Examining Monetary Policy Impact on the Financial Performance of Conventional Banks: A Case of Pakistan

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Abstract

The current paper investigates the connection among the monetary policy and financial presentation of ten conventional banking covering a time period from 2005 to 2015. For the analysis Stata software was used. For the purpose-oriented results different tests were used. Descriptive and Hausman tests were used for this purpose. Monetary policy indicators, financial performance indicators and macro-economics variables were used for getting purpose-oriented results. There is a noteworthy positive affiliation between ROA and lending rates while an insignificant relation between interest spread and ROA. ROA show an annual increase of 1.03 having low variations which shows consistency with the Macit (2011) finding. On the flip side, there is negative bond between monetary policy indicators and ROE. ROE mean value is 44.09 having no reliability with the past studies. It may be due to banks size. It has been detected that when monetary policy interest rate increases it directly distress the financial ability of the banks. It is because the aggregates lending significantly decreased. When aggregate lending decreases then also level of investment decreases. In response the growth also affected. It is empirically investigated that any change in the monetary policy have strong outcome on the financial performance of conventional banks. Macro-economic variables have negligible effect on the financial performance of the said banks. This paper attempts to provide a real picture and its effect on the economy.

Keywords: Monetary Policy, ROA, ROE, lending, macro-economics

Introduction

Commercial banks are like a life blood for a country because they produce wealth with different sources. Commercial banks in any country assumes a crucial role in distribution of the monetary policy (Ongore,2013). Banks play an intermediary role between the depositors and borrowers in the flow of funds and its crucial role can't be understated. As in the era of globalization, the modalities of financial institutions have changed when it is compared to the previous era (Bhatti & Hussain, 2010). As Pakistan is a developing country, the banking sector of Pakistan has

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been continually under the auxiliary changes and advancement stages since autonomy. Commercial banks showed a remarkable growth and also the administration procedure of banking was in row with the international matchless practices. Visible variations in the concentration, ownership and structure in banking sector were brought by the process of merger/consolidation and the privatization of the public banks (state bank of Pakistan, 2009).

Monetary policy does not set in a vacuum. It is the interest rate which reflects the basic essentials of economy. More widely, the level of equilibrium real interest rate is quite low during the severe recession. Comparing with the low inflation and low equilibrium; real interest decoded into low nominal interest rate.

Afterward the great financial disaster, the association of monetary policy (MP) and financial performance of banks had gained importance because economy became sagged. In the developed economies, short-term interest rates had declined to almost zero, while log-term interest rates declined historically to low level. It doesn't mean that the only influence of the monetary policy is interest rate, but it has a major on it. It is the Central bank which set the short and long-term rates for achieving the desire objective. The view that prolonged and exceptionally accommodative monetary easing can be counterproductive, as it can set back the necessary restructuring of balance sheets in short-run and in long-run, erode reliability of the central banks.

Changes in interest rates and level of spending were caused by the circulation of money (Sims, 1992). For the financial stability and growth to attain, the circulation of money is to be limited. Most orthodox theories were focused on the supply of money (Plasser & King,1984; Schwartz & Fiedman,1963). However up to the minute speculation of monetary policy underlines the role of commercial banks in policy.

Research Gap

Notwithstanding extensive research on Monetary Policy, significant gaps remain in understanding its impact on conventional banking. Past Studies analyzed different variables like interest and lending rates but there is limited exploration of the combined influence of interest rate spread (IRS), deposit rate on profitability metrics like ROA and ROE (Claeys & Vander Vennet, 2008). Albertazzi & Gambacorta, (2009) explained the role of IRS and it influence on bank's profitability. Agergis & Christou, (2015) revealed that limited papers considered structural breaks caused by economic crisis, which can disrupt linear relationships in the transmission of policy. Moyo *at el.,* (2014) studied the bank specific factors like size, capital adequacy and efficiency are rarely integrated,

despite their role in amplifying or mitigating MP effect. Responding to these gaps with comprehensive, data-driven approaches will provide deeper insights into how conventional banks respond to MP changes across varying economic situations.

Research Questions

➢ How monetary policy variables effect the bank's financial performance.
➢ Whether macroeconomics variables have influence on bank's financial performance.

Research Objectives

• To check the influence of monetary policy on bank's financial performance.
• To investigate the impact of macroeconomics variables on bank's financial performance.

Literature Review

Commercial banks are exposed to both external and internal factors that's why determinants of bank profitability are divided into different factors. Banks internal factors are those which are influenced by the policies and management decision, because it is the management which affects the results due to differences in the policies, objectives and decision, because it is the management which affects the results due to differences in the policies, objective and decision of the bank operating results. Various studies specify the profitability measures (dependent variables) as return on assets (ROA), return on equity (ROE), return on capital employed (ROCE) and net interest margin (NIM).

Buch *et al.,* (2014) scrutinized the impact of shock on the representative (median) banks and on individuals' bank by using the cross-sectional regression. The results revealed that bank-level features explained differences in banks' response to macroeconomic shocks. There is a significant relation among variables.

Otuori (2013) examined the impact of exchange rates on performance of the conventional banks in Kenya to ascertain the link between bank profitability and inflation rate. The results showed that inflation rate had significant but negative outcome on banks' profitability at the level of confidence was 5%. Nadeem and Kanwal (2013) investigated that there was a constructive impact of real interest rate on

ROA while Athanansolglou *et al.,* (2006) bared that the interest rate had an undesirable influence on banks' profitability.

Riaz (2013) inspected the influence of bank's specific determinants and macroeconomic variables on banks' profitability for the period 2006-2010 in Pakistan. ROA is used as independent variable and derived the results that credit risk and interest rate had substantial impact on banks' profitability.

There are limited studies which engrossed the impact of interest rate on bank's profitability. Dale (2012) implied that net benefit of prolonged monetary policy might be declining due to its negative side effects. Khan (2012) studied the consequence of unexpected fluctuations in monetary policy on inflation by estimating structure of VAR. The study concluded that unexpected changes had impact on inflation rate. Rao and Lakew (2012) used Panel data to study the determinants of profitability for the year 1999-2008 on Ethiopia commercial banks. This study suggested that external factors had statistically insignificant impact on profitability and inflation as well. However, it was positively related to the banks' profitability.

Sufian and Kamarudin (2012) conducted a study which included 13 commercial banks in Bangladesh for the year 2000-2010. Multiple regression analysis was deployed for identification of elements. The conclusion exhibited that there was noteworthy and negative connotation between the economic growth and bank's performance, while there was positive and noteworthy impact on the coefficient of inflation.

Alper (2012) investigated that non-interest income and bank-size had a confident influence on banks' profitability but size of credits portfolio and loans had adverse effect on banks' profitability. Macit (2011) inspected the commercial banks of turkey and used ROE &ROA as a measure of profitability with macroeconomics variables and bank specific variables. The outcomes concluded that the bank-specific indicators of profitability and the ratio of non-performing loans to total loans had substantial but undesirable impact on profitability.

Scott and Arias (2011) analyzed that profit was profit was not directly exaggerated by the Gross Domestic Product (GDP) growth in the US banking sectors and give the reason that GDP is an inflation adjusted measure. Sufian (2011) concluded that there was a negative influence of GDP on ROA, but on inflation it was positive. Internal and external determinants were used like inflation rate, the results showed that external factors had no influence on banks' profitability whereas internal factors had influence on profitability of commercial banks. Korean commercial banks had been scrutinized by Sufian (2011) during year (1992-2003) used

linear regression. The outcome showed adverse impact of Gross Domestic Product (GDP) on ROA, but had constructive impact on inflation.

Saksonova and Solovjova (2011) checked comparative analysis of 5 largest Latvian commercial banks during economic crisis. The outcomes exhibited that GDP had positive impact on profits but inflation had negative impact on ROA. Ramadan *et al.,* (2011) investigated the profitability of conventional banks in Jordan by using the panel dataset. The study exposed that inflation rate and economic growth had optimistic irrelevant result on ROA by considering 100 observations of banks from year 2001-2010.

Methodology

Monetary Policy fundamentally works through its direct outcome on the short-term interest rate. State Bank of Pakistan controls the interim interest rates very closely through its policy rate. Short-term interest rate on large-scale operations in government securities specifically had an impact on their prices. Balance sheet is a common example.

This section will describe the data and methodology covering the 11 years period from 2005 to 2015, with the sample of 10 conventional banks in Pakistan. Conventional banks include both public and private banks. Data used in this research was taken from the State Bank of Pakistan (SBP) website, yearly reports of commercial banks and Pakistan Stock Exchange. Lending rates, deposit rate, interest rate spread, GDP growth and inflation rates data were obtained from the Economic Survey of Pakistan (2014-2015), World Bank (WDI,2015).

Empirical analysis has been started by using the following model in accordance with the literature.

$$Y_{it} = a_i + \beta 1 M_t + X_{it}\lambda + Z_{ty} + \mu_t + \varepsilon_{it} \qquad (1)$$

Where Y_{it} = ROA and ROE for the bank i at time t; μ_t = year specific effect; a_i = individual distinct effect; X_{it} = size, Liquidity and debt to equity ratio are the bank specific variables; ε_{it} = Error term

M_t = Monetary policy measure proxies by the lending rate, interest rate spread and deposit rate; Z_{ty} = GDP growth and Inflation are macro-economic factors; i = 1 to 10 banks; t = time from 2005 to 2015.

In this study small and large banks have been included so to show that whether monetary policy effect small or large banks. For this reason, all banks have been categorized on the basis of total assets. So, this model has been extended and introduce a dummy variable so the extension of the model is

$$Y_{it} = a_i + \beta 1 M_t + X_{it}\lambda + Z_{ty} + \mu_t + D_{it} + \varepsilon_{it} \qquad (2)$$

For the bank size a dummy variable is inserted as Dit^{banksize}. The data is spilt into two set assigning the 0 for small banks and 1 for large banks. Dit^{banksize} take value 1 for ith bank in year t, if resources are greater than the average of the resources of all the banks in year t, and zero otherwise.

Results

Descriptive Statistics

Lending rate mean value is 12.12 & its standard deviation is 1.96. It means that there is variation in monetary policy indicators. It shows annual increase with low variation of 1.96. In the same way, mean value of deposit rate and interest rate spread are 6.59 and 5.54 respectively & their standard deviation is 1.83 and 1.21 respectively. It shows that there is variation in the indicators of the monetary policy and affect the bank's profitability.

Mean of the Bank size is 19.01 and standard deviation is 1.72. This indicate that diversification exists in the values of bank size. The results show consistency with the literature. Alper (2012) investigated that non-interest income and bank-size had a constructive influence on the banks' profitability but credits portfolio and loans sizes had undesirable influence on banks' profitability

ROA has mean value of 1.03 and standard deviation is 1.45 So less diversification exists in the values of ROA. Annual increase of 1.03 in return on assets with low variation of 1.45 is showing low returns with less variation. The results show consistency with finding of Macit (2011). Mean of the return on equity is 44.09 and its standard deviation is 209.73. The fallouts are not reliable with past studies it may be of due to banks size or others.

Table 1 *Descriptive Statistics*

Variables	Mean	Std Dev	Min	Max
Lr	12.12	1.96	8.37	14.5
Dr	6.59	1.83	2.5	8.7
Irs	5.54	1.21	2.37	6.8
ROA	1.03	1.45	-4.88	10.09
ROE	44.49	209.73	-32.95	2269.64
Size	19.01	1.72	12.16	21.48

Correlation Analysis

A strong positive correlation exists among lending and deposit rates while a negative correlation has been recorded between deposit rate & interest rate spread.

Regression Analysis

The study regresses the lending rates on bank's specific features with lending rates as MP indicators & GDP and Inflation rates as macroeconomic indicators. The co-efficient of lending rate is positive and statistically significant. So, it means major impact of MP exists on banks' profitability. Similarly, inflation rates is positive and significant. It shows that if inflation increases by 1% then the banks' profitability will increase by 0.128%.

Size of the banks appear positive and is statistically substantial effect. Bank size projected coefficient shows that if the banks' size increases by 1% then gradually the profitability will increase by 0.394%.

Deposit interest rates appears negatively but statistically significant. Deposit rates estimation suggests that if 1% increase occur in the deposit rates, then definitely banks profitability will decline by 0.134%. The negativity shows that monetary policy has an influence on the banks' profitability.

Table 2 *Correlation Analysis*

Variables	Lr	Dr	Irs	ROA	ROE	Inflation	GDP	Size
Lr	1.00							
Dr	0.796 0.000	1.000						
Irs	0.419 0.000	-0.217** 0.005	1.000					
ROA	-0.168** 0.033	-0.232** 0.003	0.067* 0.396	1.000				
ROE	-0.001* 0.994	0.013 0.872	-0.015 0.855	0.088** 0.264	1.000			
Inflation	0.658** 0.000	0.358 0.000	0.521 0.000	-0.074* 0.352	-0.048* 0.545	1.000		

GDP	-0.843 0.000	-0.856 0.000	-0.071* 0.362	0.214** 0.006	0.039 0.618	-0718 0.000	1.000	
Size	0.409	0.190	0.001	0.000	0.084	0.011	0.786	

**Correlation is significant at the level of 0.01 level (2-tailed)
*Correlation is significant at the level of 0.05 level (2-tailed)

Hausman Test
Fixed Effect Model

The study regresses the lending rates on banks specific characteristics with lending rates as MP indicators & GDP and inflation rates as macroeconomic indicators. The co-efficient of lending rate is constructive and noteworthy. So, it means a major impact of MP exists on bank's profitability. Similarly, inflation rates are positive and is statistically significant. Hence if inflation increase by one (1%) then the profitability may increase by 0.128%. Growth of the GDP is also statistically significant. Similarly, Bank's size appears positive and statistically significant. Resultantly, profitability will increase by 0.394% when bank's size increase by 1%.

The study regresses Return on Equity (ROA) on bank specific characteristics on deposit rates as a MP indicators & GDP and inflation rates as a macroeconomic factor. All the variables are statistically significant.

The study also regresses interest rate spread as a MP indicator on bank specific and macroeconomic indicators. Interest rate spread coefficient seems positively and statistically insignificant. All other variables are statistically significant and have impact on bank's profitability.

Table 3 *Fixed Effect Model*

ROA	Model 4a	Model 4b	Model 4c
Lr	0.032 (0.023) **	-	-
Dr	-	-0.134 (0.002) **	-
Irs	-	-	0.117 (0.388)

Inflation	0.128 (0.000) ***	0.106 (0.017) **	0.104 (0.014) **
GDP growth	0.442 (0.000) ***	0.261 (0.162)	0.380 (0.000) ***
Size	0.394 (0.000) ***	0.407 (0.000) ***	0.413 (0.000) ***
Constant	-9.613 (0.000) ***	-7.554 (0.003) ***	-9.667 (0.000) ***

Represent significant level at 10%. Numbers in Parenthesis represent p-values.

Represent significant level at 5%.

Represent significant level at 1%.

Classification of Banks

Table 4 *Bank's Classifications*

ROA	Model 5a	Model 5b	Model 5c
Lr	-1.897 (0.004) **	-	-
Lr * $D_{it}^{\text{Bank size}}$	0.098 (0.003) ***	-	-
Dr	-	-2.067 (0.002) ***	-
Dr* $D_{it}^{\text{Bank size}}$	-	0.101 (0.003) ***	-
Irs	-	-	-0.030 (0.977)
Irs* $D_{it}^{\text{Bank size}}$	-	-	0.008 (0.873)
Inflation	0.139 (0.000) ***	0.120 (0.009)**	0.118 (0.008) ***
GDP growth	0.412 (0.001) ***	0.259 (0.184)	0.417 (0.000) ***
Size	-0.725 (0.071)*	-0.182 (0.431)	0.434 (0.159)
Constant	-12.738 (0.123)	-3.779 (0.439)	-10.306 (0.089) *

Represent significant level at 10%. Numbers in Parenthesis represent p-values.

Represent significant level at 5%.

*** *Represent significant level at 1%.*

Banks were classified on the basis of their assets. The study examines 10 banks. For this purpose, a dummy variable (Dit) Bank size has been included. D1 is used for the large banks and D0 for small banks.

The connection of the dummy variable & lending interest rate looks constructive and significant statistically. It specifies that influence of MP is weaker on large banks. The co-efficient of lending interest rate is undesirable but statistically significant. This shows that when monetary policy is tight then the small banks are more effected and reduce their lending. So, lending rate affects directly profitability of banks and their profitability decreases.

Conclusion

There are various aspects which affect bank's profitability. Monetary policy is one of tools which regulate the banking sectors. The review is contributing to the past studies. When the monetary policy is tight then the small banks exert more pressure than large banks because of going concern. Actually, lending of the small banks will be reduced to maximum level. The research covers the period from 2005-2015. For statistical analysis, fixed-effect and random-effect technique has been used. The research use lending-interest rate, deposit interest rate and interest rate spread independent variables and also as a monetary policy indicator. GDP growths & inflation are used as macro-economic indicators and profitability as a dependent variable. The fallouts demonstrate that significant influence of MP exists on profitability of banks. There is an inverse relation between them. It also provides evidence that large banks are not affected too much on change of monetary policy. However small banks are affected too much and eventually the lending of the banks reduces. It is derived that lending interest rate has significant impact on banks' profitability in case of ROA. On the other hand, lending-interest rate has no noteworthy influence on the profitability in case of ROE. Similarly deposit interest rate has noteworthy impact on the profitability in case of ROA while in case of ROE, the impact is almost insignificant. The hypothesis H1 cannot be rejected because lending rates has a noteworthy impression on profitability of banks. So, the fixed-effect model is appropriate. If lending of the bank is increasing, then the profitability will be increasing. Interest rate spread has no substantial impression on profitability both in ROA and ROE.

Size of banks also play a crucial role in the profitability. Bank-size has positive influence on banks' profitability in case of ROA. Banks large in size has greater profitability. While in case of ROE as a profitability indicators size has a undesirable impact on the profitability. It also provides a space for the researchers. Liquidity of banks also has important role in profitability. If banks have more cash in hand, they have the opportunity to invest it. The study also investigates that when liquidity of banks' increases, then profitability of banks is parallel to increase.

Policy Implication

Firstly, and foremost, when the monetary policy is stable then banks are not affected. Small banks are further affected by the MP because they have to compete with others. It has been seen that when banks do not survive then often merger and acquisition take place. So, any change in MP indicators can affect the banks' profitability and may directly affect the economic activity. Interest rate should be stable and this will directly stabilize the profitability of banks. As banks are the direct target of the monetary policy. The MP variables are very sensitive to the banks' profitability. The policy should be announced in such a way that it creates a soft and flexible interest rate environment. When banks are profitable, then economic activities will take place like investment opportunities. So, it is a circle which are affected by monetary policy. Macroeconomic variables are also play a vital role. The authority has to achieve the target. When the monetary policy is in the formulation stage, the authority also has to focus the effect of macroeconomic variables. When GDP growth is increasing, it means the economy is on the right path. So, the economic activities are taking place and this will reduce the level of unemployment.

References

Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Financial Stability, 5*(4), *393–409.*

Alper, D., & Anbar, A. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey, *Business and Economics Research Journal*, 2(2), 139-152.

Alper, K., (2012). An empirical study on liquidity and bank lending. *Central bank of the Republic of Turkey, Working Paper, 4*

Athanasoglou, P.P., Delis. M. D., & Staikouras, C. K. (2006). Determinants of Bank Profitability in the South Eastern European Region. *Journal of Financial Decision Making*, 2(3), 1-17.

Buch *et al.,* Macroeconomic factors and microlevel Bank behavior, *Journal of Money, Credit and Banking,* 469(4), 715-751

Claeys, S., & Vander Vennet, R. (2008). Determinants of bank interest margins in Central and Eastern Europe: A comparison with the west. *Economic Systems,* 32(2), 197-216.

Claeys, S., & Vander Vennet, R. (2008). Determinants of bank interest margins in Central and Eastern Europe: A comparison with the West. *Economic Systems, 32*(2), 197–216.

Dale, S., (2011). Productivity and monetary policy, Speech at the South Tyneside manufacturing forum. http://www.bankofengland.co.uk/publications/documents/speeches/2011/speech519.pdf

Gambacorta, L. (2008). How do banks set interest rates? *European Economic Review, 52*(5), 792–819

Hussain, H and Bhatti, G.A, (2010). Evidence on Structure Conduct Performance Hypothesis in Pakistani Commercial Banks, *International Journal of Business and Management*, 5(9), 174-187

Kanwal, S., & Nadeem, M. (2013). The impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan. *European journal of business and social sciences,* 2(9), 186-201.

Khan, A. (2012). Economic and educational issue of Pakistan. Retrieved from blogspot: http://ahsankhaneco.blogspot.com/2012/04/role-of-commercial-banks-in-economic.html

Macit, F., (2011). "Who responds more to monetary policy, conventional banks or Participation banks?", *Journal of economics, finance and administrative science*, 17(33).

Moyo, V., Nandwa, B., Oduor, J., & Simpasa, A. (2014). Financial sector reforms, competition and banking system stability in sub-Saharan Africa. International Review of Economics & Finance*, 31*, 244–256.

Ongore, v., (2013). Determinants of financial performance of commercial banks in Kenya, *International journal of economics and financial issues*, 3(1).

Otuori, (2013). Effect of Macroeconomic Factors on Commercial Banks profitability in Kenya: Case of Equity Bank limited, *Journal of Economics and Sustainable Development,* 5(2), 46-56

SBP (2009). State Bank of Pakistan, Banking Sectors Supervision in Pakistan. Available online at: http://www.sbp.org.pk/about/ordinance/supervision,html

Sims, C. A., (1992). Macroeconomic and reality. *Econometrica*, 48(1), 1-48.

Plosser, I., & King, R. C. (1984). The behavior of money, credit and prices in a real business cycle. *National Bureau of Economic Research Cambridge*, 74(3), 363-380.

Riaz, M. W. (2013). Effect of financial leverage on firm performance: Empirical evidence from Karachi Stock Exchange. *Shaheed Benazir Bhutto University Sheringal*.

Ramadan, I. Z., Kilani, Q. A., & Kaddumi, T. A. (2011). Determinants of bank profitability; Evidence from Jordan. *International journal of Academic Research*, 3(4), 76-89.

Roa, K. R. M., & Lakew, T. B. (2012). Determinants of Profitability of commercial banks in a developing country; Evidence from Ethiopia. *International Journal of Accounting and Financial Management Research,* 2(3), 1-20.

Scott, J. W., & Arias, J.C. (2011). Banking profitability determinants. *Business Intelligence Journal,* 4(2), 209-230.

Sufian, F. (2011). Profitability of the Korean banking sector: Panel evidence on bankspecific and macroeconomic determinants. *Journal of Economics and Management*, 7(1), 43-72

Saksonova, S., & Solovjova, I., (2011). Analysis of the Quality and Profitability of Asset in the Banking System and the Impact of Macroeconomic Factors on its Stability-Case of Latvia. *International Conference on Applied economics*, (pp. 537-548).

Sufian, F., & Kamarudin, F. (2012). Bank-specific and macroeconomic determinants of profitability of Bangladesh's commercial banks. *Bangladesh Development Studies*, 35(4), 196-215