Impacts of Mergers and Acquisitions on Acquirer Banks' Performance

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Abstract

This study investigates the effects of mergers and acquisitions (M & A) on the operating performance of the acquirer banks in Pakistan. For this purpose, a sample of 18 transactions, involving acquirer banks, listed on the Karachi Stock Exchange, is used. The Financial Ratio Analysis (FRA) is used to determine the effects of M & A. The significance of change in the operating performances is tested through a paired sample t-test. The results indicate a deterioration in the performances of the acquirer banks in the post-merger period.

JEL Classification: G21, G34

Keywords: M & A, mergers and acquisitions, financial ratio analysis, ratios, profitability, liquidity, capital adequacy, performance, Pakistan

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1. INTRODUCTION

M & A is a process in which two, or even more than two, firms are amalgamated into a single entity in order to enhance their market position and market share through swapping out the competitors, and increasing the efficiency of a firm by combining the resources (Odeck, 2008). The Oxford dictionary defines merger as "converting two or more business concerns into one". Thus, merger can be defined as the amalgamation of two or more than two firms by purchase/acquisition or through common interests, but different from the consolidation where the firm continues its operations without creating any new entity (Kemal, 2011).

Problem statement

M & A has been one of the popular trends for business expansion in developed countries and is increasing in developing countries as well (Al-Sharkas, Hassan, & Lawrence, 2008). Pakistan's economy has also witnessed glimpses of such trends in the last many years, particularly in the banking sector. The frequent increase in the minimum capital requirements by the State Bank of Pakistan made it difficult for the small banks to survive. Thus they opted for M & A, particularly in the late 1990s and onwards. This creates an essential need to investigate the effects of M & A on the performances of the merged banks so that other banks can make more informed decision. Therefore, the current study is undertaken to evaluate the effects of M & A on the post-merger operating performances of the acquirer banks in Pakistan.

Objectives of the study

The current study precisely explores the reasons of M & A in order to examine the impact of M & A on the performances of the acquirer banks in terms of profitability, liquidity and capital adequacy and determine the possible outcomes of M & A for the information of the banks' management.

Significance of the study

Many researchers (Kumar, 2009; Yeh & Hoshino, 2002; Badreldin & Kalhoefer, 2009; Al-Sharkas, Hassan, & Lawrence, 2008; Odeck, 2008; Kwoka & Pollitt, 2010; Rezitis, 2008; Sufain, 2004; Lin, 2005; Asimakopoulos & Athanasoglou, 2013; Tse & Soufani, 2001; Berger & Humphery, 1992; Vallascas & Hagendorff, 2011) worked on the effects of M & A almost all over the world. However, in Pakistan the phenomenon is quite new and little attention has been paid to this important area of research with quite nominal work done (Arshad, 2012) leaving room for further research. Particularly, after 2006 (Afza & Yusuf, 2012) no research is observed to have been undertaken investigating the impacts of M & A, though the said period is more important for this purpose, with 45 mergers occurred in financial sectors during this period. Kemal (2011) and Arshad (2012) investigated the impacts of M & A in Pakistan but their studies were restricted to a single entity (i.e. SCB and RBS respectively).

This study therefore acquires significance by studying all M & A transactions occurring over a period of 10 years (2002-2011) and providing a comprehensive picture of the effect of M & A during the period under review.

Study Plan

The study is divided in five sections. Section 1 gives the introduction, problem statement and associated details. Section 2 provides a detailed review of the relevant literature. Section 3 discusses research methodology and all associated aspects in detail. Section 4 covers data analysis and discussion. Section 5 concludes the research and gives recommendations.

2. REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

Two approaches are usually used to measure the effects of M & A on the firm performance. One is operating performance approach, which compares the pre and post-merger performances of merged firms. Second, the share price approach, which measures the effects of M & A on the basis of share prices of the merged firms (Kumar, 2009).

Operating performance approach

Yeh & Hoshino (2002), Rehman & Limmack (2004), Cabanda & Pascual (2007), Badreldin & Kalhoefer (2009) and Kumar (2009) examine the post merger operating performances of acquiring organizations on the basis of financial ratios analysis and found no improvement in the operating performances. On the other hand, Pawaskar (2001) found lower operating performance in the post-merger period. Similarly, Mantravadi & Reddy (2008) observe a negative impact of mergers on operating performce, and found horizontal mergers causing higher decline in the operating performances as compared with conglomerate and vertical mergers. However, some other studies (Healy, Palepu, & Ruback, 1992; Beena, 2004; Tarawneg. 2006; Lau, Proimos & Weight, 2008) observe improvement in post merger performances of firms.

Similarly some other researchers (Favero & Pepi, 1995; Harris, Ozgen, & Ozcan, 2000; Worthington, 2001; Feroz, Kim, & Raab, 2005; Al- Sharkas et al., 2008; Odeck, 2008; Kwoka & Pollitt, 2010) found higher operating performances in the post merger periods, on the basis of data envelopment analysis (DEA) and stochastic frontier analysis (SFA). However, some studies observe mixed results. For instance, Vennet (1996) founds improvement in the cost efficiency but decline in productivity efficiency. According to Lin (2005) homogenous banks' merger does not increase efficiency, but heterogeneous banks' merger increases the cost efficiency. Some studies (Krishnasamy, Ridzwa, & Vignesan, 2004; Sufian & Fadzlan, 2007; Rezitis, 2008) report decline in the operating efficiency/ performances of the merged banks.

Share price approach

Yuce & Ng (2005) using event study method investigate the effects of the M & A and observe abnormal returns on the target and acquirer firms' stocks. Other researchers (Andreou, Louca & Panayides, 2012; Alexandrou, Gounopoulos, & Thomas, 2014; Khanal, Mishra & Mottaleb, 2014) also observe positive effects of M & A on stocks' prices. On the other hand, some studies (Toyne & Tripp, 1998; Andre, Kooli, & Her, 2004; Asimakopoulos & Athanasoglo, 2013) found abnormal returns on target firms' stocks and decline in the acquirer firms' stocks' prices but Malhotra & Zhu (2006) report abnormal return on acquirer firms' stocks as well.

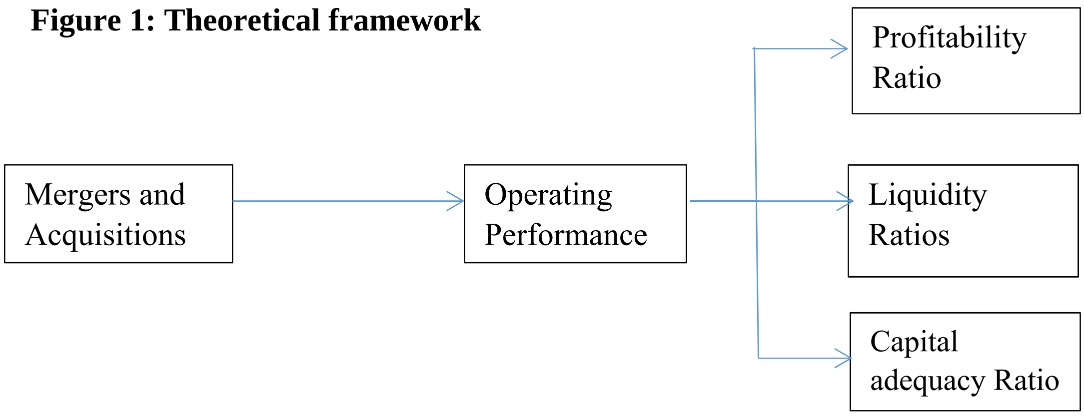
Research in Pakistan

A very insignificant research is observed to have been carried out on the M & A in Pakistan. Kemal (2011) observes improvement in the solvency ratios but does not report any improvement in the liquidity, profitability and market ratios of Royal Bank of Scotland (RBS) after the RBS's merger with the ABM AMRO Bank. Bashir, Sajid, & Sheikh (2011) found an insignificant increase in the value of acquirer firms but, on the other hand, an insignificant loss is observed in the value of target firms. Afza & Yusuf (2012) examine the impact of M & A on the efficiency of banking sector considering 12 mergers occurred between 1998 and 2006. They observe an insignificant improvement of only 0.3% in cost efficiency and a decline of 5 % in profit efficiency in the post-merger period. Arshad (2012) investigated the post-merger performance of Standard Chartered Bank (SCB) after acquiring the Union Bank in December 2006, and found improvement in some ratios but deterioration in more ratios reflecting negative post-merger effects.

Theoretical Framework

The following theoretical framework is developed for the purpose of this study. It shows the relationship between the M & A transactions as independent variable and the operating performance as dependent variable. The dependent variable (operating performance) is measured by using financial ratios, grouped into three categories including profitability, liquidity and capital adequacy ratios.

Figure 1: Theoretical framework



3. RESEARCH DESIGN/METHODOLOGY

This study intends to test the following hypotheses developed on the basis of the literature review and reflected in the theoretical framework drawn in figure 1.

1. Profitability testing hypothesis $H_0: \mu_1 = \mu_2$; $H_1: \mu_1 \neq \mu_2$
2. Liquidity testing hypothesis $H_0: \mu_1 = \mu_2$; $H_1: \mu_1 \neq \mu_2$
3. Capital adequacy testing hypothesis $H_0: \mu_1 = \mu_2$; $H_1: \mu_1 \neq \mu_2$

Where μ_1 represents the average performance of the three pre-merger years (T-3, T-2, T-1) and μ_2 represents the average performance of the three post-merger years (T+1, T+2, T+3) of the respective banks.

3.1 Measurement of Variables

In order to measure the effects of M & A, the average performance (μ_1) of the three pre-merger years (T-3, T-2, T-1) is compared with the average performance (μ_2) of the three post-merger years (T+1, T+2, T+3) of the respective banks. The year of merger is indicated by T_0 and is not included in the performance evaluation in order to eliminate the effect of the merger cost. The operating performances of the acquirer banks are measured on the basis of profitability, liquidity and capital adequacy ratios. Table 1 shows the list of profitability ratios used to measure the performances of the acquirer banks (Kumbirai & Webb, 2010; Ismail, Abdou, & Annis, 2011; Kumar, 2009; Kemal, 2011).

Table 1: Profitability Ratios

S.No	Ratio	Measurement
01	Return on assets (ROA)	(Profit or Loss after taxation / Total assets)*100
02	Return on equity (ROE)	(Profit or Loss after taxation / owner equity) *100
03	Net markup (interest) income to total assets	[Net-markup or interest income (after provision) / total assets]* 100
04	Non markup (interest) income to total assets	(Non-markup or interest income / total assets)* 100
05	Net interest margin	(Interest income - interest expenses / total assets) *100
06	Admin. expenses to profit before tax.	Admin. expenses / profit before tax

Table 2 shows the list of liquidity ratios (Arshad, 2012; Kemal, 2011; Pawaskar, 2001; Badreldin & Kalhoefer, 2009; and Yeh & Hoshino, 2002) used to measure the ability of the banks to pay off their short-term obligations as an indicator of their performances.

Table 2: Liquidity Ratios

S.No	Ratio	Measurement
01	Cash and cash equivalent to total assets	[(Cash+ cash equivalent) / total assets]*100
02	Advances to total assets	(Advances / total assets)*100
03	Investment to total assets	(Investment / total assets)*100

The frequent increase in the minimum capital requirements by SBP is considered one of the primary reasons for mergers in the banking sector of Pakistan (Khawaja & Din, 2006). Capital adequacy is therefore assumed as a performance measure of the effect of M & A. Table 3 shows the list of capital adequacy ratios used in this study.

Table 3: Capital Adequacy Ratios

S.No	Ratio	Measurement
01	Capital adequacy ratio	Total equity / total assets
02	Total deposits to total equity	Total deposit / total equity

3.2 Data Collection and Analysis Techniques

A total of 16 M & A transactions between banks, listed on Karachi Stock Exchange (KSE), took place during the 10 years period i.e. 2002-2011. The list of the merged banks is provided in annexure-A. In order to measure the effects of M & A, the average performance (μ_1) of the three pre-merger years (T-3, T-2, T-1) is compared with the average performance (μ_2) of the three post-merger years (T+1, T+2, T+3) of the respective banks. Thus, a total of 48 observations are made for 16 mergers due to the three pre-merger years and 48 observations are made for the 16 mergers due to the three post-merger years. However, due to the non-availability of data, two observations are dropped making the total of observations equal to 46 for calculating the mean of each of the pre and post-merger performances. For this purpose, the data is collected from the audited financial statements of the respective acquirer banks for the three pre-merger years and the three post-merger years, for each of the M & A transactions.

For evaluating the effects of the M & A on the operating performances of the respective banks the ratios analysis technique is applied (Kumar, 2009; Yeh & Hoshino, 2002; Healy, Palepu, & Ruback, 1992; Lau, Proimos & Weight, 2008; Badreldin & Kalhoefer, 2009; Mantravadi & Reddy, 2008; Ramaswamy & Waegelein, 2003; Ramakrishnan, 2010; Gugler, Mueller, Yurtoglu & Zulehner, 2003; Beena, 2004; Cabanda & Pascual, 2007; Ismael, Abdou & Annis, 2010; Rehman & Limmack, 2004). In order to determine the significance of change between the mean of the pre and post-merger performances i.e. μ_1 and μ_2, the paired t-test is applied (Kumar, 2009; Ramakrishnan, 2010; Beena, 2004), at a 5% level of significance.

4. ANALYSIS AND DISCUSSION

4.1 Descriptive statistics

Table 4 provides the comparison of the pre and post-merger means of the 11 ratios identified for this purpose. The comparison of pre and post- merger profitability ratios reflects decline in the mean value of ROE, ROA, Net mark-up income to TA, and Non-interest income to TA in the post-merger period. However, improvement is observed in the net-interest margin in the post-merger period, which may be attributed to the reduction in administrative expenses in the post-merger period. The comparison of pre and post- merger liquidity ratios indicates decline in cash and cash equivalent to total assets in the post-merger period. However, the advances to total assets and investment to total assets ratios show better performance in the post-merger period. The performance in terms of capital adequacy also indicates decline in the post-merger period.

Table 4: Paired Samples Statistics

Performance measures variables		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ROE (Pre-merger)	3.187	46	15.406	2.271
	ROE (Post-merger)	-16.974	46	38.177	5.629
Pair 2	ROA (Pre-merger)	0.273	46	1.800	0.265
	ROA (Post-merger)	-1.528	46	3.447	.508
Pair 3	Net markup income to TA (Pre-merger)	1.743	46	2.091	.308
	Net markup income to TA (Post-merger)	0.685	46	2.391	0.353
Pair 4	Non-interest income to TA (Pre-merger)	1.930	46	1.153	0.170
	Non-interest income to TA (Post-merger)	1.553	46	0.894	0.132
Pair 5	Net interest margin (Pre-merger)	2.628	46	1.402	0.207
	Net interest margin (Post-merger)	2.987	46	3.875	0.571
Pair 6	Admin. exp to PBT (Pre-merger)	5.197	46	11.526	1.699
	Admin. exp to PBT (Post-merger)	2.378	46	6.661	0.982
Pair 7	Cash and cash equivalent to TA (Pre-merger)	18.754	46	18.219	2.686
	Cash and cash equivalent to TA (Post-merger)	9.888	46	4.337	0.639
Pair 8	Advances to TA (Pre-merger)	48.609	46	17.910	2.641
	Advances to TA (Post-merger)	52.310	46	11.769	1.735
Pair 9	Investment to TA (Pre-merger)	25.767	46	11.272	1.662
	Investment to TA(Post-merger)	27.214	46	8.615	1.270
Pair 10	Capital adequacy ratio (Pre-merger)	14.567	46	10.210	1.505
	Capital adequacy ratio (Post-merger)	12.630	46	7.389	1.089
Pair 11	Total deposits to total equity (Pre-merger)	4.563	46	9.687	1.428
	Total deposits to total equity (Post-merger)	9.741	46	7.387	1.089

4.2 Pre and post-merger comparison of performance ratios

Table 5 shows the bank-wise comparison of ROE in the pre and post-merger period. Though the ROE of some banks indicates improvement in the post-merger period but the average ROE is declined in the post-merger period.

Table 5: Return on Equity (ROE)

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (µ1)	(T+1)	(T+2)	(T+3)	Mean (µ2)
Faysal Bank 2002	-13.103	8.639	10.702	2.079	26.964	17.167	21.524	21.885
Mashreq Bank 2002	7.025	1.740	8.561	5.775	-3.725	-45.599	-40.489	-29.938
KASB Bank 2003		-9.551	-15.199	-12.375	5.757	-15.728	6.452	-1.173
KASB Bank 2004	-9.551	-15.199	2.038	-7.571	-15.728	6.452	4.615	-1.554
Crescent Bank 2004	1.740	8.561	5.996	5.432	-45.599	-40.489	-21.330	-35.806
Allied Bank 2005	30.501	-9.701	1.870	7.556	24.860	20.506	18.593	21.320
JS Bank 2006	6.285	3.761	3.974	4.673	0.682	1.038	-10.521	-2.934
SCB 2006	25.750	35.560	48.260	36.523	6.418	1.584	1.402	3.135
Allied Bank 2006	-9.701	1.870	21.239	4.469	20.506	18.593	23.772	20.957
Atlas Bank 2006		-2.461	0.248	-1.107	-5.961	-27.634	-48.911	-27.502
KASB Bank 2007	5.757	-15.728	6.452	-1.173	-10.576	-85.256	-124.203	-73.345
NIB Bank 2008	2.463	2.724	-1.344	1.281	1.664	-74.012	-14.946	-29.098
KASB Bank 2009	6.452	4.615	-10.576	0.163	-124.203	-72.023	-40.716	-78.981
Askari Bank 2010	21.857	2.978	7.410	10.748	9.157	6.452	-29.259	-4.550
Summit Bank 2011	-3.289	-50.976	-8.986	-21.084	-89.231	-53.950		-71.590
Faysal Bank 2011	10.350	9.389	7.206	8.982	6.749	8.346		7.547
Mean (µ) overall				3.187				-16.975

Table 6 shows the bank-wise comparison of ROA, reflecting decline in the mean of ROA in the post-merger period.

Table 6: Return on Assets (ROA)

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	-1.544	0.880	1.216	0.184	4.879	2.508	3.023	3.470
Mashreq Bank 2002	1.268	0.463	3.653	1.794	-0.919	-8.586	-8.469	-5.991
KASB Bank 2003		-1.525	-3.220	-2.372	0.777	-1.587	0.586	-0.075
KASB Bank 2004	-1.525	-3.220	0.312	-1.477	-1.587	0.586	0.533	-0.156
Crescent Bank 2004	0.463	3.653	1.958	2.024	-8.586	-8.469	-6.753	-7.936
Allied Bank 2005	-1.059	0.363	0.134	-0.187	1.935	1.407	1.219	1.520
JS Bank 2006	0.955	0.945	0.984	0.961	0.186	0.278	-2.030	-0.522
SCB 2006	2.334	3.074	4.040	3.149	1.168	0.234	0.224	0.542
Allied Bank 2006	0.363	0.134	1.770	0.756	1.407	1.219	1.823	1.483
Atlas Bank 2006		-0.704	0.049	-0.327	-1.453	-3.702	-5.834	-3.663
KASB Bank 2007	0.777	-1.587	0.586	-0.075	-1.937	-7.525	-5.119	-4.860
NIB Bank 2008	0.371	0.280	-0.297	0.118	0.353	-6.628	-1.406	-2.560
KASB Bank 2009	0.586	0.533	-1.937	-0.273	-5.119	-4.248	-1.303	-3.556
Askari Bank 2010	1.622	0.207	0.489	0.773	0.523	0.395	-1.524	-0.202
Summit Bank 2011	-0.818	-5.818	-0.687	-2.441	-2.229	-1.603		-1.916
Faysal Bank 2011	0.868	0.698	0.488	0.685	0.494	0.568		0.531
Mean (μ) overall				<u>0.272</u>				<u>-1.528</u>

The average of net markup income to total assets is also decreased in the post-merger period despite improvement in the net markup income of some banks. See Table 7 for detail.

Table 7: Net Markup Income to Total Assets

	Pre-Merger				Post-Merger			
Banks	(T-3)	(T-2)	(T-1)	Mean (µ1)	(T+1)	(T+2)	(T+3)	Mean (µ2)
Faysal Bank 2002	-1.712	1.653	2.459	0.800	1.996	2.162	3.286	2.481
Mashreq Bank 2002	0.845	2.013	7.463	3.440	0.244	-3.799	-2.837	-2.131
KASB Bank 2003		0.445	0.855	0.650	2.567	-0.527	1.366	1.135
KASB Bank 2004	0.445	0.855	2.394	1.231	-0.527	1.366	1.130	0.656
Crescent Bank 2004	2.013	7.463	-0.006	3.156	-3.799	-2.837	-2.960	-3.199
Allied Bank 2005	0.729	3.035	2.043	1.936	4.276	2.897	3.184	3.452
JS Bank 2006	1.652	2.313	1.791	1.918	1.342	3.062	-0.178	1.409
SCB 2006	4.026	3.813	5.255	4.365	4.284	2.459	2.303	3.015
Allied Bank 2006	3.035	2.043	4.175	3.084	2.897	3.184	3.656	3.246
Atlas Bank 2006		1.513	1.786	1.650	0.207	0.737	-2.446	-0.501
KASB Bank 2007	2.567	-0.527	1.366	1.135	-3.894	-0.763	-2.988	-2.548
NIB Bank 2008	1.812	1.784	1.213	1.603	2.761	1.933	-0.473	1.407
KASB Bank 2009	1.366	1.130	-3.894	-0.466	-2.988	-1.959	0.283	-1.555
Askari Bank 2010	1.534	1.971	2.700	2.068	2.645	2.108	-0.697	1.352
Summit Bank 2011	1.124	-4.147	0.417	-0.869	0.077	1.477		0.777
Faysal Bank 2011	2.259	1.627	1.470	1.786	2.631	2.679		2.655
Mean (µ) overall				<u>1.743</u>				<u>0.685</u>

Decline is also observed in the average non-markup income to total assets in the post-merger period. The bank-wise comparison of non-markup income to total assets is shown in table 8.

Table 8: Non-Markup Income to Total Assets

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	1.259	2.060	1.956	1.759	6.155	2.619	2.032	3.602
Mashreq Bank 2002	2.306	2.025	1.719	2.017	1.220	1.352	1.172	1.248
KASB Bank 2003		2.059	3.516	2.787	0.920	1.195	2.530	1.548
KASB Bank 2004	2.059	3.516	1.923	2.499	1.195	2.530	2.215	1.980
Crescent Bank 2004	2.025	1.719	3.393	2.379	1.352	1.172	0.656	1.060
Allied Bank 2005	1.458	2.016	1.220	1.565	1.078	1.353	1.218	1.216
JS Bank 2006	3.483	5.309	5.968	4.920	2.191	2.503	1.158	1.951
SCB 2006	2.210	2.551	2.440	2.400	2.583	2.289	2.309	2.393
Allied Bank 2006	2.016	1.220	1.111	1.449	1.353	1.218	1.525	1.365
Atlas Bank 2006		0.027	0.140	0.084	1.631	0.898	0.168	0.899
KASB Bank 2007	0.920	1.195	2.530	1.548	1.315	0.988	1.177	1.160
NIB Bank 2008	0.844	1.173	0.363	0.793	0.860	1.124	1.481	1.155
KASB Bank 2009	2.530	2.215	1.315	2.020	1.177	1.206	1.272	1.218
Askari Bank 2010	2.762	1.454	1.128	1.781	0.932	1.288	1.000	1.074
Summit Bank 2011	0.713	0.745	1.091	0.850	1.123	1.479		1.301
Faysal Bank 2011	1.799	1.636	1.643	1.693	1.838	1.389		1.613
Mean (μ) overall				1.930				1.553

The bank-wise comparison of net interest margin, given in table 9, shows a better performance in the post-merger period.

Table 9: Net Interest Margin

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	-1.648	1.697	2.641	0.897	2.559	2.339	2.981	2.626
Mashreq Bank 2002	1.146	2.174	5.853	3.057	1.026	0.761	-0.956	0.277
KASB Bank 2003		2.969	1.813	2.391	2.557	2.379	1.542	2.159
KASB Bank 2004	2.969	1.813	2.596	2.459	2.379	1.542	1.704	1.875
Crescent Bank 2004	2.174	5.853	0.805	2.944	0.761	-0.956	1.762	0.522
Allied Bank 2005	3.733	3.602	3.121	3.485	4.586	3.834	4.110	4.177
JS Bank 2006	1.651	1.787	1.743	1.727	1.393	3.119	2.459	2.324
SCB 2006	4.026	3.813	5.255	4.365	6.841	5.684	5.461	5.995
Allied Bank 2006	3.602	3.121	4.508	3.744	3.834	4.110	4.787	4.244
Atlas Bank 2006		1.513	1.786	1.650	0.207	2.032	0.680	0.973
KASB Bank 2007	2.557	2.379	1.542	2.159	0.822	-0.763	19.036	6.365
NIB Bank 2008	2.138	2.424	1.213	1.925	2.761	1.933	1.430	2.041
KASB Bank 2009	1.542	1.704	0.822	1.356	19.036	-0.960	2.722	6.933
Askari Bank 2010	3.906	4.158	3.987	4.017	3.233	2.949	2.390	2.857
Summit Bank 2011	3.789	1.597	1.905	2.430	0.104	0.744		0.424
Faysal Bank 2011	3.854	2.902	2.372	3.043	3.119	3.328		3.223
Mean (μ) overall				2.628				2.987

The bank-wise comparison of administrative expenses to profit before taxes is given in table 10. Improvement is observed in administrative expenses as the average of this ratio is decreased in the post-merger period.

Table 10: Admin Expenses to Profit Before Tax

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	-0.901	0.801	0.578	0.159	0.304	0.514	0.360	0.393
Mashreq Bank 2002	0.860	1.406	0.633	0.967	-2.648	-0.666	-0.744	-1.353
KASB Bank 2003		-2.113	-1.992	-2.052	27.649	-1.217	16.167	14.200
KASB Bank 2004	-2.113	-1.992	5.794	0.563	-1.217	16.167	17.598	10.849
Crescent Bank 2004	1.406	0.633	0.636	0.892	-0.666	-0.744	-0.650	-0.687
Allied Bank 2005	-2.272	4.452	8.528	3.569	0.794	0.999	1.322	1.038
JS Bank 2006	9.964	25.920	-17.383	6.167	-11.833	8.835	-1.197	-1.399
SCB 2006	0.678	0.516	0.433	0.542	2.953	11.368	9.670	7.997
Allied Bank 2006	4.452	8.528	0.881	4.620	0.999	1.322	0.894	1.072
Atlas Bank 2006		-1.360	13.742	6.191	-1.211	-1.233	-0.695	-1.046
KASB Bank 2007	27.649	-1.217	16.167	14.200	-0.951	-0.400	-0.722	-0.691
NIB Bank 2008	26.353	55.740	-3.014	26.359	8.299	-0.551	-1.355	2.131
KASB Bank 2009	16.167	17.598	-0.951	10.938	-0.722	-0.774	-1.478	-0.991
Askari Bank 2010	2.083	12.797	4.260	6.380	3.581	5.185	-1.113	2.551
Summit Bank 2011	-4.048	-0.515	-3.871	-2.811	-1.448	-2.392		-1.920
Faysal Bank 2011	1.813	3.294	8.033	4.380	5.890	5.127		5.508
Mean (μ) overall				5.197				2.378

Table 11 shows the bank-wise comparison of liquidity in terms of cash and cash equivalents to total assets. The ratio is declined in the post-merger period despite increase in cash and cash equivalents of some banks.

Table 11: Cash and Cash Equivalent to Total Assets

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	21.842	4.986	24.225	17.018	7.972	12.317	8.610	9.633
Mashreq Bank 2002	46.194	71.988	60.252	59.478	11.547	10.957	12.726	11.743
KASB Bank 2003		21.439	13.739	17.589	25.605	11.042	13.249	16.632
KASB Bank 2004	21.439	13.739	12.112	15.764	11.042	13.249	10.273	11.522
Crescent Bank 2004	71.988	60.252	8.376	46.872	10.957	12.726	5.447	9.710
Allied Bank 2005	11.359	10.540	8.640	10.180	10.887	10.496	7.553	9.646
JS Bank 2006	19.999	53.626	43.513	39.046	6.448	9.952	12.232	9.544
SCB 2006	16.325	17.026	11.223	14.858	11.798	8.309	7.969	9.358
Allied Bank 2006	10.540	8.640	10.333	9.838	10.496	7.553	7.095	8.381
Atlas Bank 2006		1.862	3.019	2.440	8.072	6.115	5.737	6.641
KASB Bank 2007	25.605	11.042	13.249	16.632	3.119	5.406	6.556	5.027
NIB Bank 2008	14.486	10.184	7.097	10.589	6.400	7.727	6.506	6.878
KASB Bank 2009	13.249	10.273	3.119	8.880	6.556	27.722	8.228	14.168
Askari Bank 2010	10.194	10.732	12.248	11.058	10.407	10.414	9.776	10.199
Summit Bank 2011	6.051	7.455	6.151	6.552	9.547	10.088		9.817
Faysal Bank 2011	7.634	5.197	9.484	7.438	8.948	9.033		8.991
Mean (μ) overall				<u>18.754</u>				<u>9.889</u>

Table 12 shows the bank-wise comparison of liquidity in terms of advances to total assets. The advances to total assets ratio appears to have increased in the post-merger period indicating better performance in the post-merger period.

Table 12: Advances to Total Assets

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	54.724	34.824	71.228	53.592	66.725	73.468	61.379	67.191
Mashreq Bank 2002	31.935	49.974	52.704	44.871	42.295	42.956	33.317	39.523
KASB Bank 2003		48.500	13.807	31.154	65.719	62.426	61.930	63.358
KASB Bank 2004	48.500	13.807	45.484	35.931	62.426	61.930	67.806	64.054
Crescent Bank 2004	49.974	52.704	26.398	43.025	42.956	33.317	23.959	33.410
Allied Bank 2005	44.871	38.246	41.713	41.610	63.372	58.131	62.468	61.324
JS Bank 2006	28.614	38.329	12.101	26.348	33.912	49.309	39.883	41.035
SCB 2006	55.244	63.717	50.015	56.325	50.503	43.480	41.738	45.240
Allied Bank 2006	38.246	41.713	63.714	47.891	58.131	62.468	60.755	60.451
Atlas Bank 2006		1.592	10.357	5.974	43.458	75.280	65.834	61.524
KASB Bank 2007	65.719	62.426	61.930	63.358	64.182	52.502	55.757	57.481
NIB Bank 2008	70.163	73.701	49.610	64.492	42.956	48.876	41.864	44.565
KASB Bank 2009	61.930	67.806	64.182	64.639	55.757	50.967	36.392	47.705
Askari Bank 2010	60.961	69.180	59.598	63.246	48.405	44.949	45.475	46.276
Summit Bank 2011	67.381	52.087	48.522	55.996	42.836	47.529		45.183
Faysal Bank 2011	69.885	53.130	54.761	59.259	59.950	56.527		58.238
Mean (μ) overall				48.609				52.310

Table 13 shows the bank-wise comparison of liquidity in terms of investment to total assets. The investment to total assets ratio also increased indicating better performance in the post-merger period.

Table 13: Investment to Total Assets

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (µ1)	(T+1)	(T+2)	(T+3)	Mean (µ2)
Faysal Bank 2002	20.696	0.679	12.672	11.349	25.911	16.450	24.042	22.134
Mashreq Bank 2002	11.743	8.862	20.187	13.598	27.314	24.925	29.951	27.397
KASB Bank 2003		25.107	59.684	42.396	21.287	22.216	20.032	21.178
KASB Bank 2004	25.107	59.684	29.866	38.219	22.216	20.032	19.627	20.625
Crescent Bank 2004	8.862	20.187	24.151	17.734	24.925	29.951	20.154	25.010
Allied Bank 2005	33.262	38.317	40.195	37.258	20.659	28.981	24.237	24.626
JS Bank 2006	27.849	30.374	33.468	30.564	33.040	26.029	32.534	30.534
SCB 2006	21.549	16.285	25.257	21.030	17.194	10.242	28.100	18.512
Allied Bank 2006	38.317	40.195	25.740	34.751	28.981	24.237	24.264	25.827
Atlas Bank 2006		27.839	22.478	25.159	26.175	10.957	16.316	17.816
KASB Bank 2007	21.287	22.216	20.032	21.178	18.821	26.927	24.647	23.465
NIB Bank 2008	18.340	15.567	24.487	19.465	31.919	33.946	34.127	33.330
KASB Bank 2009	20.032	19.627	18.821	19.493	24.647	30.260	50.093	35.000
Askari Bank 2010	23.851	19.160	29.591	24.201	42.960	45.465	46.116	44.847
Summit Bank 2011	21.783	35.035	35.070	30.629	40.714	34.798		37.756
Faysal Bank 2011	23.503	32.881	35.394	30.592	30.626	34.777		32.701
Mean (µ) overall				25.767				27.214

Table 14 shows the bank-wise comparison of capital adequacy ratio. The results indicate lower performance in the post-merger period despite increase in the capital adequacy of some banks.

Table 14: Capital Adequacy Ratio

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	11.783	10.189	11.358	11.110	18.096	14.608	14.044	15.583
Mashreq Bank 2002	18.047	26.596	42.668	29.104	24.669	18.830	20.916	21.472
KASB Bank 2003		15.969	21.183	18.576	13.497	10.091	9.084	10.891
KASB Bank 2004	15.969	21.183	15.327	17.493	10.091	9.084	11.553	10.243
Crescent Bank 2004	26.596	42.668	32.653	33.972	18.830	20.916	31.662	23.803
Allied Bank 2005	-3.471	-3.739	7.192	-0.006	7.782	6.862	6.557	7.067
JS Bank 2006	15.195	25.127	24.757	21.693	27.198	26.821	19.292	24.437
SCB 2006	9.063	8.645	8.372	8.693	18.195	14.801	16.013	16.337
Allied Bank 2006	-3.739	7.192	8.336	3.930	6.862	6.557	7.669	7.029
Atlas Bank 2006		28.606	19.814	24.210	24.376	13.397	11.927	16.567
KASB Bank 2007	13.497	10.091	9.084	10.891	18.314	8.826	4.121	10.420
NIB Bank 2008	15.063	10.269	22.072	15.802	21.231	8.956	9.410	13.199
KASB Bank 2009	9.084	11.553	18.314	12.984	4.121	5.897	3.201	4.406
Askari Bank 2010	7.420	6.966	6.598	6.994	5.709	6.120	5.207	5.679
Summit Bank 2011	24.886	11.413	7.641	14.646	2.498	2.971		2.734
Faysal Bank 2011	8.387	7.435	6.765	7.529	7.320	6.803		7.061
Mean (μ) overall				<u>14.567</u>				<u>12.630</u>

Table 15 shows the bank-wise comparison of deposit to equity ratio as measure of capital adequacy. This ratio increased indicating a weaker performance in the post-merger period.

Table 15: Deposit to Equity

	Pre-Merger				Post-Merger			
Bank	(T-3)	(T-2)	(T-1)	Mean (μ1)	(T+1)	(T+2)	(T+3)	Mean (μ2)
Faysal Bank 2002	7.618	7.303	8.317	7.746	3.927	5.528	5.241	4.898
Mashreq Bank 2002	4.670	3.178	1.569	3.139	2.174	3.666	3.710	3.183
KASB Bank 2003		5.645	3.511	4.578	6.575	8.542	9.994	8.370
KASB Bank 2004	5.645	3.511	4.435	4.530	8.542	9.994	7.734	8.757
Crescent Bank 2004	3.178	1.569	1.883	2.210	3.666	3.710	2.039	3.138
Allied Bank 2005	-29.633	-28.763	12.324	-15.357	11.648	13.279	13.307	12.745
JS Bank 2006	4.685	4.405	3.602	4.231	2.634	2.899	3.769	3.101
SCB 2006	10.357	10.948	9.951	10.419	4.114	4.082	4.335	4.177
Allied Bank 2006	-28.763	12.324	11.094	-1.782	13.279	13.307	10.977	12.521
Atlas Bank 2006		0.225	1.429	0.827	2.956	5.099	7.517	5.190
KASB Bank 2007	6.575	8.542	9.994	8.370	3.814	8.853	21.203	11.290
NIB Bank 2008	5.014	7.065	3.201	5.093	2.262	7.258	6.251	5.257
KASB Bank 2009	9.994	7.734	3.814	7.181	21.203	18.618	23.690	21.170
Askari Bank 2010	11.661	12.927	13.778	12.789	16.398	15.684	17.900	16.661
Summit Bank 2011	2.855	7.722	11.777	7.451	31.629	31.384		31.506
Faysal Bank 2011	9.541	9.674	11.825	10.346	11.442	12.232		11.837
Mean (μ) overall				4.563				9.740

4.3 Hypothesis testing

Table 16 shows the results of hypothesis testing applying the paired t-test statistic to measure the change between the pre and post-merger means of respective ratios. ROE is decreased in the post-merger period and the difference in the pre and post-merger averages (μ_1 and μ_2) is found statistically significant at 1% level of significance. Thus, H_0 is rejected and the alternate hypothesis, H_1 is accepted. Similarly the mean of ROA shows a deteriorating trend in the post-merger period and the change is found statistically significant at 1% level of significance. Thus, H_0 is rejected and the alternate hypothesis, H_1 is accepted. The decrease in the post-merger mean (μ_2) of the net markup income to total assets is also found statistically significant but at 5% level of significance. Thus, the null hypothesis is rejected and the alternate hypothesis is accepted. However, the change in the non-Markup income to total assets is found statistically insignificant at even 5% level of significance, as shown in the following table. Thus, we failed to reject the null hypothesis in this case. Similarly, the change in the net interest margin is found statistically insignificant at 5% level of significance. Thus, we again failed to reject the null hypothesis. The change in the admin expenses to profit before tax is also found statistically insignificant at 5% level of significance and therefore we failed to reject the null hypothesis.

The impact of M & A on liquidity is measured in terms of three ratios. The decrease in the post-merger mean (μ_2) of the cash and cash equivalent to total assets is found statistically significant at 1% level of significance. Thus, H_0 is rejected and the alternate hypothesis, H_1 is accepted. However, the change in the advances to total assets is found statistically insignificant at even 5% level of significance, and therefore we failed to reject the null hypothesis. Similarly, the change in the investment to total assets is found statistically insignificant at 5% level of significance. Thus, we again failed to reject the null hypothesis.

The impact of M & A on capital adequacy is measured in terms of two ratios. The change in the capital adequacy ratio is found statistically insignificant at 5% level of significance, and therefore we failed to reject the null hypothesis. However, the difference in the pre and post-merger mean performances of deposit to equity is found statistically significant at 1% level of significance. Thus, H_0 is rejected and the alternate hypothesis, H_1 is accepted.

Table 16: Paired Samples Test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	ROE (Pre & Post)	20.162	38.073	5.614	8.856	31.468	3.592	45	0.001
Pair 2	ROA (Pre & Post)	1.801	3.591	0.529	0.735	2.868	3.403	45	0.001
Pair 3	Net markup income (Pre & Post)	1.057	2.772	0.409	0.234	1.881	2.587	45	0.013
Pair 4	Non markup income(Pre & Post)	0.377	1.551	0.229	-0.084	0.837	1.646	45	0.107
Pair 5	Net interest margin (Pre & Post)	-0.359	4.080	0.602	-1.570	0.853	-0.596	45	0.554
Pair 6	Admin exp. to T.A (Pre & Post)	2.819	13.720	2.023	-1.255	6.893	1.394	45	0.170
Pair 7	Cash& Eq. to T.A (Pre & Post)	8.865	18.448	2.720	3.387	14.344	3.259	45	0.002
Pair 8	Advances to T.A (Pre & Post)	-3.701	18.931	2.791	-9.323	1.921	-1.326	45	0.192
Pair 9	Investment to T.A (Pre &Post)	-1.446	14.634	2.158	-5.792	2.899	-0.670	45	0.506
Pair 10	Capital adequacy (Pre & Post)	1.937	12.701	1.873	-1.835	5.708	1.034	45	0.307
Pair 11	Deposit to equity (Pre & Post)	-5.177	11.134	1.642	-8.484	-1.871	-3.154	45	0.003

Table 17 provides a summary of all the results. The table shows that 6 out of the 11 ratios do not indicate any change between the mean performances of the acquirer banks in the three pre-merger years (μ_1) and three post-merger years (μ_2). However, the other five ratios indicate decline in the mean performances of the acquirer banks in the post-merger period (μ_2).

Table 17: Level of Change After M & A

Ratio	Mean (μ_1)	Mean (μ_2)	Change	P Value	Statistic Change	Result for H_0	Change
ROE	3.187%	-16.975%	-20.162%	0.001	Significant	Rejected	$< \mu_1$
ROA	0.272%	-1.528%	-1.800%	0.001	Significant	Rejected	$< \mu_1$
Markup income /TA	1.743%	0.685%	-1.058%	0.013	Significant	Rejected	$< \mu_1$
Non Int. income / TA	1.93%	1.553%	-0.377%	0.107	Insignificant	Accepted	N0
Net Interest Margin	2.628%	2.987%	0.359%	0.554	Insignificant	Accepted	No
Adm. Exp. to PBT	5.197	2.378	-2.819	0.170	Insignificant	Accepted	No
Cash & equ. to TA	18.754%	9.889%	-8.865%	0.002	Significant	Rejected	$< \mu_1$
Advances/ TA	48.609%	52.31%	3.701%	0.192	Insignificant	Accepted	No
Investment/ TA	25.767%	27.214%	1.447%	0.506	Insignificant	Accepted	No
Capital Ratio	14.567%	12.63%	-1.937%	0.307	Insignificant	Accepted	No
Deposit/ Equity	4.563	9.74	5.177	0.003	Significant	Rejected	$< \mu_1$

5. CONCLUSION AND RECOMMENDATIONS

This study measures the effects of M & A on the operating performances of acquirer banks in Pakistan over a period of 10 years i.e. 2002-2011. The pre- and post-merger performances are compared and the degree of change is tested with a paired t-test. Profitability, liquidity and capital adequacy ratios are used to measure the pre and post-merger performances of the acquirer banks.

It is observed that most of the profitability ratios, including ROE, ROA, net markup and non-markup income to total assets have declined in the post-merger period. Only an insignificant improvement is observed in net interest margin and administrative expenses to profit before tax ratios in the post-merger period. Deterioration is also observed in the liquidity ratios of the acquirer banks in the post-merger period. The cash and cash equivalent to total assets has declined significantly and advances, and investment to total assets ratios are increased, but insignificantly. Similarly the performances of the acquirer banks do not reflect any worthwhile improvement in terms of capital stability in the post-merger period. The deposit to owners' equity ratio is significantly increased, but the capital adequacy ratio has declined, showing an unfavorable effect on the performances of the acquirer banks in the post-merger period.

Previous researches measuring the effects of M & A report mix results. Some studies (Tarawaneh, 2006; Healy, Palepu, & Ruback, 1992; Lau, Proimos & Weight, 2008; Beena, 2004; Feroz, Kim & Raab, 2005; Harris, Ozen and Ozcan, 2000; Wen, 2002; Al- Sharkas et al, 2008;

Odeck, 2008; Worthington, 2001; Kwoka & Pollitt, 2010) observed improvement in the operating performances in the post-merger period. However, other studies (Kumar, 2009; Yeh & Hoshino, 2002; Badreldin & Kalhoefer, 2009; Mantravadi & Reddy, 2008; Cabanda & Pascual, 2007; Pawaskar, 2001; Krishnasamy, Ridzwa & Vignesan, 2004; Rezitis, 2008; Sufian & Fadzlan, 2007) indicate decline or no change in the post-merger performances. The current research also resulted in similar findings. Most of the ratios studied do not show any significant change in the post-merger period, while some of the ratios are shown to have declined in the post-merger period. In summary, the performances of the acquirer banks are observed to have deteriorated in the post merger period.

Therefore, the banks may better invest their resources in expanding their networking instead of participating in the ineffective mergers deals. Kumar (2009) also suggests that banks should not engage in M & A due to the ineffectiveness of such deals. Banks, in Pakistan may also expand their business in certain other ways, for example Islamic banking, for improving performances.

Limitation of the study and future research

This study is confined to the financial sector of Pakistan, including only the M & As that occurred in the banking sector, thus limiting the scope of this study, which may restrict the generalizability of the findings. Further, the study pooled the data and observed the overall impact of M & A on the performance of all the acquirer banks as a whole, but not on the performance of each bank individually, which might have performed better in the post-merger periods, in some cases. Future researchers may examine the banks' operating performances on a case to case basis. Future researchers may also investigate the role of management expertise in making the M & A successful or otherwise.

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ANNEXURE

Annexure-A: List of Mergers and Acquisitions (2002-2011)

Sr #	*Acquired*	*Acquirer*	*Acquired date*
01	Al- Faysal Investment Ltd.	Faysal Bank Ltd	10-01-2002
02	KASB & Company Ltd.	KASB Bank Ltd.	04-05-2003
03	Crescent Investment Bank Ltd.	Mashreq Bank Pakistan Ltd.	09-06-2003
04	KASB Leasing Ltd.	KASB Bank Ltd.	10-03-2004
05	Trust Commercial Bank Ltd	Crescent Commercial Bank Ltd.	18-10-2004
06	Ibrahim Leasing Ltd.	Allied Bank Ltd.	31-05-2005
07	Atlas Investment Bank Ltd.	Atlas Bank Ltd.	26-07-2006
08	First Allied Bank Modaraba	Allied Bank Ltd.	25-08-2006
09	Union Bank Ltd.	Standard Chartered Bank (Pakistan) Ltd.	29-12-2006
10	Jahangir Siddiqui Investment Bank Ltd.	JS Bank Ltd.	30-12-2006
11	International Housing Finance Ltd.	KASB Bank Ltd.	22-11-2007
12	Pakistan Industrial Credit & Investment Corporation Ltd.	NIB Bank Ltd.	01-01-2008
13	PICIC Commercial Bank Ltd.	NIB Bank Ltd.	01-01-2008
14	Network Leasing Corporation Ltd.	KASB Bank Ltd.	17-02-2009
15	Askari Leasing Ltd.	Askari Bank Ltd.	10-03-2010
16	The Royal Bank of Scotland Ltd.	Faysal Bank Ltd.	03-01-2011
17	Atlas Bank Ltd.	Summit Bank Ltd.	11-01-2011
18	MyBank Ltd.	Summit Bank Ltd.	06-07-2011

(*Source:* http://www.kse.com.pk)