



Role of Credit Information Sharing and the Funding Cost of Banks: Evidence from the Top Ten “AA Rating” Commercial Banks of Pakistan

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Purpose- The objective of the study is to investigate the relationship between the credit information sharing and the funding cost of banks of the top ten “AA rating” commercial banks of Pakistan as the Commercial banks also play a significant role in the economy of every country.

Design/Methodology- In this study, panel data were analyzed from 2011 to 2017. We selected the top ten “AA rating” banks from Pakistan credit rating agency (PACRA) website, and data related to another related variables are obtained from financial statements of the respective banks. Generalized Method of Moments (GMM) statistical technique was employed to measure the relationship among related variables.

Findings- The result of the study shows that there is a negative and significant relationship between credit information sharing, operation efficiency, and funding cost. On the other side, profitability has a positive and significant relationship with the funding cost of the bank.

Practical Implications- To manage the funding cost policymakers must focus two key findings which are credit information sharing and operational efficiency of bank and set up a credit information sharing institutions which help to reduce information irregularity and ultimately manage the funding cost of the banks.

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Introduction

In the modern world, commercial banks are the key component of the financial sector and play an important role to increase economic growth in every country. Trade and commerce would become slow down if the banks did not actively discharge their financial activities. Therefore, banks emerge as a significant part of the modern economy. Banks provide industrial, agricultural, and commercial consultancy, loan, and facilitating the process of economic development. Tiwari et al., (2013) investigate a relation among return on equity ratio, the return on assets ratio and net interest margin and found an upward trend after the establishment of a credit bureau in 2010 to 2014, while this trend was downward during 2006 to 2009. Non-performing loans were stayed below at 5% from 2005 to 2010, for the same tenure, the net margin was more than 6%. Ndungo et al., (2017) explore the differences in measured efficiency, including differences in size, specialization, other bank characteristics detected by numerous possible sources.

According to the Vyas et al. (2008) study of commercial bank capital, non-interest income, and net interest margin impact on funding cost as well as bank performance and find a positive relationship in banking variables and funding cost because the bank also increases their capital to plan loans for other financial institutions or banks. Almazari (2013) inspected the impact of capital adequacy on the bank's loan cost and profitability. The result of the study describes that an increase in capital adequacy will have a significant impact on the bank's loan cost (Anbar and Alper, 2011) the argument about the effect of bank interest rate on the profitability, because bank profit depends on return on equity and returns on assets as a function of bank-specific and macroeconomic determinants. In many countries around the globe, financial sector facilitates economic growth and development but this segment faced various problems among them the most crucial one is the credit risk. Financial crises of 2007 caused massive credit losses to credit risk exposure. Many empirical studies recommend that sharing of credit information decreases adverse selection of the banks, moral hazard and serves as an inspiration for repayment of loans which turn to reduce non-performing bank loans and enhance bank asset quality (Pagano and Jappelli, 1993; Powell et al., 2004; Doblas-Madrid and Minetti, 2013; Brown and Zehnder 2007; Padilla and Pagano, 2000).

In previous studies, several variables were used which effect the funding cost of the banks, like capital adequacy, inflation, gross domestic product (GDP), quality information, bank performance, etc., These variables were studied in cross-sectional form of data, although few studies also focused on panel countries analysis excluding Pakistan, therefore as per our information it is the pioneer study which analyzed the top ten "AA Rating" bank of Pakistan. Secondly, this study targets the role of credit information sharing by using the proxy of private bureau information along with some other variable, which includes bank size, capital adequacy, profitability, and operation efficiency. Additionally, this study applied two different statistical techniques to investigate the relationship among the target variable, which includes fixed and random effect OLS and dynamic GMM approach.

Literature Review

The previous studies on the subject used the pecking order theory of finance and expect a positive relationship between funding cost and capital adequacy. This theory argues that equity capital is the most expensive source of funding and indicating that an increase in equity capital also increases the funding cost of a firm (Dietrich & Wanzenried, 2011). Uncertain information of financial market creates a negative impact and increase the distrust and risk as well. However, the credit rating theory is beneficial to analyze the strength of the financial market (Gehrig & Stenbacka, 2007). The countries which significantly enhance the organizational performance as well as maintain good standards of accountability are positively correlated with significant confidence on equity financing by the investors in the country (Meo et al., 2018).

The study of Vins & Bloch (2008) investigated those elements that resolve local bank's funding cost. They analyzed the panel data of more than eight hundred German, confined banks, from 1998 to 2004 and found that there is a strong relationship between bank size and funding costs. Kishan & Opiela (2000) analyzed the association among the credit channel and a banking size in the US from 1980 to 1995. Their finding suggests that debt of bank affect the volume of assets and ratio of capital leverage, which significantly affect bank size on funding cost as well. Another findings of Aruwa & Mohammed (2011) explored the effect of capital adequacy on the monetary performance of Nigerian banks. They collected data from 1997 to 2011 and employed the ordinary least square method of regression and find an insignificant effect of capital adequacy on the credit financial performance of banks. Akhmedjonov and BalciIzgi (2015) conducted a study for the period of financial crises of 2008-2009 to inspect that maximum credit was getting as funding of upper bank capital among Turkish banks. This study used the average smallest amount to measure the constant impacts and comprehensive way of moment estimator strategy and found that capital of tops bank had a significant effects on the profitability of bank. Kwan & Eisenbeis (1997) present equation framework to measure relationships among banks credit funding rate and credit risk. They used regression analysis to identify the impact between operating efficiency and funding cost. Findings of the study showed a positive relationship between operating efficiency and funding cost. A measure of performance of the bank depends on the efficiency of the firm and the market in which these firms operate, it is also known as financial health or financial stability of the financial sector (Ali et al., 2019).

Berger & Hannan (1998) focused on market authority and their characteristic of operational efficiency in the banking sector. This study analyzed the data of 233 banks and employed regression analysis to measure the relationship between the variables. Findings of the study described that there is a positive impact of operational efficiency on market power and performance of the banks. Gul et al. (2011) analyzed the data of the best 15 Pakistan profitable banks from 2005 to 2009 to measure the association between bank credit cost and its profitability. This study applied the pooled ordinary least square method to investigate the impact of the special rate of banking credit interest on the profitability of the bank. The results describe that credit has a strong influence on profitability. Kosmidou (2008) conducted a study to examine the performance of Greek banks of EU financial integration during the period 1990 to 2002. The study analyzed an unstable pooled time series dataset of 23 banks to measure the impact of profitability by utilizing, interest rate. The finding shows that the high rate of return (ROA) has a strong impact on profitability while increase in profitability decreases the credit ratio of the bank.

Methodology

Variables and Data Source

Sample data of the study consist of a panel of banks from 2011 to 2017. Data related to banks rating were collected from Pakistan credit rating agencies (PACRA), and data associated with the targeted variables of the study were obtained from the annual financial statements of the relative commercial banks. The present study focused only AAA, AAA+, AA+, and AA rating banks such as MCB, Allied, Habibmetro, Bank Al Habib, Askari, Standard Chartered, National, Alfalah, Faysal and Bank of Punjab. In this study, funding cost is our dependent variable, while the explanatory variable includes Bank size, Profitability, Capital adequacy, and Operating efficiency. There are many other types of research around the globe, which have study these variables (Kishan & Opiela, 2000; Pradhan & parajuli, 2017).

$FC = f(\text{Private Bureau, Bank size, Profitability, Capital adequacy, and Operating efficiency})$

Table 1 - Variables description and sources

Variable	Description	Units	Source
PB	Private bureau	General figures	WDI
FC	Funding cost	General figures	Financial Statement
BS	Bank size	Value	Financial Statement
CA	Capital adequacy	General figures	Financial Statement
PR	Profitability	General figures	Financial Statement
OE	Operational efficiency	General figures	Financial Statement

An econometric model of the study is.

$$Fc_{it} = \beta_0 + \beta_1 (Pb_{it}) + \beta_2 (Bs_{it}) + \beta_3 (Ca_{it}) + \beta_4 (Pr_{it}) + \beta_5 (Oe_{it}) + \mu_{it} \dots\dots\dots(1.1)$$

Where

- FC = Funding cost Total interest expenses/total deposits
- PB = Private bureau Score
- BS = Bank size Total deposits
- CA = Capital adequacy Total equity/total assets
- PR = Profitability Net profit/average equity
- OE = Operation efficiency Operating expenses/total income
- i* = Country in the panel
- t* = Time period
- $\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients of the sloop

Generalized Method of Moments (GMM)

The system of GMM is established by (Arellano & bover, 1995) method is measured further better than difference GMM (Bond et al., 2001) unobserved heterogeneity can be rectified by this method, committed variables, measurement fault and possible endogeneity that regularly influence funding cost. We can use GMM for time series, panel, and cross-sectional data. The model is efficient when we have less period and more cross-sectional. There must be five-year data for applying in the GMM model (Arellano & bover, 1995). Indifference, GMM employs small tell stats to use for small sample adjustment and report-t instead of 2-statistic and the chi-square test instead of the F test. In this model, the study can use AR1 and AR2 as a serial correlation, and it must be less than 0.5 (Arellano & bover, 1995). There are multiple analyses we can use if we need such as Homoscedasticity, cross-sectional, Linear Factor Models, and Sargan Test of Over-identifying Restrictions. GMM provides more reliable judgments by using the tools which are getting to the orthogonally situations that were present in the lagged variable and error term (Arellano & Bond, 1991; Arellano & bover, 1995).

Consider the following regression equation:

$$y_{it} - y_{it-1} = (\alpha - 1)y_{it-1} + X_{it}\beta + n_{it} + y_t + \varepsilon_{it} \dots\dots\dots(1.2)$$

Where *y* is the logarithm of Funding cost, *X* presents the range of descriptive variables other than insulated Funding cost, η is an unnoticed banking specific effect, γ is a time-specific effect, ε is the i.i.d. Error term, and the subscript “*i*” and “*t*” is bank and period, respectively. Equation (1.1) can be rewritten as:

$$y_{it} = \alpha y_{it-1} + X'_{it}\beta + n_i + y_t + \varepsilon_{it} \dots\dots\dots(1.3)$$

And to remove the bank-specific effects, Equation (1.2) is taken as first differenced, like the following:

$$\Delta y_{it} = \alpha \Delta y_{it-1} + \Delta X_{it}\beta + \Delta y_t + \Delta \varepsilon_{it} \dots\dots\dots(1.4)$$



To utilize this tool is compulsory to use for with firstly the likely endogeneity of the descriptive variables, and secondly, difficulty resulted from the establishment of the latest error term, $\Delta\varepsilon_{it} = (\varepsilon_{it} - \varepsilon_{it-1})$ that is connected with the lagged dependent variable, $\Delta y_{it-1} = (y_{it-1} - y_{it-2})$. If we assume, (a) error term, ε , is not regularly linked, and (b) the descriptive variables, X , are inadequately exogenous i.e., the descriptive variables are understood to be orthogonal to prospect realizations of the error term), the GMM dynamic panel information estimator uses the following moment conditions:

$$E[y_{it-s}\Delta\varepsilon_{it}] = 0 \text{ for all } s \geq 2, t = 3, \dots, T \dots \dots \dots (1.5)$$

$$E[X_{it-s}\Delta\varepsilon_{it}] = 0 \text{ for all } s \geq 2, t = 3, \dots, T \dots \dots \dots (1.6)$$

The GMM estimator depends upon above mentioned moment conditions is said to be different estimator (or difference GMM).

Results & Analysis

Table 2 - Descriptive statistics

Variable	BS	CA	FC	OE	PR	PB
Mean	0.06	0.06	0.11	2.21	0.30	3.95
Median	0.05	0.06	0.10	1.89	0.29	4.50
Maximum	0.02	0.14	1.20	8.60	0.58	6.70
Minimum	0.02	0.03	0.00	0.34	0.03	1.80
Std. Dev.	0.03	0.02	0.13	1.50	0.11	1.85
Skewness	1.97	0.93	7.32	2.38	0.05	0.08
Kurtosis	7.67	2.73	58.87	9.45	2.81	1.43
Jarque-Bera	107.71	10.39	9732.14	187.62	0.13	7.19
Probability	0.00	0.00	0.00	0.00	0.93	0.02

Table 2 is showing the result of descriptive statistics indicating that funding cost average value 0.11 with a standard deviation of 0.13 and maximum and minimum values 1.2 and 0.001, respectively. The above values of descriptive statistics describe the general qualities of data which includes, minimum, maximum values of the data utilized in this study, similarly standard deviation, skewness, kurtosis, jarque-bera.

Table 3 - Correlation Matrix

Variables	FC	BS	CA	OE	PR	PB
FC	1.00					
BS	0.27	1.00				
CA	-0.21	-0.01	1.00			
OE	0.06	0.14	0.37	1.00		
PR	0.07	-0.10	-0.12	-0.40	1.00	
PB	0.50	0.47	-0.08	0.05	-0.09	1.00

The above Table 3 showing the details of correlations of the among the all the variables of this study. Correlation describes the strength and direction of the relationship between the variable. The probability value is under 5%, then the relationship between variable is significant.

Table 4 - Fixed & Random Effect OLS and GMM

Variables	Fixed effects	Random effect	GMM
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Funding Cost L-1 ¹	-	-	-0.42 (0.04**)
Private Bureau	-0.85 (0.05)	-0.19 (0.00)	-0.16 (0.04**)
Bank Size	-1.42 (0.00*)	-0.68 (0.08*)	-1.45 (0.11)
Capital Adequacy	-0.80 (0.53)	-0.40 (0.01)	-0.82 (0.15)
Operation Efficiency	-0.10 (0.31)	-0.01 (0.62)	-0.13 (0.02*)
Profitability	0.04 (0.01)	0.05 (0.07)	0.05 (0.08***)

Note: *, ** and *** indicates level of significance at 1%, 5% & 10% respectively.

¹Funding cost is the dependent variable

Table 4, shows the results of the study, our appropriate methodology is GMM, and results are reported in column 4, but we have also reported OLS Fixed, and Random effects result for comparison purpose. Above results of the study explain that impact of the private bureau and operation efficiency on the funding cost is negative and significant which describe that private bureau information sharing decrease the funding cost and enhance the assets quality of the banks. The role of bank size and capital adequacy is also negative, but significant, however role of the profitability is positively significant.

Discussion

The results of this study explored negative relationship among credit information sharing and the funding cost, this relationship among the variable explored that sharing of information reduces the funding cost and ultimately enhance the performance and assets quality of the banks. These findings follow the arguments of prior study of Kusi et al. (2017). Secondly finding of the research also support results of the Harris et al., (2013) they also investigate the negative relationship among funding cost and operation efficiency. Similarly, Dietrich et al., (2004) also find out positive and significant relationship with profitability of the bank and the funding cost as well.

Conclusion

The objective of this study was to analyze the role of credit information sharing and the funding cost of “AA rating” top ten banks of Pakistan. Banks provide industrial, agricultural, and commercial consultancy, loan, and facilitating the process of economic development and to achieve this goal funding cost of the bank is the crucial factor. Funding cost of the banks is affected by several internal and external elements, but this study targets the role of credit information sharing by using the proxy of private bureau information along with some other variable which includes bank size, capital adequacy, profitability, and operation efficiency.

Findings of the study explore that role of credit information sharing and operation efficiency on funding cost is negative and significant on the other side role of bank profitability is positive while the impact of other variable is not significant. To control the funding cost of the banks, policymakers must focus two key findings which are operational efficiency and bank size as well as and set up credit information sharing institutions which help to reduce information irregularity and ultimately manage the funding cost of the banks.

This study analyzes only private bureau information as the proxy of credit information sharing; the future researcher should also investigate the role of private as well as public bureau information. This research

collected data from the top ten banks of Pakistan; in the future, the wider sample size will help to obtain more accurate and reliable results.

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