Evidence on Structure Conduct Performance Hypothesis in Pakistani Commercial Banks

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Abstract

The purpose of this research is to examine the relationship between market structure and performance in the banking sector using data from Pakistani commercial banks. Investigating the effect of changes in the market structure on profitability is based on the structure-conduct-performance (SCP) and efficient-structure (E-S) hypotheses. We have taken a sample of 20 scheduled commercial banks incorporated in Pakistan to examine the above hypotheses, using the annual and pooled data for a period of 9 years from year 1996-2004. Three measures of bank's performance are utilized: return on assets (ROA), return on capital (ROC) and return on equity (ROE). We have used concentration ratio (CR) to measure structure-conduct-performance (SCP) hypothesis and market share to measure efficient-structure (E-S) hypothesis. We have also used control variables to capture market specific characteristics such as bank size, market size, risk to owners, liquidity measure, market risk, and market growth. Using regression analysis, we have found a positive relationship of concentration ratio (CR) with profitability. In light of these results, we conclude that there is a positive relationship between profitability and concentration.

The results of market share (MS) which is used for efficient structure (E-S) hypothesis explain a negative relationship with profitability. The results of our analysis do not support the efficient structure (E-S) hypothesis. The empirical findings suggest that market concentration determines the profitability in Pakistani commercial banks. Hence, we also conclude that there is a negative relationship between competition and profitability in the Pakistani commercial banks. The leading banks are still enjoying the state of monopoly. But, the market trend shows that this state will not continue for a longer period as private commercial banks have started to compete with the existing top commercial banks.

1. Introduction

The Banking sector acts as the life-blood of modern trade and commerce to provide them with a major source of finance. To analyze the financial performance of Banks operating in Pakistan, we are starting with the financial background of the country, which was significantly altered in early 1970s with nationalization of domestic banks and expansion of public sector development finance institutions. By the end of 1980s, it became quite clear that the national socio-economic objectives could not be achieved by nationalization. The dominance of public sector in banking and non-bank financial institutions was responsible for financial inefficiency, deteriorating quality of assets and rising weakness of financial institutions. At the end of 1990, the share of public sector in the banking industry was almost 90 percent in total assets, while the rest belonged to foreign banks, as domestic private banks did not exist at that time. Similarly high shares existed for deposits, advances and investments.

The financial structure at the end of 1980s was hardly conducive for meeting the growing financial needs of the economy. The nationalization of banks in early 1970s resulted in the rapid expansion of branch network within the country. Weaknesses in the supervisory system and lack of governance in state-owned institutions were worsening the quality of services being delivered. Inefficiencies due to over-staffing and over-branching were continuously adding to administrative cost of public sector institutions. Spread between lending and deposit rates was concealing the intermediation inefficiencies due to the system of caps and ceilings on interest rates. Data disclosure standards were not showing full picture of the financial health of those institutions. In short, the financial health was deteriorating very fast, and radical reforms were made in two ways:

1.   Financial Sector Reforms

2.   Privatization of the Banking Sector

Realizing the inherent weaknesses of the financial structure that emerged after nationalization, the government initiated a broad based program of reforms in the financial sector. Objectives of reforms were to create a level playing field for financial institutions and markets for instilling competition, strengthening their governance and supervision, and adopting a market-based indirect system of monetary, exchange and credit management for better allocation of financial resources.

Reforms covered seven important areas:

1.   Financial liberalization

2.   Institutional strengthening

3.   Domestic debt

4.   Monetary management

5.   Banking law

6.   Foreign exchange

7.   Capital market.

The banking sector was liberalized by permitting private banks to operate and compete with nationalized commercial banks. Competition was promoted through privatization of the Muslim Commercial Bank (MCB) and Allied Bank Limited (ABL).

In the early 1990s, ten new banks were permitted to operate, out of which eight started functioning. A couple of new banks also joined the private sector afterwards. Governance of financial institutions was strengthened by inserting new sections in The Banking Companies Ordinance, 1962. Loan recovery process was streamlined by issuing clear guidelines for loan classification. Banks were required to submit regular reports on loan recoveries.

A number of nationalized banks and Domestic Financial Institutions (DFI) were downsized and restructured through golden handshake and branch closure programs in later half of 1990s. Prudential regulations were introduced simultaneously to ensure capital adequacy and disclosure of financial data reflecting true conditions of banks. Several steps were taken by the Government of Pakistan to enhance effectiveness of the State Bank of Pakistan (SBP).

Presently, the banking system in Pakistan is highly regulated. As the Central Bank of the country, the State Bank of Pakistan regulates the banking sector with full autonomy. In general, The State Bank of Pakistan is responsible for licencing, directing, supervising, controlling and inspecting banks through exercising various monetary control policy measures.

In addition, the Securities and Exchange Commission of Pakistan (SECP) also monitors the operations of the listed banks in so far as they relate to public shareholding matters.

The State Bank of Pakistan introduced the following reforms in the banking sector:

• Further strengthening of Prudential Regulations.

• Significant Liberalization of the policy for opening and closing of branches.

• Introducing free-floating market driven exchange rate system. In addition, restrictions on buying and selling of foreign exchange by banks were removed.

• Introduction of the Banking Companies (Recovery of Loans, Advances, Credits and Finances) Act, in February 1997. Special banking courts were established under this Act to facilitate the recovery of non-performing loans and advances from defaulted borrowers.

• Forming the Corporate and Industrial Restructuring Corporation (CIRC) to take over the non-performing loan portfolios of nationalized banks on certain agreed terms and conditions, and issue government guaranteed bonds earning market rates of return.

The purpose for establishing the CIRC was:

• To focus on recovering loans

• To improve the profitability of nationalized banks

• To appoint independent persons to the Board of Directors of   Nationalized Commercial Banks

- To enhance the requirement for minimum capital of banks to Rs.1 billion to encourage consolidation of smaller banks.

- To improve the quality and reliability of reporting; the format of statutory accounts has been revised on basis of International Accounting Standards, quarterly reporting to the shareholders has been initiated, and periodic reporting to regulators has increased. In addition, the State Bank of Pakistan published a list of approved auditors for various sizes of banks.

- To enforce good corporate governance culture, both by the SBP and SECP, covering director's responsibilities, improved reporting, and empowerment of audit committees and internal audit and independence of external auditors.

- To make mandatory credit rating for all commercial banks.

- To allow extension in the period of carry forward of losses to 10 years and offsetting of losses by parent company in case of acquisition.

- To reduce the tax rates for commercial banks.

- To change the tax laws to facilitate merger and acquisition of banks and financial institutions by allowing group tax loss relief.

- To issue Government bonds against long outstanding tax refund claims of banks.

Consequently, this will lead to an increase in the profitability of these banks, as the funds blocked in non-earning assets will be converted into earning assets.

2. Recent trends in the Banking Sector

The key trends in the banking sector are as follows:

- Large expansion of branch network and deposits by private banks

- Rationalization of branches by nationalized banks.

- Increased focus towards consumer finance

- Increased focus on attracting local rupee deposits

- Increased focus on online banking and automation

- Increased the banking hours for banking services

- Check on non performing loans as a result of better governance of banks and greater accountability process initiated by the government

- Increased Merger & Acquisition activity in the banking sector with local private banks having made several domestic acquisitions

The performance of the Pakistani banking sector has improved considerably in this decade on account of the following:

- Launching professional management

- Significantly Increasing performance of nationalized banks, as the restructuring process initiated in these banks since the year 1997 has begun to show positive results.

- Minimizing administrative costs versus total income
  of Banks; especially that the nationalized banks have taken steps to curtail their administrative expenses.

- Reducing tax rates: The tax rates have been reduced from 58percent in 2001 to 50percent in 2002 to 44percent in 2003 to 41percent in 2004 to 38percent in 2005 and will be reduced to 35percent for 2006.

3. Privatization of the Banking Sector

Pakistan is one of the few developing countries where the public sector of banks went to the private hands in a very short span of time. Now, the Federal government only owns the National Bank and First Women Bank while the Provinces own the Bank of Khyber, and Bank of Punjab. Eighty per cent of the bank assets are in the private sector.

There is strong competition among banks in the private sector where everything is performance-based. An employee who is not performing actively will be fired because he affects profit of the organization. Conversely, any employee in public or Government sector employee is protected. The bankers these days go out of their

luxury offices to market their financial products and build up customer base. The seller market has changed into a buyer market. The customer may choose the bank having best products and services.

The government is making efforts to ensure swift and smooth privatization of the National Commercial Banks (NCB). This includes two tier strategies:

Firstly: sale of the remaining shares owned by GoP in banks that are slowly privatized.

Secondly: sale of majority shares alongside with transfer of management of remaining NCBs.

There was a plan to list the NCBs on stock exchanges first and then off-load part of GoP holding, according to the market appetite. Following this policy, National Bank of Pakistan was listed on local stock exchanges and 5 per cent shares were offered to general public. As the issue was heavily over-subscribed, the GoP decided to exercise 'green-show option' and off-loaded its 10 per cent shares.

As we see, the past decade has witnessed fundamental changes in the banking systems and financial markets in Pakistan. Privatization, financial reforms, liberalization of capital flows and the establishment of the framework for an efficient regulatory environment in Pakistan facilitated the stability of the banking system and the establishment of a sound financial infrastructure. Changes in the operating environment also exerted a substantial impact on the structure of banking markets and the degree of competition. Due to the initially liberal entry rules and promising profit prospects, the number of banks rose significantly until the middle of the 90s, with mainly private banks entering the market. However, due to the tightening of prudential regulations, mergers and acquisitions as well as the liquidation of insolvent banks, the number of foreign banks began to decrease in the second half of the 90s.

4. Objectives of Study

The focus of our study is to measure the performance of commercial banks; particularly the local banks incorporated in Pakistan. A closer look at commercial banks operating in Pakistan reveals some emerging trends. The nationalized commercial banks (NCB) are going through an extensive restructuring program. Private Banks are consolidating their position by increasing their paid-up-capital and expanding branch network.

At the same time, with the dominance of private ownership and stable financial systems bank's performance have become increasingly market-based. Thus, competition may constitute a major determinant of bank performance in Pakistan today, contrary to the earlier period when prevailing state ownership of commercial banks.

In order to assess the role of competition and concentration in bank performance empirically, we have planned to take the structural approach to measure banking market in Pakistan. This approach is relevant as it evaluates the structural features of the market, and links competition to concentration. Our main interest is not only to determine the degree of competition and concentration but also to explore to what extent competition and concentration influence bank performance.

The primary objectives of the present study are delineated below:

- To find out the relationship between market structure and bank performance in Pakistani commercial banks.
- To capture the effect of other market-specific factors influencing the profitability.
- To determine which market structure affecting the profitability of Pakistani Commercial banks.

5. Literature Review

The following are the important studies and research that were interesting for our research:

Smirlock (1985) depicts that there is no relationship between concentration and profitability, but rather between bank market share and bank profitability. He hypothesizes that market concentration is not a random event but rather the result of firms with superior efficiency obtaining a large market share. In this case, market share and profits are correlated but there will be no relation between market concentration and profitability. To test this hypothesis, the interrelationship between profits, market share, and concentration is investigated for over 2,700 unit state banks.

The results of this study provide evidence that if market share is accounted for properly, concentration adds nothing to explaining bank profit rates. The findings do not support the notion that concentration in banking markets results in monopoly profits being earned, and suggests that any effect of concentration reported in previous studies is bogus and probably due to a correlation between profitability and the omitted market share

variable. The author views these findings as supporting the efficient structure hypothesis over the traditional hypothesis as a description of banking markets.

Molyneux and Forbes (1995) explains that market structure and performance in 18 European countries for the four years period 1986-89 is measured to test the two hypotheses S-C-P and E-S, using pooled and annual data. He suggests that if the SCP paradigm is found evident in European markets, this would imply that antitrust or regulatory policy should be aimed at changing market structure in order to increase competition or the quality of bank performance. If the efficiency hypothesis is found, then increasing concentration in banking markets should not be restricted by antitrust or regulatory measures.

The return on assets (ROA) is used as bank performance measure. The independent variables include both market specific and firm-specific variables. Ten-firm concentration ratio (CR_{10}) is used as a measure of market structure and market share measure (MS) to capture firm efficiency. A number of control variables are included to account for other risk, cost, size and ownership characteristics. Finally, the results present support to the traditional SCP approach. In brief, they show that concentration in the European banking market lowers the cost of collusion between firms.

Chirwa (2003) investigates the relationship between market structure and profitability of commercial banks in Malawi using time series data between 1970 and 1994. The competition in the main markets for commercial banks increases due to an increase in the number of financial institutions as well as in commercial banks. The author uses time-series techniques of co-integration and error-correction mechanism to test the collusion hypothesis. He wants to find whether a long-run relationship exists between profits of commercial banks and concentration in the banking industry. The author provides definition, measurement and descriptive statistics for the variables which are used in his regression analysis.

He concludes that a long-run relationship between profitability and concentration, capital-asset ratio, loan-asset ratio, assets, demand deposits-deposits ratio, market deposits and market growth, exists in commercial banks. The relationship between commercial bank profits and concentration is positive and its coefficient is statistically significant at the 5percent level in all specifications. The results show that a long-run relationship exists between profitability and market structure in Malawian banking. The collusion hypothesis is strongly supported by the positive and significant relationship between commercial bank profitability and concentration.

Maudos (1998) analyzes the relationship between market structure and performance within the Spanish banking industry. Three different stochastic measures of efficiency are used. The relationship between performance and market structure has generated two competing hypotheses: First, the traditional collusion hypothesis and Second, the efficient structure hypothesis.

The results obtained for Spanish banks over the period 1990-93 are to accept the so-called 'modified efficient structure hypothesis' since efficiency positively affects profitability and the market concentration factor is found significant in bank performance. At the end, the author rejects the traditional collusion hypothesis. These results contradict those reached by Molyneux et al, (1994), due to the fact that those authors used market share as a proxy for efficiency. But, he uses a direct measure of efficiency obtained through the estimate of a stochastic cost frontier and market share is not used as a proxy for efficiency.

Ahmed and khababa (1999); they measure the performance and market power of the Saudi banking sector. To judge the monopoly power, the market concentration ratios are used. They explain the structure-performance (S.P.) and efficient-structure which are the well known hypotheses in industrial economics. There are 11 commercial banks in addition to one non-bank (Serafa) in Saudi Arabia. The detailed data is available for some of them and represent a monopolistic competitive market. They apply a regression model at two levels: *First* on yearly basis from 1987 – 1992 for 11 banks due to the small number of observation. Moreover, they are unable to include all independent variables and omit one variable Bank Deposit (DB) which represents size of the bank and is measured in the term of total deposits. *Second*, regression is applied using the pool all independent variables including Bank Deposit (DB) also. Their results from the three models show that the business risk and bank size are the main variables which determine banks profitability.

6. Framework and Methodology

Our methodology is based on the structure-conduct-performance framework of industrial analysis. In the basic view, the market structure determines the behavior of firms in the market and the behavior of firms determines various features of market performance. To investigate the structure-conduct-performance (SCP) relationship in banking, primarily, we have applied the following model.

7. The Model

The model we have used in this paper is based on Gilbert, 1984; Michael Smirlock, 1985; Molneux and Forbes, 1995; Maudos, 1998, as shown below:

$$\Pi = a_o + \beta_1\, CR + \beta_2\, MS \;+\; \sum_{i=1}^{6} a_i\; Z_i \tag{1}$$

Where:

Π is the measure of dependent variable the rate of profit,

CR is a measure of market concentration,

MS is a measure of the market share of the firm,

Z is a vector of six additional control variables (Note 1)

The SCP hypothesis is supported by significance of the concentration ratio. Significance of the coefficient of market share β_2 and insignificance of the coefficient of the concentration ratio β_1 would lead to supporting the efficient structure hypothesis.

The traditional SCP hypothesis implies the following assumptions:

$$\beta_1 > 0, \qquad\qquad \beta_2 = 0.$$

Market share would not affect firm-rents. Those observed rents in higher profitability are monopoly rents that are the outcome of market concentration. Conversely, a coefficient combination of:

$$\beta_1 = 0, \qquad\qquad \beta_2 > 0$$

implies that firms with high market share are more efficient than their competitors and earn rents because of their efficiency and also indicating that increased market concentration does not result in bank's earnings any monopoly rents.

Thus, $\beta_1 > 0$, $\beta_2 = 0$ supports the traditional hypothesis whereas $\beta_1 = 0$, $\beta_2 > 0$, supports the efficient structure hypothesis.

A particular interesting case is where:

$$\beta_1 > 0\,, \qquad\qquad \beta_2 > 0$$

Supporters of the traditional hypothesis would interpret such a result that all firms in concentrated markets earn monopoly rents from collusion, and these benefits, as suggested by theories of oligopolistic behavior, are distributed unevenly with the larger firms in the market capturing the lion's share of monopoly rents. It is to be noted that these large firms are earning unequal rents due to monopoly and not efficiency. Proponents of the efficient structure hypothesis are of a view that leading firms are more efficient than their competitors and some firms earn super-abnormal profits because of superior efficiency. Here, we need the appropriate interpretation of this type of finding whether the effect of both concentration and market share on profitability is primarily related to collusion or efficiency.

We use the following equation to test the hypotheses for the Pakistani Commercial Banks:

$$\Pi = a_{0} + \beta_1\, CR + \beta_2\, MS + \beta_3 LNASTS + \beta_4 LNDEPT + \beta_5 CAR + \beta_6\, LDR + \beta_7 LAR + \beta_8 MKTGROW \tag{2}$$

8. Data Analysis and Results

We have applied two types of analysis, Descriptive and Quantitative.

The following table provides a summary of the ratios we calculated about the banking sector in Pakistan.

INSERT TABLE 1 HERE

This table provides statistics about the 20 commercial banks incorporated in Pakistan for 9 years from 1996 to 2004. The table displays our model's dependent, independent, and control variables.

Return on Assets (ROA) ratio is one of the dependent variables used to measure performance of commercial banks. The mean of ROA ratio is 0.009642 and standard deviation is 0.02567. The maximum and minimum values are 0.0598 and - 0.2070 (Note 2) respectively.

Return on Equity (ROE) is another dependent variable used to measure performance of commercial banks. The mean of ROE variable is 0.2405 and standard deviation is 0.4134. The maximum and minimum values are

1.7760 and –2.9337 respectively. The negative ROA is due to state owned banks and privatized banks. The reasons are non-performing loan (NPL), lending to public sector for non-profitable operations, overstaffing, and underutilization of assets.

We have found that there is a strong difference between ROA and ROE. The value of standard deviation is very high in ROE as compared to ROA. The maximum value of ROE is also very abnormal which shows a very high return in some years.

Return on Capital (ROC) is our third dependent variable used to measure performance of commercial banks. The mean of ROC variable is 0.143 and standard deviation is 0.0338. The maximum and minimum values are 0.0758 and – 0.2658 respectively.

Those three dependent variables: ROA, ROE, and ROC are used to measure performance of the commercial banks in Pakistan. The mean, maximum, minimum, and standard deviation values of ROE have shown different trends as compared to ROA and ROC. It shows that shareholder's equity is extremely low as compared to assets of the banks. The data indicates some losses in commercial banking activities as reflected by the negative profitability.

The concentration ratio (CR) is one of our independent variables used as proxy of concentration. The mean of this ratio is 0.0500 and standard deviation is 0.1150. The maximum and minimum values are 0.4674 and 0.00002 respectively. It shows that the Pakistani commercial banking market is highly concentrated. Some leading banks are capturing a major share of the market. The largest five banks have approximately eighty percent share of the market.

The Market Share (MS) is the second independent variable of our model, and is used as proxy to measure competition in the market. The mean of this variable is 0.0500 and the standard deviation is 0.0744. The maximum and minimum values are 0.2917 and 0.0017 respectively. The maximum value of concentration ratio (CR) is 0.4674 shows that the Pakistani banking market is highly concentrated. But the maximum value of market share (MS) variable is 0.2917 shows that there is weak evidence for competition.

Total Bank Assets are included as a control variable for the size of bank to test the possibility that large banks are expected to have greater products and loan diversification. The mean of this variable is 17.3131 and the standard deviation is 1.3328. The maximum and minimum values are 20.1249 and 14.7531 respectively.

Total Market Deposits are included as another control variable to measure size of the market. The entry is easier in larger market as compared to smaller markets customers in large markets are sophisticated and less traditional. We mean by larger markets those with many small banks where entry and exit of the market is easy. But, smaller markets are those dominated by large banks that make entry difficult for new banks and exit easy for smaller ones. The mean of this variable is 17.0065 and the standard deviation is 1.3976. The maximum and minimum values are 19.9587 and 14.5516 respectively.

Capital to Assets Ratio is included as a control variable to measure the market risk. The mean of this variable is 0.05528 and the standard deviation is 0.0405. The maximum and minimum values are 0.2110 and –0.1826 respectively. The negative minimum value shows that there is greater risk in the market.

Lending to Deposits Ratio is another control variable used to measure lending the risk of banks as compared to their deposits. This control variable captured how efficiently banks lend their deposits. The mean of this variable is 0.4740 and the standard deviation is 0.1949. The maximum and minimum values are 0.1.4940 and 0.0183 respectively.

Lending to Assets Ratio is also a control variable that we have used to measure lending of banks as compared to their assets. This control variable captures the liquidity of banks. The mean of this variable is 0.3522 and the standard deviation is 0.1494. The maximum and minimum values are 1.1031 and 0.0129 respectively.

Market Growth is the last control variable we have used in the model. It measures the degree of operational bank performance. It measures the profit opportunities for existing banks and represents their operational efficiency. The mean of this variable is 0.2288 and standard deviation is 0.2769. The maximum and minimum values are 1.5626 and –0.4999 respectively.

9. Emprical Results

We have applied a linear regression model to examine the relation among profitability and explanatory variables CR, MS, LNASTS, LNDEPT, CAR, LDR, LAR, and MKTGROW. We have used three measures of profitability (ROA, ROE, and ROC) in the regression model and results of the model have been obtained through SPSS software.

Those results are shown in the following Tables:

INSERT TABLE 2 HERE

Table 1 displays the results of ROA; F-Value of the model is 22.505 meaning that the model is significant at 1percent level. R^2 reflects strength of our regression model and is 0.513, while the Adjusted R^2 is 0.490.

Comparing our results with previous traditional SCP studies, ours results are satisfactory as we have found a positive relationship between commercial bank profitability and concentration; coefficient of this relationship is 0.133 and statistically significant at 5 percent level of significance. This finding provides a strong support for the proposition that there is a positive relationship between profitability and concentration.

The coefficient of Market Share is - 0.310 and significant at 1 percent level. It means that results strongly reject the competition hypothesis and support to SCP hypothesis. We find a negative relation between profitability and competition in Pakistani commercial banking market.

The results of other control variable representing the market-specific characteristics are according to expectation except CAR and LDR.

LNASTS represents size of the banks. Actually, we expected that larger banks have the ability of big portfolio and the choice of diversification. According to the portfolio theory, if a company has the larger portfolio it can diversify the risk, and earn larger profits. On basis of this theory, we expected that size of the bank has a positive relation with profitability; the results support our expectation and coefficient of this variable is + 0.657 and significant at 1percent level.

LNDEPT represents the relationship of market size with profitability; we have assumed that entry is easy in large markets not controlled by big banks, and expected that there is a negative relationship between profitability and market deposits. In fact, customers of larger markets are not traditional and ready to accept innovative methods by banks. We find the same relationship, and the coefficient is – 0.110, highly significant at 1percent level.

We expect a negative relation of CAR with profitability. But, we find a positive coefficient of 0.419 for this variable, and it is significant at 1 percent level. This result is surprising given that the lower capital ratios are associated traditionally with greater risk taking.

We have expected a positive relation of LDR with profitability. But, we find a negative coefficient of – 0.200 for this variable and it is significant at 1 percent level. This control variable has been used as a risk measure in all previous studies. However, this is not surprising as a number of studies have got the same results. So, our results here are in agreement with those previous studies.

LAR stands for lending to assets and this variable is included to test the risk assumed by banks provided that the profit measure is not risk-adjusted. Lending to assets ratio is included to account for different risk levels between banks. We expect a positive relation of LAR with profitability. The results are as expected in the model. The coefficient of this variable is 0.317 and is significant at 1 percent level.

MKTGROW variable is used to measure market growth of commercial banks. We have assumed a positive relation because expanding markets can generate higher profits. In expanding markets, customers are cultured, not like the conventional ones, and their behavior becomes more bank-oriented. We have used bank deposits to measure growth of the market in Pakistani commercial banks.

In growing markets, the existing banks can avail the economies of scale and earn larger profits. But, it becomes dangerous when the market growth encourages entry of new banks. We assume that expanding markets enable banks to make new products different from the existing ones, and consequently generate higher profits. We assume a positive relation of market growth with profitability of banks which shows that growth rate has a positive impact on profitability.

INSERT TABLE 3 HERE

Table 2 shows results of ROE measure of profitability. We used three measures of profitability and one is return on equity (ROE). Our results are relatively different from those of the ROA measure of profitability. The main reason is that ROE is very fluctuating about the Pakistani banking market. The trend of this profitability has been negative for many years. The factors of this negative trend would be discussed later on.

Now, we are going to discuss the results of the regression model shown in Table 4.3.2. The coefficient R^2 of this regression model is 0.174 and adjusted value R^2 is 0.135 which shows a weak relationship of the overall model. But, the model is significant with F-value equal to 4.490. These results provide that the model has corroborated for us the prior studies where R^2 was about our value. The same results were reported by M. Nasser about the

Malaysian banking industry. Both CR and MS gave similar results to those we found in the ROA measure of profitability. The coefficient of CR is 3.352, significant at 1percent level. This finding provides strong support for the proposition that there is a positive relationship between profitability and concentration.

The coefficient of MS is −7.818, significant at 1percent level. This result strongly rejects the competition hypothesis and supports the SCP hypothesis. We find a negative relationship between profitability and competition in the Pakistani commercial banking market.

So, we may conclude that the Pakistani banking market provides a positive relationship between concentration and performance. Several previous studies have found the same result.

Regarding LNASTS, we find that it has the same relation as ROA has with profitability. The coefficient of this variable is 0.657; however, the results are not statistically significant.

We have also found similar results with LNDEPT. It coefficient is − 0.450; but, the results are not statistically significant. Anyway, the main observation is that the assets and deposits of all banks are persistently increasing year after year. Since ROE has a negative coefficient in most of the years, it is evident that if our resources and assets are increasing, profitability should have also increased in the same direction. But, we have not found this trend in the Pakistani market. The main cause is that there is no persistent rise in Bank profitability in relation to assets and deposits. As we continue with data for individual banks, we find persistent rise in assets and deposits of all banks. However, we cannot find the same trend in profitability of any individual bank, and the data do not show constant rise in the banks profitability.

The coefficient of CAR variable is − 1.697 significant at 10percent level which shows a very weak relationship with profitability. It is somewhat surprising that we find contrary relationship of CAR variable with profitability as we find in ROA measure of profitability.

The coefficient of LDR is − 0.996, and coefficient of LAR is 1.748. The sign of LDR is not positive as expected but negative. But, previous studies also found the same result, contrary to expectations.

The coefficient of MKTGROW is 0.195, significant at 10percent level. This result agrees with assumptions of our model. But, it shows a very weak relationship with profitability.

INSERT TABLE 4 HERE

Table 3 shows the results of ROA. F-Value of the model is 21.570, meaning that the model is significant at 1percent level. R^2 provides a measure of the model's strength, and stands at 0.502 while the Adjusted R^2 is 0.479. These results are the same as are mentioned in Table 2. Actually, the Pakistani commercial banks are still in concentrated conditions although the government is interested in liberalizing the financial sector to create the conditions of competition in the market.

The results are in agreement with the monopoly hypotheses. The conditions of monopoly are becoming weak because of the entry of new private banks in the market and, the governmental privatization of the larger banks. After privatization, these banks did not lose their businesses as data show that they have improved themselves and even now they are the market leaders. The private banks compete by introducing new and differential products with good service environments and friendly interaction with the customers.

The coefficient of CR used for concentration is 0.203. Concentration is in fact a measure of monopoly where all banks earn the monopoly rent. This result is statistically significant at 1percent level as we have expected in the model. We find a positive relationship between profitability and concentration. The results corroborate strongly the monopoly condition in Pakistani banking market. So, we reject that there is no relationship between profitability and concentration, and accept that there is a positive relationship between profitability and concentration.

MS stands for efficient structure hypothesis and it is negatively correlated with profitability. Coefficient of this variable is − 0.459 and it is highly significant at 1percent level. There is a negative relationship between profitability and competition in Pakistani commercial banking market. Results of this regression model provide evidence in favor of the monopoly hypotheses.

The coefficient of LNASTS is 0.172, significant at 1percent level. It is used as proxy for the size of bank. It is already mentioned that the bank size is positively correlated with its profitability. We have assumed that LNASTS has a positive relationship with profitability because Pakistani banking market is recently an emerging market. The larger and diversified portfolios minimize the risk of loss and consequently banks earn higher profits.

LNDEPT stands for total assets of the banks to measure the market size of banks. If size of the banking market increases, it will create a new opportunity of profits for the banks. The customers also become mature and rational, and they like efficient banking services. Coefficient of this variable is − 0.154 at 1percent level of significance. Some authors argue that market size and bank profitability relationship may be either positive or negative. If the growth encourages new entry, it will impact negatively on profitability of the existing banks. If such banks take advantage of growth, then we can assume a positive relation of this variable with bank profitability. The government wants to encourage new banks entry that lead to market expansion and create a competitive environment in Pakistani banking market. However, the results show a negative relationship of LNDEPT with profitability in Pakistani banking market.

CAR relationship with profitability was expected to be negative. Its coefficient is 0.513, significant at 1percent level. This result is contrary to our expectation in the model. CAR examines the risk of the bank owners. The expected relation of this variable with profitability is negative, but we find it's positive. It shows that if there is an increase in the capital of a bank, the profits of that bank will also increase.

LDR measure the lending to deposits ratio, and its coefficient is − 0.297, significant at 1percent level. We have expected a positive relationship between this variable and profitability, but found a negative relation. However, it is not surprising as a number of previous studies have got the same result; so, our results are in agreement with previous studies.

LAR variable stands for lending over deposit ratio and the coefficient of this variable is 0.471 at 1percent level of significance. It is used as a measure of risk. We have expected a positive relationship of this variable with profitability, and the results are as expected. They explain that risky assets can earn higher profits. This variable examines the operations of assets whether they are used efficiently or otherwise. The assets which give higher returns can contribute positively in the profitability of the bank.

MKTGROW denotes market growth of the banks and the coefficient of this variable is 0.028 at 1percent level of significance. Our general hypotheses were that the market growth of banks has positive impact on their profitability. We have assumed that market growth has a positive relationship with profitability, and that is what we have found. Prior studies have also found the same result. But, some authors argue that if market growth allows new entry, then the relationship may be negative.

CR and MS are considered as basic variables of our model. The relationships of these variables are according to our expectations. The results of other control variable as LNASTS, LNDEPT, LAR, and MKTGROW, used for market-specific characteristics are almost according to our expectations. We cannot find the same relation of LDR and CAR with profitability of the banks because the characteristics of all markets are not necessarily the same.

The combined results of three profitability measures allow us to conclude that the Pakistani commercial banking market shows concentration in our period of study from 1996 to 2004.

10. Conclusion

There are different views of desired banking structures in which banks operate. The Pakistani policy makers who are responsible for monetary and financial stability want to create competitive conditions in the banking industry because competition can lower the financial costs and contribute to improving economic efficiency.

In this paper, we are interested in testing validity of the SCP and ES hypotheses in the Pakistani commercial banking market. We used CR as proxy to measure concentration and MS as a proxy variable to capture the market competition. We tried to assess the current market structure and also the degree of concentration and competition in Pakistani commercial banking market over the period 1996-2004.

Profitability in commercial banks is measured in *three* alternative ways:

      1- Return on assets (ROA).

      2- Return on capital (ROC), and

      3- Return on equity (ROE).

Results of the analysis conducted on a sample of the Pakistani commercial banks over the period from 1996 to 2004 have allowed us to reject the ES hypothesis. In all models, the MS variable used proxy for market competition has shown a negative relationship with profitability, and the results are statistically significant. The results of CR variable, used proxy to measure market concentration, suggests that we accept the SCP hypothesis. It means that the Pakistani banking market is still highly concentrated. The lion share of market is in hands of the leading banks. Thus, we cannot reject the structure-conduct-performance hypothesis. The leading banks are still

enjoying the state of monopoly. But, the market trend shows that this state will not continue very long because private banks have begun to compete with the existing leading banks.

The empirical findings suggest that market concentration determines the profitability in the Pakistani banking market. Although recent studies on the US banking industry have favored the efficiency hypothesis, our study provides a strong support to the traditional SCP hypothesis. The results also suggest that concentration in the Pakistani Banking market lowers the cost of collusion between firms. Our findings are consistent with most recent studies that have tested the market structure in their evaluation of bank performance (Evanoff and Fortier 1988; Molyneux and Thornton, 1992; Lloyd-Williams et al., 1994; Molyneux and Forbes, 1995; E. W. Chirwa, 2003; Milind Sathye, 2005).

In our empirical analysis, we have met with some limitations in sequence.

Firstly, this study is limited to commercial banks incorporated in Pakistan.

Secondly, we have used only traditional methods of measuring profitability. So, our findings may not provide the true picture as required.

Thirdly, it is believed that liberalization in banking sector in Pakistan has lead to increase competition in the banking market; however, the findings of this study show that it has not significantly reduced the concentration and hence the collusive behavior still exists in the Pakistani banking market.

Fourthly, we could not find as free competition as in USA. So, we recommend that the Pakistani government strengthens its policies that encourage more entry in commercial banks. With help of this policy, we expect that the banking sector will benefit customers through lower cost of financial services.

Fifthly, we could not do more than what we have done due to time limit. But, we plan in the near future to extend our research to a larger period and include more variables in our analysis.

At last, we recommend that more research be done for authoritative statements regarding the concentration and profitability relationships. Future research will hopefully provide additional evidence on the matters focused in this study, particularly, those among profitability, market share, and market concentration in banking.

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Notes

Note 1. Prior studies have included those control variables for firm-specific and market specific characteristics to affect bank profitability.

Note 2. The minimum values ROA, ROC, and ROE are negative. The State-owned banks and privatized banks produced negative profitability as compared to privately-owned banks. The reasons are lending to public sector for non-profitable operations, over-staffing, heavy operational expenses, and non-performing loans (NPL).

Table 1. Summaries of Descriptive Statistics

	Minimum	Maximum	Mean	Std. Dev.
ROA	-0.207060	0.059887	0.009642	0.025671
ROE	-2.933745	1.776069	0.240526	0.413463
ROC	-0.265814	0.075875	0.014302	0.033819
CR	0.000022	0.467459	0.050000	0.115075
MS	0.001774	0.291745	0.050000	0.074448
LNASTS	14.753118	20.124957	17.313112	1.332825
LNDEPT	14.551629	19.958777	17.006539	1.397653
CAR	-0.182592	0.211052	0.055258	0.040511
LDR	0.018260	1.494026	0.474035	0.194959
LAR	0.012943	1.103150	0.352165	0.149473
MKTGROW	-0.499948	1.562660	0.228850	0.276944

Table 2.

REGRESSION MODEL- VARIABLE ROA		
R SQUARE		0.513
ADJUSTED R SQUARE		0.490
F-VALUE		*22.505
Variables	**Coefficient**	*t*- statistics
Constant	-0.302	-7.569
CR	**0.133	2.198
MS	*-0.310	-2.548
LNASTS	*0.124	5.656
LNDEPT	*-0.110	-5.068
CAR	*0.419	9.409
LDR	*-0.200	-4.236
LAR	*0.317	4.880
MKTGROW	*0.020	3.820

* Significant at 1%, ** Significant at 5% and *** Significant at 10%

Table 3.

REGRESSION MODEL- VARIABLE ROE		
R SQUARE		**0.174**
ADJUSTED R SQUARE		**0.135**
F-VALUE		***4.490**
Variables	**Coefficient**	*t*- statistics
Constant	**-3.351**	**-3.998**
CR	***3.352**	**2.632**
MS	***-7.818**	**-3.059**
LNASTS	**0.657**	**1.427**
LNDEPT	**-0.450**	**-0.988**
CAR	***** -1.697**	**-1.818**
LDR	**-0.996**	**-1.004**
LAR	**1.748**	**1.282**
MKTGROW	***** 0.195**	**1.742**

* Significant at 1%, ** Significant at 5% and *** Significant at 10%

Table 4.

REGRESSION MODEL- VARIABLE ROC		
R SQUARE		**0.502**
ADJUSTED R SQUARE		**0.479**
F-VALUE		* 21.570
Variables	**Coefficient**	*t*- statistics
Constant	-0.395	-7.428
CR	* 0.203	2.514
MS	* - 0.459	-2.832
LNASTS	* 0.172	5.895
LNDEPT	* -0.154	-5.325
CAR	* 0.513	8.668
LDR	* -0.297	-4.711
LAR	* 0.471	5.441
MKTGROW	* 0.028	3.917

* Significant at 1%, ** Significant at 5% and *** Significant at 10%