bank returns with the common factor of market returns, could be expected to increase inter-bank return correlations, without necessarily indicating increased interdependencies between banks. Such increased correlations could also reflect increased correlation in the discount rates investors use in pricing bank shares.

of crisis, and that a more restrictive regulatory system may contribute to the build up of instability.

Recent theoretical literature on concentration in banking has emphasized the fact that the economic functions of banking need to be considered when assessing what type of industrial structure is optimal. While competition is generally desirable given perfect information etc., the information imperfections which give rise to financial institutions imply that a market involving institutions with some market power may be optimal. Allied to that is the fact that banking technology may involve economies of scale leading to the emergence of large institutions as the most cost effective operators.

Boyd and De Nicolo (2005) argue that increased banking sector concentration may lead to lower deposit interest rates and higher loan interest rates, but that the latter effect would induce borrowers to adopt more risky projects. This potential response is taken into account by banks in their loan rate setting. Boyd and De Nicolo demonstrate that, under certain assumptions about, *inter alia*, bank strategic interaction, an increased number of banks leads to a lower overall level of asset portfolio risk.

Allen and Gale (2000, 2007 Chapter 10) develop models which assist understanding of the characteristics of banking market structure which may give rise to contagion. They consider the ways in which banks are interconnected (through mechanisms such as inter-bank deposit markets) and demonstrate that in an “incomplete” network structure, liquidity shocks at one bank leading to runs on that bank can trigger failures at other banks. Liquidity shocks in one region lead affected banks to liquidate assets (including claims on other banks) in a particular order, with incomplete networks inhibiting the countervailing adjustments involving other banks which might otherwise occur. These models do not provide conclusions on whether contagion or financial instability is related to banking sector concentration, but highlight the fact that careful analysis of inter-linkages within the financial sector are crucial for understanding the transmission and ultimate effects of shocks to the system.

##### 5. *Bank Concentration and Financial Sector Structure*

Analyses such as that of Allen and Gale (2000) indicate that the structure and interrelationships within the financial sector, involving both institutions and markets, are

potentially important for financial stability. Those analyses, while concentrating on the liquidity provision aspect of banks, tend to downplay one potentially important implication of the monetary nature of bank liabilities. This is the layering of financial claims emphasized in earlier banking literature, whereby non-bank financial institutions use bank deposits as their liquid reserves.<sup>29</sup> In such circumstances, providing investors do not convert withdrawals from a financial institution into currency, switches in their preferences between different types of financial assets do not change the aggregate of bank deposits, but only their ownership.<sup>30</sup>

Financial market conditions, participants, and practices have changed substantially since the deregulation of financial markets began several decades ago. Adjustment mechanisms to external shocks or changes in investor preferences now involve changes in asset prices and interest rates, rather than simply the quantity adjustments assumed in the old derivations of money and credit multipliers. However, the layering of claims is potentially important for thinking about how the structure of financial markets may be relevant to the issue of financial stability.

Consider, for example a simple financial sector involving banks and mutual (hedge) funds, and with no holdings of base money (currency and Central Bank deposits) other than that held by banks. Liquidity or confidence shocks causing investors to withdraw funds (by cheque or electronic funds transfer) from a particular bank, do not reduce the aggregate amount of base money held by the banking sector. (Recipients of those funds, including mutual funds, will have increased bank deposits).

Interest rate, exchange rate, and asset price adjustments will be induced (through reactions of the affected bank and others) but in principle the interbank market can redistribute the available liquidity as required. Even if deposit withdrawals from bank A were used to pay out loans at another bank (B), a new “equilibrium” could be established with interbank loans from B to A restoring A’s liquidity and maintaining the scale of each bank’s balance sheet (albeit with different composition). In practice, price effects

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<sup>29</sup> See for example Davis and Lewis (1980)

<sup>30</sup> The standard models used involving liquidity shocks may be able to partially capture this effect by assuming offsetting idiosyncratic liquidity shocks which cancel out in the aggregate, but would need extra structure to reflect the “layering” of claims effect.



could be expected to occur and the willingness of bank B to provide interbank loans may be affected by whether the liquidity shock were random or due to some more fundamental features of A's business. In a concentrated branch banking system where networks are likely to be relatively "complete", the risk of contagion occurring due to such shocks to bank liquidity appears relatively small, unless the resulting asset price adjustments expose fundamental weaknesses in the structure of bank portfolios.

However, the layering of financial claims, whereby "secondary" non-bank institutions such as mutual (hedge) funds use bank deposits as a means of payment and liquidity, creates potential for an "incomplete" network, and disorderly reactions to liquidity shocks. Consider, for example, decisions by investors to withdraw funds from a mutual fund, which runs down its bank deposit holdings and sells assets to meet that withdrawal. As well as the asset price reactions, an initial component of the adjustment process is likely to involve a quantity effect, as the size of the mutual fund decreases, but only the ownership and not the total of bank deposits is affected. Only if the investor has withdrawn funds to reinvest with another mutual fund, or if banks expand their lending, is the initial contraction in size of the secondary institutions likely to be avoided. Depending on the structure of relationships (including lending) between banks and such secondary institutions, the potential for "incomplete network" effects to occur seems more likely in the case of a "flight to quality" from secondary institutions to banks by investors, than within the banking sector per se.

While "failures" or "meltdowns" in secondary institutions such as hedge funds lie outside the responsibility of prudential regulators, the effects of such events are of concern to both them and Central Banks charged with a financial stability objective. Both the consequences of the asset price adjustment processes and changes in the value of assets (such as loans and investments to secondary institutions) of prudentially regulated institutions are matters for potential concern.

It would thus appear that understanding the interlinkages and adjustment process involving secondary financial institutions and banks in countries with highly concentrated banking systems is a more important agenda item for future research on financial stability issues than analysis of banking concentration per se.

## 6. *Bank Concentration and Public Policy*

In this section, the focus is upon implications of banking sector concentration for public policy in Australia. As evident from previous sections, the Australian banking sector is relatively highly concentrated, the major banks play an important role across the entire financial sector, but the evidence points to a significant level of competition and a growing presence of foreign banks and (partly through mergers) modest-size domestic institutions in Australian financial markets. Internationally, available evidence (and theory) also appears to indicate no obvious relationship between levels of concentration and either financial sector stability or competition, as well as a lack of evidence for economies of scale at very large size. Also apparent is an increasing interest of large international banks for cross-border expansion into domestic retail and commercial banking markets.

### *Four Pillars Policy.*

Since the late 1980s, the Australian Government has articulated a position which prohibits the possibility of mergers between the four major banks,<sup>31</sup> known since 1997 as the “four pillars”. It is based on the fact that, in addition to meeting conditions of the Trade Practices Act regarding competition effects, banking regulation requires that any merger between banks needs to be approved by the Federal Treasurer. While there is no explicit prohibition on takeovers of the four majors by overseas banks, approval by the Treasurer would be required after consideration on national interest grounds.

The rationale for the policy is based largely upon concerns about ensuring adequate competition in the banking sector,<sup>32</sup> and appears to reflect a fear that any merger between two of the big four would induce a merger of the remaining two. Concerns have also been expressed (such as in submissions to the Wallis Inquiry held in 1996-7) that issues of “too big to fail” and concentration of economic power would become more problematic if a larger institution were created by merger. The banks themselves, have generally argued against the retention of the policy, on the grounds that it prevents achieving economies of

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<sup>31</sup> In Canada, which has a similarly concentrated banking sector, proposed mergers between the major banks were prevented in 1998, although there appears to be no specifically articulated policy of prohibition.

<sup>32</sup> This view was expressed by the Federal Treasurer, the Hon Peter Costello in an interview in 1998, where he also noted that “if you can be satisfied that there’s new competition, then we’ll look at it at that point”. <http://www.treasurer.gov.au/tsr/content/transcripts/1998/061.asp>

scale, and inhibits their ability to reach a scale necessary for effective competition in international markets.

Any discussion of the future of the four pillars policy requires that attention be paid to the alternative regulatory processes and responsibilities for approval of potential mergers which would exist. Internationally, there is a wide variety of practices. Carletti and Hartmann (2002) provide a review of approaches in the G7 countries, noting that it is common for financial regulators to play a role in merger processes. One reason is that bank mergers sometimes reflect regulator-aided solutions to the potential (or actual) failure of banking firms. But more generally, the special licensing requirements for banks suggest a role for the licence-granting authority, while concerns about the potential impact of mergers for prudential regulation and financial stability, are also relevant.

In Australia, the Wallis Report (Financial System Inquiry, 1997) argued for the removal of the (then six-pillars) policy, on the grounds that competition policy as applied by the Australian Competition and Consumer Commission (ACCC) would provide an adequate substitute for evaluation of anti-competitive effects of potential mergers. Harper (2000) indicated a potential role for APRA in such an evaluation process, but limited primarily to advising whether any prudential concerns should be taken into account.

While the ACCC would undoubtedly consult widely in making any decision, the particular features of banking suggest that there is a major role for other public sector entities. Specifically, APRA through prudential regulation and bank licensing requirements, as well as the RBA through systemic risk concerns and its oversight of the payments system would warrant involvement.

Imposing a blanket ban may be a cost effective form of policy if it is certain that any application for merger between the four majors would be rejected, although it prevents the case being put to the test. But also relevant are game-theory considerations. Were it believed that one, but not two mergers among the big four would be permitted, removal of the blanket ban might induce merger applications to protect against private losses should the others merge. For example consider the highly simplified payoff scenario such as outlined below in which it is assumed that there is some natural pairing of banks associated with potential mergers. In such a scenario, each group would have an incentive

to apply first for merger approval, even though no net social benefit accompanies the potential increase in concentration. Given the difficulties for a merger authority in calculating social costs and benefits of mergers (perhaps particularly so in an industry such as banking) it would seem advisable to avoid a regulatory structure which might induce such pre-emptive merger applications.

		Banks A and B	
		Merge	Don't Merge
Banks C and D	Merge	Net Private Benefit to each = 0 Net Social Benefit < 0 Not Permitted by Authorities	Private Benefit to C and D = x Private Benefit to A and B = - x Net Social Benefit = 0 May be permitted
	Don't Merge	Private Benefit to A and B = x Private Benefit to C and D = - x Net Social Benefit = 0 May be permitted	Private Benefit to A and B = 0 Private Benefit to C and D = 0 Net Social Benefit = 0

On the basis of the evidence reviewed earlier, the rationale for opposition to mergers between the four majors appears to be weakening. Other, multinational and local, banks have been increasing their share of domestic banking business – and this trend looks likely to continue.<sup>33</sup> Despite high profit rates of the major banks, competition in financial markets does appear to have increased.

At the same time, the arguments that such mergers are necessary or desirable on economic grounds do not appear strong. The recent empirical studies (surveyed earlier) do not find convincing evidence of economies of scale or scope for institutions of the size of the four majors. The assertion that increased scale (through increased size and concentration in domestic markets) is necessary to enable effective competition in global wholesale markets is untested. Its relevance is also questionable for the case of the four Australian majors who: (at 2005) all ranked in or near the top fifty world wide (by asset size); had greater emphasis on large scale international wholesale funding than common elsewhere; and who would appear to have ready access to increased equity capital to fund increased offshore activities. Also the ability of a much smaller local bank (Macquarie) to compete in international investment banking, securities and wholesale markets would

<sup>33</sup> At the time of writing, BankWest, a subsidiary of the UK bank HBOS had just announced plans for a major expansion of its retail banking network.

appear to weaken the argument, and suggest that “culture” may be a more important issue than domestic commercial banking scale.

Mergers between major banks may be less of a concern if there were not restrictions on entry into retail banking markets or regulations which may reduce the ability of some participants to compete effectively and which thus reduce contestability. There are two principal issues involved here.

### *Basel 2 Regulatory Capital Requirements*

One development relevant to potential future developments in banking market structure concerns the impact of Basel 2. Large banks, such as the four majors and their multinational peers, will be regulated under the IRB provisions which involve differential levels of regulatory capital requirement to those for smaller banks operating under the “standardized” approach for particular types of activities. In particular, estimates of capital requirements available under the Quantitative Impact Studies undertaken by the Basel Committee indicate quite substantial reductions in the regulatory capital required for retail and housing mortgage lending under the IRB approach relative to the standardized approach. To the extent that bank internal economic capital allocations and loan pricing reflect regulatory capital requirements, entry hurdles into these loan markets for deposit taking institutions may be higher for *de novo* entrants subject to the standardized approach than for multinational banks able to operate under the IRB approach.

Foreign banks operating in Australia as branches would fall into that latter category (if their parents have IRB status in their home country), but small domestic banks would not, and foreign bank subsidiaries may not be able (or find it worth incurring the cost) to achieve IRB accreditation by APRA. Consequently any impediments to entry by foreign bank branches into retail banking, while possibly reducing prudential and financial stability concerns (as discussed below), may have adverse effects on future competition in retail financial markets. This needs to be viewed in the context of the challenges faced by small domestic institutions in matching competitive gains of larger banks with more

sophisticated internal risk based ratings systems and (potentially) lower regulatory capital requirements.<sup>34</sup>

*Foreign Branches and Retail Banking.* When foreign bank entry into Australia was permitted in the 1980s, the option of entry via either a branch or subsidiary was allowed, but restrictions were placed on the permissible activities of foreign bank branches. Specifically, they are not allowed to accept an initial deposit of less than \$250,000 from a customer, thereby effectively precluding them from competing in the retail deposit market. To the extent that foreign banks desire entry into retail banking and their preferred mode of entry is via a branch network, this restriction lessens potential competition in retail deposit markets.

Several considerations motivated this restriction. First, prudential supervision of foreign branches is the responsibility of home country regulators. Although Australia has no explicit deposit insurance, perceptions of government protection of retail depositors meant that the complications arising from the failure of a foreign branch operating in retail deposit markets made this unattractive. Second, at that time, banking sector economics and technology made it unlikely that many foreign banks would seek to establish a retail market presence (and could do so via the subsidiary method), thus making the costs of such a restriction relatively small.

This regulation now seems an unnecessary barrier to entry into retail banking. Foreign banks are now more readily able to establish a domestic retail presence through changed product delivery mechanisms and greater brand recognition through their other financial services activities. Their preferred method of operation appears to be via branches than subsidiaries.<sup>35</sup> Regulatory authorities have agreed on protocols for the supervision of internationally active banks, such that concerns about inadequate home country supervision of foreign branches have largely declined.

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<sup>34</sup> On the other hand, deposit insurance schemes (as discussed later) may work to the advantage of such smaller institutions (particularly if premiums are not fully risk related) by reducing the advantages of institutional age, size and reputation as signals of safety to potential depositors.

<sup>35</sup> Available evidence on applications for foreign bank entry suggests that entry by way of branch is preferred to that of a subsidiary. In the 64 countries for which data was available and which permitted both branch and subsidiary entry, there were 416 applications for entry by branch compared to 115 by subsidiary in the period 2001-2006. (However, there were 15 countries where even though both types of entry appeared to be permitted, all applications were for entry as a subsidiary). In Australia, (where branch entry effectively precludes retail deposit taking) the corresponding figures were 11 and 3. (World Bank, 2007).

Removing the restriction on foreign branch participation in retail deposit markets would thus appear to be warranted, on the grounds of increasing contestability and limiting concentration in these markets. It would, however, require resolution of one issue – that being the protection afforded to Australian depositors should such an institution fail.

*Failure Management and Depositor Protection Arrangements.* Significant concentration in the banking sector creates potential complications for the operation of deposit insurance schemes, and thus may help to explain the pattern of adoption of such schemes internationally. Insurance schemes generally work best when they cover a large number of small independent risks.<sup>36</sup> Jones and Nguyen (2005) suggest that the increased consolidation of the US banking system, even though it remains relatively non-concentrated by international standards, poses threats for the viability of the US deposit insurance scheme.

Concentration in banking markets poses three potential problems for failure management and deposit insurance schemes. First, will a deposit insurance scheme be able to survive the failure of a large bank which has a significant share of the deposit market? Second, is it possible to design a suitable funding mechanism (premium structure) for the scheme when the banks involved vary dramatically in terms of size and also in range of activities and consequent risk taking.<sup>37</sup> Third, will prudential regulators be able to arrange an orderly exit of a large complex banking organization in financial distress or will they adopt a “too big to fail” (TBTF) approach thereby potentially distorting competitive conditions and inducing excessive risk taking. These challenges are heightened when multinational banks are significantly involved in the domestic banking sector.

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<sup>36</sup> This prompts the question of whether countries with high bank concentration are less likely to have in place an explicit deposit insurance scheme – a possibility which could also reflect the outcome of lobbying pressure by small banks in a less concentrated sector for introduction of such schemes (which are generally perceived to be to their relative advantage). While there is a significant negative correlation between concentration ratios and the existence of a deposit insurance scheme Demigurc-Kunt, Kane and Laeven (2007) have undertaken a detailed study of the determinants of deposit insurance introduction which considers the role of a range of institutional, economic, and social factors relevant to the political decision-making process. They do not include concentration per se, but find (contrary to expectations) that the relative importance of small banks delays the introduction of deposit insurance.

<sup>37</sup> This problem also occurs when funding for the prudential regulator comes from levies on supervised institutions, as in the case of APRA. In Australia, a levy involving two components, both proportional to assets, but with one component capped, has been adopted with a view to capturing regulatory resource costs per institution of both a fixed nature and related to institutional size and complexity.

On the first issue, the essential problem is that (unless large banks are more risky than small banks) demands upon the insurance fund are likely to involve less frequent, but larger scale, claims. Jones and Nguyen (2005) suggest that expected losses arising from the hypothetical failure of one of the five largest US banks in 2003 would have exhausted the Bank Insurance Fund's reserves and imposed significant demands upon the banking industry and/or the taxpayer to meet the shortfall. However, as they note, the critical issue in this regard is the availability of liquidity to the fund, to meet required payouts to depositors, through access to credit from the Government/Central Bank. If overall risk in the banking system is unaffected by concentration, the average premium rates required over a long horizon to meet deposit insurance claims will be unaffected. The Fund's reserve balance may be potentially more volatile, including having periods of negative value, but that is of significance only if Governments are unwilling to guarantee the Fund's liabilities (which may be the case) or if premium rates are increased significantly following a failure to rapidly return the fund balance to some desired target value. A more important consideration is whether Governments will respond to the impending failure of a large bank by adopting a "too big to fail" approach (considered below) which in effect overrides the normal operations of a deposit insurance scheme.

On the second issue, the inherent difficulties in designing a suitable premium structure for a concentrated banking sector were considered in the report of the Australian Study of Financial System Guarantees (Davis, 2004). Concentration *per se* was less of an issue than sometimes thought for several reasons. Imposing a low maximum limit on individual deposits covered, together with a balance sheet structure of the large Australian banks, involving significant wholesale and offshore funding, would reduce the exposure of an insurance fund to large banks, particularly when the system of *depositor preference* would mean that insured depositors (and thus the fund) have prior claims over bank assets to other non-depositor creditors. Concentration may affect the temporal clustering of claims on the fund, but unless this is viewed as a problem for the fund's solvency (because of absence of government backing of the fund), it does not have substantial implications for the determination of premiums.

Far more important is the third issue of whether the regulatory authorities are able to effectively manage the orderly exit of a large bank in financial distress. Difficulties in



being able to do so, can lead to a situation in which TBTF status becomes anticipated, generating competitive advantages for the institutions concerned and generating excessive risk taking. Having in place clear guidelines for the protection (and exposures) of bank customers and arrangements for dealing with a failed bank are important components of preventing such a situation developing. The recommendations of the Australian Council of Financial Regulators for creating a Financial Claims Compensation Scheme are a step in the right direction warranting prompt implementation – as argued by the Australia-New Zealand Shadow Financial Regulatory Committee (ANZSFRC, 2006).

However, allowing foreign bank branches to compete in retail deposit markets would require further consideration of depositor protection arrangements for their customers. Australian depositor preference arrangements and protection under the proposed compensation scheme would not apply, and Australian depositors may not be covered under the deposit insurance arrangements of the home country.

## 7. *Conclusion*

A growing body of evidence from empirical cross-country studies suggests that the relationships between banking concentration, bank size, and financial stability, competition, bank efficiency and performance are complex and depend upon multi-faceted aspects of regulatory policy and institutional arrangements. Those latter features include *inter alia* regulatory and political attitudes towards, and mechanisms for, dealing with possible failures of large complex financial institutions. Theoretical studies also point towards complex relationships between financial sector structure and financial stability, which need to be better understood. There should, though, be no presumption that either high concentration or suppression of bank competition promote financial stability.

Consequently, the optimal design of bank merger policy, including allocation of responsibilities, assessment criteria, and processes, is not a simple task. Any consideration of changes to existing policy needs to involve a cost-benefit analysis which takes into account the impact and desirable settings of a wide range of other interrelated policy instruments. In section 6 of this paper, some of those interrelationships were examined in the Australian context of the “four pillars” merger policy currently

prevailing. These included restrictions on foreign bank branches operating in domestic retail markets, interrelationships between Australian and overseas depositor protection arrangements, and failure resolution mechanisms for large banks.

Changing merger policy, such as replacing the “four pillars” with some alternative merger evaluation policy process, does not imply that the new process would lead to approvals of mergers between large Australian banks. The brief review of empirical evidence in section 3 suggests that it is difficult to identify private and social benefits from further increases in the size of large banks, although technological change in banking and telecommunications may be rapidly depreciating the relevance of that evidence. Design of a new policy approach would also need to take into account the lack of reliable information available about potential benefits and costs of mergers, and the incentives which the policy process gives to large financial institutions (both domestic and potential foreign entrants) to both contemplate mergers and expend substantial resources on lobbying for desired outcomes.

Given those complications, it might be suggested that the “four-pillars” policy has the virtues of low administrative cost, simplicity and a degree of certainty. While the available evidence does not appear obviously inconsistent with this ban on mergers being social optimal, it is not conclusive nor does it allow that assertion to be tested. Meanwhile ongoing changes in global banking indicate that a substantial review is required.

Global banks are increasingly engaging in cross-border takeovers and entry into domestic retail and commercial banking markets. The major Australian banks are potential takeover targets. Any serious takeover offers by foreign banks could be expected to trigger a political re-assessment of the merits of the four-pillars policy, if only on the grounds that all alternatives for change in control of a major Australian bank should be considered before approval is granted. Undertaking a considered and substantial review of bank merger policy arrangements, including their interrelationships with other settings of regulatory policy seems preferable to the possibility of a hurried policy response to (or possibly unwarranted denial of) a foreign bank takeover proposal.

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