

# X-Efficiency and Financial Restructuring: A Case of Pakistani Commercial Banks

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## Abstract

*Privatization is considered a most sophisticated technique to improve financial position of banking sector, and has been empirically tested by many researchers through different methods and still many studies are under process to assess its implications on the economy. Prior research has shown a significant positive effect of privatization on financial institutions profitability. The present study is conducted to calculate the operating efficiency of 28 Pakistani commercial banks over a 5 year period i.e. 2003-2007, through traditional method and DEA approach. Traditional approach uses operating income, administrative expenses and labor expenses; whereas, Data Envelopment Analysis (DEA) approach is used to measure operating efficiency in terms of interest and non-interest variables. The results of traditional approach suggest that privatization cannot help banks in improving their operating income. These results have been further robust to the findings of the DEA approach of measuring efficiency, which shows that public banks are better able to cover up their interest and non-interest expense form their corresponding revenues.*

Keywords: privatization, operating efficiency, commercial Banks, traditional approach, Data Envelopment Analysis (DEA)

## 1. Introduction

The significance of financial sector in the economic growth can not be denied and banking sector, in the capacity of intermediation between borrower and lender, facilitates the economic activities as a part of financial sector. Evaluating the financial conditions and performance of banks has been a considerable issue in the recent years, particularly in developing countries. This phenomenon is attributed to the crucial role of commercial banks in the economy, which is a result of the generally acceptable fact that commercial banks are dominant financial institutions and represents foremost source of financial intermediation in these countries. The examination of overall performance of banking sector is important to depositors, owners, potential investors and, of course, for the policy makers, as banks are the effective executors of monetary policy of the government.

To establish better internal control and hence, increasing the performance of the banks, different financial restructuring reforms have been developed. One of them is privatization program– transferring the ownership form public hands to private ones. Such transformation of ownership is done to enhance competition and efficiency by permitting the market forces to determine the prices rather than administrative forces. Privatization is used by governments to strengthen the financial health and increase profitability, by liberalizing the interest rates, abolishing limits on credit and monetary policies, establishing well defined prudential regulations and governing rules, developing an effective monitoring system for investments and utilization of funds in profitable opportunities (Khan 2002).

With a wave of socialist government policies, in 1990s, all financial institutions were made nationalized in 1974 under Pakistan Banking Council (Khalid 2006) and state direct intervention in operations lead to reduction in economic growth. This inefficiency leads to a large number of non-performing loans, utilization of loans in priority projects and inappropriate rates of interest on deposits and lending. Later with a removal of government economic policy in 1991, privatization program was initiated by giving control of two nationalized banks into private hands, namely, Muslim Commercial Bank Limited and Allied Bank Limited. Thereafter, many banks were privatized to

achieve the desired goals. According to the quarterly performance review of State Bank of Pakistan, at the end of year 2007, the privatized banks have market share of 74.2%, profit after taxes are 16.4%, Return on Asset 2.1%, Return on Equity 22.1%, whereas the public banks have market share of 20%, profit after taxes 5.2%, Return on Asset 2.4%, Return on Equity 19.8% (SBP, 2008). Thus a remarkable change has been achieved in market share and operating profit after taxes from financial restructuring reforms; however, there seems no great difference in return on asset and return on equity of private and public banks.

The present study is conducted to observe the effects of restructuring reforms on the Pakistani commercial banks by using traditional approach as well as x-efficiency measure of performance. Traditional approach encompasses balance sheet information – profit after taxes, administrative expenses, operating expense etc, whereas, x-efficiency consists of parametric and nonparametric approaches used by researchers to calculate cost, allocative, technical and operational efficiency. The objective of this paper is to conduct the comparative analysis of operating efficiency of state-controlled banks and private banks of Pakistan through traditional and DEA approach by using the sample data of 28 commercial banks for the period of 2003-2007. Issues discussed in this paper are: (1) Is there a significant difference between state-controlled banks and private bank? (2) Has privatization improved bank efficiency or not? (3) Are findings of this study are consistent with earlier studies? Since the economy of Pakistan has sustained remarkable growth in the first decade of the new millennium and entry of new domestic and international incumbents, and new rules and regulations by State Bank of Pakistan has changed the competitive position of local commercial banking industry, therefore, the current research paper is expected to enhance the earlier findings on bank efficiency and financial restructuring and would contribute some fruitful results in finance literature of Pakistan. Remaining paper is organized as follows: Section 2 deals with the theoretical background explaining all the parametric and nonparametric approaches; section 3 explains the methodology, data and variables for this study. Section 4 presents and discusses the results and last section concludes the study.

## **2. Literature Review:**

Banking efficiency is under consideration by many researchers to analyze the impact of deregulation of financial restructuring reforms on banking performance. Economies having political views of government intervention used privatization program to improve financial performance and overall economic efficiency. This change in the performance and efficiency of banking sector is then explored and tested by many researchers. Quick review of related literature has been summarized below. Bonin et al. (2004) compare the pre privatization and post privatization effect on bank's profit and cost efficiency across six transition economies by using Stochastic frontier approach. Results support privatization significant effect on banking performance, however timing of privatizations shows different effect on banking efficiency, as early privatized banks are proved to be most efficient than latter privatized banks.

Chen (2001) measures X-inefficiency of 41 Taiwan's banks for a year 1997 and finds a strong support of privatization program. Noulas (2001) measures operating efficiency of Greek banks through DEA approach over a period of 1993-1998. Findings of this study are mixed; ratio analysis shows a positive significant effect of privatization on banking efficiency while according to DEA, efficiency gaps between two groups (public and private) are statistically insignificant. Boubakri (2005) conduct a study on 88 banks form 22 developing countries, by using univariate tests and panel data estimates techniques, finds a decrease in economic efficiency and increase in credit risk exposure of private banks, while newly privatized banks shows increase in profitability level as compared to pre-privatization period.

Akhtar (2002) conducted a study to measure technical, allocative and overall efficiency of 40 Pakistani commercial banks by using DEA approach during 1998-1999. The author found a strong support for a privatization process and ended up with a need for improvement in banking efficiency. By using CAMELS framework of financial ratios, Khalid (2006) analyzed the effect of privatization on Pakistani commercial banks for a period of 1990-2002. Results supported the ongoing process of privatization and concluded that privatizations showed little improvement in whole banking system; however, there is still a need for better monitoring and controlling system for the banking industry. By using DEA approach, Attaullah et al. (2004) measured overall technical, pure technical and scale efficiency of Pakistan' and India's Commercial Banks before and after privatization for a period of 1988-1998 and found an improvement in efficiency of Pakistani banks after privatization.

Burki and Niazi (2003) tested privatization effect on Pakistan's banking cost, allocative, technical, scale and pure technical efficiency through DEA approach and regression analysis of unbalanced panel data over a sample period of 1991-2000. Results through DEA approach showed foreign banks achieve highest efficiency level as compared to the private and public banks; however, in contrast with public banks, private banks were more efficient. Contrary to it, regression results show a negative and statistically significant effect of independent regulator on cost and allocative efficiency of bank. In this paper, private and public bank's operating efficiency is calculated through traditional approach and DEA approach to analyze the performance of private banks in comparison with public banks.

### **3. Theoretical Background**

Earlier, the bank's efficiency used to be calculated through traditional approach, where several accounting measures utilized financial statement items such as ROI, ROA, interest coverage ratio and administrative expenses to operating income (Noulas 2001, Sinkey 2002, Ataullah et al. 2004, Qayyum & Khan 2007, and Noulas et al. 2008). Financial ratio approach has been used to analyze the present performance or position in market and operating efficiency of firm from different perspectives. It provides an opportunity to evaluate the firm performance according to the benchmark (Qayyum & Khan 2007); it also enables firm to forecast its future performance, chances of bankruptcy cost, financial risk and liquidity position. Nevertheless, it carries some drawbacks which arises the need to employ other approaches or techniques to calculate efficiency. First, this approach does not consider long-term effect in their calculations; secondly, no one can predict the overall performance and strength of firm from few ratios, as there are some other factors which affect financial strength and performance of firm (Qayyum & Khan 2007, and Noulas et al. 2008). To cover up these deficiencies, the x-efficiency approach was introduced by researchers to calculate the efficiency of firm on a frontier. Farrell (1957) was the first to present a new technique of frontier approach for measuring inefficiency by defining "the deviation of actual from optimal behavior". There are four types of frontier approaches, among which, Stochastic Frontier Approach (SFA), Thick Frontier Approach (TFA), and Distribution Free Approach (DFA) are parametric approaches, whereas the Data Envelopment Analysis (DEA) is non-parametric approach.

Stochastic Frontier Approach (SFA) uses multiple outputs and inputs to run a function. This approach provides an advantage to identify the inefficiencies that occur because of firm's inability to produce desired outputs. SFA ranks the firm as first having lowest cost which is set as a cost function and the firms following such function are considered as technically efficient. Some of the studies done on this approach are: Tannenwald (1995), Bauer et al. (1998), Chen (2002), Diaz-Mayans and Sanchez (2004), Barros (2005), Kumbhakar et al. (2007) and Afza and Mahmood (2006). Thick Frontier Approach (TFA) divides the sample into four quartiles based on the cost function. It has the qualities of both SFA and DEA. However, its distinctive point is that the firm in the lowest average cost is labeled as best performing firms. The movement in cost between highest and lowest quartiles of firms is considered as inefficiencies, thus, it enables a researcher to identify a best performing firms and worst performing firm. Some landmark studies which used TFA are: Bauer et al. (1998), Lang and Welzel (1998), and Wagenvoort and Schure (2006).

Third parametric approach is Distribution Free Approach (DFA) which is used in case of time series analysis. According to DFA, the efficiency of firm will remain stable over number of years but random error changes its position with the change in time. Thus it calculates efficiency by taking the mean of its all efficiency scores over a given study period. Bauer et al. (1998), and Qayyum and Khan (2007) have also used this study. Finally, DEA is the non-parametric mathematical programming used to calculate technical efficiencies, first introduced by Charnes et al. in 1978. DEA assumes that all the firms are using same level of technologies to produce output from a given set of inputs. It estimates production efficiencies through Decision Making Units (DMUs) and enables the investigator to identify a best practice firm and compare all other firms against it. The DMU which outperform better than best performing firm is considered as efficient and vice versa. As DEA has the ability to deal with multiple inputs and outputs, it is difficult to give recommendations about efficiency of firms without using DEA approach. So many researchers prefer to use DEA in calculating efficiency because it is applied even when the sample size is small (Banker et al. (1984), Bauer et al. (1998), Chen (2001 & 2002), Isik and Hassan (2002), Kasman and Yildirim (2006), Ataullah et al. (2004), Angelidis and Lyroudi (2006), Qayyum and Khan (2007), Sathye (2001), Tannenwald (1995) and Noulas et al. (2008)).

**3. Research Design**

Efficiency of banks can be measured either by operating or intermediation approach. In operating approach the bank is considered as producer of services and efficiency will be calculated in terms of cost/revenue perspective. On the other hand, in intermediation approach, the bank will be considered as manufacturing unit and efficiency is measured in terms of outputs like loans, deposits and investments. (Akhter 2002). In this study the banking efficiency is calculated through operating approach. Following Noulous (2001), two different methodologies are used to compare the operating efficiency of Pakistani commercial banks. Banking literature has suggested that operating efficiency is better analyzed by ratio of non-interest expenses to its profitability (Avkiran 1999). Non interest expense is further categorized to determine a ratio of labor expense to net income. For both of these versions, decrease in the ratio will make a bank more economical in realizing its upcoming reduction in revenue (low interest rate and decrease volume of loan) from its earnings.

Moreover, DEA is used for calculating relative efficiency. A bank is said to be relatively efficient as compared to other firms if (1) it produces the maximum output form a given set of inputs or (2) it generates a given set of output form minimum inputs. Noulous (2001) used interest revenue and non-interest revenue as two output variables and interest expense and non-interests expenses are treated as input variables. The bank having maximum efficiency is considered as “best practicing firm” and the remaining banks efficiency is compared with it. Moreover, ratios having value 1 are considered as efficient and on the frontier, while proportions having relative amount less than one or zero is deemed to be inefficient. Data source of this study is the annual financial statements of the commercial banks listed in Karachi Stock Exchange. Total listed commercial banks are 39; out of which 29 are private banks, 9 are state-owned and remaining one is public. Eleven banks have to be disqualified form original sample; most of these are excluded because of unavailability of relevant data, while others started their operations after 2003. All the financial data is collected in terms of Pakistani rupees for the period of 2003 to 2007.

**3.1 Empirical Model**

The use of DEA model allows the management of firms and researchers to analyze and compare the performance of various banks across the selected sample as well as along with the other traditional measures of efficiency used in literature. There are a number of DEA models, the most frequently used are; Charnes, Cooper and Rhoades (CCR) model of Charnes et al. (1978) and Banker, Charnes and Cooper (BCC) model of Banker et al. (1984). CCR assumes that DMU is operating at constant return to scale while BCC allows the variability of return to scale in the model. As the present study is assuming constant returns to scale for the commercial banks under review, the relative efficiency of a bank is defined as the ratio of weighted sum of outputs to the weighted sum of input available to that bank. The mathematical expression of this relationship will be as follows:

$$E_j = \frac{\sum_{r=1}^s U_r Y_{rj}}{\sum_{i=1}^m V_i X_{ij}} \dots\dots\dots (1)$$

Where:

- E<sub>j</sub> = efficiency ratio of bank j
- s = number of outputs of bank
- U<sub>r</sub> = weight of output r
- Y<sub>rj</sub> = amount of r output produced by bank j
- m = number of inputs of a bank
- V<sub>i</sub> = weight of input i
- X<sub>ij</sub> = amount of i input used by bank j

The equation (1) uses controllable inputs and constant returns to scale. Determining a common set of weights and their appropriate allocation could be difficult as inputs and outputs can be calculated and entered in the above equation without standardization. However, different banks may value outputs and inputs in a different way

and assign different weights. Charnes et al. (1978) addressed this issue and they proposed the following linear programming form of equation (1) to calculate efficiency by using DEA:

$$\text{Max } E_j = \frac{\sum_{r=1}^s U_r Y_{rj}}{\sum_{i=1}^m V_i X_{ij}} \dots\dots\dots (2)$$

subject to:

$$E_j \leq 1, \\ \sum_{r=1}^s U_r = 1, \quad \sum_{i=1}^m V_i = 1, \quad \text{and} \\ U_r, V_i \geq 0$$

The first inequality assures that the efficiency ratio of bank j cannot exceed one; while the sum of weights of inputs and outputs of banks should be equal to 1. Moreover, the assigned weights should also be greater than zero and each input and output used to calculate the relative operating efficiency of the bank must have some positive weight. To remove any doubt, the allocative weights are determined by DEA so that each bank can maximize its own efficiency ratio, as any other set weights will reduce its operating efficiency.

**4. Empirical Results**

**(a) Ratio Analysis:**

Table 1 shows descriptive statistics of all variables averaged for private and state controlled banks for five years to analyze changes over the time period. Mean, standard deviation and coefficient of variation has been calculated for both, state controlled banks and private banks, in order to have a better comparative analysis. State controlled banks have larger mean values of interest revenue and interest expense as compared to private banks, as larger part of government funds are deposited in these banks. This incremental supply and demand of money in state controlled banks increases the profitability and non-interest revenue for state controlled banks. However, labor and non-interest expense for private banks is more as of higher wage rates, promotional and distributional expenses. One major reason for this difference is the larger network and wide range of branches of state control banks over the country, hence, increasing their deposits as well as capacity to generate more revenues. In addition to this, private banks show larger values of standard deviation and coefficients of variation as compared to public banks. The higher values in interest revenue and interest expense by private banks is might be due to the banks own endogenous factors, its exposure to different risks and overall disturbed macro environment of economy.

Table 2 and 3 depict the year-wise analysis of state controlled and private banks on individual basis. The efficiency ratios have been calculated by dividing the non-interest expenses and labor expenses, respectively, by the operating profits. The results of these tables strengthen the earlier findings of descriptive statistics reported in table 1. At first, state controlled banks, on average, have shown better operating performance than the private banks; however, the results describe no particular sequence. Secondly, there exist large variations in the efficiency of different banks within same groups over the window period and this might be due to the banks’ own intrinsic factors i.e. goodwill, service provisions, bid/ask spreads etc. One of the possible reasons for these mixed findings of the efficiency for state controlled and private banks may be regulatory requirements of the central bank. State Bank of Pakistan pressurized the commercial banks to increase the number of branches up to the minimum required level. These regulations force private banks to increase their number of branches which require heavy capital expenditures, leading to reduced efficiency and increased costs.

The difference between the efficiency of state controlled and private banks has been tested empirically through Kruskal-Wallis Chi-square and results have been reported in table 4. It is evident from the results that public banks have maximum efficiency of 269% in year 2007 and minimum efficiency of -96.9% in year 2005 where

maximum efficiency of private bank is 668.7% in 2003 and minimum is 41.4% in 2007. These results robust our earlier findings that with the passage of time operating efficiency of private banks decreases. Our findings support null hypothesis that there is no statistically significant difference between efficiency of state controlled banks and private banks, in 2003, 2004, 2005 and 2006. Whereas in 2007, difference between operating efficiency of state controlled banks and private bank is significant at 5% level and this might be due to larger decrease in operating efficiency of Private Banks as compared to other years. Finally difference between means of state controlled banks and private banks are tested and it is insignificant at the 5% level.

Likewise, table 5 reports findings of chi-square of labor efficiency between state controlled banks and private banks. The results are almost similar and state controlled banks show highest (265%) and lowest (-111%) administrative efficiency level in 2007 and 2004 respectively. On the other hand, private banks depict maximum (403%) and minimum (41.2%) in 2003 and 2007 years respectively, demonstrating that private banks efficiency declines with year, while in 2006 and 2007, operating efficiency of state-owned banks increases due to the reduction in labor and administrative efficiency. Difference between labor efficiency of state controlled banks and private banks are statistically insignificant at 5% level in 2003, 2004, 2005, however they are significant at 5% level in 2007 and 10% level in 2006. At the end, the mean difference between both groups is statistically insignificant at 5% level.

#### **(b) DEA Approach:**

Panel A of table 6 measures the banks' efficiency by their composite state-owned banks using x-efficiency approach of DEA. On average, deviation of the state controlled bank from the best practice firm (National Bank) is not so large. National Bank and Punjab Provincial Bank proved to be the most efficient bank during our sample period. In comparison with them, The Bank of Punjab is the second most and Askari bank is the least efficient bank during the whole window period. Contrary to this, private banks in Panel B depict larger variation not only across the years but also within the banks. Habib Bank (MCB Bank) seems to be the first most (second most) efficient decision making units having, on average, efficiency level of 100% (97%). In contrast with the Habib Bank, Royal Bank of Scotland demonstrates as a least efficient unit within all private banks. Overall, private banks efficiency declines across the years whereas state controlled banks proved to be more efficient and their efficiency level remains the same or better throughout the study period. Findings of our study are consistent with Burki and Niazi, who found an overall insignificant effect of privatization on banking performance whereas, Noulas results, by using DEA approach, shows that there is no statistical significant difference between operating efficiency of public and private banks.

Finally, the differences between the efficiency of state controlled and private banks, as measured by DEA, have been tested for statistical significance using Kruskal-Wallis chi-square. The results reported in table 7 indicate that state controlled banks seem to be more efficient with the passage of time while private bank's operating efficiency declines over the years on the frontier, which is quiet opposite to our expectation. On average, state-owned banks and private banks' operating efficiency across all years are 83.62% and 67.03%. These results are further strengthened when relative difference between operating efficiency of state controlled banks and private banks is found to be significant at 5% level in 2004, 2006 and 2007. In the same way, average difference between state controlled banks and private banks is also significant at 5% level.

#### **5. Conclusion**

Privatization is considered a most widely used technique to improve overall economic growth. Especially in banking sector financial reforms enhance competition and improve quality of product and services. Literature provides strong evidence regarding significant impact of financial restructuring on banking performance. The purpose of this study is to conduct a comparative analysis of public and private commercial banks of Pakistan for the period of 2003-2007 through traditional method and DEA approach. Earning before interest and taxes, administrative expenses, direct and indirect income are considered while calculating operating efficiency of the commercial banks operating in Pakistan. Results show that efficiency of private banks is less than public banks and differences between operating efficiency of both state controlled banks and private banks are statistically insignificant. No particular trend has been seen in findings of traditional method. Large variations are found across

the sample not only among different banks but also within banks, this might be due to the increased competition among banks as many new banks enter in the contest at the start of 2003.

According to DEA approach, operating efficiency of private banks declines during the study period. Our results are consistent with Noulas (2001) and Burki and Niazi (2003). Several reasons contribute to these unexpected results. First of all, from 2006 overall economic and political conditions of Pakistan became worse resulting in an adverse effect on the economic growth. Secondly, loans provided under consumer financing to general public became bad debt due to inability of consumer to payback the loan. Thirdly, SBP issued prudential regulations and banks are ordered strictly to follow them which increased administrative and non-interest expense. Finally, increase in paid-up-capital requirement, reserve requirement, and number of branches requirement further lead to decline in the efficiency of private banks. On the other hand state controlled banks have a large amount of government deposits that reduces its liquidity risk. Therefore, one might recommend commercial banks to improve their operating efficiency by reducing the number of non-performing loans and administrative expense. Further analysis of deregulation effects on banking efficiency can be analyzed by using different parametric approaches, CAMEL approaches while variation in efficiency can be measured across regions, types of banks, and functions they perform. Banks performance can be analyzed by calculating technical, allocative, pure technical, scale and overall technical efficiency.

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## Annexure

**Table 1: Descriptive Statistics (In Millions)**

Variables	State Controlled Banks			Private Banks		
	Mean	SD	CV	Mean	SD	CV
<b>Operating Profit</b>	3,713.65	1,529.19	0.4117	2,947.32	1,613.85	0.5475
<b>Interest Revenue</b>	8,674.46	3,680.17	0.4242	7,845.09	5,399.95	0.6883
<b>Interest Expense</b>	3,474.23	2,106.89	0.6064	3,194.68	2,705.01	0.8467

<b>Non-Interest Revenue</b>	2,621.96	1,162.90	0.4435	2,012.32	815.94	0.4054
<b>Labor Expense</b>	2,908.21	742.39	0.2552	2,958.92	1,351.69	0.4568
<b>Non-Interest Expense</b>	2,753.96	790.68	0.2871	2,906.25	1,348.95	0.4641

Table 2: Total Operating Efficiency (non interest expense/operating income)

Banks	2003	2004	2005	2006	2007
<b>Al Baraka Islamic Bank</b>	--	--	0.5901	1.5383	1.0664
<b>Alfalah Bank</b>	0.5144	1.6201	1.6947	2.3063	1.8275
<b>Bank Al-Habib</b>	0.7060	1.2660	0.8560	0.9044	1.0374
<b>Allied Bank</b>	4.7407	9.0871	0.9189	0.8265	1.0808
<i>Askari Bank</i>	0.7558	0.6491	0.9072	0.9465	2.0878
<b>Atlas Bank</b>	--	--	14.3343	-2.19211	-1.2171
<b>Crescent Commercial Bank</b>	0.6400	-2.6600	-0.6899	-0.7442	-0.6712
<b>Faysal Bank</b>	0.3090	0.5145	0.3604	0.49076	1.0436
<b>Habib Bank</b>	--	1.9363	1.0397	0.7202	1.1955
<b>Habib Metropolitan Bank</b>	0.5433	0.5916	0.4809	0.4295	0.5362
<i>Khyber Bank</i>	--	--	1.5472	1.6719	5.9744
<b>Meezan Bank</b>	--	--	1.1354	1.3176	1.3903
<b>MCB Bank</b>	2.0966	1.6180	0.5043	0.3546	0.2609
<b>My Bank</b>	61.4478	4.6444	2.5593	0.9815	3.2574
<i>National Bank</i>	0.8728	0.7417	0.6012	0.5182	0.5128
<b>NIB Bank</b>	--	12.6971	26.4084	40.8002	-3.5135
<i>The Bank of Punjab</i>	0.9999	0.6623	0.4079	0.3946	0.4723
<i>Punjab Provincial Bank</i>	--	-12.5471	17.1029	3.2846	4.2279
<b>Royal Bank of Scotland</b>	--	--	0.7796	0.7674	-4.3323
<b>Saudi Pak Commercial Bank</b>	0.3966	1.0128	5.4296	-2.6878	-0.3988
<i>SME Bank</i>	--	0.6052	1.2784	2.3049	3.4279

<b>Soneri Bank</b>	0.6160	0.6149	0.5727	0.7157	0.8759
<b>Standard Chartered Bank</b>	--	--	0.4351	0.7229	2.9723
<b>United Bank</b>	1.5511	1.3658	1.3811	0.8200	1.0518
<i>Zarai Tarqiati Bank</i>	7.2153	2.0953	-28.6333	6.5602	2.1670
<b>Mean</b>	5.5603	1.3955	2.08011	2.5501	1.0533
<b>Maximum Value</b>	61.4478	12.6971	26.4084	40.8002	5.9744
<b>Minimum Value</b>	0.3090	-12.5471	-28.6333	-2.6878	-4.3323

Table 3: Total Administrative Efficiency (labor expenses/operating income)

<b>Banks</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Al Baraka Islamic Bank</b>	--	--	0.5732	1.5319	1.0651
<b>Alfalah Bank</b>	0.5133	1.6191	1.6826	2.2895	1.8239
<b>Bank Al-Habib</b>	0.7019	1.2654	0.8548	0.9044	1.0373
<b>Allied Bank</b>	4.4516	8.9476	0.8901	0.7943	1.0110
<i>Askari Bank</i>	0.7552	0.6491	0.9066	0.9448	2.0826
<b>Atlas Bank</b>	--	--	13.7421	-2.1884	-1.2110
<b>Crescent Commercial Bank</b>	0.6358	-2.6483	-0.6659	-0.7442	-0.6497
<b>Faysal Bank</b>	0.3041	0.5140	0.3599	0.4823	1.0378
<b>Habib Bank</b>	--	1.9015	1.0157	0.7116	1.2082
<b>Habib Metropolitan Bank</b>	0.5409	0.5910	0.4777	0.4292	0.5361
<i>Khyber Bank</i>	--	--	1.5405	1.6549	5.7433
<b>Meezan Bank</b>	--	--	1.1347	1.3115	1.3834
<b>MCB Bank</b>	1.8233	1.7853	0.4962	0.3504	0.2357
<b>My Bank</b>	61.1804	4.3886	2.5184	0.9430	3.2101
<i>National Bank</i>	0.8666	0.7384	0.5875	0.5110	0.5063
<b>NIB Bank</b>	--	12.2464	26.3525	40.7250	-3.5051
<i>The Bank of Punjab</i>	0.9976	0.6429	0.4028	0.3674	0.4645
<i>Punjab Provincial Bank</i>	--	-12.5075	17.0493	3.2840	4.2238
<b>Royal Bank of Scotland</b>	--	--	0.7607	0.7564	-4.2227

<b>Saudi Pak Commercial Bank</b>	0.4227	1.0472	5.2168	-2.9722	-0.3826
<i>SME Bank</i>	0.0000	0.6050	1.3755	2.3906	3.4614
<b>Soneri Bank</b>	0.6035	0.6137	0.5658	0.7101	0.8661
<b>Standard Chartered Bank</b>	--	--	0.4328	0.7191	2.9531
<b>United Bank</b>	1.4223	1.3708	1.3236	0.8026	1.0334
<i>Zarai Tarqiati Bank</i>	3.5322	2.0881	-28.5917	4.2678	2.1237
<b>Mean</b>	4.9220	1.3610	2.0401	2.4391	1.0414
<b>Maximum Value</b>	61.1804	12.2464	26.3525	40.7250	5.7433
<b>Minimum Value</b>	0.0000	-12.5075	-28.5917	-2.9722	-4.2227

**Table 4: Differences between Total Operating Efficiency for Banks**

Year	State Banks	Private Banks	K-W Chi-Square
2003	2.4610	6.6874	1.381
2004	(1.2989)	2.6391	1.508
2005	(0.9693)	3.2661	0.033
2006	2.2401	2.6707	2.476
2007	2.6957	0.4146	4.487*
<b>Mean</b>	<b>1.0257</b>	<b>3.1356</b>	<b>0.059</b>
<i>* and ** Level of Significance at 5% and 10% respectively</i>			

**Table 5: Differences between Administrative Efficiency of Banks**

Year	State Banks	Private Banks	K-W Chi-Square
2003	0.8787	4.0333	.080
2004	-1.1120	1.8690	1.508
2005	-0.9613	3.2073	.004
2006	1.9172	2.6420	2.872**
2007	2.6579	0.4127	4.487*

Mean	0.6761	2.4328	.092
<i>* and ** Level of Significance at 5% and 10% respectively</i>			

Table 6: DEA Results for Banks' Operating Efficiency

Panel A: DEA results of State Controlled Banks					
Banks	2003	2004	2005	2006	2007
Askari Bank	1.000	1.000	.79	.8155	.7856
Khyber Bank	--	--	.9216	1.000	.933
National Bank	1.000	1.000	1.000	1.000	1.000
The Bank of Punjab	1.000	1.000	1.000	.9763	.9006
Punjab Provincial Bank	--	1.000	1.000	1.000	1.000
SME Bank	--	.9453	.7814	.8292	1.000
Zarai Tarqiati Bank	.9776	.9033	.9598	.8897	.8559
Mean	.5682	.8363	.9218	.9301	.9250
Panel B: DEA results for Private Banks					
Banks	2003	2004	2005	2006	2007
Al Baraka Islamic Bank	--	--	1.000	1.000	1.000
Alfalah Bank	1.000	0.8386	0.6178	0.5208	0.4725
Bank Al-Habib	0.645	0.7064	0.7362	0.6401	0.5404
Allied Bank	0.5333	0.6946	0.7491	0.6518	0.5597
Atlas Bank	--	--	1.000	0.9763	0.6696
Crescent Commercial Bank	1.000	1.000	0.4354	0.7298	0.664
Faysal Bank	1.000	1.000	0.9307	0.7626	0.6054
Habib Bank	--	1.000	1.000	1.000	1.000
Habib Metropolitan Bank	0.698	0.9323	0.879	0.7888	0.6239
Meezan Bank	--	--	0.7208	0.7175	0.6176
MCB Bank	1.000	0.8909	1.000	1.000	1.000
My Bank	0.437	0.843	0.7156	0.8869	0.7408
NIB Bank	--	0.8003	0.5693	0.5792	0.4958
Royal Bank of Scotland	--	--	0.8242	0.7364	0.4323
Saudi Pak Commercial Bank	0.6735	0.8483	0.6804	0.5434	0.5016
Soneri Bank	0.6815	0.9608	0.8331	0.7051	0.629
Standard Chartered Bank	--	--	0.9961	0.735	0.4646
United Bank	1.000	0.9616	0.8058	0.8106	0.8916
Mean	.4815	.6376	.8052	.7657	.6616

Table 7: Comparison of State Controlled Banks and Private Banks

Year	State Banks	Private Banks	K-W Chi-Square
2003	0.5682	0.4815	1.810
2004	0.8363	0.6376	3.915*
2005	0.9218	0.8052	2.531
2006	0.9301	0.7657	6.244*
2007	0.925	0.6616	7.353*
<b>Mean</b>	<b>0.8362</b>	<b>0.6703</b>	<b>4.362*</b>
<i>* Level of Significance at 5% level</i>			