EFFECTS OF MERGER ON MALAYSIAN BANKS' EFFICIENCY

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this o any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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DEDICATION

We would like to dedicate our dissertation work to our family, friends, and relatives for giving their unlimited support, help, encouragement and motivation throughout the completion of this research project.

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LIST OF ABBREVIATION

BNM: Bank Negara Malaysia

ROE: Return on Equity

FSMP: Financial Sector Master Plan

ROA: Return on Assets

ROCE: Return on Capital Employed

GDP: Gross Domestic Product

LTD: Loan to Deposit ratio

OLS: Ordinary Least Squares

OPR: Operational Risk Ratio

LR: Liquidity Risk

CA: Capital Adequacy

BE: Business Earning Ability

PREFACE

Today's financial sector competitiveness increases through competition, deregulation, mergers and higher capital banks. As would any organization, banks would seek to strengthen their position to be able to attract investors and public interest. One such a way to strengthen their position is through mergers and acquisition of other banks.

Strengthening ones position and as a collective unit differs in terms of objective, as shown by the merger program initiated and concluded in 2001 by the government. This merger program does not seek to strengthen any particular bank, but it aims to strengthen the Malaysian banks as a whole after the Asian financial crisis 1997. Hence, we explore the effects that this merger program has made and the significant changes it brings.

As we explore the effects of merger on Malaysian banks' efficiency, literature frameworks and research were selected to determine the variables that affect bank efficiency, which are operational risk, liquidity risk, business earning ability and capital adequacy. Subsequently, we examine the merger effects.

Abstract

Bank mergers are said to strengthen a banks position and gain higher operating capital. The purpose of this research is to investigate whether the merger program initiated and concluded in 2001 by the government does bring significant effects to the Malaysian anchor banks. Thus this study follows Rasidah et al. (2008) model to test this effect on the ten Malaysian anchor banks collectively.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This chapter outlines the research problems with an overview of the study. In this chapter, it contains research background, problem statement, research objectives, research question, hypotheses of study, significant of study, and a conclusion.

1.1 Research Background

The global business market has undergone unforeseen changes in virtue of the liberalization of economic, technological revolution, globalization and financial deregulation. It is come to light that the common goal for every business is to sustain higher profitability in long run in order to meet the expectations of stakeholders. There are various form of corporate combinations such as joint ventures, takeovers, sell offs, leveraged buyouts, absorptions and the most prevalent tactic to triumph over the competitors is merger. Merger can be defined as restructuring of business firms in order to improve the firm's competitiveness via economies of scale and capture a greater market shares (Bansal & Bansal, n.d.). In the meantime, the banking industry has become more dynamic and competitive since globalization and worldwide financial reforms and hence Somoye (2008) claimed that consolidation is essentially in emerging economies to compete and boost the growth of capital market. Merger in banking industry can be classified as horizontal merger because the merged banks capable to develop their customer bases by getting into the same industry and similar of commercial activities ("Mergers and Acquisitions," 2010).

Sufian and Fadzlan (2004) points out that Bank Negara Malaysia (BNM) had helped to bring into effect the merger of Malaysian banks which constituted by

large number of small institutions before the Asian financial crisis 1997. Nevertheless, only a few banks complied with this policy instrument which induced by BNM. A burst of Asian financial crisis in July, 1997 which caused by the currency depreciation on Thailand, Indonesia, South Korea, Malaysia, Singapore and other Asian countries has bring on those affected countries' government to increase interest rates and sell foreign exchange reserves. However, those measures have slowed down the growth of economic and at the same time equities become less attractive as compared with interest-bearing securities (Nanto, 1998). This Asian financial crisis has smashed the fragile small banks that failed to implement any of the contingency measures. Tan and Hooy (2003) discovered that these vulnerable banking institutions tend to preserve their balance sheets' qualities and maintaining a high level of capital instead of loans portfolio due to the significant impact of systematic risks that brought by the Asian financial crisis. The drawback effects in loan activities may result in deeper economy recession because the function of intermediation process was being breached. It is followed by second wave of forceful promotion of merger by BNM with the intention to weaken the impact of systematic risks associated with economy downturn. Besides, the bank merger will also redound to establish a mighty banking group which able to cope with the challenges that occurred in financial liberalization and capable to compete with foreign banks that are based in Malaysia.

There are dissimilar responses from different realms of professionals with regard to Malaysian banks merger. Malaysian Finance Minister, Tun Daim Zainuddin declared that merger of Malaysian banks was important since the government need not to rack their brain in saving the banks that affected by the Asian financial crisis 1997 (Netto, 1999). In addition, the Malaysia's central bank Governor, Dr. Zeti Akhtar Aziz also stated that consolidation among Malaysian banks is worthwhile because it reap the benefits to be more integrated with the foreign countries if Malaysian banks be bold in venture in next challenges stages of development ("Zeti: Bank Mergers," 2010). However, Sarawak Bank Employees' Union (SBEU) raised their fierce opposition on any possible of Malaysian banks merger because they deemed that this would lead to the merged bank to become 'too big to fail' (Ji, 2011).

The prominence policy that implemented by most of the Malaysian banks is merger that helps to correct the deficiencies among the Malaysia banks (Somoye, 2008). Meanwhile, without mergers the bank has to painstaking in catering the domestic market solely and the bank's performance may not accord with the resources and efforts allocated. In other words, the banks' cost efficiency will be reduced since there are excess of capacities in marketing, personnel, overlapping branch network and data processing. According to Somoye (2008), the impetuses of Malaysian banks merger are the reduction of overall credit risk, technology advancement, innovation of critical mass and economic of scale to enhance the risk control and the products and marketing scheme being forward. Meanwhile, the banks can make progress in capitalization and operational efficiency through these impetuses.

The merger program in the Malaysian banking industry has resulted in a significant decrease number of domestic commercial bank of 20 in 1999 to 10 in 2001 when the program was completed. The reasoning for such drastic changes to the banking industry was that the worsening situation of banks as a result of the 1997 Asian financial crisis (Lum & Koh, 2005). Table 1.1 shows the merging banks as a result of the initiation of the merger program by the government.

Table 1.1: Bank Mergers of Domestic Banking Institutions

Leading Anchor Bank	Original Merging Commercial Banks	Other Merging Financial Institutions
Affin Bank Group	Perwira Affin Merchant Bank BSN Commercial Bank (Malaysia) Bhd	Asia Commercial Finance Bhd BSN Finance Bhd BSN Merchant Bankers Bhd
Alliance Bank Group	Multi-Purpose Bank Bhd International Bank Malaysia Sabah Bank Bhd	Sabah Finance Bhd Bolton Finance Bhd Amanah Merchat Bank Bhd Bumiputra Merchat Bankers Bhd
Arab-Malaysian Bank Group	Arab-Malaysian Bank Bhd Bank Utama (Malaysia) Bhd	Arab-Malaysian Finance Bhd Arab-Malaysian Merchant Bank

		MBF Finance Bhd Utama Merchant Bank Bhd
Bumiputra-Commerce Bank Group	Bank of Commerce (M) Bhd Bank Bumiputra Malaysia Bhd	Bumiputra Commerce Finance Bhd Commerce International Merchant Bankers Bhd
EON Bank Group	EON Bank Bhd Oriental Bank Bhd	EON Finance Bhd City Finance Bhd Perkasa Finance Bhd Malaysian International Merchant Bankers Bhd
Hong Leong Bank Group	Hong Leong Bank Bhd Wah Tat Bank Bhd	Hong Leong Finance Bhd Credit Corporation (Malaysia) Bhd
Malayan Banking Group	Maybank Bhd Pacific Bank Bhd PhileoAllied Bank	Mayban Finance Bhd Aseambankers Malaysia Bhd Sime Finance Bhd Kewangan Bersatu Bhd
Public Bank Group	Public Bank Bhd Hock Hua Bank Bhd	Public Finance Bhd Advance Finance Bhd Sime Merchant Bankers Bhd
RHB Bank Group		RHB Sakura Merchant Bankers Bhd Delta Finance Bhd Interfinance Bhd RHB Bank Bhd
Southern Bank Group	Southern Bank Bhd Ban Hin Lee Bank Bhd	United Merchant Finance Bhd Perdana Finance Bhd Cempaka Finance Bhd Perdanace Merchant Bankers Bhd

Source: Adapted from Bank Negara Malaysia Annual Report 2001

1.2   Problem Statement

This research project will examine the impact of merger on Malaysian banks' efficiency, because there are only a few microeconomics studies conducted in this field of studies with respect to the Malaysian banking system. This research topic can help researchers to get more understanding about the real scenario happened in Malaysia and the impact to the Malaysia banking industry.

Central bank Malaysia, Bank Negara Malaysia (BNM) has always encouraged banks to merge. Merger in banking industry was said to integrate the entire banking sector by making both bank become more competitive and efficient (Bala and Mahendran, 2003).

The Malaysia's central bank Governor, Dr Zeti Akhtar Aziz stated that consolidation among Malaysian banks is worthwhile because it reap the benefits to be more integrated with the foreign countries if Malaysian banks be bold in venture in next challenges stages of development (Hamilton, 2011).

In order to ensure banks able to compete in globalization, BNM consent to grouping the bank among banking institution to strengthen the banking sector by increase their performance efficient and competitive advantages. Furthermore, merger would let banks to integrate and provide cross-selling of products between commercial banks, finance companies and merchant banks. The merger exercise could benefit both acquirer banks and target banks. The acquirer banks could enjoy re-rating benefit. While the target banks could also benefit if the acquirer bank is paying higher price than expected price. Thus, anchor banks will now emerge stronger after the merger because of increased market share and operational efficiency (Asia Times, 2000).

According to previous studies of Sufian and Habibulah (2009) who were studied on the effect of merger of Malaysian banks, their finding shows that the merger of banks was successful especially for the small and medium size banks which have benefited from the merger and economies of scale.

However, Rasidah, Fauzias, Low and Aisyah (2008) were studies on the effect of merger of Malaysian banks. The result of analysis shows that the mergers did not seem to improve efficiency of the banks, because they do not indicate any significant difference before and after the banks merge. On the other hand, Amer, Moustafa and Eldomiaty (2009) were analyzed on the effect of merger on the bank performance on Egypt. They only found minor positive effects on the credit risk position. The findings also indicate that not all banks which undergone of mergers have shown significant improvement on performance and return on equity when compared to their performance before merger. Badreldin and Kalhoefer (2009) were studied the effect on merger of Egyptian banks during the period 2002 to 2007, the research result shown that merger was no effects on the profitability of banks in the Egyptian banking industry.

In conclude, some evidence above shows that merger is very important to enhance banking sector's competitive ability and boost the economy growth by improve bank performance while some did not. Therefore, this study is using capital adequacy, liquidity, business earning ability, operational risk to examine the bank efficiency after merger of Malaysian anchor banks.

1.3 Research Objective

1.3.1 General Objective

The general objective of this study is to review the efficiency of Malaysian anchor bank by comparing pre-merger and post-merger bank performance. We are using ROE as the dependent variable which represents bank efficiency, while independent variables are capital adequacy, liquidity, business earning ability and operational risk.

1.3.2 Specific Objective

1) To examine the relationship between capital adequacy with bank efficiency.
2) To examine the relationship between liquidity with bank efficiency.
3) To examine the relationship between business earning ability with bank efficiency.
4) To examine the relationship between operational risk with bank efficiency.
5) To examine whether mergers result in significant changes of ten Malaysian anchor banks collectively.

1.4 Research Question

The study seeks to answer several questions as shown below to address the researching issues.

1) Is capital adequacy significantly explaining bank efficiency?
2) Is liquidity significantly explaining bank efficiency?
3) Is business earning ability significantly explaining bank efficiency?
4) Is operational risk significantly explaining bank efficiency?
5) Do mergers result in significant changes of the ten Malaysian anchor banks collectively?

1.5 Significance of the study

This research will be strongly concerned by the Malaysian banks since the results of this study enable them to evaluate the accomplishment of the merger program among the domestic incorporated Malaysian commercial banks. Besides, this study will also be interested by the government, because the merger will affect the nation economy. One of the important implications in the research area is directing the government policy regarding deregulation mergers and decision

maker to be more careful in promoting mergers as a means to enjoying efficiency gains.

Furthermore, this research has vital public policy implications, following the principal aim of the Malaysia Financial Sector Master Plan (FSMP) which is to achieve a more proficient and competitive financial system. This study also can help the regulatory authorities to determine the action which could be taken in the future in order to further strengthen the Malaysian banking sector.

In addition, this research will act as a benchmark for investors who are interested invest in merging bank. Through this study, investors or companies can determine the factors that must be consider before they invest in merging bank.

1.6 Chapter Layout

Chapter 2

In this chapter, it will discuss the methodology of measure, theoretical framework, and identify dependent and independent variables of research. In addition, all the sources of data and relevant variables have been identified and the related information such as previous research findings, research design and research problem have been included in this chapter.

Chapter 3

This chapter will present the methodology in term of research design, data collection method, sampling design, research instrument, constructs measurement, data processing and the data analysis. In the research, the Panel Data Regression Analysis will be use to examine the banks efficiency.

Chapter 4

This chapter will discuss the patterns of results and analyses of results from various tests which have been relevant to the research questions and hypotheses. Besides, the descriptive analysis, scale measurement, and inferential analyses have been developed to analyze the result.

Chapter 5

In this chapter, it will provide a summary of statistical analyses and discuss the major findings of research. Besides, the research will discuss implications of study for the policy makers based on the result. Furthermore, limitations and recommendations for the future research also will be provide in this chapter.

1.7 Conclusion

Most of the previous empirical results suggested that bank mergers do improve to overall performance of banks. However, there is limited number of research to identify the impact of merger on Malaysian banks' efficiency.

Thus it is important to carry out an analysis to understand effect of the merger on Malaysian's banks efficiency. The next chapter will further examine the previous empirical result to identify the relationship between merger and banks' efficiency to provide better insight and ensure that all important variables and factors are included in this research.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This literature review discusses the following: explanations of the dependent variable and independent variables of the study, summaries and discussions of various related researches and their differences, proposed theoretical framework and (d) hypothesis developed for the study.

2.1 Research of the Literature

2.1.1 Bank Efficiency

The definition and means of measuring banks' efficiency varies among researchers. Garza-Garcia (n.d.) studied the determinants of bank performance in Mexico and Heffernan (2008) studied the determinants of bank performance in China, which both used Return on Assets (ROA) and Return on Equity (ROE) as a measure of bank profitability, which contributes to a banks' efficiency. Rasidah, Fauzias, Low and Aisyah (2008), who studied the Malaysian banks, states that both variables could be used to measure bank performance, but their study indicated that since loans take up large proportion of the banks' assets, Return on Equity (ROE) would be a more appropriate measure of bank performance from their perspective.

There are two researches on the determinants of bank performance on Pakistan banks, but they differ in terms on measuring the bank performance. The two group of researchers are Akhtar, Ali and Sadaqat

(2011) and Gul, Irshad and Zaman (2011). Akhtar et al. (2011) used Return on Assets as their measurement of bank efficiency while Gul et al. (2011) used Return on Capital Employed (ROCE). They state that Return to Captial Employed as a better alternative to Return on Assets, while it is similar to Return on Assets, it also considers sources of financing, which some banks may have high debt as its primary source of financing. Fauzias and Rasidah (2004) have a clearer explanation between the two variables difference, they explained that Return on Assets evaluates efficiency of the institution in utilizing its asset in creating income, while Return on Capital Employed evaluates the efficiency of institution in capitalizing its invested capital (as cited in Harjito & Zunaidah, 2006).

Harjito and Zunaidah (2006), whose study focused on Arab Malaysian Bank Berhad and Hong Leong Bank Berhad, used multiple financial ratios to record the effects of merger and acquisition on their bank performance, mainly divided into share performance ratios, profitability ratios, efficiency ratios and liquidity ratios. The table below shows division of financial ratios as a bank performance measurement.

Table 2.1: Definitions of Financial Ratios

Performance Measure	Ratios	Definitions
Share Performance	Earning per Share, EPS	Net Profit divided by the number of common shares outstanding
	Book value per share	Shareholder's fund divided by number of common shares outstanding
Profitability	Return on Asset (ROA)	Net income divided by Total Asset
	Return on Capital Employed (ROCE)	Net income plus interest expense divided by total liability plus shareholder's fund.

Efficiency	Overhead efficiency	Gross income divided by overhead expenses
	Cost to income	Total expenses divided by gross income
Liquidity	Asset to Liability	Total asset divided by Total Liability
	Loans to Deposits	Total Loans divided by Total Deposits
Credit Risk	Loans to Assets	Total Loan divided by Total Assets Ratio of non-performing assets to Total Loan.

Source: Fauzias and Rasidah (2004), as adopted in Harjito and Zunaidah (2006).

The studies above each present their own case of using different performance measurement for banks. However, we would like to focus on one dependent variable, which would best capture a bank's efficiency. Harjito and Zunaidah (2006) study is relevant to our study, but their study has been largely focused on two banks and have not clearly indicated which is the better measurement for banks and the variables affecting them. Rasidah et al. (2008) study focused on Malaysian banks and uses the Return on Equity (ROE) as its dependent variable, which is very relevant to our study. In addition, most studies indicated above have similarly included Return on Equity (ROE) either as their only or one of their dependent variables.

We conclude that Return on Equity (ROE) as the best indicator for bank efficiency. Hence, in this study, bank efficiency is defined as the bank's ability to generate profit utilizing its shareholder's equity. Therefore, the term bank performance and bank efficiency will be used interchangeably in this study as it represents the dependent variable.

2.1.2 Capital Adequacy

Capital adequacy is the measure of a bank's ability to absorb losses before it becomes insolvent, in short it is total capital divided by total assets (Garza-Garcia, n.d.) or total capital divided by total loans (Rasidah et al, 2008). The difference in between the interpretation of a bank's capitalization is that loans are the major part of assets for the bank. The literature reviewed showed contrasting results on the how it affects the banks. Garcia-Herrero, Gavilá and Santabárbara (2009) noted that the capital adequacy of a bank could affect its profitability through a few ways: (a) greater capital increases loans to customers which increases profits, (b) high value banks want to be kept well capitalized, (c) capital adequacy is an important indicator of creditworthiness and (d) a well capitalized bank need to borrow less from their peers, reducing the financing cost (as cited in Garza-Garcia, n.d.).

It was shown to have a positive relationship towards a bank's profitability in the US (Berger, 1995) and Europe (Goddard, Molyneux & Wilson, 2004) (as cited in Garza-Garcia, n.d.). Abreu and Mendes (2002) noted in their study on European banks that they face lower bankruptcy cost (as cited in Gul et al. (2011). Akhtar et al. and Gul et al. concurs with the previously stated researches above, showing a positive effect of capital adequacy and profitability, measured with Return on Equity, in Pakistan. De Joughe and Vander Vennet (2008) also showed a positive and significant effect to Return on Equity, which they explained that it would be perceived as an indication for better future performance and more risk aware.

However, Nacuer and Goaied (2002) stated that it has negative relationship with profitability, as large capital requires maintenance and reflects negatively as a result (as cited in Akhtar et al, 2011). Heffernan (2008) noted that banks with substantial capital adequacy ratios could mean that they are overly cautious, thus a lost opportunity in utilizing that

capital to gain profit. Therefore, this ratio could be positive or negative, and rapidly decline in this ratio could indicate serious capital problems.

Therefore, the literature above showed there is a relationship between capital adequacy and bank efficiency. However, there are positive and negative effects towards a bank's efficiency. Hence, to achieve a positive effect, banks must balance their capital with their profitability activities, such as giving out loans.

2.1.3 Liquidity

There are many variations on the measure of a banks' liquidity, but the literature reviewed most seem to use loans as their denominator as a measurement for liquidity risk. Liquidity risk is defined as a firm's ability to meet short term cash obligations (Arshad, Umar & Arif, 2007, p. 138). The following discusses the many definitions of liquidity risk to banks.

Loans to deposit ratio, in short, is explained by dividing total loans to total deposits of a bank. Loans are the main source of income and deposits are the main source of funds to the banks. Hence, since they play major part in obtaining funds and earning profit, they should in turn be expected to play a significant part in determining a bank's efficiency. According to Hussein (2010) study of factors affecting Islamic banks and conventional banks, this ratio is used to describe a bank's business risk.

According to Rasidah et al (2008), loan deposit ratio is used in judging a bank's liquidity position as it is known as a CAMEL type variable. CAMEL variables are traditionally used to judge a bank's profitability, asset quality, and capital adequacy and soundness of the bank's management. In their study, it serves as a benchmark to judge a bank's liquidity risk. They explained that a high ratio indicating exposure to liquidity risk but could yield higher returns, improving the Return on

Equity in the process. However, this could only happen if the bank is prudent in its activities.

In other studies, liquidity risk is defined as loans over bank's total assets (Garza-Garcia, n.d. ; Heffernan, 2008 ; Gul et al, 2011), but it is described as a measure for credit risk for Fauzias and Rasidah (2004) study (as cited in Harjito & Zunaidah, 2006). Demirgüç-Kunt, Laeven and Levine, 2004 used liquidity of assets divided by total assets as their measurement of a banks liquidity (as cited in Tapia, Fernandez & Suarez (2006). They explained its relation to a bank's profitability is in terms of interest income, which high levels of liquid assets would have lower interest income than others with lower levels of liquid assets. In short, greater liquidity is negatively associated with interest margins and bank profit.

The above literature reviewed showed the differences in defining liquidity risk, but all converge that it could affect bank profitability. Since deposits are the main source of generating possible loans to customers, therefore in this study, it is more practical to use this as a measure of a bank's liquidity risk. Hence, loan deposit ratio is used instead loan asset ratio.

2.1.4 Business Earning Ability

A bank's main income, as stated previously, is from the loans given out to customers. Then, the loans generate interest income for the bank. Net interest income consists of total interest income minus total interest expenses (Ventureline, 2012).

According to Rasidah et al. (2008), net interest income to total income serves as an indicator of a bank's earnings ability and nature of its business activities. Their study stated that it could have adverse effects on Return on Equity if banks increase their net interest income but maintain their loan portfolio. In Huizinga, Nelissen and Vander Vennet (2001) on European

banks, they define a bank's earning efficiency as a ratio of predicted profits and actual profit.

Worthington (2001) study of determinants of non-bank financial institution performance, their use of net interest income over total loans is significant in their result. In addition, his results shows that it is significant in a firm's decision to acquire another Australian firm.

Akhtar et al. (2011) and Gul et al. (2011) used net operating income to total assets as a measure of earning ability. They use this variable is to measure more on the bank's ability to manage its assets as a whole, not only the loans.

Hence, the literature reviewed concurred there is a relationship between a bank's earning ability to its bank performance. However, as more researchers used net interest income to total income as a measure of bank earning ability, this variable would be used in this study.

2.1.5 Operational Risk

Worthington (2001) defines operational risk as total expenses to total revenue. His study explained that it defines the operational risk of the institution, which is the possibility that its operation cost exceeding its revenue, which would then deplete the firm's capital.

Heffernan (2008) defines total expenses to total revenue as a measure of operational efficiency. He states that the higher the ratio, the less efficient the bank is, which will negatively affect bank profits. Usually it is expected to negatively impact the bank performance, in this case, Return on Equity.

Rasidah et al (2008) study used this variable as it is a CAMEL-type variable, which is general indication of a firm stability and soundness. Hazlina, Zarehan and Muzlifah (2010) states that interest expense is incurred as a bank's cost of borrowing, which in turn would be used for capital measure or additional output, such as generating loans for interest income. In addition, with increasing inflation, non-interest income plays an increasingly important role to be monitored constantly.

Therefore, the operational efficiency in terms of controlling costs show a significant relationship with bank performance. Hence, total expenses to total revenues is one of the variables in this study.

2.1.6 Merger Effect

The literature results for the United States banks are mixed, but most studies failed to find any significant value increases (Houston and Ryngaert, 1994; Piloff, 1996; Kwan and Eisenbeis, 1999) (as cited in Huizinga, Nelissen & Vander Vennet, 2001). However, there is evidence suggests that the cost efficiency effects of merger and acquisitions may depend on the motivation behind the mergers and the consolidation process and substantially improve the cost efficiency when relatively efficient banks acquire relatively inefficient banks (Rhoades, 1998).

The results of the merger and acquisition effects are mixed. Some found improved profitability ratios associated with merger and acquisitions (Cornett and Tehranian, 1992), although others found no improvement (Piloff, 1996) (as cited in Huizinga, Nelissen & Vander Vennet, 2001).

Linder and Crane (1992) noted some indications that interstate mergers do not improve operating income in the US. Similarly, Srinivasan (1992) concludes that mergers do not cut cost on the non-interest expenses of the financial institutions. In addition, Berger and Humphrey (1992), who

compare each merged bank's performance with non-merged banks, do not find any significant cost efficiency gains on average and the small insignificant gains identified were offset by reductions in scale efficiency.

Since the literature above shows the mixed results, leading to no conclusion whether it does show an impact on the Malaysian banks. Hence, it is integral we explore the effects of mergers on the Malaysian banks.

2.2 Review of Relevant Theoretical Model

2.2.1 Rasidah et al. (2008)

Figure 2.1: Rasidah et al. (2008) Model on Estimating Merger and Acquisition Effect

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┌─────────────────────────────────────────────────────────────────────┐
│   ┌──────────┐      ┌──────────┐      ┌──────────────────┐           │
│   │ Capital  │      │ Cost     │      │ Dummy Variables: │           │
│   │ Buffer   │      │Efficiency│      │ 10 Anchor Banks  │           │
│   │ Ratio    │      └──────────┘      └──────────────────┘           │
│   └──────────┘                                                        │
│   ┌──────────┐         ┌──────────────┐                               │
│   │ Loan     │         │ Profitability│                               │
│   │ Growth   │         └──────────────┘                               │
│   └──────────┘                                                        │
│   ┌──────────┐                                                        │
│   │ Loan Loss│                                                        │
│   │ Reserve  │                                                        │
│   └──────────┘                                                        │
│   ┌──────────┐         ┌──────────────┐                               │
│   │ Loan     │         │ Interest     │                               │
│   │ Deposit  │         │ Earning Ratio│                               │
│   │ Ratio    │         └──────────────┘                               │
│   └──────────┘                                                        │
└─────────────────────────────────────────────────────────────────────┘
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Division of periods: Whole Period, Pre-merger and Post-Merger Period
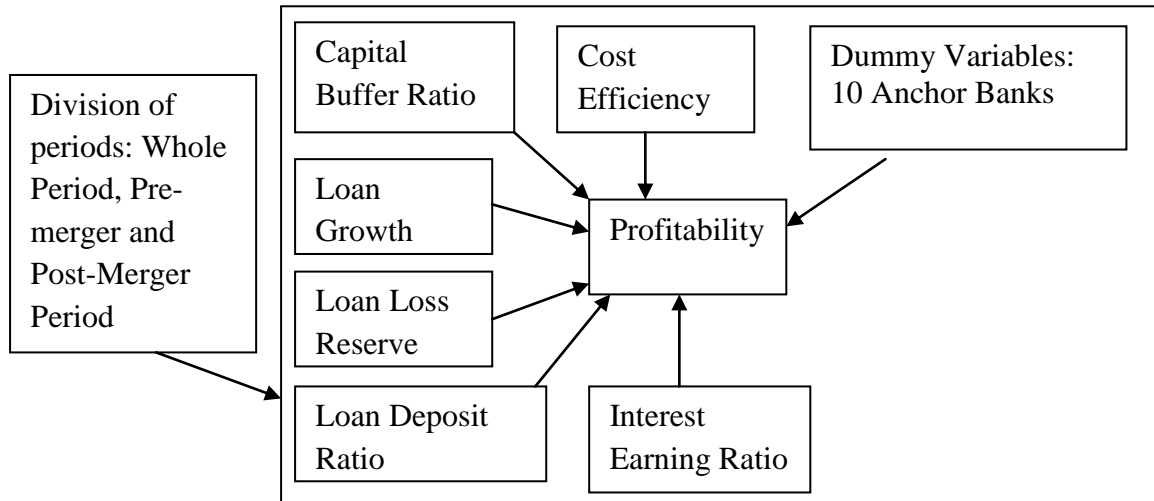
Adapted from: Rasidah, M.S., Fauzias, M. N., Low, S. W., & Aisyah, A. R. (2008). The Efficiency Effects of Mergers and Acquisitions in Malaysian Banking Institutions. *Asian Journal of Business and Accounting, 1*(1), 47-66.

Rasidah et al. (2008) study included variables that encompassed all aspects that would affect the financial stability and soundness of the bank. Their study focused on the CAMEL-type variables which they deem vital in determining a bank's profitability, covering the aspects of capital, liquidity, efficiency and credit risk. In addition, to analyze the ten different anchor banks, nine dummies variables are only included, as the tenth bank would then be represented by the intercept. Finally, to compare the difference between the two periods, namely before and after merger, examination of the variables against the Return on Equity of the banks is performed according to their respective pre and post-merger period. However, unlike the next model, it does not consider the external factors.

2.2.2 Gul et al. (2011)

Figure 2.2 Determinants of Bank Profitability
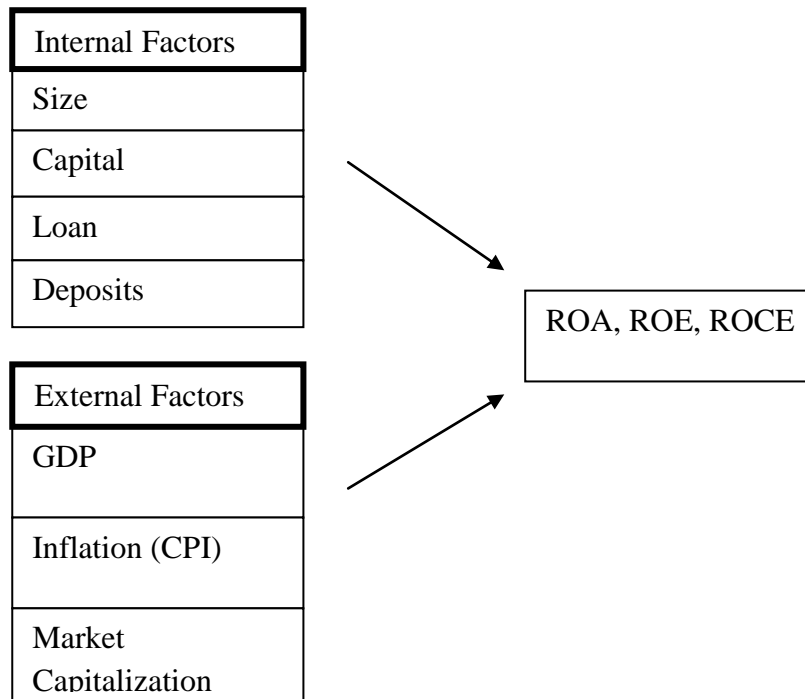
Adapted from: Gul et al. (2011). Factors affecting bank profitability in Pakistan. *The Romanian Economic Journal, 14*(39), 61-87.

Gul et al. (2011) model encompassed external factors, taking into consideration of GDP, inflation and stock market capitalization of the country. Similar to the Rasidah et al. (2008) model, the internal factors takes into consideration capital, loan and deposits. However, the slight difference is that Gul et al. (2011) takes the lump sum of capital, loan and deposits of the bank in their model, unlike Rasidah et al. (2008) model, which takes in terms of ratio of one against another, for example loan deposit ratio. Another difference in Gul et al. (2011) is that it includes the bank size in terms of total assets, due to stating that a bank's business activities should operate differently according to its size.

2.3 Proposed Theoretical Framework

Figure 2.3 Proposed Theoretical Framework
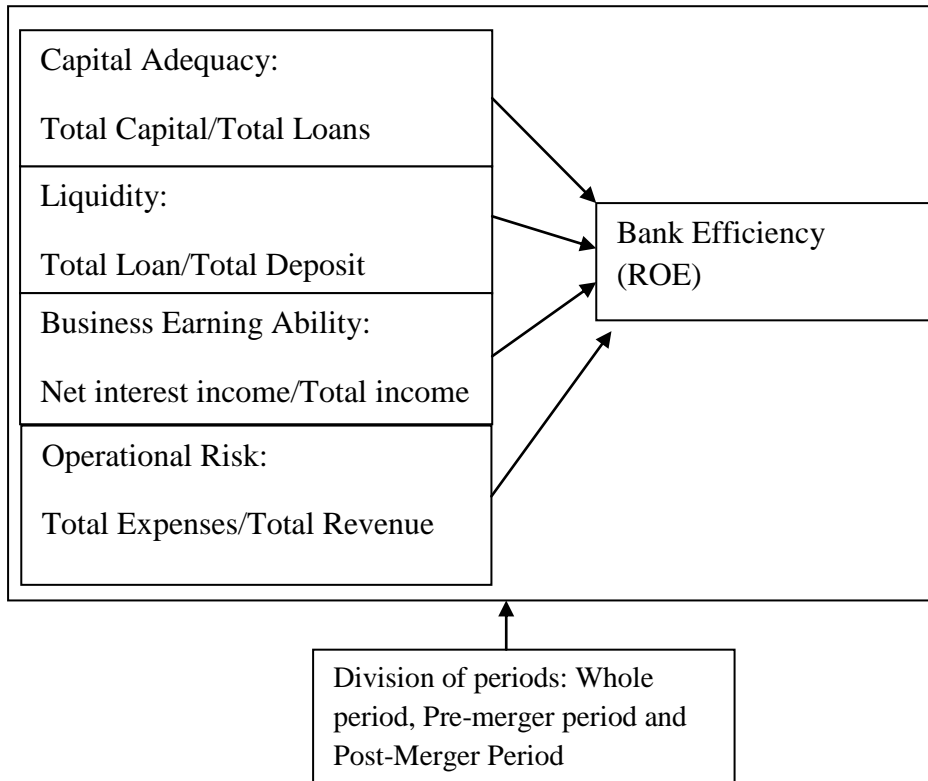
Figure 2.4 is the proposed theoretical framework, as a result of adapting and modifying the previously stated theoretical models and some of the journal articles' support of variables. The model proposed is similar to the two model reviewed, namely Rasidah et al. (2008) and Gul et al. (2011) models. The similarities are it considers the capital position, liquidity, earning ability as well as its operating risk. In other words, it is similar to the CAMEL-type variables by Rasidah et al. (2008), but expressed differently, even though it represents the same risk. The variables difference between the proposed and reviewed models is the support gained through other researchers. Thus, those variables from previous researchers that lacked literature findings were omitted in the study.

This model follows closely with Rasidah et al. (2008) model, where it would measure the effects of pre and post merger, where the results would be reflected in the Return on Equity of the banks. The changed in Return on Equity of the banks between periods would be resulted from the four variables, as the merger and

acquisition effect may cause banks to alter their business operations. This would then subsequently lead to changes in Return on Equity.

The reason external factors of Gul et al. (2011) are not included in the proposed theoretical framework is because it is not the subject of our study. This is where our study would like to limit the external factor to only the merger requirement effect. Hence, it is not included as it is not the focus of this study, which is to examine merger effects on bank performance through its business activities.

2.4 Hypotheses Development

Since the relationship of variables is established in the literature review section, the hypotheses development of the variables can now be established.

2.4.1 Relationship between Capital Adequacy and Bank Efficiency

H_0: There is no significant relationship between capital adequacy and bank efficiency.

H_1: There is significant relationship between capital adequacy and bank efficiency.

2.4.2 Relationship between Liquidity and Bank Efficiency

H_0: There is no significant relationship between liquidity and bank efficiency.

H_1: There is significant relationship between liquidity and bank efficiency.

2.4.3 Relationship between Business Earning Ability and Bank Efficiency

H_0: There is no significant relationship between business earning ability and bank efficiency.

H_1: There is significant relationship between business earning ability and bank efficiency.

2.4.4 Relationship between Operational Risk and Bank Efficiency

H_0: There is no negative relationship between operational risk and bank efficiency.

H_1: There is negative relationship between operational risk and bank efficiency.

2.4.5 Relationship between Merger and Bank Efficiency

Examining the significance of the merger requirement to bank efficiency cannot be used the usual significance level as the other independent variables to determine its significance. In our research, to fairly examine, the difference that the merger requirement brings, the changes of the independent variables significance between the before and after merger period are used to interpret the effect of the merger.

2.5 Conclusion

Literature reviews of relevant theoretical models and variety of approaches to analyzing bank efficiency and its effects from merger and acquisition provides conceptual background to strengthen the argument of this research. More importantly, the formulation of hypotheses will allow qualitative and quantitative testing to proceed. The research methods of the study will be discussed in detailed in the next chapter.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

A research is a logical and systematic search for new and useful information on a particular topic (Kothari, 1985) and a research methodology is defines as the activities of the research by how to proceed, the progress and what is the constitutes success (Williman, 2010). It is used to govern the range of choices as to how the data will be collected, analyzed, reported and concluded (Creswell, 2005).

In this chapter will present the methodology in term of research design, data collection method, sampling design, research instrument, constructs of measurement, data processing and the data analysis. In the research, the Panel Data Regression Analysis will be used to examine the banks' efficiency.

3.1 Research Design

In this research, it would implement the quantitative method to conduct the research. This method allows the researchers to seek measurable relationships among variables to test and verify their study hypotheses (Swanson & Holton III, 2005). It consists of 5 steps which are (1) determining the basic questions the researchers intend to answer with the research study, (2) determined the participants in the research, which are capitalizes on the advantages of using statistics to make inferences about larger groups using very small samples, also known as generalizability, (3) select methods of answer questions, where the researchers identify the variables, measures, and the research questions, methods, and participants of the research, (4) select statistical analysis tools for analyzing the data collected, and (5) perform interpretation of the results of the research

analysis based on statistical, significance determined (Swanson & Holton III, 2005).

The purpose of this research is to investigate the mergers effects on Malaysian banks' efficiency and it is better to classify this research as exploratory research as well as causal research. Exploratory research is preliminary research conducted to increase understanding of a concept, to clarify the exact nature of the problem to be solved. Journals and articles that were related to mergers effects were studies to understand about the relationship of variables, which the dependent variables will be examined against the independent variables to determine the relationship between them. The dependent variable is the bank's efficiency, and the independent variables are the bank's capital adequacy ratio, liquidity ratio, business earning ability ratio and operation risk ratio.

Researcher uses this research method to clarify the research questions that guide the entire research project (Williman, 2010.). This will help the researchers to be able to focus on answering the research question and specifying the research hypothesis (Zikmund, 2003). After studying and understanding the concept of mergers effect, the researchers started to investigate how the mergers will affect the efficiency of Malaysian banks.

Besides, a causal research is implement to emphasis on the specify hypothesis about the effects of changes of one variable on another variables, in other word, the cause and effect relationship among the variables (Swanson & Holton, 2005). This will allow the researcher to focus their studying and examining the factors of the banks' efficiency against the mergers effects.

There are four types of methods for obtaining insights and getting a clearer picture of a problem: secondary data analysis, pilot studies, case studies, and questionnaire survey (Swanson & Holton III, 2005).

In this research, secondary data analysis was chosen as a tool to examine the factors that affect bank efficiency in Malaysia. The researchers refer to the factors

that gain from the previous research on mergers effects, and convert the data into useful information for this research.

3.2 Data Collection methods

According to Cooper and Schindler (2006), data can be collect from two main sources which are primary data and secondary data.

3.2.1 Secondary data

This research is using secondary data analysis as examining tool. Secondary data are the only sources used in this research; primary data are excluded in this research.

Secondary data are the information gathered from the sources which are already existed (Creswell, 2005). This kind of data is usually collected by someone other than the user and it does not require any access to respondents. This kind of data is faster and easy to obtain and it will save time and cost instead of acquiring primary data. However, the obtained data may be outdated and it may not meet the researchers' requirement (Creswell, 2005). Nevertheless, this data always provides great value in exploratory research.

3.3 Source of Data and Sample

In this research, the researcher collects the secondary data from the online database that contained the sources of journals and articles. The online database was provided by Universiti Tunku Abdul Rahman (UTAR) and Universiti Utara Malaysia (UUM). There are many different types of data such as views and

comments from different authors and academicians based on their different perspectives. Even some of the journals and articles were outdated. Yet, the researcher was still able to find out useful data for this research from the database. There were also other sources of data such as online newspaper, annual report, books, magazines, dissertations done by other researchers. The Final Year Projects done by the former UTAR's undergraduates were also used as references in this research.

The data were collected from the sources were the total capital, total assets, total loan, total deposit, net interest income, total income, total expenses, total revenue, and all the data which have significant relationships to the Return on Equity (ROE) of Malaysian banks. These data were collected to run the Panel Data Regression Analysis to examine the bank efficiency before and after merger.

There are ten anchor banks in Malaysia which included Affin bank Berhad, Alliance Bank Berhad, AmBank Berhad, CIMB Bank Berhad, Hong Leong Bank Berhad, Malayan Banking Berhad(Maybank), Public Bank Berhad, RHB Bank Berhad, EON Bank Berhad and Southern Bank. However, the unit of analysis in this report is excluded EON Bank Berhad, and Southern Bank because of insufficient data provided.

The research are based on eight anchor banks periods from 1998-2004. Data such as total equity and net income are collected. ROE of eight anchor banks are computed into periods of pre-merger period (1998-2000), post-merger period (2001-2004) and pre-merger with post-merger (1998-2004) to examine the relationship between merger and Malaysian domestic banks efficiency. The pre-merger period start from 1998 and end on 2000 is because of local banking institutions' merger program was initiated 1999 and this was succeeded in consolidated fragmented banking institutions in 2000 (Bank Negara Malaysia, 2001). In this research, the post-merger period start from 2001 to 2004 instead of 2001 to 2010. This is because of the researchers wish to do a comparison between pre-merger period and post-merger period. A large different in number of years is unfair for researchers to do comparison.

The estimation tool used in this research is Panel Date Analysis which consists of a sequence of observations, repeated through time on the statistical units. Sample size (n) of panel data analysis is year time number of individual. This research has obtained total of 56 (7x8) panel data observation in these targeted populations.

3.4 Description on Dependent and Independent Variable

In this research, we are using return on equity ratio (ROE) as dependent variable and capital adequacy ratio, liquidity ratio, business earning ability ratio and operational risk ratio as independent variable.

3.4.1 Return on Equity (ROE)

In this study, accounting measurement is being used to measure banks' return upon performance. The return on equity (ROE) is being used in this paper to measure a banks' performance. According to the researchers, the accounting measurement is a useful tool as it comprises more relevant and suitable variables regarding to return performance measurement (Gomes & Ramaswamy, 1999; Sullivan, 1994).

ROE indicates how well management is employing capital in banks. Besides, ROE offers a useful signal of financial success because it indicate whether banks are growing profits without pouring new equity capital into the business. A steadily increasing ROE means that management is giving shareholders more for their money, which is represented by shareholders' equity. Therefore, ROE was used as the measurements for return on profitability. Furthermore, ROE are using the net income after tax and interest expenses as the numerator.

The firm performance (ROE) was respectively calculated from year 1998 to 2010. The formulas for the banks return measurement are shown below: Return measurement:

$$ROE\ ratio = \frac{Net\ income\ after\ taxes\ and\ expenses}{Total\ Equity}$$

3.4.2 Capital Adequacy Ratio

The capital adequacy ratio is ratio of bank's capital to its risk, which is being used as independent variables to measure the bank's capacity to meet the time liabilities and other risks such as market risk, operational risk.

Capital adequacy ratio indicates whether safety and soundness of the entire banking system in an economy. The higher the capital adequacy ratios means a bank has the greater the level of unexpected losses it can absorb before becoming insolvent. The formulas for capital adequacy ratio are shown below:

$$Capital\ adequacy\ ratio = \frac{Total\ Capital}{Total\ Loan}$$

Total capital consist two types of capital, which are tier one capital and tier two capital. Tier one capital can absorb losses without a bank being required to cease trading such as ordinary share capital. Tier two capital can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors such as subordinated debt.

3.4.3 Liquidity Risk Ratio

The liquidity risk ratio also known as loan to deposit ratio (LTD), which is being used as independent variables to measure the bank's ability to cover withdrawals made by its customers.

Liquidity risk ratio indicates the percentage of a bank's loans funded through deposits. An upswing in the LTD indicates that a bank might not have enough liquidity to cover any unforeseen fund requirements. A downswing in the LTD indicates that banks may not be earning as much as they could be. The formulas for loan to deposit ratio are shown below:

$$Liquidity\ risk\ ratio = \frac{Total\ Loan}{Total\ Deposit}$$

Total deposit include customer deposits, central bank deposits, banks and other credit institution deposits and other deposits, while total loan include loans to banks or credit institution, customer net loans, mortgages, loans to group companies and associates and trust account lending.

3.4.4 Business Earning Ability Ratio

Business earning ability ratio is being used as independent variables in this study, which calculated by dividing bank's net interest income by its total income. Business earning ability ratio indicates whether bank able to earn profit. The formula for business earning ability ratio is shown below:

$$Business\ earning\ ability\ ratio = \frac{Net\ interest\ income}{Total\ Income}$$

3.4.5 Operational Risk Ratio

Operational risk ratio is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events. It includes legal risk, which is the risk of loss resulting from failure to comply with laws as well as prudent ethical standards and contractual obligations. Besides, it also includes the exposure to litigation from all aspects of an institution's activities. The formulas for operational risk ratio are shown below:

$$Operational\ risk\ ratio = \frac{Total\ Expenses}{Total\ Revenue}$$

3.5 Model Specification

Based on the previous studies on bank efficiency such as Rasidah et al. (2008) model and Gul et al. (2011) model which have been discussed earlier in literature review, the researchers have established the following economic model in order to explore the relationship between capital adequacy, liquidity, business earning ability and operational risk with Malaysian's bank efficiency in this research.

$ROE = \beta_0 + \beta_1\ CAPADE - \beta_2\ LIQ - \beta_3\ BEA - \beta_4\ OPERISK + \varepsilon t$

The ROE is Return on Equity which is the bank's ability to generate profit utilizing its shareholder's equity and it is expressed in percentage (%). Besides, the CAPADE is capital adequacy which represents a bank's ability to absorb losses before it becomes insolvent and that is expressed in percentage (%). The LIQ is liquidity which is a bank's ability to meet short term cash obligations and it will also be expressed in percentage (%). In addition, the BEA is business earning ability which refers to a bank's ability to earn profit and it will be expressed in percentage (%). The OPERISK is operational risk which is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and

systems or from external events and it is expressed in percentage (%). Lastly, the εt is stochastic error term.

The expected sign of the capital adequacy is positive. According to Berger (1995), a higher capital ratio should reduce the amount of funds required and the price of funds for a bank and hence the bank's net interest income and Return on Equity can be enhanced eventually (as cited in Mathuva, 2009). Besides, the liquidity is expected to a have negative sign since a high levels of liquid assets would have lower interest income than others with lower levels of liquid assets (as cited in Tapia, Fernandez & Suarez (2006).The business earning ability of a bank is expected to have a negative sign because the bank tends to increase their net interest income but maintain their loan portfolio at the same time (Rasidah et al, 2008). In addition, the expected sign of the operational risk is negative. According to Heffernan (2008), the higher the operational risk ratio, the less efficient the bank is and hence will lead to lower Return on Equity.

3.6 Estimation Tools

The researchers are using Correlation Analysis, Panel Data Analysis and Jarque Bera Normality Test to examine the result.

3.6.1 Correlation Analysis

The major relational statistic used by the researches is correlation which is to measure the strength and direction of the relationship between two variables and does not imply causality.

The range of correlation coefficient is from +1 to -1 whereas the sign of correlation coefficient shows the direction of the correlation between the two variables. When the absolute value of correlation coefficient moves closer to 1, it indicates that there is a stronger correlation between the two

variables. On the other hand, when the absolute value of correlation coefficient moves far away from 1, it shows that there is a weak correlation between the two variables.

In short, the two variables are perfectly positively correlated when correlation coefficient is +1. If the correlation coefficient is -1, it shows that the two variables are negatively correlated. Furthermore, when the absolute value of correlation coefficient is equals to 0, it indicates that the two variables are totally not correlated (Studenmund, 2006, pp. 35-59).

The researchers decided to use the correlation analysis because it is simple and does not imply causality which will be useful in examining the strength and direction of relationship between capital adequacy, liquidity, business earning ability, operational risk with Malaysian's bank efficiency which is Return on Equity.

3.6.2 Panel Data Analysis

A panel data is a dataset where the behaviors of entities are observed across time. In other words, it is a combination of time series and cross section data. Panel data allows the researchers to study individual dynamics such as separating age and cohort effects. Meanwhile, the researchers can also enjoy the benefit of using panel data since panel data are more informative. For instance, panel data with more variability, less colinearity, more degrees of freedom and the estimates are more efficient (Bruderl, 2005).

Despite the benefit of panel data analysis, it has several estimation and inference problems. The data of panel involve both cross-section and time dimensions, problem of heteroscedasticity and autocorrelation arise and need to be tackle. However, the researcher done the diagnostic checking based on normality test (Jarque Bera) in this research.

Panel data analysis in this research included panel ordinary least square and fixed effect.

3.6.2.1 Ordinary Least Square

Ordinary Least Square (OLS) is a regression analysis used to estimate the coefficients of economic model in order to minimize the sum of the squared residuals.

There are two critical reasons that lead the researchers to use OLS to estimate the regression model. One of the reason is OLS is the simplest and most common econometric estimation tools as compared with others. Secondly, in theoretical point of view, minimization of the sum of the squared residuals is definitely appropriate in regression analysis. It is due to the reason that squared terms are always positive and hence it helps to avoid the cancelling of positive and negative residuals and the squared function have no mathematical difficulties in manipulation (Studenmund, 2006, pp. 35-59).

3.6.2.2 Fixed Effect Regression

Fixed effect regression is a least squares dummy variable model. The researchers are using fixed effect regression to run the data. The regression included cross-sectional fixed effect and period fixed effect. E-view will create a set of appropriate dummy variables in order to estimate the model and indicating the membership in cross-sectional data and period data.

By including fixed effects, researchers can get the result with greatly reduced the threat of omitted variable bias. This is because fixed

effects rely on within-group action, the E-view will repeat observations for each group and thus get a reasonable figure for our dependent variable − ROE within each group. The more action we take the more better result we get (Todd and Jeff, 2000).

3.6.3 Jarque Bera Normality Test

The researchers use the Jarque Bera normality test to test the null hypothesis of whether the data are sampled from normal distribution. It is also a diagnostic checking in this research paper. The Jarque Bera test is based on the kurtosis and skewness of the sample data whereby the formula for kurtosis is $K = \frac{1}{n} \sum (\frac{x - \bar{x}}{\sigma n})^4$ and the formula for skewness is S $= \frac{1}{n} \sum (\frac{x - \bar{x}}{\sigma n})^3$. Meanwhile, the kurtosis and skewness for a normal distribution is 3 and 0 respectively.

The Jarque Bera statistic is calculated based on the formula of

$$JB = \frac{n}{6} \left[S^2 + \frac{(K-3)^2}{4} \right].$$

According to Maddala (2001, p. 423), Jarque Bera test is applicable in large samples since it is an asymptotic test to test the null hypothesis of whether the data are sampled from normal distribution.

3.7 Conclusion

This chapter has discussed the methodology in term of research design, data collection method, source of date and sample, description on dependent and independent variable, constructs of measurement, model specification and all the estimation tools that being used in the regression analysis. The researchers will discuss about estimation result and result interpretation in chapter 4.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this chapter, the descriptive analysis, result estimation and interpretation of results are discussed. The analysis software used for this research is generated by E-views 6.0.

4.1 Descriptive Analysis

4.1.1 Descriptive Statistics

Since the research will be divided into whole period, pre-merger and post-merger study. Descriptive statistics for each is period is shown below.

Table 4.1- Descriptive Statistics for Whole Period (1998-2004)

	ROE	OPR	LR	CA	BE
Mean	0.044736	0.597479	8.573772	0.114005	2.931346
Median	0.078800	0.599562	5.359558	0.117987	2.051132
Maximum	0.178000	1.645122	48.56203	0.206372	27.88938
Minimum	-1.414500	0.039639	1.422051	0.017744	-7.691296
Std. Dev.	0.215535	0.222039	8.300238	0.035072	4.826983
Skewness	-5.744170	1.350202	2.579647	-0.114591	2.659510
Kurtosis	39.04763	11.34833	11.25005	3.549427	15.77990
Jarque-Bera	3339.966	179.6359	220.9239	0.826920	447.1084
Probability	0.000000	0.000000	0.000000	0.661358	0.000000
Sum	2.505200	33.45882	480.1312	6.384278	164.1554
Sum Sq. Dev.	2.555033	2.711566	3789.168	0.067651	1281.487
Observations	56	56	56	56	56

Table 4.2- Descriptive Statistics for Pre-Merger Period (1998-2000)

	ROE	OPR	LR	CA	BE
Mean	-0.004633	0.622974	9.664910	0.110233	2.933269
Median	0.067100	0.672959	4.042623	0.115133	1.792462
Maximum	0.178000	1.645122	48.56203	0.206372	27.88938
Minimum	-1.414500	0.039639	1.422051	0.017744	-7.691296
Std. Dev.	0.311393	0.311599	11.16240	0.043286	6.603588
Skewness	-4.083115	0.846098	2.098937	-0.087461	2.035439
Kurtosis	19.08906	6.642745	7.232901	2.944672	9.912973
Jarque-Bera	325.5451	16.13312	35.53959	0.033659	64.36124
Probability	0.000000	0.000314	0.000000	0.983311	0.000000
Sum	-0.111200	14.95137	231.9578	2.645592	70.39846
Sum Sq. Dev.	2.230203	2.233156	2865.781	0.043094	1002.970
Observations	24	24	24	24	24

Table 4.3- Descriptive Statistics for Post-Merger Period (2001-2004)

	ROE	OPR	LR	CA	BE
Mean	0.081763	0.578358	7.755418	0.116834	2.929904
Median	0.090300	0.585147	5.721419	0.119018	2.232033
Maximum	0.172500	1.036571	24.89480	0.184381	17.62510
Minimum	-0.295900	0.419862	2.400715	0.067140	-1.477425
Std. Dev.	0.084713	0.120631	5.307882	0.027801	2.997403
Skewness	-2.813039	1.571481	1.627356	0.267142	3.774676
Kurtosis	13.46833	7.490965	5.148203	2.954267	19.45743
Jarque-Bera	188.3183	40.06263	20.27723	0.383402	437.1195
Probability	0.000000	0.000000	0.000040	0.825554	0.000000
Sum	2.616400	18.50745	248.1734	3.738686	93.75692
Sum Sq. Dev.	0.222463	0.451111	873.3820	0.023959	278.5172
Observations	32	32	32	32	32

The tables above show the descriptive statistics for whole period, pre-merger period and post-merger period study. The information consists of mean, median, standard deviation, skewness, kurtosis and jarque bera. It also consists of the number of observations, which in panel data consists of banks chosen and number of years in this study.

4.1.2 Correlation Analysis

Since the research has a three period study, which are whole period, pre-merger and post-merger, the correlation analysis is also divided as accordingly.

Table 4.4- Correlation Analysis for Whole Period (1998-2004)

	ROE	OPR	LR	CA	BE
ROE	1.000000	0.186858	-0.168585	0.417918	0.031048
OPR	0.186858	1.000000	-0.344282	-0.007780	0.148448
LR	-0.168585	-0.344282	1.000000	-0.185388	0.037814
CA	0.417918	-0.007780	-0.185388	1.000000	0.007302
BE	0.031048	0.148448	0.037814	0.007302	1.000000

Table 4.5- Correlation Analysis for Pre-Merger Period (1998-2000)

	ROE	OPR	LR	CA	BE
ROE	1.000000	0.368595	-0.217083	0.451791	0.063058
OPR	0.368595	1.000000	-0.351034	0.144797	0.130915
LR	-0.217083	-0.351034	1.000000	-0.386488	0.020753
CA	0.451791	0.144797	-0.386488	1.000000	0.142564
BE	0.063058	0.130915	0.020753	0.142564	1.000000

Table 4.6- Correlation Analysis for Post-Merger Period (2001-2004)

	ROE	OPR	LR	CA	BE
ROE	1.000000	-0.877198	0.217337	0.354321	-0.152674
OPR	-0.877198	1.000000	-0.402225	-0.425266	0.227754
LR	0.217337	-0.402225	1.000000	0.327842	0.097434
CA	0.354321	-0.425266	0.327842	1.000000	-0.336389
BE	-0.152674	0.227754	0.097434	-0.336389	1.000000

According to Gujarati and Porter (2008), excessively high pair-wise correlation between is over 80% (0.80) (p. 358). Since all pair wise correlation does not exceed that number and are all below 0.50, multicollinearity should not exist between independent variables in all periods of study. On the contrary, the high correlation between Operational

Risk and Return on Equity is over 0.80 in post-merger period, as shown in Table 4.6, which means there is high correlation relationship between these two variables. However, further investigation is required to investigate independent variables relationship with the dependent variable.

4.2 Inferential Analyses

The result estimation is divided into three parts, whole period, pre-merger period and post-merger period. The whole period estimation is to show the variables effect during the seven years effect on the banks' efficiency. The pre-merger period and post-merger period result estimations are to compare the effects before and after the effects of the merger and acquisition program. The normality test (Jarque-Bera test) for each model is also presented.

4.2.1 Whole Period (1998-2004)

Table 4.7- Result Estimation for Whole Period (1998-2004)

Dependent Variable: ROE
Method: Panel Least Squares
Date: 02/24/12   Time: 21:47
Sample: 1998 2004
Periods included: 7
Cross-sections included: 8
Total panel (balanced) observations: 56

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPR	**0.364860**	**0.150654**	**2.421844**	**0.0203**
LR	-0.001868	0.004731	-0.394720	0.6953
CA	**2.740799**	**1.299191**	**2.109620**	**0.0415**
BE	0.004110	0.006134	0.670126	0.5068
C	-0.481762	0.191320	-2.518093	0.0161

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.473513	Mean dependent var	0.044736
Adjusted R-squared	**0.237979**	S.D. dependent var	0.215535
S.E. of regression	0.188148	Akaike info criterion	-0.248081
Sum squared resid	1.345192	Schwarz criterion	0.402925
Log likelihood	24.94627	Hannan-Quinn criter.	0.004313
F-statistic	2.010383	Durbin-Watson stat	3.144593
Prob(F-statistic)	**0.036757**		

The table above shows the result estimation of the dependent variable, ROE, against the independent variables. The cross-section fixed and period fixed in the model show the fixed effects in the model. This means that each cross section and period has its own intercept and not limited to the same intercept. The reasons for this are that each bank is affected by different factors and each period is also affected by different factors, subject to external events.

Based on the model above, the Capital Adequacy and Operational Risk Ratio (OPR) are significant with 5% confidence level. Hence, for Capital Adequacy, the null hypothesis is rejected as it is significant towards Return on Equity (ROE). There is an unexpected sign of Operational Risk Ratio, which based on the literature should be a negative sign. However, a conclusion would not be drawn here, the pre-merger and post-merger study is conducted to investigate whether this unexpected sign result still persists.

Nevertheless, the positive t-statistics of both significant variables means that they are positively correlated with bank efficiency. Thus, control of expenses to revenue and its capital over loans throughout the whole study period contributes to bank efficiency.

The adjusted R-square for this model is 0.2379, meaning that the independent variables explanatory power is only 23.79% of Return on Equity of Malaysian banks' efficiency. In addition, the overall significance of the model is shown by the F-statistic at 5% level.

4.2.2 Pre-Merger Period (2001-2004)

Table 4.8- Result Estimation for Pre-Merger Period (1998-2000)

Dependent Variable: ROE
Method: Panel Least Squares
Date: 02/24/12   Time: 22:21
Sample: 1998 2000
Periods included: 3
Cross-sections included: 8
Total panel (balanced) observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPR	0.332347	0.429180	0.774377	0.4566
LR	0.003249	0.013363	0.243150	0.8128
CA	2.334656	4.039986	0.577887	0.5761
BE	0.001067	0.015054	0.070886	0.9449
C	-0.503567	0.579459	-0.869029	0.4052

Effects Specification				

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.490182	Mean dependent var		-0.004633
Adjusted R-squared	**-0.172582**	S.D. dependent var		0.311393
S.E. of regression	0.337194	Akaike info criterion		0.954882
Sum squared resid	1.136998	Schwarz criterion		1.642080
Log likelihood	2.541421	Hannan-Quinn criter.		1.137195
F-statistic	0.739602	Durbin-Watson stat		4.023482
Prob(F-statistic)	**0.700072**			

The table above is the results of pre-merger period. The unexpected results is the insignificance of all independent variables 10% confidence level. In addition, the adjusted R-square is negative, meaning the regressors are not significant at explaining the Malaysian banks' efficiency before the merger period. This is also supported by the insignificance of the F-statistic p-value even at 10% confidence level. Hence, we conclude that there are other factors that should be affecting the banks' efficiency before the merger program.

The results are interpreted that the management of expenses, liquidity and capital is unlikely to bring about a significant change in the banks' efficiency.

4.2.3 Post-Merger Period (2001-2004)

Table 4.9- Result Estimation for Post-Merger Period (2001-2004)

Dependent Variable: ROE
Method: Panel Least Squares
Date: 02/24/12   Time: 22:37
Sample: 2001 2004
Periods included: 4
Cross-sections included: 8
Total panel (balanced) observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPR	**-0.618244**	**0.110801**	**-5.579743**	**0.0000**
LR	**-0.005520**	**0.003044**	**-1.813549**	**0.0874**
CA	0.296980	0.464885	0.638825	0.5315
BE	0.003394	0.002894	1.172728	0.2571
C	0.437501	0.098125	4.458630	0.0003

Effects Specification				

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.895531	Mean dependent var	0.081763
Adjusted R-squared	**0.809497**	S.D. dependent var	0.084713
S.E. of regression	0.036974	Akaike info criterion	-3.452213
Sum squared resid	0.023241	Schwarz criterion	-2.765149
Log likelihood	70.23540	Hannan-Quinn criter.	-3.224470
F-statistic	10.40907	Durbin-Watson stat	1.977065
Prob(F-statistic)	**0.000010**		

The post-merger period results are in stark contrast to that of pre-merger period. The Operational Risk Ratio variable is significant at 1% confidence level and Liquidity Risk is significant at 10% confidence level.

Thus, both variables reject the null hypothesis stating that these individual variables are not significant in affecting bank efficiency. The adjusted R-square for this model is high (0.8094), and the F-statistic p-value is also significant at 0.01 level. Based on the adjusted R-square, this means that this model can explain 80.94% of the banks' efficiency.

The results could then be interpreted as after the merger program, control of expenses and managing loans and deposits are contributing factors in determining the banks efficiency and performance. The negative values of both t-statistics for Operational Risk Ratio (ie. -5.579) and Liquidity Risk (ie. -1.813) means that they are inversely related to bank efficiency. The higher the ratio of both variables, the lower the bank efficiency. This means that the unexpected sign of Operational Risk Ratio previously in the whole period study (Table 4.7) is not shown here. Hence, the unexpected sign of Operational Risk Ratio in Table 4.7 could be explained by the inclusion of the pre-merger years, which could affect its sign and significance.

4.3 Diagnostic Checks

The necessary diagnostic check for panel data is the normality test, which the Jarque-Bera test is used. Since there are three models, the Jarque-Bera test is used for all three.
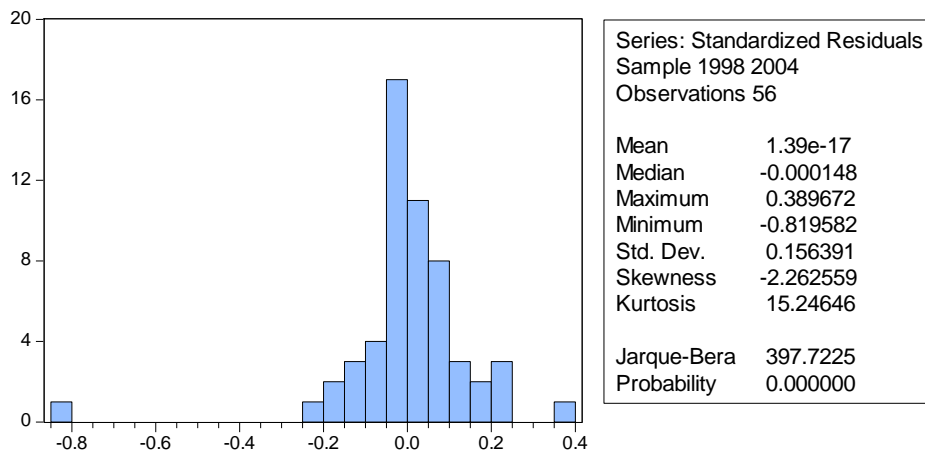
Figure 4.1- Normality Test for Whole Period Model

| Series: Standardized Residuals |
| Sample 1998 2004 |
| Observations 56 |

Mean	1.39e-17
Median	-0.000148
Maximum	0.389672
Minimum	-0.819582
Std. Dev.	0.156391
Skewness	-2.262559
Kurtosis	15.24646
Jarque-Bera	397.7225
Probability	0.000000

Figure 4.2 – Normality Test for Pre-Merger Model

| Series: Standardized Residuals |
| Sample 1998 2000 |
| Observations 24 |

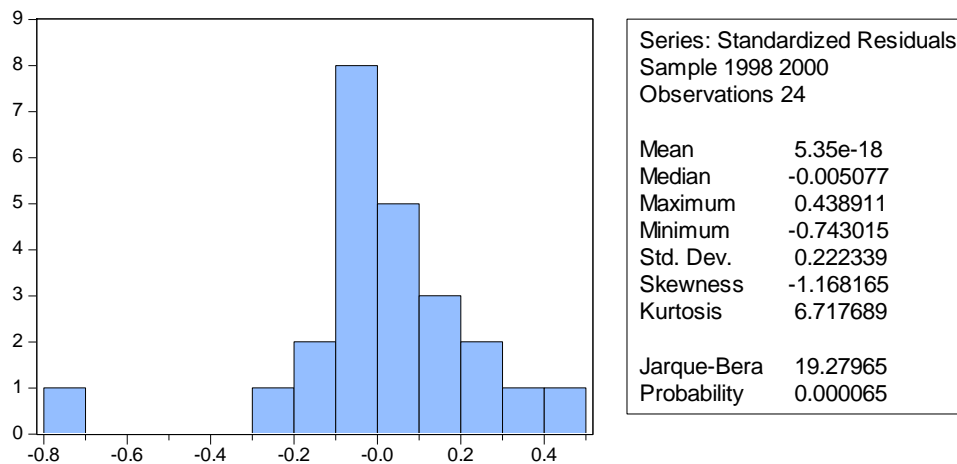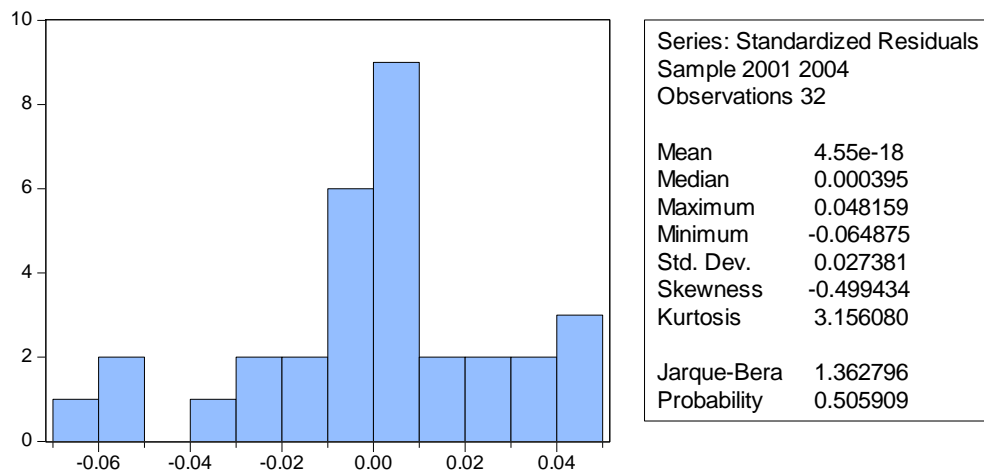|	
Mean	5.35e-18
Median	-0.005077
Maximum	0.438911
Minimum	-0.743015
Std. Dev.	0.222339
Skewness	-1.168165
Kurtosis	6.717689
Jarque-Bera	19.27965
Probability	0.000065

Figure 4.3 –Normality Test for Post-Merger Model

The tables above shows the normality tests done on the three model that represent different study periods. For the whole period and pre-merger study, the Jarque-Bera p-value at 1% significance level rejects the null hypothesis that the distribution is normal. However, the post-merger period normality test is at p-value 0.505. This means that the null hypothesis is not rejected and the model's distribution is normal.

However, the largest observation in this study is 56, which is the whole period study, while the Jarque-Bera test is suitable for large sample. Gujarati and Porter (2007) states that a sample size of 50 may not be large enough for the Jarque-Bera test. Hence, the normality tests are not entirely dependable (p. 134).

4.4 Conclusion

The whole period study (1998-2004) of the eight banks shows that management of expenses and capital adequacy are important factors throughout the operations before and after the merger. As for the pre-merger study, the insignificance of all independent variables in the pre-merger study concludes that management of expenses, liquidity, capital and earning performance would not significantly affect the bank's efficiency. On the contrary, the post-merger period results show that management of expenses to revenue and capital management is significant in affecting banks efficiency. Hence, the merger program brings a difference that management of expenses to revenue and capital management would affect the Malaysian banks' efficiency, which both variables in the pre-merger period were insignificant.

CHAPTER 5: DISCUSSIONS, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter summarizes and discusses the findings which have been presented in the previous chapter. Moreover, reasons or evidences will be given to support hypothesis. Implications and recommendations are also highlighted. In addition, the limitation of research study will be mentioned in. In the last section of this chapter, will be the overall conclusion of the entire research project.

5.1 Summary of Finding

The statistical results showed there are only two variables, namely Capital Adequacy and Operational Risk, has a significance result by using the target sample sum of eight anchor banks spread over seven years period from 1998 to 2004. The result point out that both independent variable have a positive relationship with bank efficiency (refer to table 4.7). It means the higher the level of Capital Adequacy and Operational Risk would bring to higher efficiency to bank. Furthermore, the R-square was 23.79% (refer to table 4.7), meaning 23.79% of dependent variable was explained by independent variable. In addition, the overall significance of the model is shown by the F-statistic at 5% level in this period. On the other hand, t-statistic and F-statistic show an unexpected result that all independent variables are insignificant at 10% confidence level during pre-merger period which the eight anchor banks spread over three years period from 1998 to 2000. The R-square is negative means that the independent variables are not significant in explaining the Malaysian Banks' Efficiency before merger period. Besides, the result for the post-merger period (2001-2004) shown that Operational Risk and Liquidity Risk are significant to bank efficiency at 10% confidence level. The result point out that both variable have a negative

relationship with bank efficiency (refer to table 4.9). It means the lower the level of Operational Risk and Liquidity Risk would bring to higher efficiency to bank. The adjusted R-square shows that there is 80.94% (refer to table 4.9) of bank efficiency explained by independent variable in this post-merger period. The F-statistic p-value in this period is also significant at 1% confidence level.

5.2 Discussions of Major Findings

Based on the target sample of eight anchor banks in Malaysia over the 7 years period from 1998 to 2004, the major findings obtained from the result are inconsistent with the hypothesis. In another words, capital adequacy and business earning ability do not affect on banks' efficiency in pre and post-merger periods. However, the post-merger period results of liquidity and operational risk are in stark contrast to that of pre-merger period. The liquidity and operational risk do not affect bank efficiency in pre-merger periods, but affect bank efficiency with negative relationship in post-merger periods.

5.2.1 Significance of Liquidity Risk and Operational Risk to ROE

In post-merger periods, increase in the bank efficiency is associated with the decrease of liquidity and operational risk. This result are supported by previous researcher, Rasidah, Fauzias, Low and Aisyah (2008) state that operational risk is commonly measured as the ratio of total expenses to total revenue. This suggests that as the level of operational risk of the management increases, the ROE of banks decreases. In other words, the operational risk of the management will be reflected in relatively high expenses incurred by the banks and consequently a negative impact on the overall profitability. Besides, Heffernan (2008) mentions that the higher the operational risk ratio, the less efficient the bank is, which will negatively affect bank profits. Furthermore, Heffernan and Fu (2008) state

that measure of operational risk reflecting the cost of running the banks as a percentage of income. The higher this ratio the less efficient the bank will be, which should adversely affect bank profits. Therefore, a negative relationship with performance is expected. Moreover, Khizer, Muhammad and Hafiz (2011) state that the major portion of banks operations are involves in borrowing and lending activities due to banks suffer in threats high risk and they create a loan loss provisions to reduce the risk. This risk adverse policy of banks reflects towards low profitability, because the loan loss provisions are created from retained earnings of banks.

Concerning the liquidity, Rasidah, Fauzias, Low and Aisyah (2008) defined liquidity as total loans divided by total deposits. During the post-merger period, as bank loans increased, liquidity also increased, banks have become more conservative in maintaining their loan portfolios by providing a relatively high loan loss reserve that will eventually use a large portion of the banks' income. When this happens, an increasingly loan will have a negative impact on the ROE of banks. Besides, Lin (2005) also mentions that banks with higher overdue loan would have a higher inefficiency score. This result is consistent with the perception that banks with higher overdue loan would have poorer performance quality and efficiency. Furthermore, Tapia, Fernandez & Suarez (2006) explained high levels of liquid assets would have lower interest income than others with lower levels of liquid assets. In short, greater liquidity is negatively associated with interest margins and bank profit. Thus, the results acquired from this research were consistent with the previous researchers.

5.2.2 Insignificance of Capital Adequacy and Business Earning Ability to ROE

In pre- and post-merger periods, capital adequacy and business earning ability are not significant at explaining the Malaysian banks' efficiency. The insignificant t-statistics for capital adequacy and business earning ability indicate that does not have an important impact on the efficiency of the banks as measured by the ROE. The study done by Rhoades (1993) highlighted that no evidence of income and cost reduction does improve banks' efficiency. Rhoades (1993) conducts an examination of in-market mergers taking place between 1981 and 1986. He conducts several analyses where the income of bank and non-interest expenses whether influences the efficiency of a bank increased, decreased, or remained unchanged. In this several tests, Rhoades finds that neither income nor non-interest expenses were affected efficiency by merger activity, which means business earning ability were not significantly related to bank's efficiency.

As for the capital adequacy, it is measured as the sum of equity by the total asset and it serves as a control variable for the size of the banks. The finding of no relationship between capital and ROE implies that the amount of capital of the banks increases or decrease, the ROE also remain unchanged. The result supported by Ramlall (2009), he analyzes the relationship between capital adequacy and ROE by using quarterly dataset of Taiwanese banking system for the period 2002 to 2007 and he find that there are insignificant relation of capital with profitability. Consistently, Ozyildirim and Ozdincer (2008) also find that capital adequacy does not significantly improve profitability. They conducts their analyses by explore the efficiency of bank for a panel of 15 banks over the period from 2002 through 2006. Their results indicate that capital adequacy is not an important factor in explaining performance. Thus, the research seem consistent to previous studies.

In addition, the individual bank data of research are retrieved from online database which was provided by Universiti Tunku Abdul Rahman (UTAR) and Universiti Utara Malaysia (UUM). This database contains the balance sheet and income statements of Malaysian banks. The data in the balance sheet and income statements may have been adjusted before published. Hence, it may cause the results inconsistency with the literature reviewed.

5.2.3 Merger Effect on ROE

Based on the previous studies, some researchers have pointed merger is insignificant to bank efficiency. Rhodes (1990 & 1993) discovered that the cost reduction, profitability, efficiency gains, and non-interest expenses are not significantly affected by merger activity (as cited in Rasidah, Fauzias, Low and Aisyah, 2008). According to the study of Linder and Crane (1992), it indicates that the operating income would not be improved through mergers (as cited in Rasidah, Fauzias, Low and Aisyah, 2008). In addition, Berger and Humphrey (1992) have proved that mergers do not carry any significant effect on cost efficiency gains through the comparison of performance of each merged bank with non-merged banks (as cited in Rasidah, Fauzias, Low and Aisyah, 2008). There is sufficient evidence from the study of Badreldin and Kalhoefer (2009) which concluded that merger in Egyptian banks during year 2002 to 2007 do not have clear effects on the banks profit by calculating their Return on Equity.

However, there are some other evidences conclude that bank efficiency is significantly affected by merger program. The latter research conducted by Berger and Humphrey (1997) and Berger (1998) shows that US merged banks' profit efficiency gains have been improved significantly relative to lowest efficiencies before merger program implemented (as cited in Mylonidis & Kelnikola, 2005). In addition, Calomiris (1999) discovered that merger could help to improve the efficiency gains by decreasing the operating costs, improve bank diversification and enhance the

relationships between the bank and customers (as cited in Rasidah, Fauzias, Low and Aisyah, 2008). Vander Vennet (1996) carried out research on examining the performance of 492 European banks merger during year 1988 to 1993 and he discovered that the merger of equal-sized partners tend to enhance the merged banks' profit (as cited in Huizinga, Nelissen & Vander Vennet, 2001). Rhodes (1998) discovered that most of the mergers of large US banks have improved a lot on their cost efficiency gains (as cited in Sufian, Abdul Majid & Haron, 2007). Furthermore, Halkos and Salamouris (2004) explore a significant positive correlation between the size of bank and efficiency which could be concluded that merger helps to improve the bank average efficiency continuously. Sufian and Abdul Majid (2007) carried out research on examining the merger effect on the Singapore domestic group' efficiency and they found that the merger has increased the overall efficiency of Singapore banking groups.

According to the study of Pilloff (1996), there are several reasons could explain the performance improvement after merger. Firstly, the financial performance of the institution can be enhanced through transferring of management skills from superior entity to less superior entity in order to construct a better-quality management team. The researcher also mentions that merger help to remove the unneeded facilities and redundant human resource which may improve the institution's financial performance. Other than that, merger contributes in consolidation of skills, technology and also resources. He also states that merger could help to combine the fragmented markets shares of each entity of the institution. On the other hand, the research paper from Rappaport (1986) revealed that the financial performance of banks could be improved by reducing of risk, enhancing debt capacity and lowering the interest rates through bank mergers (as cited in Rasidah, Fauzias, Low and Aisyah, 2008). Akhavein et al. (1997) and Berger (1998) suggest that the efficiency gains from US bank mergers in year 1980s to 1990s could be due to the enhancement on risk diversification because the merged banks' asset portfolios shifted from securities to loans (as cited in Rasidah, Fauzias, Low and Aisyah, 2008).

Berger et al. (1999) claims that merger not only lead to changes in efficiency but also included market power, availability of services, effective of payment system and also economies of scale and scope (as cited in Huizinga, Nelissen & Vander Vennet, 2001).

According to the empirical results from this research, the independent variables in pre-merger period are insignificant at explaining the Malaysia banks' efficiency. However, for the post merger-period, the researchers found that there are two independent variables which are liquidity and operational risk are significantly in explaining the Malaysia banks' efficiency. Besides, the adjusted R-square increased from pre-merger period of negative 17.26% to post-merger period of 80.95%. In short, merger activity brings a difference that management of expenses to revenue and loan to deposit would affect the Malaysia bank's efficiency. Hence, it can be concluded that this research is consistent with most of the previous studies. Merger contributes on improving the bank economies of scale and scope, restructuring the bank asset, transferring management skills and hence it is applicable to enhance the bank efficiency.

5.3 Managerial Implications

This research has important implications such as providing information to the government and allows them to implement suitable policy regarding future consideration on merger programs initiated by the government. The suitable policy meant that should foreign banks strengthen or Malaysia faces another financial crisis, BNM could consider this merger program as a solution. Through this research, the government would take in more consideration in promoting mergers as to promote and robust financial system.

As for the domestic banks involved in the merger, they are able to measure and compare the overall efficiency of their banks before and after the merger. Although foreign banks are not involved in the program, they are still able to

compare their banks' efficiency with Malaysian Banks' efficiency. In addition, these foreign banks can also take appropriate action to increase their efficiency should another merger program be initiated by the government or initiated by the banks themselves. Thus, as both domestic and foreign take appropriate action, a more competitive financial environment exists.

In addition, this research will act as a guide for the investors and shareholders who are interested in the merging banks. The investors can determine the factors that would affect banks' performance before and after the merger. The shareholders could also better understand the effects of a merger should there be one that involves their own bank or a competitors bank.

The negative relationship between banks' efficiency with Liquidity Risk and Operational Risk Ratio in the post-merger period is of significance to the banks healthiness. Hence, it is advised that current bank to manage their liquidity and expenses to revenue with care as it would affect their profitability.

This research will also allow the future researcher to have better understanding toward the mergers effects toward the banks' efficiency. Hence, future studies could be more in depth towards other external or internal factors.

Lastly, this research has important public policy implications, BNM will be able to use the result gain from the research to achieve a more competitive and efficient financial system. This research will also help the BNM in determining future course of action to strengthen the Malaysia banking sector.

5.4 Limitations of the Study

In the research, this research was unable to test each bank individually as there was time constraint. Hence, the research focused on analyzing the overall effect instead of individual multi regression on every bank, where this method requires diagnostic checking on multi-collinearity, hetero-scarticity, auto correlation and model specification. This would be very time consuming.

Furthermore, two anchor banks' data were unable to retrieve during the pre-merger period. Hence, the two anchor banks were excluded in this research and only eight anchor banks were included this research.

In the pre-merger period, the independent variables were unable to explain the banks' efficiency, this might due to the external factors that the banks might have problems with the efficiency during the pre-merger period. According to Fadzlan, Muhd-Zulkhinri and Razali (n.d) most of the banks are inefficient during the pre-merger period. This result was also similar with Fadzlan (2004) study as well. According to Huizinga, Nelissen and Vennet (2001) that there are several reasons affect the banks' efficiency such as gradual deregulation, technological innovations and increase in competition of bank. Increases in competition of bank have induced banks to adapt their strategies which may affect the banks' efficiency. Besides, technological progresses are probably related to bank efficiency and may constitute a powerful incentive to merge for banks. Hence, the result is restricted to external factor of the merger program.

Lastly, the diagnostic checks for panel data are using the normality test, which the popular Jarque-Bera test is used. According to Gujarati and Porter (2007), Jarque-Bera test is only suitable for large sample size (p. 134).Due to the exemption of the two anchor banks which the data were unable to achieve, the sample sizes for the test analysis were reduced. Hence, the missing data could have proved vital for the research and Jarque-Bera test could have been more reliable.

5.5 Recommendations for future research

Since this research is only able to conduct the eight anchor banks out of the anchor banks in Malaysia. A researcher that has better resources and is able to obtain all data is advisable to conduct all ten anchor banks in the future when all the data are achievable. Hence, it is more favorable if the analysis is run test individually on each bank to indicate individual improvements on the banks.

Furthermore, there are still other factors that are able to explain the bank's efficiency. During the whole period, the adjusted R-square is very low, which is 0.23. This means that this model is only able to explain 23% of Malaysian banks' efficiency. At the same time, the adjusted R-square in pre-merger period is negative. This means that the regressors are not able to explain the Malaysia banks' efficiency the merger period. Hence, it is recommended that further research on explanatory variables that are able to explain the bank's efficiency to conduct a better model that explains bank's efficiency.

Lastly, external factors such as gradual deregulation, technological innovation or competitor number increases does not include in this research. According to Huizinga, Nelissen and Vennet (2001), that these factors have significant affect toward banks efficiency. The researchers recommended that these factors should not be excluded in the future research.

5.6 Conclusion

This research project provides an in-depth study on the Mergers effect of the banks in Malaysia toward the efficiency of the Malaysia Bank. Generally this research studies about the three periods which are pre-merger, post-merger and the whole period. The Return of Equity (ROE) represents the banks' efficiency and the mergers effect represented by changes of significance in the Capital Adequacy (CA), Business Earning Ability (BE), Liquidity Risk (LR) and Operational Risk Ratio (OPR). Based on the research finding, the mergers are important to enhance banks' efficiency through the management of their internal factors.

There are three results in this research, which is the Capital Adequacy and Operational Risk Ratio are significant with the ROE during the whole period, while the Business Earning Ability and Liquidity Risk are insignificant with ROE. Then, all the independent variables are insignificant with ROE during the pre-merger period and finally the Operational Risk Ratio and Liquidity Risk is significant with ROE during the post-merger period. E-views 6 was the data analysis software was used in this research to test the hypothesis being formulated and the results above were obtained.

Lastly, the research objectives were met, the research questions were answered and the hypothesis test had been proven. A few recommendations have been made in the research for future researchers and parties concerned on mergers.

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