FINANCIAL PERFORMANCE AND EFFICIENCY CHANGES OF MALAYSIAN BANKING INSTITUTIONS IN MERGERS AND ACQUISITIONS

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Abstract

The purpose of this paper is twofold. First, it intends to analyse the financial performance changes of commercial banks on stand alone basis and compare it with 'post merger' basis on the consolidation program initiated by the central bank following the recent 1997-1998 Asian financial crisis. This paper also tries to analyse and explore the efficiency of the banks resulted from this consolidation. The findings suggest that based on the actual accounting data of the anchor banks and DEA analysis, the consolidation program initiated by the central bank does not show any significant difference to the level of efficiency and the financial performance of the banking institutions in Malaysia.

The total number of banking institutions as of 20th October 1999 was 55, which consisted of 20 commercial banks, 23 finance companies and 12 merchant banks. They have been given a dateline by end of January 2000 to forward their comprehensive proposal to the Central Bank. Initially the Central Bank, Bank Negara Malaysia (BNM) has approved 6 anchor banks i.e. Maybank, Multi-Purpose, Public, Southern, Perwira Affin and Bumiputra Commerce. Consequently, the number has been increased to 10 with the additional EON, Hong Leong, RHB and Arab Malaysian joining the elite group.

Introduction

In Malaysia, the plan to consolidate and rationalize the banking sector was initiated as early as mid 80's when the industry was badly hit by the 1985-1986 economic recession. The period saw a number of weak commercial banks and finance companies succumb into insolvency and financial distress. One of the banks, United Asian Bank Berhad, was subsequently merged with Bank of Commerce (M) Berhad. The name of UAB was subsequently changed to Bank of Commerce (M) Berhad. Since then, the only market-oriented mergers in banking sector were between Kwong Yik Bank and DCB Bank which became RHB Bank Berhad, and Chung Khiaw Bank and United Overseas Bank (M) Berhad.

The 1997-1998 Asian financial crisis gave the much needed push for the industry to consolidate. The merger programs undertaken by the Malaysian banking system as proposed by the central bank are indeed in tandem with the direction of the global industry. Efficiency, economies of scale coupled with the impending liberalization of the Malaysian banking system make consolidation inevitable. The total number of banking institutions as of 20th October 1999 was 55, which consisted of 20 commercial banks, 23 finance companies and 12 merchant banks. These banks were given a dateline by end of January 2000 to forward their comprehensive proposal to Bank Negara Malaysia (BNM) on this merger. Initially, BNM has approved 6 anchor banks i.e. Maybank, Multi-Purpose, Public, Southern, Perwira Affin and Bumiputra Commerce. Consequently, the number has been examine to 10 with the additional EON, Hong Leong, RHB and Arab Malaysian joining the elite group. To date, all fifty five banks have consolidated into ten anchor banks (refer to Appendix 1 for the list of these anchor banks). Following this consolidation, some investigations had been performed to investigate the impact of this consolidation on the Malaysian banking system. Using data for the period of January 1999 to February 2000, Isa and Yap (2003), for example, found that there is a positive market reaction on the announcement of bank mergers with substantial returns recorded mostly on the day before the announcement. This finding is supported by the results produced by Mahmood and Mohamad (2004) who conclude that bank mergers after the 1997 crisis have led to an improvement in performance of these banks.

Studies that show bank mergers result in efficiency gains, however, have produced mixed results. For instance, Krabill (1985), Meehan (1989) and McNamee (1992), Calomiris and Charles (1999) and Bergers et al. (1999) found that bank mergers produce positive efficiency gains. Using a sample of the largest bank mergers between 1985 and 1996, Houston et al. (2001) found that the bulk of the efficiency gain being attributable to estimated cost savings rather than projected revenue enhancements. On the other hand, all 39 studies of bank mergers and performance published between 1980 and 1993 summarized by Rhoades (1994) show no evidence of efficiency gains from bank mergers. Rhoades (1998) further investigates the efficiency effect of bank mergers by using case studies of nine mergers in America. The same basic analytical framework was employed in all of the case studies, such as financial ratios, econometric cost measures and the effect of the merger announcement on the stock of the acquiring and acquired firms. All nine mergers resulted in significant cost cutting in line with pre-mergers projections. Four of the nine mergers were clearly successful in improving cost efficiency but five were not. The most frequent and serious synergies experienced in bank mergers that increase bidder returns relative to non-financial mergers were unexpected difficulty in integrating data processing systems and operations.

Following this, this paper attempts to study the efficiency gains that result from the recent consolidation program for the domestic commercial banks initiated by Malaysian central bank, namely Bank Negara (BNM). Indicators of commercial bank efficiency are first estimated by applying a version of Data Envelopment Analysis (DEA) to bank level data for the period of 1998-2003. Prior to this, using financial ratios, this study also tries to provide a naive analytical framework for the consolidation program. This analysis is done at three stages. The analysis is first performed on the six anchor banks that were initially approved by BNM. Since the final number of anchor banks was later decided at ten, this analysis is then performed on these ten anchor banks. Finally, to gain insight on the financial performance changes that all fifty five banks experienced after the consolidation program, the analysis is performed on these banks. All ratios were analysed to get an indication of the financial performance changes and therefore support the findings using DEA in concluding whether the commercial banks consolidation program results in any efficiency gains.

Data and methodology

In studying the issue of possible gains from this consolidation program, two measures will be looked into: financial performance and efficiency improvements. This is in line with the objective of attaining economies of scale and efficiency gains that was outlined in proposing this merger. For financial performance changes, this study focuses on individual commercial banks on 'stand alone' basis and compares it with 'post merger' based on the consolidation program. A range of financial performance from the merger group that spans different types of performance measures is studied: Share performance, profitability, efficiency, liquidity risk, and credit risk performance (the ratio of non performing loans to total loans). The data are in the form of financial statements that are extracted from either published newspaper or the bank's website. Financial accounts derived are from the period of 1998-1999. The selected period would allow a better illustration on the performance of the individual banks after the wake of financial crisis. For the purpose of this study, the average number of the two years is derived for benchmark purposes. The financial accounts are grouped in their respective cluster (6 and 10 groups) and headed by their respective anchor banks. The financial accounts derived are then extended to the year 2003 to analyse the impact of consolidation program on banks' efficiency.

Measuring Financial Performance

The following financial ratios are being utilized to evaluate the performance change:

♦ Share Performance

Earning Per Share	Net Profit of the institutions divided by the number of shares outstanding.
Book Value Per Share	Shareholder's fund divided by the number of shares outstanding.

♦ Profitability

Return on Asset (ROA)	Net Income of the Institutions divided by the Total Asset of the company. This ratio evaluates the efficiency of the institution in utilizing its asset in creating income.
Return on Capital Employed (ROCE)	Net Income plus Interest Expenses divided by Total Liability plus Shareholders Fund. This evaluates the efficiency of the institution in capitalizing its capital.
Return on Equity (ROE)	Net Income of the Institutions divided by Shareholder's fund.

♦ Efficiency

Overhead Efficiency	Gross Income of the Institution divided by Overhead Expenses. This is to evaluate the efficiency of the institution in capitalizing its human resource (productivity).
Cost to Income	Total Expenses (interest plus overhead) divided by Gross Income.

♦ Liquidity

Asset to Liability	Total Asset divided by Total Liability of the Institution. This is to evaluate the ability of the company in meeting its financial obligations.
Loan to Deposit	Total Loans divided by Total Deposit of the Institution. This is to evaluate the efficiency of the institution in creating income (loans) over liability (deposits).
Loan to Asset	Total Loans divided by Total Asset of the Institution. This is to evaluate whether the institution is overly or conservatively taking risk.

♦ Credit Risk Performance – The ratio of nonperformance assets to total loans.

Measuring Efficiency Using DEA

Data Envelopment Analysis (DEA) was originally developed by Charnes, Cooper and Rhoades (1978). Up to now, DEA has been applied to different fields ranging from education to banking. It is a non-parametric approach methodology in which linear programming is being used to measure the distance of a producer, which is always referred to as a decision making unit or DMU, from the efficient frontier. The common method for measuring efficiency is to take the ratio of output over input. To provide a brief description of the underlying linear method, assume that there are *s* inputs and *m* outputs for every DMUs (in our case, banks). Therefore, the model for the DMU is as given below:

$$\max imize: \quad \theta = \frac{u_1 y_{1o} + u_2 y_{2o} + ... + u_s y_{so}}{v_1 x_{1o} + v_2 x_{20} + ... + v_m x_{mo}} = \frac{\sum_{r=1}^{s} u_r y_{ro}}{\sum_{i=1}^{m} v_i x_{io}} \tag{1}$$

subject to: $v_1 x_{1o} + v_2 x_{2o} + ... + v_m x_{mo} = 1/$ $\qquad\qquad\qquad$ (2)

$\qquad\qquad u_1 y_{1j} + ... + u_s y_{sj} \leq v_1 x_{1j} + ... + v_m x_{mj} \qquad (j = 1, ..., n)$ $\qquad$ (3)

$\qquad\qquad v_1, v_2, ..., v_m \geq 0$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (4)

$\qquad\qquad u_1, u_2, ..., u_s \geq 0$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (5)

where,

$\qquad\quad \theta$ = Objective value (Efficiency score)

$\qquad\quad u_i$ (i = 1, .., s) = output weights, $\qquad\qquad$ s = number of inputs

$\qquad\quad y_{io}$ (i = 1, .., s) = outputs for DMU$_o$

$\qquad\quad v_i$ (i = 1, .., m) = input weights, $\qquad\qquad$ m = number of outputs

x_{io} (i = 1, .., m) = inputs for DMU$_o$

n = number of DMUs

the DMU is CCR-efficient if :

i) $\theta^* = 1$, and

ii)   there exists one optimal v* or u* in which v* > 0 and u* > 0

The choice of our inputs and outputs is based on the intermediation approach which views banks as financial intermediaries whose main business is to borrow funds from depositors to be lent out to others. Our DEA model, therefore, has the following three input variables: total deposit, interest expense and overhead expense. The first input is included since most commercial banks' activities were funded by this variable (which hovered between 66% to 75% of total liabilities)[1]. The next two variables (interest expense and overhead expense) are included as they are the main contribution to banks' total expenses. Outputs are total loan and total income. Total loans consti-tute the main activities or main assets of commercial banks while total income represents the goal that bank has to achieve in carrying out their activities.

Findings

A. Financial performance changes using financial ratios based on Bank Negara's consolidation program

Table 1 shows the essence of the comparison between pre-merger and post-merger ratio effect for six and ten anchor banks. The merged financial accounts using pooling method are compared to individual ratio of group members on stand alone basis. As expected, on average, the six anchor banks have larger asset based, shareholders' fund and book value per share than stand alone basis and even larger than the ten anchor banks. However, the ten anchor banks tend to show higher performance for overhead efficiency and cost to income than stand alone basis and the six anchor banks. In terms of non-performing loan or credit risk performance, profitability and liquidity, there is no significant difference between the ten anchor banks, the six anchor banks and stand-alone basis.

Table 1

Predicted Financial Results for pre-merger and post-merger ratio effect based on naïve model

	Average for one	Average for six	t-value	Average for ten	t-value
Value per share					
EPS Per Share (cents)	9.5642	2.4169	0.0793	(5.1121)	(0.1678)
Book Value per share	3	6	4.7972	4	2.8783
Profitability					
ROA	1.0891	1.2878	0.7641	0.9688	0.5748
ROCE	3.4102	4.9853	1.7168	4.8957	1.6859
ROE	15.3832	9.5724	0.2926	1.7964	0.0549
Efficiency					
Overhead Efficiency (times)	5.1995	6.4793	3.3953	6.9329	3.6330
Cost to income	0.7894	0.7921	8.2256	0.8022	8.3307
Liquidity					
Asset to Liability	1.0753	1.1032	25.9883	1.0933	25.7542
Loan to Deposit	0.8136	1.4473	1.1738	1.3228	1.0728
Loan to Asset	0.6106	0.6933	5.9923	0.6871	5.9386
Credit risk Non performance loan to Total Loan	8	9	1.4237	10	1.6029

[1] Source: The Central Bank and The Financial System in Malaysia: A Decade of Change, BNM.

Table 2 presents result of financial ratios for commercial banks before and after the consolidation of these banks. The results indicate that there is no significant difference in most of these ratios. The only changes that can be seen are on the liquidity ratio (that is, the loan to deposit ratio) and on the credit risk ratio, which improves after the consolidation program has been completed.

Table 2

Financial Results for pre-merger and post-merger based on actual accounting data *

	Pre-merger	Post-merger	t-value
Value per share			
EPS Per Share (cents)	21.85	15.73	0.5052
Book Value per share	2.12	2.03	0.9595
Profitability			
ROA	0.0300	0.0281	0.7697
ROCE	0.0633	0.0498	0.2412
ROE	1.0734	0.8848	0.5217
Efficiency			
Overhead Efficiency (times)	0.8134	0.6952	0.3311
Cost to income	8.3314	4.2499	0.1729
Liquidity			
Asset to Liability	1.0993	1.0918	0.5593
Loan to Deposit	0.7277	0.8137	0.0835
Loan to Asset	0.5861	0.6411	0.1062
Credit risk			

*NOTE: The ratios are first calculated based on yearly data for the period of 1998 to 2003 for each bank. These ratios are then classified into two periods (pre- and post-merger periods according to their respective completion date of consolidation) for each bank. Finally, average ratios for pre-merger period and post-merger period of all banks, respectively, are calculated.

B. Results from DEA

The table below lists the results of the DEA analysis.

Table 3

The results of the DEA analysis

DMUs	Score (Pre-merger)	Score (Post-merger)
Public Bank	0.896635	0.797531
RHB	0.917975	0.951133
Hong Leong Bank	0.929132	0.922415
Alliance Bank	1	1
EON Bank	1	1
Maybank	1	0.980191
BCB	0.900656	0.903683
Southern Bank	0.954932	1
Affin	0.928397	0.879494
AMBank	1	1
Average	0.9527727	0.9434447

The average scores of efficiencies for the DMUs are high for both pre- and post- merger period; more than 0.9[1]. Therefore, we can conclude that there is no difference in efficiency on these DMUs when DEA analysis is performed. This is consistent with results on efficiency produced earlier.

Conclusions and Implications

This article attempts to shed light on the performance as well as efficiency changes in merger and acquisition of banking institutions in Malaysia. Financial ratios of commercial banks were analysed to get an indication whether mergers and acquisitions following the recent financial crisis in the Asian region result in any efficiency gains. Combined bank simple average ratios are calculated and compared with a simple average of all banks. To confirm the results produced by this naïve approach, a DEA analysis was performed.

Financial performance changes using financial ratios based on Bank Negara's consolidation program show that on average, the six anchor banks have larger asset based, shareholders' fund and book value per share than stand alone basis and even larger than the ten anchor banks. However, the ten anchor banks tend to show higher performance for overhead efficiency and cost to income than stand alone basis and the six anchor banks. In terms of non-performing loan or credit risk, profitability and liquidity, there is no significant difference between the ten anchor banks, the six anchor banks and stand alone basis. Consolidation program appears to increase efficiency (overhead efficiency and post acquisition positive reactions) and may have improved the real economies where these consolidations occurred. The market believes that M&A event itself may have awakened or makes the management realise to the need for improvement. The evidence is consistent with increases in market power and improvements in efficiency and potential costs on the financial system. The study, however, shows that there is no significant difference between the pre- and post-merger periods in the level of efficiency and the financial performance for the ten anchor banks. DEA analysis confirmed this result.

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[1] The maximum value that can be obtained for efficiency score is 1.

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