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Macro and micro prudential regulatory failures amongst financial institutions in the United Kingdom: Lessons from Australia

Macro and micro prudential regulatory failures between banks in the United Kingdom and Australia 2004-2009

Purpose – This paper compares the performance of the big four UK banks and four Australian banks between 2004-2009. The banks are chosen according to the total assets as listed in The Banker magazine 2009. The purpose is to analyse why UK banks were more vulnerable to the financial crisis of 2007-2009 than Australian banks. The consequence of this study is what improvements can be made in relation to liquidity, leverage, loan to deposit, asset quality and capital ratios.

Design/methodology/approach – The author adopts an empirical approach and gathers data from the annual reports of the big four UK banks and Australian banks and the database 'Factiva' and the Financial Times. The data contains liquidity, debt, capital, asset quality and profitability ratios during 2004-2009.

Findings –The author's data show UK banks had *on average* higher cash ratios, higher leverage ratios, higher loan to deposit ratios, higher capital ratios, lower asset quality, lower ROA but higher ROE than the Australian banks.

Research implications- The results support the findings in the Financial Development Index 2011 of the World Economic Forum. UK banks should ameliorate its ranking on financial stability by improving the quality of loans and capital.

Practical implications- The analysis is of use to regulators who are contemplating the need for reforms aimed at improving financial ratios of banks. Basel III Accord has introduced some recommendations but has its limitations.

Originality/value – This paper's value lies in providing analysis of the top four UK and Australian banks' performances during 2004-2009. There is room for improvement in providing a more stable financial environment in the UK.

Paper type: Research paper

KEYWORDS

Financial crisis; Basel III; banking regulation; liquidity; bank leverage; bank profitability; financial stability

Introduction:

The purpose of this paper is to compare the performance of banks in the United Kingdom and Australia between the period of 2004-2009. Data from the Financial Development Report of the World Economic Forum (2011) as well as liquidity, debt, capital, asset quality and profitability ratios from the top four UK banks and four Australian banks will be examined. The data highlights macro prudential weaknesses in contemporary banking such as high leverage and debt ratios, poor liquidity and systemic risks. This paper will analyse why UK banks were more vulnerable than Australian banks in the financial crisis. It will also discuss whether Basel III's recommendations solve the problems raised by the crisis.

The financial crisis of 2007-2009 provides a valuable opportunity to study the corporate governance and regulatory aspects of the banking sector, a hinge point in the development of regulation in the financial sector. The paper aims to fill a gap in the literature on banking regulation, financial development and financial stability. In particular, little research has been done comparing the financial ratios of UK and Australian banks between 2004-2009 and the implications arising from the ratios.

The financial crisis has exposed serious corporate governance and regulatory failures in the UK financial sector. The UK government had to nationalise Northern Rock and Bradford & Bingley, injecting £850 billion into banks such as the Royal Bank of Scotland and Lloyds Banking Group to stabilise the banking system. The UK sees a shift from the universal regulator (the Financial Services Authority) to a 'twin-peaks' model. This gives the Bank of England banking supervisory powers and its subsidiary, the new Prudential Regulation Authority will deal with prudential and financial regulation. The Consumer Protection and Markets Authority will promote confidence in the financial markets.

Australian banks have withstood the financial crisis better than UK banks. Australia did not have any bank runs. Four of the nine AA-rated banks around the world are Australian banks, so the Australian regulation system worked well. Australia has also performed well in the Financial Development Index of the World Economic Forum 2011 (WEF, 2011). They are ranked fifth out of sixty countries in the overall index and scored well in stability of its banking system. The Australian financial system is not perfect though. The World Economic Forum states that the Australia banks had low Tier 1 capital and had high levels of stress. Also, its commercial access to capital is weak. Although the UK takes third place in the Financial Development Index, it scored very low in overall financial stability (41st). It is ranked 38 out of 60 in frequency of banking crises compared to Australia's top position. Financial intermediation however, is still strong despite the challenging economic conditions. (WEF, 2011)

This study extends the academic literature on regulation of banks. The most extensive piece of research in the regulatory aspects of banks was carried out by Barth et al in 2006. It offers the first comprehensive cross-country assessment of the impact of bank regulation on the operation of banks and assesses the validity of the Basel Committee's approach to bank regulation. Barth et al find that boosting capital standards or strengthening supervision do not lead to better banking efficiency. They call for more market discipline such as better disclosure; transparency and private sector monitoring of banks than on command and control regulations.

Barth et al's results should be re-examined in view of the current financial crisis. The author combines a comparative approach with empirical findings to investigate how UK banks can improve their financial performance. Financial innovation has created new ways for creating capital and investing. In theory, this enhances financial development which increases economic growth. However, complex financial products and processes have increased moral hazard since financial institutions took excessive risks in search of profits. Financial innovation has also decreased transparency through complicated products and confidentiality of transactions. Ample academic literature since the financial crisis (Acharya et al, 2009; Goodhart, 2009) has shown that Collaterised Debt Obligations did not shift risks in the securitisation process and so the argument that securitisation can diversify risks and thus enable financial markets to grow is flawed. Financial stability is thus an important factor in a country's economic growth. The right amount of regulation is needed to balance financial development and financial stability.

This study will have practical implications for policy makers worldwide, especially in the UK and Australia. Although both the UK and Australia are common law countries, they are different in terms of population, economy and culture. Reforms in financial regulation depend on local circumstances, political principles and country specific preferences. Basel III's 'one-size fits all' approach does not treat banks and other financial institutions equally. Financial institutions such as hedge funds which operate in the shadow banking sector are not as tightly regulated as banks. The question whether the shadow banking industry should be brought into the remit of Basel III will be discussed. Australian banks rely more on intermediation than securitisation. Is it fair to apply stricter capital, liquidity and leverage requirements to Australian banks? The Australian government is currently reviewing its liquidity requirements, along with other G20 countries. Australian banks seem capable of meeting the proposed Basel III capital standards, but application of the proposed new liquidity level in Australia is hard due to the low level of domestic government debt for banks to hold as liquid assets.

Research from Ranciere et al (2008) suggests that countries that have experienced occasional financial crisis have, on average, demonstrated higher economic growth than countries that have shown more stable financial conditions. Whilst Ranciere et al are not suggesting that financial crises are good for economic growth, they suggest that the systemic risk-taking that overcomes financial hindrances to economic growth is associated with occasional financial crises. The right amount of regulation is needed to balance financial development and financial stability. This balance is of significance on a global scale, so this paper will have important implications for academics and policy makers on an international dimension.

Literature Review

Liquidity, leverage and capital are all connected. Adrian and Shin (2010) submit that 'aggregate liquidity is intimately tied to how hard the financial intermediaries search for borrowers'. In the sub-prime crisis, banks lent money to customers who had no realistic chance of repaying it. This is because banks had surplus capital which is costly to retain. During a boom, asset prices increase and balance sheets are stronger. Banks have to find ways to use their capital to increase leverage. Brunnermeier (2009) said that during the financial crisis there were two "liquidity spirals." When asset prices drop, financial institutions' capital erodes and, at the same time, lending standards and margins tighten. Both effects cause 'fire-sales, pushing down prices and tightening funding even further.' (Brunnermeier, 2009) These liquidity spirals lead to banks protecting their funds so inter-bank lending decreases. Bank runs then follow and capital levels deplete. Northern Rock in September 2007 is a prime example.

Hildebrand views excessive leverage as the main cause of financial fragility (Hildebrand, 2008). Excessive leverage and over reliance on short-term borrowing from the wholesale market contributed to the crisis (Crotty et al, 2010). Research from Borio and Lowe (2002), Adalid and Detken (2007), Alessi and Detken (2009), Gerdesmeier et al (2009) show that almost all major crises are preceded by a combination of two factors: an increase in leverage, following excessive credit expansion and an unusual increase in asset prices. A higher leverage ratio 'indicates in general a lower capacity to absorb losses and hence greater fragility since it entails that many agents have issued promises to pay a certain nominal amount but do not have the resources to honour these promises' (Hildebrand, 2008). Moosa (2010) believes that 'liquidity and leverage are, as far as risk management is concerned more important than capital'. He argues that Basel II fail to take liquidity and leverage into account. He welcomes Basel III but concludes by stating that one should abandon harmonisation of banking regulation. Each country should produce its own regulation. Whilst there is merit in this approach, the inter-connectedness of the global banking sector makes it hard to implement this.

Capital acts as an absorber of losses. Berger and Bouwman (2009) explore the relationship between bank capital and different aspects of bank performance in crises and calmer times for U.S. banks. According to their study, better capitalized banks performed better in the early 1990s but not in the recent crisis. Demirguc-Kunt et al's study (2010) finds that higher capital is associated with better share performance in larger banks. Their data consists of 381 banks in 12 economies between 2006-2009. Banks which relied more on deposit funding than wholesale funding performed better. Leverage ratios and capital are important in large banks because they have a higher risk of regulatory dialectic. Greater importance should be given to tier 1 capital and equity. This author develops her research further by examining data from UK and Australian financial institutions.

Takáts and Tumbarello (2009) opine that the usual financial soundness indicators of capital, leverage, liquidity and profitability should be viewed alongside with asset quality. Banks in Iceland had very strong leverage ratios but a number of them failed in the financial crisis. According to Gudmundsson, the leverage ratio of Icelandic banks never exceeded 18% between 2003-2008 (Gudmundsson, 2010). In fact, just before the financial crisis, Kaupthing

Bank had a leverage ratio of 15.1%. Landsbanki Bank had a leverage ratio of 20% and Glitnir had a ratio of 19.3% (Gudmundsson, 2010). Therefore, asset quality is very important to financial soundness. Data from Wheelock and Wilson (2000) revealed that banks with little capital, low-quality and illiquid assets are more likely to fail. They also found that banks with relatively high non-performing loan ratios are less attractive takeover targets.

Data revealed in this paper shows that HSBC fared better than most UK banks but had a lower profit-earning ratio. Markets will not function properly where there are externalities (Stiglitz, 2006). Persaud (2009) agrees and states that market discipline is important in bank efficiency but 'it cannot be on the front line of defence against crises' (2009). Blundell-Wignall and Atkinson (2010) said that 'the bubble at the root of the sub-prime crisis and crises before it suggest the systemic absence of informational efficiency'. Barth et al's (2006) study thus needs to be re-examined. They asserted that boosting capital and supervision will not improve bank efficiency. Market discipline, transparency and private monitoring of banks are the solutions. Modern banking is interconnected and as seen from the financial crisis, the UK market failed to control risks. It is submitted that the UK financial landscape should shift from a laissez-faire approach to a better regulated one. Basel III is welcomed to a certain extent.

Methodology

This paper examines the big four UK banks and four Australian banks. The 'big four' commercial banks play a vital role in the British economy. These big banks also have complex balance sheets and are exposed to securitisation in the wholesale funding market. Better understanding of these banks will help policy makers and academics shape the future financial architecture. The author has taken the 'big four' Australian banks for comparison with the 'big four' in the UK to maintain consistency. Although the UK and Australia are different in terms of economy, size and population, they are both common law countries. Hence, a comparative legal analysis is used.

Variables affecting bank profitability can be divided into internal and external determinants (Athanasoglou et al, 2005). This paper focuses on the internal determinants, where the author concentrates on bank specific characteristics. The data for this study comprise of liquidity, debt, capital, asset quality and profitability ratios. These financial ratios are used by regulators to evaluate banks. These ratios are used to check the correlation between the former four with the performance of banks. The author calculated the ratios over a five year period, namely between 2004-2009. The period of 2004-2009 was particularly volatile and the author would have liked to analyse data from 1999-2003 to provide a more balanced set of data. Unfortunately, the author does not have access to Bankscope or other equivalent database.

The cash ratio is the figure for cash and cash equivalent divided by current liabilities. It refines the current and quick ratios to reveal the most liquid of assets, cash. Two types of debt ratios are used: bank leverage (total debts divided by shareholder equity) and loan to deposit. Tier 1 capital divided by risk-weighted assets gives the tier 1 capital ratio. Asset quality is the ratio of non-performing loans to total loans. Finally, profitability is measured by return on assets (ROA) and return on equity (ROE) ratios. The ROA ratio indicates the capital intensity of banks. This is useful in light of the debate of whether more capital would benefit banks. The ROE measures the efficiency of banks in generating profits. A weakness of the ROE ratio is that it does not take debt into account. If a bank can issue debt at a lower interest rate than the rate of return on its investments, it could increase its return on equity. However, higher debt also increases the risk of failure for a bank. The data thus includes ROA ratios. The ROA and ROE ratios are considered by Sinkey (2002) as the best measures of a bank's overall performance (Ta Ho & Shun Wu (2006); Beck et al. (2005)) although the ROA appears to be the key ratio for measuring bank performance (IMF, 2002). Calculations are checked against market data and secondary sources where possible to ensure robustness.

Descriptive results:

Table 1a: Liquidity, Debt, Capital, Asset Quality and Profitability Ratios of UK Banks between 2004-2009

Bank	**Country**	**Cash ratio 5 year average (%)**	**Debt-to-Equity ratio 5 year average (%)**	**Loan to deposit ratio 5 year average (%)**	**Tier 1 Capital ratio 5 year average (%)**	**Asset quality (impaired loans to total loans %) 5 year average**	**Return on equity ratio 5 year average (%)**	**Return on assets 5 year average (%)**
Royal Bank of Scotland	UK	16.68	21.1	115.22	8	2.11	9.26	-0.3
HSBC	UK	44.67	16.07	96.64	8.8	2.21	7.26	0.66
Barclays	UK	55.72	25.9	93.28	8.8	2.72	20.96	0.35
HBOS	UK	5.1	38.98	179.24	7.2	2.06	0.23	0.04
Average		30.54	25.51	121.1	8.2	2.28	9.43	0.19
Standard deviation		23.61	9.83	39.95	0.77	0.30	8.61	0.41
Coefficient of variation		0.77	0.39	0.33	0.09	0.13	0.91	2.19

Source: Published annual reports; Factiva and Financial Times

Table 1b: Liquidity, Debt, Capital, Asset Quality and Profitability Ratios of Australian banks between 2004-2009

Bank	**Country**	**Cash ratio 5 year average (%)**	**Debt-to-Equity ratio 5 year average (%)**	**Loan to deposit ratio 5 year average (%)**	**Tier 1 Capital ratio 5 year average (%)**	**Asset quality (impaired loans to total loans %) 5 year average**	**Return on equity ratio 5 year average (%)**	**Return on assets 5 year average (%)**
Westpac Banking Corporation	Australia	22.68	20.02	135	7.3	0.25	19.57	0.95
Commonwealth Bank of Australia	Australia	24.12	16.8	134.22	7.68	0.17	17.64	0.98
ANZ	Australia	26.49	15.09	124.34	7.74	0.23	14.54	0.89
National Australia Bank	Australia	43.92	17.24	116.92	7.65	0.21	12.26	0.75
SD		9.87	2.04	8.63	0.20	0.03	6.88	0.66
Average		26.76	18.81	105.1	7.59	0.18	10.97	0.65
Coefficient of variation		0.37	0.11	0.08	0.26	0.19	0.63	1.01

Source: Published annual reports; Factiva and Financial Times

Discussion of results

(1) Liquidity

Tables 1a and 1b revealed that UK banks had on average higher cash ratio, higher leverage ratio, higher loan to deposit ratio, higher capital ratio, lower asset quality, lower ROA but higher ROE than the Australian banks. These results are revealing. It is surprising to note that UK banks had higher cash and capital ratios than Australian banks. Table 2 provides a clear comparison of the liquidity ratios between UK and Australian banks during the period of 2004-2009.

Table 2: Liquidity ratios of UK and Australian banks between 2004-2009

Bank	**Cash ratio 5 year average in %**
Royal Bank of Scotland	16.68
HSBC	44.67
Barclays	55.72
HBOS	5.1
Average	**30.54**
Standard deviation	**23.61**
Westpac	22.68
Commonwealth Bank of Australia	24.12
ANZ	26.49
NAB	43.92
Average	**26.76**
Standard deviation	**9.87**

Source: Published annual reports; Factiva and Financial Times

Amongst the UK banks, HSBC and Barclays had the highest cash ratios. HSBC and Barclays did not receive financial help from the UK government during the financial crisis of 2007-2009. In November 2007, HSBC spent $45 billion bailing out its Special Investment Vehicle. After the bail-out, HSBC weathered the financial crisis and focused on expansion in the emerging markets such as China (Doherty et al, 2008). Following the collapse of Lehman Brothers on 14th September 2008, Barclays bought the investment bank and capital markets branches of Lehman Brothers two days later (Doherty et al, 2008). This deal boosted the US investment banking branch of Barclays. Some argue that Barclays were fortunate in the financial crisis due to the financial assistance from the Middle East, failed attempt to purchase ABN Amro and their purchase of part of Lehman Brothers (Jenkins, 2010). Barclays had to raise £4.5 billion in September 2008 to strengthen its balance sheet. The strong cash ratio of Barclays certainly boosts its financial position to withstand the financial crisis.

National Australia Bank had a very high cash ratio. According to market data provided by the Financial Times (2010), National Australia Bank increased its cash reserves by 6.33% in 2010.

Further, it used very little or no debt in their capital structure. This is reflected in the low debt-to-equity and loan to deposit ratios. Overall, Australian banks had a healthy cash ratio. It is worth noting from the standard deviation that Australian banks are more uniform and consistent than UK banks in their liquidity ratio.

(2) Debt-(Leverage ratio and loan-to-deposit ratio)

The high leverage ratio amongst UK banks is expected. Diagram 1 below shows that the average leverage ratio amongst UK banks between 2005-2009 is approximately 20%. Apart from HSBC, all the UK banks had a higher than average leverage ratio. The author's data shown in table 3 includes data from 2004 as well, which explains the average leverage ratio of 25.51 amongst UK banks.

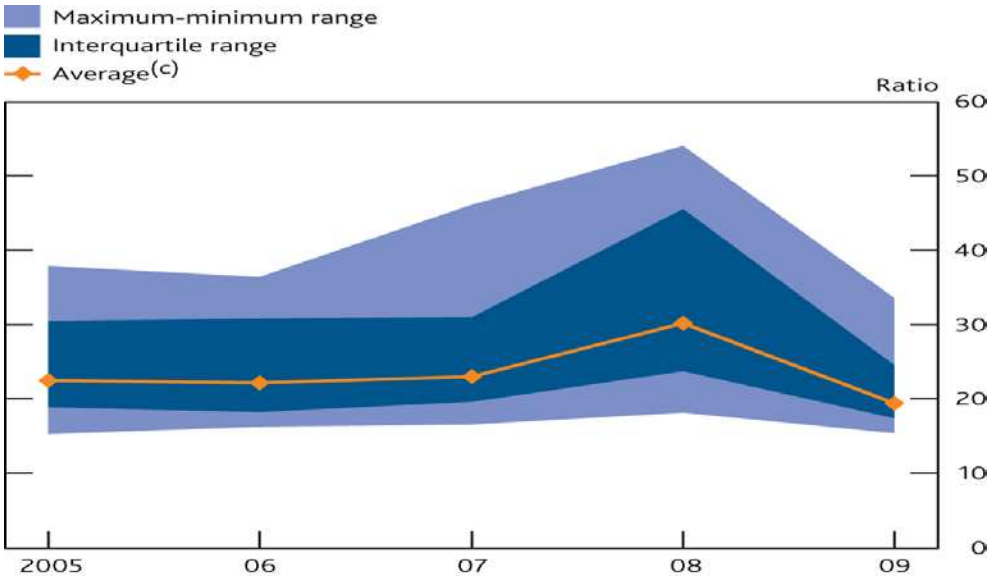

Diagram 1: Leverage ratios of major UK banks

Source: Bank of England Financial Stability Report (2010)

(a) Excludes Northern Rock. (b) Asset weighted.

Table 3: Debt ratios of UK and Australian banks between 2004-2009

Bank	**Leverage ratio 5 year average in %**	**Loans-to-Deposits ratio 5 year average in %**
Royal Bank of Scotland	21.1	115.22
HSBC	16.07	96.64
Barclays	25.9	93.28
HBOS	38.98	179.24
Average	**25.51**	**121.1**
Standard deviation	**9.83**	**39.95**

Westpac	20.02	135
Commonwealth Bank of Australia	16.8	134.22
ANZ	15.09	124.34
NAB	17.24	116.92
Average	**18.81**	**105.1**
Standard deviation	**2.04**	**8.63**

Source: Published annual reports; Factiva and Financial Times

The high leverage ratio of HBOS is one of the indicators of poor performances: Lloyds TSB took over HBOS in 2009. Lending in the wholesale market dried up when the sub-prime mortgage crisis hit banks, especially HBOS. Paul Moore, the ex Head of Regulatory Risk at HBOS told the author that excessive exposure of HBOS to the wholesale market led to huge losses. HBOS pursued a 'sales driven' policy, putting profits before ethics (Moore, 2010). It is the 'search for yield' argument that banks moved from the 'originate-to-hold' model to 'originate-to-distribute' model in the late 1980s.

The 'originate-to-distribute' model relies on securitisation. Two schools of thought on securitisation have since emerged. According to the first school, securitisation is to be celebrated because it reduces default risk by dispersing risks along the process and thus strengthens the financial system (Greenlaw et al (2008) cited in Shin, 2009). However, Acharya et al (2009) rebut this argument and counterclaim that the securitisation market collapsed in early 2007 due to banks ignoring their own model of securitisation and failed to transfer credit risks (Acharya et al, (2009). Banks moved from the 'originate-to-hold' model to 'originate-to-distribute' model because in theory, securitisation would give greater liquidity; more borrowing capacity and ability to transfer credit risks to ultimate investors. In reality, the latter was not achieved (Acharya et al, 2009; Goodhart, 2009). Acharya et al (2009) believe that between 2003-2007, banks utilised securitisation to avoid Basel II Accord on capital requirements. Regulatory dialectic thus became the aim of banks, not transferring credit risks to investors. The term 'originate-to-pretend-to-distribute' model should be more accurate to describe securitisation (Goodhart, 2009).

The second school of thought on securitisation is one of misalignment of incentives (Paligorova, 2009) Securitisation contributed to the collapse of the financial system because incentives were distorted in all the stages of the securitisation process. The end result is that the ultimate investors at the end of the process will end up with the 'hot potato of bad loans' (Shin, 2009). In Shin's view, the ultimate investors did not end up with the bad loans. He argues that the financial crisis was severe because the bad loans were not all passed on to final investors. Instead, the bad loans remained in the securitisation process, on the balance sheet of financial intermediaries or special purpose vehicles that sponsored them (Shin, 2009).

From the above data, the author supports the second school of thought on securitisation. UK banks with high leverage ratios performed badly in comparison to the other banks because of excessive risks which were not shifted from the banks in the securitisation process. Diagram 2 shows that HBOS had a high percentage of securitised mortgage stock. These banks performed poorly in the financial crisis. Australian banks on the other hand, relied more on intermediation than on securitisation (Hawtrey, 2009). In fact, less than 10% of bank funding was from securitisation between 2006-2010 (RBA, 2010). Australian banks

had a more conservative and controlled approach to banking because risks were better monitored. Further, only 18% of Australia's housing loans were securitised (IMF, 2008), so Australian banks suffered less direct losses.

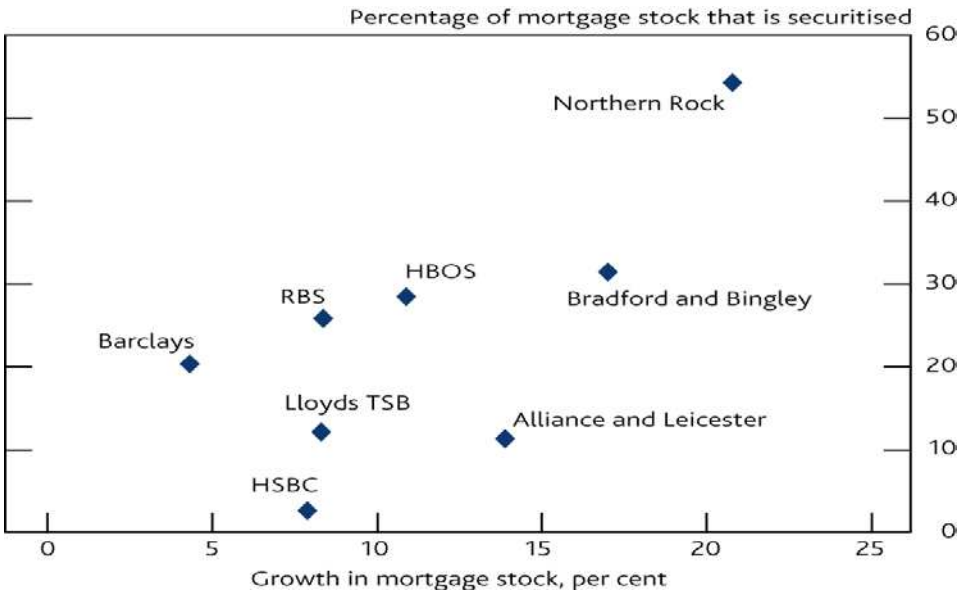

Diagram 2: Share of UK mortgages securitised by UK banks versus growth in stock of mortgages

Average annual growth in mortgage stock from end of 2004 to end of 2007

Source: Bank of England (2009)

The loan to deposit ratio reveals how heavily a bank is reliant on borrowing. HBOS stands out with a very high borrowing ratio. According to Sir Victor Blank (Ex-Chairman of Lloyds Banking Group): 'HBOS was borrowing too much from the wholesale markets. HBOS's problem was really about the model, it was about the dependence on the inter bank markets' (Randall, 2009). This heavy reliance proved to be a dangerous model when the short-term and interbank markets froze (Shin, 2008). HBOS became insolvent due to its maturity mismatch of balance sheets and the inter-connectedness of banks.

HSBC and Barclays all had lower loan to deposit ratios. In particular, it can be argued that because HSBC have a strong presence in Asia, they are more conservative in their banking models. They performed better because their leverage and liquidity ratios were controlled. HSBC's Chief Executive believes that HSBC performed better than other banks because of its 'subsidiarised' banking model. Each business division controls the amount of capital and liquidity. These two items can be easily separated by a crisis hits the bank (Ahmed, 2010). Jaspal Bindra, Asia CEO at Standard Chartered, disagrees and claims that the notion of subsidiarisation is a safer banking model "may be illusory in practice". Empirical evidence on

the contrary needs to be collated to prove that subsidiarisation is not a viable option. The Independent Commission on Banking has considered subsidiarisation (ICB, 2010). The Independent Commission discussed the advantages and disadvantages of various types of subsidiarisation. Retail ring-fencing is considered a compromise since full subsidiarisation is too costly and operational subsidiarisation is too minimal. The Independent Commission of Banking published its final report on 12th September 2011. They recommended ring-fencing retail banking and a 10% equity baseline. In December 2012, the Parliamentary Commission on Banking led by Andrew Tyrie proposed to 'electrify' ring-fencing of banks. This gives the regulator more enforcement powers. (Jenkins, 2012) The author believes that this is positive news since depositors will receive more protection under the new recommendation. She has discussed the merits and shortcomings of retail ring-fencing in another paper. (Lui, 2012)

The author's descriptive data from table 1 shows that HBOS has an unusually high loan to deposit ratio. There is empirical evidence that there is a negative relationship between profitability and debt ratios (Kester (1986), Titman and Wessels (1988) and Rajan and Zingales (1995). However, Long and Malitz (1986) do not find such a relationship between leverage and profitability. Whilst the author's results show that there is a relationship between the two variables, the strength was not as stark as envisaged. Naturally, profitability of banks is affected by a range of factors, both external and internal. Therefore, leverage is only one factor which affects profitability. Nonetheless, it appears that the high leverage ratios amongst UK banks question the view of Myers & Majluf (1984). Myers & Majluf (1984) state that firms have a hierarchy of financing. First, firms prefer to use retained earnings. Secondly, firms use debt financing. Finally, firms issue new shares. Their view is somewhat dated in modern finance. Over the past 20 years, it became apparent that banks relied more and more on debt financing, especially in the wholesale market. The hierarchy of financing has thus changed in banking and perhaps the pendulum should swing back towards retained earnings. Since the financial crisis, UK banks have reduced their dependence on wholesale markets for funding. Just 15% of customer loans are now funded through the wholesale markets, a level not seen since 2003. Australian banks have reduced their short-term borrowing from just above 30% in 2006 to just above 20% in 2010 (RSA, 2010). They have also increased their liquid assets to improve the liquidity position (RSA, 2010).

(3) Capital

In relation to the capital ratios, the difference between Australian and UK banks is slight. Both countries had ratios very close to the 8% as laid down by the Basel II Accord. Diagram 3 shows that the average core tier 1 ratio of major UK banks hovers around the Basel II requirement of holding 8% capital of total risk-weighted assets. The diagram also triangulates with the author's data in table 4.

Table 4: Capital ratios of UK and Australian banks between 2004-2009

Bank	**Tier 1 capital ratio 5 year average in %**
Royal Bank of Scotland	8
HSBC	8.8
Barclays	8.8
HBOS	7.2
Average	**8.2**
Standard deviation	**0.77**
Westpac	7.3
Commonwealth Bank of Australia	7.68
ANZ	7.74
NAB	7.65
Average	**7.59**
Standard deviation	**0.20**

Source: Published annual reports; Factiva and Financial Times

Basel II Accord is an international agreement that sets guidelines for bank regulation. Under the Accord, banks must hold at least 4% in Tier 1 capital. Apart from HBOS, all the UK banks from the author's table had healthy Tier 1 capital ratios. Basel II Accord has been in force in Australia since 1st January 2008. Australian banks held capital just below 8% (RBA, 2010).

Capital, especially equity, is viewed as a shock absorber, protecting a bank from externalities. A drop in asset price combined with an increase chance of default by banks means that in difficult times, banks have to sell their assets at market price. More capital is required in such a case (Powell & Allen, 2010). However, some banking professionals argue that high levels of capital would not have prevented the recent financial crisis (FSA, 2010). Higher capital retention alone would not be the solution. Better quality of capital is the key to better absorption of shock. Blundell-Wignall & Atkinson (2010) have produced a table which shows that some US and European banks' losses would have absorbed all or most of their capital during the crisis. Their calculation is based on the new leverage ratio (equity less goodwill) under Basel III. The author's results are supported by the IMF's data of 2010. Australian banks had a 0.2% non-performing loans to total loans between 2004-2007, rising to 0.8% in 2008 and 1.1% in 2010. UK banks hovered at 1% between 2002-2006, rising to 1.6% in 2009 and 3.3% in 2010 (IMF, 2010). Better quality of assets is thus important to absorb losses.

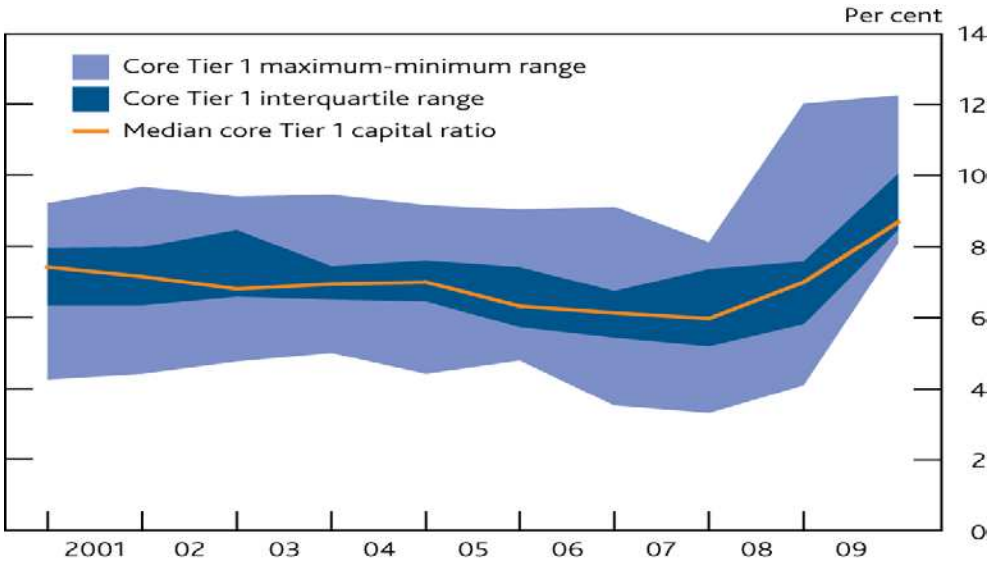

Diagram 3: Core Tier 1 ratios of major UK banks

Source: Bank of England Financial Stability Report (2010)

(4) Asset quality

Oshinsky and Olin (2006) submit that the combination of low capital ratios and risky assets lead to bank failures. Jin et al (2011) conducted research into the factors leading to bank failures during the financial crisis of 2007. They obtained data from the Federal Reserve Bank of Chicago's Bank Holding Company. The author is particularly interested in their research into loan quality. They used several variables such as proportion of securitized assets to total assets, level of non-performing loans, growth in various loan categories and loan portfolio mix in predicting bank failure. Data about non-performing loans are found in annual reports and are a useful source of information about loan default. (Liu & Ryan, 2006) Their results show that non-performing loans have a positive correlation with bank failures. Due to difficulty in obtaining data, the author has only managed to obtain information on non-performing loans in UK and Australian banks. Table 5 shows that Australian banks have a better asset quality ratio, with an average of 0.18% of impaired loans compared to an average of 2.28% impaired loans among UK banks.

Table 5: Asset quality ratios of UK and Australian banks between 2004-2009

Bank	**Asset quality ratio 5 year average in %**
Royal Bank of Scotland	2.11
HSBC	2.21
Barclays	2.72
HBOS	2.06
Average	**2.28**

Standard deviation	**0.30**
Westpac	0.25
Commonwealth Bank of Australia	0.17
ANZ	0.23
NAB	0.21
Average	**0.18**
Standard deviation	**0.03**

Source: Published annual reports; Factiva and Financial Times

(5) Profitability

Table 6: Profitability ratios of UK and Australian banks between 2004-2009

Bank	**ROE 5 year average %**	**ROA 5 year average %**
Royal Bank of Scotland	9.26	-0.3
HSBC	7.26	0.66
Barclays	20.96	0.35
HBOS	0.23	0.4
Average	**9.43**	**0.19**
Standard deviation	**8.61**	**0.41**
Westpac	19.57	0.95
Commonwealth Bank of Australia	17.64	0.98
ANZ	14.54	0.89
NAB	12.26	0.75
Average	**10.97**	**0.65**
Standard deviation	**6.88**	**0.66**

Source: Published annual reports; Factiva and Financial Times

Profitability is measured by return on assets (ROA) and return on equity (ROE) ratios. The ROA ratio indicates the capital intensity of banks. The ROE measures the efficiency of banks in generating profits. A weakness of the ROE ratio is that it does not take debt into account. If a bank can issue debt at a lower interest rate than the rate of return on its investments, it could increase its return on equity. However, higher debt also increases the risk of failure for bank. The author thus included ROA ratio in her data. Beltratti & Stulz (2009) conducted research at cross-country and bank levels as to why some banks performed better than others in the financial crisis of 2007. Focusing at a bank-level, they found that banks with more Tier 1 capital and more deposit at the end of 2006 had higher returns during the crisis. Banks with more loans and more liquid assets performed better during the month following the Lehman bankruptcy. Beltratti & Stulz's study has a limitation in that they only studied the return regressions during 2007-2008. The author's study spans across five years and shows that Australian banks had a higher profitability ratio both in terms of ROE and ROA. Australian banks are more efficient since they have a higher ROE. A paper by Vu and Turnell (2011) reveals that the big four Australian banks were efficient before the financial crisis of

2007. Profit efficiency fell during the financial crisis but recovered towards the end of 2009. This phenomenon supports Blejer's research in 2006 that efficient financial systems are better insulated from externalities. (Blejer, 2006) ROA is a more accurate measure of productivity since it takes debt into account. ROA is flat in the UK whilst ROE increased during the financial crisis due to higher leverage ratios.

Basel III reforms

In light of the correlation between capital/liquidity; capital/loan to deposit ratio and capital/asset quality, it is only justifiable to examine whether the Basel III proposals will address the problems manifested in the financial crisis. Basel III recommendations include higher and better quality capital, counter-cyclical buffer of 0-2.5%, tier 1 leverage ratio (ratio of book capital to assets) of 3% and maintenance of minimum liquidity. Tier 1 capital ratio will increase from 4% to 6% but the overall capital ratio remains at 8%. There is some flexibility for national differences in adoption and implementation by way of a 'comply or explain' provision. Changes will be implemented gradually until 2019. Basel III recommendations are necessary to address the problems encountered by several UK banks during the crisis. Problems however, exist.

Basel III fails to address the problem of regulatory dialectic in the shadow banking sector. Basel III only applies to banks, not the shadow banking sector. Thus, many banks will continue circumventing Basel III rules by relying on securitisation, a way to create apparently risk-free assets out of risky pools. Northern Rock is an example. Northern Rock was a building society but has gradually become a commercial bank in the UK. Northern Rock was adequately capitalised but illiquid prior to its collapse. It utilised a Structured Investment Vehicle called Granite which had £50 billion worth of mortgages. Mortgages are considered by Basel II as low risk assets. Granite was an off-shore vehicle and is thus unregulated for capital purposes. The FSA failed to notice that Northern Rock had only a 2% capital-to-assets ratio in June 2007. Until the definition of capital includes the shadow banking sector, an increased capital ratio will not be sufficient to counter externalities.

Australian regulators have recently increased regulation of the shadow banking institutions. The Australian Securities and Investments Commission now grants licences and imposes certain obligations on these institutions. The regulatory coverage of credit products under the National Consumer Credit Code has been expanded to include investor-housing mortgages. The UK government needs to adopt similar measures. It is encouraging to note that on an international dimension, several advanced economies are working towards increased regulation of hedge funds and credit rating agencies.

Hildebrand supports a leverage ratio because it acts as 'a complementary instrument to risk-weighted requirements when assessing banks' capital adequacy' (Hildebrand, 2008). Recent empirical evidence reveals that when asset growth is controlled by several instruments, banks performed better (Senior Supervisors Group, 2008). Canadian banks are governed by a leverage ratio and there have been no bank bail outs in the financial crisis. The governor of the Bank of Canada believes that lower leverage leads to better performance in banks

(Carney, 2008). Hildebrand mentions that a leverage ratio 'does not address credit concentration, excessive maturity mismatch or undue reliance on asset market liquidity' (Hildebrand, 2008). Nonetheless, a leverage ratio should be introduced to curb excessive leverage. Bank directors must then review the funding position of its bank to ensure that liquidity is adequate. Corporate governance thus complements macro-prudential measures to improve the banking system.

Conclusion:

In comparison to the big four Australian banks, this paper has revealed that big four UK banks had on average, higher cash ratio, higher leverage ratio, higher loan to deposit ratio, higher capital ratio, lower asset quality, lower ROA but higher ROE than the big four Australian banks. Interestingly, the core 1 capital ratio was slightly higher amongst UK banks than Australian banks although the difference is slight. Australian banks did not require any government assistance during the financial crisis. Four UK banks required significant financial assistance from the UK government during the financial crisis. Macro-prudential regulatory changes are inevitable for the UK financial sector. UK financial institutions should rely less on short-term wholesale funding and more on cash, deposits and equity. One must balance financial innovation with financial stability. Whilst forecast growth by the IMF for the UK economy is positive, the UK cannot afford to continue with the insatiable quest for innovation and profits.

The pendulum should shift towards financial stability but without jeopardising economic growth. Better regulation and risk management are required. A leverage ratio and minimum liquidity requirements are welcomed. Good quality capital is necessary to absorb externalities. Basel III has laid down suitable recommendations but they are insufficient. In particular, the shadow banking sector should be subject to the same rules and regulations as the banking sector to create a level playing field. Flavius Vegetius Renatus (375AD) once said: 'If you want peace, prepare for war'. A counter-cyclical buffer of 0-2.5% should thus prepare banks for unexpected losses in the next financial crisis.

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