Do bank mergers lead to efficiency gains? The Case Study of bank mergers in Pakistan (working paper)

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Abstract: Pakistani banking industry is under the wave of merger and acquisition. This paper summarizes two case studies on the efficiency effects of mergers. The bank mergers of year 2006 are selected for study. Twelve ratios are applied on all case studies for the period of 3 years pre merger and 3 year after merger. Market analysis is used as control variable. The results provide objective of cost cutting is achieved on average, efficiency effect is marginal and pre merger efficiency of acquirer and size of bank didn't contribute anything in efficiency gains.

1. Introduction:

Pakistani banking industry transformed from a government dominated sector to a highly competitive and profitable industry. Major reforms in banking industry have increased its resilience and developed efficient financial system that brings economic growth. The whole phenomenon is consistent with different studies e.g. financial development is correlated with economic growth (Goldsmith, R. W, 1969., Abma, R. C. N et al 2003, Khan and Senhadji 2000).
This industry has been suffering under the wave of merger and acquisition since many years. One reason of these mergers and acquisitions is duly implementation of Basel Accord II by State Bank of Pakistan. According to circular issued in October 2005 all banks are required to maintain their capital gradually to the level of 23 billion till the end of 2013, however now this requirement has decreased to 10 billion according to market condition but still our focus is on requirement imposed in 2005 to understand the situation prevailing in our study time period. Banks found it difficult to raise the capital through equity injection or reinvestment of profits therefore merged themselves to bring their capital to the required level. This phenomenon is consistent with the studies of Harford, jarred (2004) that shocks that may be regulatory and technologically causes industry merger waves. By using the data of USA many bank analyst argued that bank merger leads to efficiency gains. But recent studies show that no efficiency effects can be attained from mergers and acquisition. While the studies in Taiwan shows that banks relating to different cultures can attain cost efficiency.

We can find significant number of mergers in banking industry in a short period of time. Since no study has focused on this important issue of merger. We have conducted this study with an objective to find out whether bank mergers leads to efficiency gains or it just achieve cost reduction due to economics of scale. Further we want to analyze that efficiency of acquirer before merger has any positive effect on efficiency of merged firm, and impact of size of banks before merger on efficiency gains, and some information about labor laws in Pakistan. Our study will be the addition in literature.

Our study analyzed the effects of mergers on efficiency yields in Pakistan using case study methodology. We will compare the results of financial ratios before and after merger in order to find out the effects of merger on efficiency while market analysis is used as control variable. Results of the study provide that cost reduction is achievable on average, efficiency gains are not clear or not achievable, Pre merger more efficient acquirer have no effect on efficiency gains and large banks didn't provide more efficiency gains after merger.

This paper consists of four sections. Section one provides literature review and our hypothesis. Section two provides methodology. Section three discusses our study frame work and data. Section four discuss summary of findings and limitations.

2. Literature Review:

Jalal D. Akhavein et al (1997) finds that merged banks realized statistically significant increase in profit efficiency relatively to other banks, and these improvements are high for the banks that are inefficient prior to merger.
According to Crispi et al (2004) premerge efficiency of merged and acquired bank is relatively low.

Cornett et al (2006) finds that after merger revenue enhancement and cost reduction improved performance of banks and these results are more significant for large banks relatively to small ones.

Facarelli Dario et al (2002) finds that strategic objective of merger is expanding revenues from financial services. He finds that economies of scale or cutting costs are difficult to implement in country where labor laws are rigid.

According to Ryngaert D. Michael et al (2001) most of the estimated value gains from bank mergers stem from the opportunity to cut cost by eliminating overlapping operations and consolidating backroom operations. For a typical bank merger estimated revenues enhancement are significantly less important.

According to Peristiani Stavros (1997) banks that participate in a merger realized a small but significant decline in pro forma X- efficiency 2 to 4 years, and acquiring bank achieves moderate improvements in scale efficiency. He also finds that profitability and operating cost performance of surviving banks after merger are greatly influenced by balance sheet attributes and other bank characteristics.

According to Len, Ping-wen (2005) that banks relating to different cultures can achieve better results from merger regarding cost efficiency in Taiwan. While banks with same set up cant explore new business grounds so can't achieve cost efficiencies from merger.
According to Huizinga, H.P. (2001) checked the efficiency effect of 52 horizontal bank mergers in Europe, the cost efficiency of bank mergers is substantial while profit efficiency is marginal.
According to GARY A. DYMSKI (2002) U.S experience that mergers are efficiency driven is unique and can't be applicable on all banking industry. In developing countries such mergers are not efficiency driven but actually due to changes in macro structural changes and due to change in banking strategies over time.

Rhoades Stephen A. (1998) used case study methodology in order to find out the cost and efficiency results of merger. Sixteen financial ratios consisted on expense ratios, profitability ratios, and balance sheet ratios, were applied on nine case studies on USA banking industry. Data for pre merger and post merger activity were analyzed. Ratios of peer group were used as control variable, to check the observed changes are due to economic variables or due to combined firm effect. Results of studies showed that on average mergers reduced cost but not necessarily brought efficiency gains. Moreover size of acquiring firm and premerger efficiency of acquiring firm can't predict the results of merger.

3. Hypothesis:

Literature review provides base for four hypotheses, that Mergers provide efficiency gains, Mergers decrease cost of doing business due to economics of scale, and better effects of merger can be attained by the banks operating at large scale and if acquirer is more efficient before merger.

4. Methodology:

4.1 Case study approach

We have used case study methodology to measure the effects of merger using premerger data, of acquirer and target firm, and post merger data. The choice of methodology is influenced by two factors e.g. small number of observation and desire to get information about firm's behavior and performance. (Rhoades, Stephen A. (1998), Facarelli Dario et al (2002).

5. Study framework and data:

The same common financial ratios are used on all case studies in order to judge the efficiency of merger. Financial ratios include six expense ratios, two profitability ratios, four balance sheet ratios.

We take data of 3 years preceding the merger and 3 years after the merger. **"**Three year time period was used because of the almost unanimous agreement among the experts we interviewed that about half of any efficiency gains should be apparent after one year, and all gains should be realized within three years.**"** *by Rhoades, Stephen A (1998).*
Ratios for three years before merger are calculated for both acquirer and for target, and for industry that provides information about relative efficiency of target and acquirer. Then by taking the average ratios of acquirer and target we just create a hypothetical firm that shows the summation of balances of both firms.

For the post merger period we calculate the ratios for combined firm. And premerger data is compared with post merger data to determine what changes occurred in efficiency, performance, and balance sheet items. The control group is particularly valuable at this stage because it allow to judge that observed changes are due to economic factors or due to combined effect.

6. Data:

The mergers analyzed are not selected randomly. Indeed, the mergers are selected on the basis of recent data. So the activities of year 2006 are considered, as 2007 didn't provide any merger activity. And activities after 2007 didn't provide the financial statements for three years.

Information about merger activities is taken from web site of Karachi stock exchange which provides that three mergers activities are acquired in year 2006. Financial data are taken from publications of state bank of Pakistan and from web sites of merged banks. But we are unable to gather the required data for atlas investment bank. So our study focused on two merger activities that are coded as A and B. Case study B shows merger of large banks as compared to case study A.

7. Financial ratios:

Twelve financial ratios are analyzed to examine the results of merger. Six are expense ratios includes, expenses to average assets[1], expenses to operating revenue, these ratios are best indicator of efficiency gains and are controlled for shrinkage of firm.
Ratio of non-interest expenses[2] to assets directly affected by cost saving that are routine result of horizontal merger. So this ratio is of special interest. Total expenses to total revenues and non-interest expenses to adjusted operating revenues[3] are analyzed as an alternative to the expenses to assets ratios. Rationale of using revenues in denominator is, expenses are adjusted for interest rate changes but assets are not. So revenues are used as they are also adjusted for interest rate changes.

Two profitability ratios include net income[4] to average assets. This ratio shows the ability of bank to generate income from assets at its disposal, and is good indicator of overall banking performance. However the limitation of ratio is, it is upward biased due to income generated from off balance sheet items. Second ratio is net income to equity, and it is alternative of profitability ratio. That measures the return on owner's investment. But limitation of this ratio is different firms used different structure of capital and equity.

Four balance sheet ratios include total capital to total assets that is indicative of risk taking behavior of firms. Other ratios include total loans[5] to total assets and, C and I[6] loans to total assets that would likely shows change in expense ratios. As increase in these ratios increase the cost of maintaining loan portfolio relative portfolio of government securities with no meaningful implication for operating efficiency. Finally ratio of core deposit[7] to total deposit shows the choices between non-interest and interest expenses without any implication for operating efficiency, as increase in this ratio likely result in increase in non-interest expenses and decrease in interest expenses.

8. Summary of findings:

This section presents a summary of findings of the two case studies.

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[1] Average assets are calculated by taking the average of opening and year ending balances with a rational that expenses (income) represent a flow generated through the whole year so average of asserts are more closely related with these flows.
[2] Noninterest expenses include administrative and other expenses that are directly related with managing business.
[3] Adjusted operating revenues= noninterest income+(interest income-interest expenses)
[4] Net income is defined as operating income minus applicable income tax minus extraordinary items and other adjustments.
[5] Total loans= lending to financial institution + advances
[6] C and I loans are defined as advances
[7] Core deposit according to Richard G. Sheehan (2004) can be defined as checking accounts and saving accounts for financial institutions

Merger	Acquiring firm more efficient then target	Pre to post merger change in performance relative to market					
		Return on Assets	Total expenses ÷ total Assets	Total expenses ÷total rev.	noninterest expenses ÷ total assets	noninterest expenses ÷ adj ope rev.	Return on equity
A	Yes	WK[8]	Imp[9]	NC[10]	Imp	Imp	WK
B	Yes	WK	Imp	WK	WK	WK	WK

8.1 Main Findings:

Total expenses are increased as compared to assets but such increase in expenses less then market trend for both case studies. So it can be interpreted as total expense to total asset ratio show efficiency gains in both case studies. Total expenses to total revenue ratio for first merger didn't provide any clear information. While for second merger increase in expenses are more as compared to increase in revenues. Although market trend is consistent for this phenomenon but for merged firm increase in expenses are more when measured in percentage terms. So this ratio can't provide any efficiency gains for both studies. Non-interest expenses to total assets and adjusted operating revenue ratios are used to measure cost efficiency which is achieved in one case study but for case study B cost efficiency is not achieved.

Both case studies show that return on assets and return on equity are decreasing. But return on equity for merged firm of case study A is very low.

8.2 Explanation of findings:

Based on information provided in table 1, we can interpret that on average bank mergers can achieve cost cutting objective. Case study A shows that cost cutting objective that is more famous result of horizontal merger is achieved. While for other case study it is not achieved. And this result is supported by Ryngaert D. Michael (2001), Huizinga, H.P. (2001), Rhoades Stephen A.(1998) studies. Efficiency, that is different from cost cutting on the basis that cost cutting leads to shrinkage of business or closing of overlapping offices while efficiency leads to achieve more output from least input, is marginal in both case studies. This result is consistent with the studies of Ryngaert D. Michael et al (2001), Huizinga, H.P. (2001), Rhoades Stephen A. (1998). Our hypothesis that if acquirer is more efficient than acquired then efficiency gains are more is not acceptable. For example in both case studies acquirer is more efficient then acquired firm but this efficiency didn't provide any special efficiency gains. This result is not supported by literature. Large Size of the merged firms add efficiency gains also proved wrong as merger B provides no special gains although it shows merger of large banks relative to merger A. this result is also not supported by literature.

Both merger decreases return on assets and specially return on equity. That can be interpreted that mergers In Pakistani banking sector are not the result of achieving more benefits for shareholders in fact these are result of structural requirements imposed by State Bank of Pakistan.
On checking of balance sheet attributes we find that merger didn't change the risk behavior of firms. The one common attribute in both studies is that both merged firms didn't increase the

[8] WK: Weakened
[9] Imp: Improved
[10] NC: Not clear

amount of advances that can earn high profits but both firms increased the amount of core deposits that pays high interest which didn't provide efficiency effect to them however reducing cost of non-interest/ non-mark up expenses provides merger A cost efficiency.

9. Conclusion:

Objective of our study is to check the efficiency gains, fulfillment of cost cutting objective, also analyze the role of pre merger efficiency of banks and size of banks to be merged. We have found that cost cutting is important result of merger while efficiency is marginal result of merger. Moreover size and pre merger efficiency didn't contribute anything in efficiency. On the basis of such results we can interpret that these mergers are due to requirements of minimum capital and minimum no of branches imposed by state bank of Pakistan. So the banks that are unable to increase their capital by equity injection go for mergers. This result is consistent with studies of DYMSKI GARY A.

10. Limitations:

Results of study can't be generalized as it covers activity of one particular year. We can't analyze some proposed ratios of Rhoades Stephen A. (1998) studies, like personnel, occupancy, other non-interest expenses to assets ratios, off balance sheet items to assets ratio due to availability of data on such grounds. Our research aims include that we want to interpret the labor laws are also not achievable as we are not able to find out true staff cost. However this is an ongoing research and we will try to remove the problem of generality in our full research paper by taking data from different years and also check the results by taking peer group as control variable.

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