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Bank Concentration And Firm Growth: Evidence From Pakistan

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Abstract

This study aims to study the bank concentration effect on the growth of Pakistani non-financial companies for the period, 2006 to 2017. The sample size consists of twenty-ninebanks. Profit, firm size and firm liquidity were taken as the control variables. The aggregate data of the firm growth and control variables was taken. The descriptive statistics, correlation and regression analysis were applied to generate and interpret the results. Results indicated the negative significant effect of profit and firm size on the firm growth while the firm liquidity depicted positive insignificant effect. The bank concentration was found to have significant positive effect on the firm growth suggesting that the high level of bank concentration may likely to decrease information asymmetry of bank with the borrowers thus having favorable impact on access of the firms to credit availability. Results of this study may also aid managers and academicians to better understand effects of bank concentration in stimulating the firm growth in different industries.

Key Words: Bank Concentration, Firm Growth, Profit, Firm Size, Firm Liquidity

1. Introduction

In a concentrated market, there are few large banks and they may likely exert their power in that market associated with low level of competition and so they provide loans at the high intertest rates [1] which suggests greater cost and firm risk. And this can negatively affect their investment and growth prospects [2].

Bank concentration is studied in relation to different firm characteristics like with the firm entry [3], new firms' size distribution [4] and firm investment [5]. However, the literature is deficient as how the banks' concentrated structure can affect the firm growth of different industries[6]. Therefore, this study aims to fill the underlying literature gapto examine the effect of bank concentration on different firms' growth.

2. Literature review

Considering 2008 to 2009 (post Lehman) eurozone crises and after the European banks' consolidation which resulted in enhanced level of bank concentration, a better comprehension of the firm growth along with its relationship with the extent of bank concentration is required that

may facilitate the policy makers to devise appropriate strategies conducive to the economic recovery [2]. Therefore, researches may be required to examine bank concentration effects on the firm growth to serve the macroeconomic objectives. In a study the positive effect of bank concentration on the firm growth was noted for financial inclusion level of less than 85 percent for the firms that had bank loans [7]. This result appeared against the intuition as bank concentration has favorable impact when credit charges are low associated with improved financial inclusion.

Bank concentration improves thefirms' growth in different industries which are in dire need to obtain financing by the provision of credit availability to the new entrants [8,9]. Therefore, bank concentration in terms of better credit access meets the firms' needs to acquire credit at attractive terms to finance their growth opportunities to achieve high growth.

As per the structure performance hypothesis, market power associated with the bank concentration leads to low credit supply at greater cost decreasing the firm growth while in parallel according to the information-based hypothesis the market power in concentrated banking sector decreases the information asymmetry to improve credit access encouraging to the firm growth [10]. Therefore, the structure performance hypothesis infers negative while information-based hypothesis implies positive effect of bank concentration on the firm growth.

As regards the control a number of studies highlight the relationship between profit and the firm growth.The profit-firm growth relationship can be explained on the basis of evolutionary theory with the argument of natural selection asserting that the firms survive and grow and less efficient firms lose market share and so following the mechanism of evolutionary selection, they exist the market. And hence, if profit is taken as the proxy of fitness, then probably the firms having more profit will also have more growth [11]. The profitable firms have tendency to more likely grow with high survival [12]. In a research based on the Turkish firms it was found that there is bidirectional relationship between profit and the firm growth, however, positive effects of profit on the firm growth were much stronger in comparison [13]. However, some studies have documented negative relationship between profit and the firm growth [14, 15].

The large firms in comparison to the small firms have low tendency to grow [16]. A negative relationship betweenfirm size and the firm growthcan be noticed [17].The small and young firms face financial constraints which with the passage of time relaxes that permits such small firms to experience faster growth and attain the desired size [18]. This implies negative effect of size on the firm growth. Thefirm growth sensitivity is greater against the firm cash flow highlighting that the firm growth is limited by the liquidity constraints implying the negative liquidity effect on the firm growth [19].The small younger firms have more growth but liquidity constraints hinder their growth which again suggests negative impact of liquidity on the firm growth [20, 21].

3. Methodology

3.1 Data Type

The study relies on secondary data of twenty-nine banks for 2006 to 2017 which is obtained from the State Bank of Pakistan (SBP) documents while aggregate data related to independent and control variables of non-financial companies are taken.

3.2 Variables

1. Bank Concentration

Bank concentration is taken as the independent variable and computed through Herfindahl-Hirschman Index (HHI). This is the measure of wide use [22] and is equal to the sum of squares of all firms' market share of a sector or industry [23].

$$H = \sum_{i=1}^{N} Si^2$$

where s_i is the market share of firm i of an industry and N equals to the total number of firms. If the percentages are taken as the whole numbers, then the range of the index can be up to 10,000 (100^2) and so the index will equal to

$$H = \sum_{i=1}^{N} Si^2 \times 10{,}000$$

According to the USA guidelines, 2010, related to mergers[1], an industry can be classified in any of the below given three groups based on the HHI index: -

- Score of HHI less than 1500 shows industry having no concentration.
- Score of HHI falling between 1500 and 2500 indicates medium concentration level.
- Score of HHI which is greater than 2500 shows high industry concentration levels.

2. Firm Growth

The firm growth may be attribute to the external factors like business combination or internal factors such as when a firm experiences growth in its existing level of assets [24].So, following this, the assets increase can be regarded as an appropriate proxy of the firm growth[25]. Moreover, the annual percentage increase or decrease in the total assets can be considered a convenient and inclusive measure of firm growth [26]. Therefore, we will use annual change in total assets as the proxy to measure the firm growth.

$$\text{Firm Growth} = \frac{\text{Current Year Total Assets} - \text{Previous Year Total Assets}}{\text{Previous Year Total Assets}}$$

3. Firm Size

Different studies have used the natural logarithm of total assets to measure the firm size [27, 28, 29]. Therefore, we will also apply the same measure to capture the firm size.

4. Return on Assets

The exiting literature regards Return on Assets as an important measure of the firm profitability [30, 31]. Therefore, we will follow and use the same measure which equals to the profit after taxes over the firm total assets.

5. Liquidity

Current ratio is the most common measure of the firm liquidity used in different studies [32, 33, 34, 35]. Therefore, we will use the same measure as the proxy of firm liquidity.

[1] "Horizontal Merger Guidelines" are available at The United States, Department of Justice.

3.3 Analytical Tools

Data are analyzed using the descriptive statistics, correlation and multiple regression analysis.The Ordinary Least Squares (OLS)and Maximum likelihood (ML) are the main methods used to estimate the results but OLS is widely used as it is appealing and applies simple mathematics. OLS is popular and powerful estimation method due to its statistical properties desired in the analysis. Furthermore, intercept estimators and slope parameters of OLS and ML are identical in respect of normality though the error term variance estimators of OLS and ML are different, however, in case of large samples, both of these estimators have convergence. For this reason, we will apply the OLS estimation method [36].

3.4 The Econometric Model

The econometric model will be estimated through the following equation consisting of independent, dependent and control variables.

$$FG = \alpha + \beta_1 BC + \beta_2 ROA + \beta_3 FS + \beta_4 LIQ + \varepsilon$$

Where;

FL = Firm Growth

BC = Bank Concentration

ROA = Return on Assets

FS = Firm Size

LIQ = Firm Liquidity

ε = Error Term

4. Results

The data obeys normal distribution as the p-value of Jarque-Bera normality test is greater than the significance level of 0.05, therefore, the null hypothesis of normality is accepted. There is also no issue of multicollinearity in the data as no individual VIF value is greater than 10. Moreover, if the correlation coefficient value exceeds 0.9 between the independent variables, then it indicates the multicollinearity [37]. As can be seen, no individual value of correlation coefficient is greater than 0.9, hence, again it can be confirmed that the data has no multicollinearity problem. The heteroskedasticity is checked using the Breusch-Pagan/Cook-Weisberg test. The null hypothesis of the test states that there is no heteroskedasticity. The p-value of this test is 0.6356 which is greater than the significance level of 0.05. Therefore, the null hypothesis is accepted and there is no issue of heteroskedasticity in the data. The Breusch-Godfrey LM test is used to detect autocorrelation in the data. The p-value of this test is greater than the significance level of 0.05 due to which the null hypothesis of no autocorrelation is accepted. So, the data also has no autocorrelation problem.

Table 1: Multicollinearity Statistics

Variable	VIF	1/VIF
ROA	3.00	0.333259
Bank Concentration	2.38	0.419597
Firm Size	2.17	0.461507

Liquidity	1.72	0.581464
Mean VIF	2.32	

Table 2: Breusch-Godfrey LM test for Autocorrelation

lags(p)	chi2	Df	Prob > chi2
1	2.497	1	2.497

H0: no serial correlation

The correlation matrix table shows that the firm growth is positively and significantly correlated with the bank concentration while it is negatively and significantly related with the firm size. The correlation of the firm growth with ROA and Liquidity is positive and insignificant. Bank concentration has positive (significant) and negative (significant) correlation with ROA and firm size respectively though it is negatively and insignificantly correlated with the firm liquidity. The ROA has negative (significant) and positive (insignificant) correlation with the firm size and firm liquidity respectively. Finally, the firm size has negative and insignificant correlation with the firm liquidity.

Table 3: Correlation Matrix

	Variables				
Variables	Firm Growth	Bank Concentration	ROA	Size	Liquidity
Firm Growth	1.0000				
Bank Concentration	0.5986*	1.0000			
ROA	0.3302	0.6174*	1.0000		
Size	-0.7341*	-0.5813*	-0.6937*	1.0000	
Liquidity	0.2875	-0.0642	0.4516	-0.3370	1.0000

*. Shows correlation significance at 0.05 level-2-tailed.

The descriptive statistics are provided in the below table. The mean value of the firm growth lies close to the maximum value indicating that overall firms have high growth while the mean value of bank concentration lies close to the maximum value indicating high level of bank concentration. However, range of bank concentration values are 650.0897 to 781.1269 which according to the USA guidelines, 2010 discussed above illustrates that the banking sector in Pakistan is unconcentrated. Similarly, ROA has mean value tending to the minimum value showing that in general firms have low profitability. The mean value of firm size slightly tends to the maximum value depicting that on average the firms have large size. Finally, the firm liquidity has mean value lies close to the minimum value indicating that firms have low liquidity.Overall, individual values of the standard deviation are low and so the data have no large variation or dispersion.

Table 4: Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
Firm Growth	.1332847	.0673793	.016599	.240558
Bank Concentration	718.7249	44.15361	650.0897	781.1269
ROA	.0829167	.0245483	.0529	.14
Size	22.20659	.4172358	21.45175	22.73778
Liquidity	1.076939	.0502563	1.026959	1.161944

The below table presents the multiple regression results. The p-value of F-Statistics is less than 0.05 depicting that the model is significant in predicting the dependent variable using the values of independent variables. The value of R-squared indicates that 82.69 percent of variation in the firm growth can be due to the independent variables. The difference between R-squared and Adjusted R-squared values is not much big and the Adjusted R-squared value illustrates that if the additional independent variables are taken into account, then 72.80 percent of variation in the dependent variable may be attributable to the independent variables. The Beta coefficient value of bank concentration is positive and significant showing the positive effect of bank concentration on the firm growth suggesting that a one unit change in the value of bank concentration will result in increase of .0011 times in the firm growth. The values of Beta coefficient of ROA and Size are negative and significant showing that large size profitable firms have low growth. The Beta coefficient value of Liquidity is positive which indicates its positive relationship with the firm growth although the same value is insignificant.

Table 5: Multiple Regression Results

Dependent Variable: Firm Growth	F-Statistics	Prob > F	R-squared	Adjusted R-squared
	8.36	0.0084	0.8269	0.7280
Variables	**Coefficient**		**t-statistics**	**P>t**
Bank Concentration	.0010785		2.91	0.023
ROA	-2.273821		-3.04	0.019
Size	-.1201832		-3.22	0.015
Liquidity	.6115908		2.21	0.063
Constant	1.556898		1.43	0.195

5. Discussion

The results indicated positive significant effects of bank concentration on the firm growth. This is in line with the information-based hypothesis that the associated market power of concentrated banks overcome the information asymmetry of lender with the borrower improving the credit access of firms at favorable terms to finance their growth [10]. Thus, a positive link between bank concentration and the firm growth can be found.The results are also in line with the argument that bank concentration favors the firm growth to enhance the understanding regarding the bank concentration-firm growth association so as to devise policy stimulating the distribution of firm growth and so bring about the economic recovery [2].

The results also indicated the negative significant effect of profit on the firm growth which are contrary to the evolutionary theory that the profitable firms in the wake of survival strive to grow, however, the results are in conformance with other relevant studies [14, 15] which noted negative profit-firm growth relationship. It was also found that the firm size has negative significant effect on the firm growth which in in conformance with the assertion that the small firms experience financial constraints which relaxes over time permitting such small firms to attain high growth and achieve the desired size [18]. The study also showed positive significant effect of liquidity on the firm growth with the supportive argument that the firm growth is limited by the liquidity constraints depicting negative effect of liquidity on the firm growth [19, 20].

6. Conclusion

Historically, banking sector in Pakistan has been dominated by few large banks. Pakistani banks have central role to stimulate growth in other different sectors by the efficient provision of timely credit. Therefore, it is imperative to examine that up to what extent the bank concentration can affect the growth ofPakistani firms in different sectors or industries, specifically the non-financial companies. This is a neglected area as so far bank concentration-firm growth relationship is not investigated and, in this respect, this study aims to contribute towards the related literature. The ordinary least squares (OLS) method of estimation is applied and the wide bank concentration measure, the Herfindahl-Hirschman-Index (HHI) is used as proxy of bank concentration based on sample consisting of twenty-nine banks for the period 2006-2017. As regards firm growth and control variables, the aggregate data of non-financial companies are used.

The descriptive statistics, correlation and multiple regression analysis are used to generate and interpret the results. The results depicted that the selected firms have high growth. Moreover, ROA (profit) and firm size were found to have negative significant effects on the firm growth while the firm liquidity was having positive insignificant effect on the firm growth.As regards the negative effect of profit against the evolutionary theory, we may suggest undertaking of future researches to explore the nexus between profit and firm growth in a more understanding manner. The study also recommends future studies to examine bank concentration effects on the firm growth targeting companies of other countries and using alternate proxies of selected variables to better comprehend bank concentration-firm growth relationship.

The results also illustrated that Pakistani banking sector is an unconcentrated market which may be due to the reason that medium size banks are merged or acquired by other banks that might have reduced the dominance of large five banks. The opening of private domestic and foreignbanks also has diluted their dominance. Moreover, opening of Islamic banks also has impaired the market power of large banks. The results indicated that the bank concentration has significant positive effect on the firm growth highlighting that the high bank concentration may reduce information asymmetry of banks with the borrowers thus likely to overcome constraints in the way of credit accessibility to the companies in different sectors to enhance their growth and accordingly contributing to the overall economic development.

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