Advances in Management & Applied Economics, Vol. 10, No. 1, 2020, 61-71
ISSN: 1792-7544 (print version), 1792-7552(online)
Scientific Press International Limited

Cost and Benefit of Commercial Banks' Capital Regulations of Australia, Norway, and Pakistan

Shumaila Meer Perhiar[1], *Changjun Zheng[2] and Probir Kumar Bhowmik[3]

Abstract

The sample data of 66 banks of Australia, Norway, and Pakistan is used from the year 2010 to 2017. Based on the model of Pooled Ordinary Least Square (POLS) we aim to find the cost and benefits of cost of intermediation for commercial banks of developed countries with enlightenment on the emerging economy. The empirical findings are: the cost of intermediation is significant for the developed and emerging country. Liquidity maintained in banks are beneficial in financial crises for the cost of intermediation, management efficiency is profitable for developed economy, an example for developing financial sector for the cost of intermediation. Liquidity standards are maintained after the Basel Accord. Small size banks of Pakistan need to improve economies of scale same as the large size banks in Australia and Norway.

Keywords: Basel Accord, commercial bank, cost of intermediation, panel data, POLS, bank risk-taking behavior.

[1] School of Management, Huazhong University of Science and Technology, Wuhan 430000 430074, China.
[2] School of Management, Huazhong University of Science and Technology, Wuhan 430000 430074, China. ***** Corresponding author
[3] School of Management, Huazhong University of Science and Technology, Wuhan 430000 430074, China.

Article Info: *Received:* September 17, 2019. *Revised:* September 25, 2019.
Published online: January 10, 2020.

1. Introduction

On the offset of the financial crisis in 2008, brought forward many points of consideration about strict capital rules and regulations for the banking sector, the banking downfall occurs 4% to 5% in countries that are industrial or emerging economies. The main aspect of the whole concept is to empirically know exact capital requirements required to hedge, in reaction to the risk created due to an imbalance in the balance sheet. The financial crises started in 2008 in the USA after Lehman brothers reported bankruptcy on 15th September 2008, which spread globally as a domino effect. This research is to study the nature of intermediation cost and at a minimum level to risk-taking behavior of a bank, to understand the major prudential regulations.

To secure the financial strength of the banking sector in the developed and developing economy, the capital requirement is set according to the Basel Committee on Banking Supervision. The Basel Accord I of the kind designed in 1988 and the main focus was on bank credit risk and made obligatory for the bank to sustain capital ratios in according to the asset's portfolio risk. An amendment was made in Basel Accord of 1996 to maintain premium on market risk of bank hold capital ratio accordingly. Basel II was amended in 2004; premium or risk on bank operation was introduced also supervisor review and mechanism of market discipline was implemented. Basel Accord III give a summary of maximum capital ratio with a limit of CET1 to RWA (risk-weighted assets), and a buffer to banks[1].

In Australia, the Australian Prudential Regulation Authority aka (APRA) has circulated a paper to modify the capital framework of domestic banks according to Basel Accord III. However Australian banks are well capitalized and are in consultation to accommodate the final version of accord[2]. The research on the saving banks of Europe and the behavior of management was conducted[3, 4, 5 and 6] European Union (EU) in year 2013 implemented Basel III in legal framework of EU and spent €200 billion of taxes and saved failing banks. The financial instability is based on many reasons that are the presence of good quality capital and liquid assets in low amount. The banks of Pakistan have adopted many reforms for capital regulations and provide an opportunity to test the hypothesis for the past two decades.

Pakistan has trade links with Australia and Norway the former two show high economic growth in respective regions and has a banking system different from Pakistan with traditional lending and borrowing behavior and the banks act as intermediate with regular banking policies. Pakistani banks adopted capital regulations based on Basel Accord since 1997 and have made amendments according to the Basel Accord requirements. The Basel III Accord BPRD Circular No. 06 of 2013 is the latest regulations implemented in the banks of Pakistan[7] and in accordance to research by [8].

1.1 Objectives

According to the above discussion, the main objective of the research is:

- Observation for enlightening of developed countries on Pakistan under the cost of financial intermediation
- Observation for enlightening of developed countries on Pakistan under bank risk-taking behavior.

Regulation with respect to banks' cost of financial intermediation, in economic regions and countries, collectively and individually and hold some role in risk-taking behavior of the financial sector globally. The crises in question bring attention to the stability of the banking system and micro-prudential regulations.
The thought of discussing is what type of capital requirement is necessary and the regulations should be formed according to the financial sector of the country. If the regulations are more than required then it has a negative impact on high intermediation cost and decreases profits in a bank that face constraints to give credits and stop global growth in non-crises times.
The study will contribute to the literature in many ways some of them are mentioned here as: The study is first of the kind to study the impact or enlightenment of Australia and Norway and Basel Accord and IFRS ratio calculation methods on Pakistan.
The research paper is structured as follow: introduction and background study of cost and benefits of cost of intermediation and risk-taking behavior of banks of Australia, Norway, and Pakistan. Literature reviews as the theoretical also empirical literature dealing with the impact of capital requirements on bank's cost of intermediation and risk-taking behavior. Methodology present the sample, models, and methodology of regression analysis are discussed. Findings and results of models in the last section of the paper give some conclusion and implication of policies.

2. Literature Review and Hypothesis Development

Net interest margin a proxy for the cost of intermediation calculated by[9] the increase in capital regulations result in the growth of the cost of intermediation, and the step is taken to compensate for high risk faced by shareholders. Different papers by[10,11,12,13] state the benefit of the strategy of a bank to be well capitalized, have a low risk of bankruptcy and need less funding. However, the market with financial constraint with limited credit at the bank has to increase the cost of intermediation to raise profit[14, 15].
According to the research done by[9], high management efficiency measured as high capital to asset ratio and bank profits measure manager efficiency. Management efficiency has a positive impact on interest margin by over chagrining customers. Similarly[10] the high value of management efficiency lowers the cost of

intermediation. The management efficiency is calculated as a ratio, the efficiency is high when the calculated ratio shows high numeric value and ultimately the cost of intermediation come down and show a negative relationship. On the other hand, the manager works hard to make more profit to the bank and raise the cost of intermediation to lower the risk. The profit is generated by the investment of assets. The management study by[16] state that evidence is present for poor management efficiency and regulatory authority in developing economies, must pay attention to the performance of managers for the establishment of the finance sector and reduce nonperforming loans.

H1: management efficiency is significant to the cost of intermediation.

A paper was written by[9] to study liquidity effect on cost of intermediation positively that is countered by a decrease in output growth. The vigorous study of[17] show an increase in capital and liquidity requirement can stop bank crises and increase spread. Liquidity is explained by[18] as a channel of the bank to lend in monetary policy. The prediction is of loan reduction with the increase in interest rate only when cash reserves are in binding and the bank have liquidity constrains responding accordingly. A detailed paper on liquidity by[19] discuss banks with a high collection of liquidity shows less reaction towards the same level of change in monetary policy also bank with high finance cost target high liquidity in long term. Basel Committee 2009 gave the feasibility for a commercial bank was dependent on liquidity position. The rise in interest margin kindled a bank to pay more attention to lend and decrease the liquid assets at the bank[20,21].

H2: liquidity is significant to the cost of intermediation.

The bank size researched by[9] proved that natural log of total assets of a bank increased after the regulation period and was able to gather deposits from different shareholders and resulted in an increase in competition and thus big bank asked for the high cost of intermediation. Economies of scale also played a significant role in the increase in profit. The study by [22] gave the idea that bank tried to increase in size with a speed without considering the damage they make to profitability. Size is researched by[23] as a bank of big size have benefit of economies of scale to improve the efficiency of the bank and decreases the exposure to risk [24, 25, 26, 27] and [28]

H3: size is significant to the cost of intermediation.

3. Research Design and Methodology

Bureau Van Dijk's BankFocus database is used to collect data for dependent and independent variables, the sample consists of panel data of 66 banks from the year 2010 to 2017 for commercial banks which are active in operations and located in Australia, Norway, and Pakistan. Table 1 gives definition of variable abbreviations and source of data collection.

Table 1: Variable name and source of data

Variables	**Indicators**	
Dependent Variable	**Measures of Variables**	**Source/ Explanation**
Cost of intermediation Net interest margin (NIM)	The ratio of interest income to average total assets	The formula by[10 and 9]. Data gathered from Bankfocus and formula calculated by author
Independent Variables		
Management efficiency (MAN)	Earning assets to total assets	The formula by[10 and 9]. Data gathered from Bankfocus and formula calculated by author
Liquidity (LIQ)	Liquid assets / total assets	The formula by[9]. Data gathered from Bankfocus and formula calculated by author
Bank size (SIZE)	log of total assets	The formula by[29 and 9]. Data gathered from Bankfocus and formula calculated by author.

3.1 Model Specification

The model developed based on dependent and independent variables are as follow:

$$\text{Net Interest Margin}_{i,} = \beta_0 + \beta_1 ln\text{Net Interest Margin}_{i,-1} + \beta_2 \text{Management efficiency}_{i,}$$

$$+ \beta_3 \text{Liquidity}_{i,t} + \beta_4 \text{Size}_{i,} + \in_{i,t} \qquad \text{(I)}$$

The ɨ is a subscript of commercial banks there are (i=1, 2….66) for Australian, Norwegian and Pakistani banks. The time frame of eight years is represented by (t=2010...2017). Estimation parameters are β and the error term is denoted by εi, t.

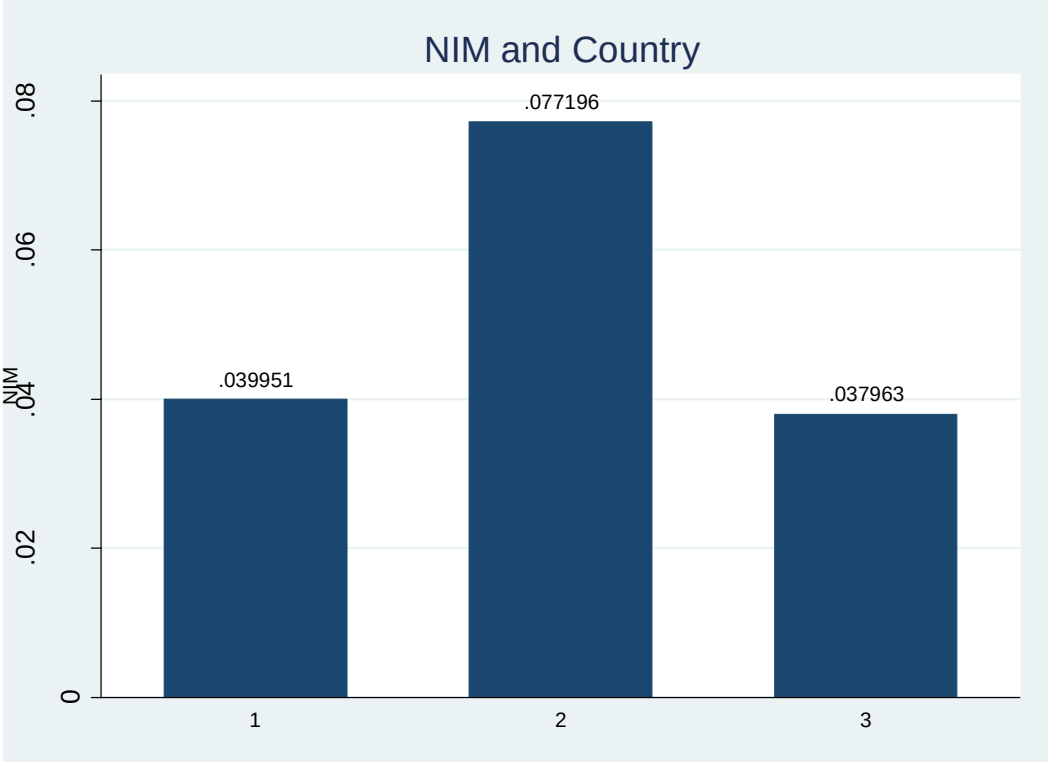

Figure 1: Sample distribution of NIM of all commercial banks of Australia, Norway and Pakistan

The graph presents dependent variable NIM country 2 that is Pakistan has highest value at 0.077196, Australia has 0.039951 value of NIM and country 3 that is Norway has lowest value of NIM at 0.037963.

4. Results and Discussion

4.1 Descriptive Statistics

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Net interest margin	464	.0533928	.0235033	.0033887	.088771
Management efficiency	486	.8924481	.0765147	.5392977	.9912236
Liquidity	486	.1268636	.155711	.0101966	.8066642
Size	486	6.353331	.9102139	4.588249	8.27017

Descriptive statistics in table 2 is a cursory summary of the whole sample data, the three countries that are Australia, Norway, and Pakistan in three different regions of Australian, Europe and Asia have net interest margin of 464 observations at the

mean value of .0533928, the highest value at .088771 and lowest value of .0033887. The management efficiency of the three countries in total is very high that is 99% and still not bad at the minimum value of 54% approximately for a total of 486 banks. Some banks among the 486 total have shown minimum liquidity of .0101966 way below the average of .1268636 and the maximum value of .8066642. On average a bank size is 6.353331 with a minimum log of 4.588249 and maximum log value of 8.27017.

4.2 Correlation Matrix

Table 3: Pairwise Pearson correlation coefficient

	NIM	MAN	LIQ	SIZE
NIM	1.0000			
MAN	-0.1636*	1.0000		
LIQ	-0.3252*	-0.0334	1.0000	
SIZE	0.0079	0.1910*	-0.0516	1.0000
*denotes statistically significant at 5%				

The correlation matrix of variables in table 3 represents the correlation matrix by Pearson's, for Australia, Norway, and Pakistan. The multicollinearity is not a problem in the data. A negative and significant correlation with 0.1636 value is seen between management efficiency MAN and the cost of intermediation NIM. LIQ has a negative and significant correlation with NIM at 0.325. SIZE the natural log total assets has correlation with NIM at a value of 0.0079, a positive and significant correlation is witnesses between SIZE and MAN for 0.1910.

The correlation coefficient act insignificant when variables are highly autocorrelated as stated in paper by[30], the research methodology is based on the basic pooled ordinary Least Square (POLS) equation estimation.

4.3 Net Interest Margin POLS

Table 4: Empirical results of panel regression pooled ordinary least square (POLS)

	NIM(1)	NIM(2)	NIM(3)
Indicator	**Australia**	**Norway**	**Pakistan**
NIM_L1	0.337 ***	0.617 ***	0.326 ***
	(4.22)	(11.08)	(4.80)
MAN	0.0321*	0.0117	-0.0472 *
	(2.14)	(1.09)	(-2.54)
LIQ	-0.0285 ***	-0.0150 **	-0.0227 *
	(-3.74)	(-3.12)	(-1.98)
SIZE	-0.000447	-0.00193	-0.0227 ***
	(-0.39)	(-1.71)	(-4.24)
_cons	0.00358	0.0175	0.128 ***
	(0.28)	(1.53)	(6.54)
N	115	151	175
R^2	0.384	0.617 ***	0.261
t statistics in parentheses * p < 0.05, ** p < 0.01, *** p < 0.001			

MAN is significantly and positively correlated with NIM at 5% level at a value of 0.0321 for Australia [9] however, significantly negative correlation with NIM at a value of 0.0472 at 5% level is seen for Pakistan[10]. Liquidity is significantly and negatively correlated to NIM at 0.0285 with 0.1% level for Australia, same significant and negative correlation is seen at the value of 0.0150 at 1% level for Norway and as for Pakistan at 0.0227 with 5% level [19]**.** Size is negatively significant to NIM only for Pakistan at a value of 0.0227 at 0.1% level [31].

5. Conclusion and Policy Implication

The research analysis the capital regulation impact on commercial banks in Australia, Norway two developed economies with the enlightenment on Pakistan an emerging economy, the cost of intermediation calculation is significant and with the rise of net interest margin and regulations. The rise in liquidity propels a bank to decrease the cost of intermediation NIM and the nonearning asset is reduced. The cost of intermediation NIM rises with the efforts of management efficiency to make bank profitable and charge the account holder with the cost to attain efficiency this favorable situation is only for Australia. In the case of Pakistan, the scenario is the opposite, here the management show less efficiency towards the banks' business and promote the cost of intermediation.

The net interest margins are increased and provide stimulation for banks to promote

lending, the asset in liquid form decrease. Liquidity shows the strength of a bank to finance asset growth and fulfill obligations in time of crisis as a shield against losses. The big size banks pay high deposit interest with the low-interest rate on loans and are less concerned with income earned on interest. The banks of Pakistan has the capacity to give more services on charges, also recommend high rates to depositors to have the benefit of selling across the banks and attain economies of scale.
Complete research needs an answer on more questions about the cost of intermediation in emerging economies same as Pakistan, developed countries financial stability set as benchmarks.

6. Limitations

The research is an important contribution to the literature on net interest margin and risk-taking behavior of a commercial banks in Australia, Norway and Pakistan. During the study authors faced some limitations that can be base to future research. The selection of bank specific and macro-economic variables can be changed to other determinants for the three countries under study with availability of data. Australia, Norway and Pakistan has different banking structure and economic situations thus comparison was a limitation but the developed countries banking sector provide enlighten to emerging countries like Pakistan. Net interest margin can be measured with other formula to measure cost and benefit and capital regulations of a bank. The limitation of availability of data does not help in testing hypotheses, other financial variables may carry some impact like macroeconomic factors and can be addressed in further research.
On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

[1] Basel Committee on Banking Supervision. Literature Review on Integration of Regulatory Capital and Liquidity; 2016; Vol. No 30.
[2] RBA. Reforms to the Basel III Capital Framework; 2018.
[3] Altunbas, Y.; Carbo, S.; Gardener, E. P. M. and Molyneux, P. Examining the Relationships between Capital, Risk and Efficiency in European Banking. Eur. Financ. Manag. 2007, 13 (1), 49–70. https://doi.org/10.1111/j.1468-036X.2006.00285.x.
[4] Williams, J. Determining Management Behaviour in European Banking. J. Bank. Financ. 2004, 28 (10), 2427–2460. https://doi.org/10.1016/j.jbankfin.2003.09.010.
[5] Lucchetta, M. What Do Data Say about Monetary Policy, Bank Liquidity and Bank Risk Taking? Econ. Notes 2007, 36 (2), 189–203. https://doi.org/10.1111/j.1468-0300.2007.00180.x.
[6] Valla, N.; Saes-escorbiac, B. and Tiesset, M. Bank Liquidity and Financial Stability. 2007, 28, 40–47.

[7] Gul, S.; Irshad, F. and Zaman, K. Factors Affecting Bank Profitability in Pakistane. Rom. Econ. J. 2011, 14 (39).
[8] Ahmad, F. and Bashir, T. Explanatory Power of Bank Specific Variables as Determinants of Non-Performing Loans: Evidence from Pakistan Banking Sector. World Appl. Sci. J. 2013, 22, 1220–1231.
[9] Ben Naceur, S. and Kandil, M. The Impact of Capital Requirements on Banks' Cost of Intermediation and Performance: The Case of Egypt. J. Econ. Bus. 2009, 61 (1), 70–89. https://doi.org/10.1016/j.jeconbus.2007.12.001.
[10] Rahman, M. M.; Zheng, C.; Ashraf, B. N. and Rahman, M. M. Capital Requirements, The Cost of Financial Intermediation and Bank Risk-Taking: Empirical Evidence from Bangladesh. Res. Int. Bus. Financ. 2018, 44, 488–503. https://doi.org/10.1016/j.ribaf.2017.07.119.
[11] Islam, S. and Nishiyama, S. The Determinants of Bank Net Interest Margins: Panel Evidence from South Asian Countries. J. Appl. Financ. Bank. 2015, 6 (3)
[12] Demirguc-Kunt, A.; Laeven, L. and Levine, R. Regulations, Market Structure, Institutions, and the Cost of FInancial Intermediation. Natl. Bur. Econ. Res. 9890 2003, 1–63.
[13] Harun M. A. Determinants of Cost of FInancial Intermediation in Nigeria's Pre-Consolidated Banking Sector. Eur. Sci. J 2013, 9, 282–290.
[14] Poghosyan, T. Financial Intermediation Costs in Low Income Countries: The Role of Regulatory, Institutional, and Macroeconomic Factors. Econ. Syst. 2013, 37 (1), 92–110.
[15] Soedarmono, W. and Tarazi, A. Bank Opacity, Intermediation Cost and Globalization: Evidence from a Sample of Publicly Traded Banks in Asia. J. Asian Econ. 2013, 29, 91–100. https://doi.org/10.1016/j.asieco.2013.09.003.
[16] Rajha, K. S. Determinants of Non-Performing Loans: Evidence from the Jordanian Banking Sector. J. Financ. Bank Manag. 2017, 4 (1), 125–136. https://doi.org/10.15640/jfbm.v5n1a5.
[17] Yan, M.; Hall, M. J. B. and Turner, P. A Cost-Benefit Analysis of Basel III: Some Evidence from the UK. Int. Rev. Financ. Anal. 2012, 25, 73–82. https://doi.org/10.1016/j.irfa.2012.06.009.
[18] Aiyar, S.; Calomiris, C. W. and Wieladek, T. How Does Credit Supply Respond to Monetary Policy and Bank Minimum Capital Requirements? Eur. Econ. Rev. 2016, 82, 142–165. https://doi.org/10.1016/j.euroecorev.2015.07.021.
[19] Ben Moussa, M. A. The Determinants of Bank Liquidity: Case of Tunisia. Int. J. Econ. Financ. Issues 2015, 5 (1), 249–259.
[20] Hovarth, R., Seidler, J., and Weill, L. Bank Capital and Liquidity Creation: Granger –Causality Evidence. Work. Pap. 1497 2012, 3–30.
[21] Berger, A. N. and Bouwman, C. H. S. Bank Liquidity Creation. Rev. Financ. Stud. 2009, 22 (9), 3779–3837. https://doi.org/10.1093/rfs/hhn104.
[22] Berger, A. N. Potential Competitive Effects of Basel II on Banks in SME Credit Markets in the United States. J. Financ. Serv. Res. 2006, 29 (1), 5–36.

[23] Bitar, M.; Pukthuanthong, K. and Walker, T. The Effect of Capital Ratios on the Risk, Efficiency and Profitability of Banks: Evidence from OECD Countries. J. Int. Financ. Mark. Institutions Money 2018, 53, 227–262. https://doi.org/10.1016/j.intfin.2017.12.002.
[24] Pasiouras, F. International Evidence on the Impact of Regulations and Supervision on Banks' Technical Efficiency: An Application of Two-Stage Data Envelopment Analysis. Rev. Quant. Financ. Account. 2008, 30 (2), 187–223. https://doi.org/10.1007/s11156-007-0046-7.
[25] Chortareas, G. E.; Girardone, C. and Ventouri, A. Bank Supervision, Regulation, and Efficiency: Evidence from the European Union. J. Financ. Stab. 2012, 8 (4), 292–302. https://doi.org/10.1016/j.jfs.2011.12.001.
[26] Abedifar, P.; Molyneux, P. and Tarazi, A. Risk in Islamic Banking. Rev. Financ. 2013, 17 (6), 2035–2096.
[27] Barth, J. R.; Lin, C.; Ma, Y.; Seade, J. and Song, F. M. Do Bank Regulation, Supervision and Monitoring Enhance or Impede Bank Efficiency? J. Bank. Financ.2013,37(8),2879–2892. https://doi.org/10.1016/j.jbankfin.2013.04.030.
[28] Tan, Y. and Floros, C. Risk, Capital and Efficiency in Chinese Banking. J. Int. Financ. Mark. Institutions Money 2013, 26 (1), 378–393. https://doi.org/10.1016/j.intfin.2013.07.009.
[29] Schindele, A. and Szczesny, A. The Impact of Basel II on the Debt Costs of German SMEs. Journal of Business Economics. 2016, 86 (3), 197–227. https://doi.org/10.1007/s11573-015-0775-3.
[30] Blundell, R. and Bond, S. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. J. Econom. 1998, 87 (1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8.
[31] Hamadi, H. and Awdeh, A. The Determinants of Bank Net Interest Margin : Evidence from the Lebanese Banking Sector. J. Money, Invest. Bank. 2012, 23 (23), 85–98.