

## **Performance and Financial Ratios of Commercial Banks in Malaysia and China**

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*This study aims to investigate the impact of bank-specific factors which include the liquidity, credit, capital, operating expenses and the size of commercial banks on their performance, which is measured by return on average assets (ROAA) and return on average equity (ROAE). The results imply that ratios employed in this study have different effects on the performance of banks in both countries, except credit and capital ratios. Operating ratios influence performance of banks in China, but this influence is not true for Malaysian banks regardless of the measure of performance.*

**Field of Research:** bank performance, bank reform, financial ratios

### **1. Introduction**

Banks, as the critical part of financial system, play an important role in contributing to a country's economic development. If the banking industry does not perform well, the effect to the economy could be huge and broad. Due to the U.S. sub-prime mortgage crisis that happened recently, the banking sectors of many countries suffer huge losses, especially U.S. and E.U. The poor performance of the banking industry has slowed down the U.S. economy and also the growth of global economy until current period. One of the root causes is the poor lending policies and decisions made by U.S. banks like Citibank, Wells Fargo and so on. In Asia, although the losses in banking sectors are not as serious as U.S., it is also hurting the economy.

From their empirical findings, Demirguc-Kunt and Detragiache (1999) suggested that bank profitability is an important predictor of financial crises. Therefore, the study of the determinants of the bank profitability becomes an important issue which could help banks understand the current conditions of the banking industry they are involved in and the critical factors they should consider in making decisions and creating new policies either for recovery or improvement.

Studies on performance of banking institutions are aplenty. Results of these studies strongly suggest that bank profitability determinants vary across countries and also among regions of the world (e.g. Doliente 2003). Studies on banking systems of developed countries show that net interest margins

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have significant positive relationship with a bank's level of capital, loan loss provisions, reserve requirements, implicit interest payments, and interest rate volatility. On the other hand, a study of Latin American bank spreads rarely confirmed and even contradicted some of the benchmark results (Brock and Suarez 2000).

This paper seeks to examine the contributions of the profitability determinants to the performance of Malaysia and China commercial banks. There are two main reasons why these two countries are selected. First, the banking sectors of these two countries remain relatively strong compared to other countries in the region even during the recent crisis. Both Chinese and Malaysian banking sectors are more bank dominated and their financial depth (as measured by domestic credit to GDP of 178 percent and 120 percent, respectively) are relatively more substantial than other countries in the region (Deloitte 2007).

Second, Malaysia's trade ties with China have grown faster than that with the rest of the world, particularly since the aftermath of the financial crisis in 1998. The bilateral trading volume between China and Malaysia has increased by 27 percent annually for the past 10 years. Malaysia becomes China's second largest trading partner in South-east Asia. The more cooperation in trading between two countries also brings more opportunities to both banking sectors. Therefore, the comparative analysis of the determinants of bank profitability for these two countries will help to enhance the understanding for the banking sectors in both countries.

The paper is organized as followings. Section II describes the China and Malaysian banking system reform until their present banking system. Section III discusses related literature on the determinants of bank profitability. The research method and its design are described in Section IV. Section V will show the analysis of the data and the results. Finally, the last section draws the conclusions.

## 2. Banking Sector in China and Malaysia

At present, China's banking system consists of the People's Bank of China, four state-owned commercial banks, 10 national-level domestic joint-stock banks, and 113 city-level commercial banks. The banking system also includes three policy banks, 225 foreign bank branches, non-bank financial institutions, regional banks, cooperated banks, and postal saving banks. The four state-owned commercial banks form the main part of China's banking system.

The present China's banking system has experienced three main stages of reforms since 1978 where the third and latest reform took place following the 1997 Asian financial crisis. This crisis had made the Chinese leaders to realize the importance of the financial stability and systematic risks in the

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banking sector. Therefore, in November 1997, the Communist Party of China (CPC), Central Committee and the State Council held the First National Financial Work Conference and decided to promote financial system reform intensively, mainly focusing on the rehabilitation of the Big Four state-owned commercial banks (Bank of China, China Construction Bank, Industrial and Commercial bank of China, and Agricultural Bank of China) because they provided over 70 percent of China's total loan. The reforms include issuing special bonds to increase the state banks' capital, disposing of non-performing loans, and promulgating prudential accounting principles and a loan classification system (BIS 2006). The banks also actively engaged in operational mechanism reform, and in improving lending procedures and risk control. These reforms carried out with the hope that they will raise profitability of these banks.

Like China and other developing economies, the Malaysian banking system also plays an important role in its economy. It is the major component of the financial system, accounted for approximately 70 percent of the total assets of the financial system. Presently, the Malaysian banking system, which comprises of the commercial banks, investment bank (previously known as the merchant banks), Islamic banks, and foreign bank, is the major institutional source of credit to the economic sector.

Within the banking system, the commercial banks are the major players that accounted for about 42% of the total assets of the financial system as at the end of 2007 (IBBM 2007). As of May 2008, there were 22 commercial banks (of which 13 are locally incorporated fully foreign-owned), 13 Islamic banks (of which three are foreign-owned), and 14 investment banks. Domestic commercial banks had the largest share of the market. Among these, the government controlled the largest bank (Maybank) through a majority share and it fully owned the second largest bank, CIMB Bank Bhd. In addition, there are also development finance institutions (DFIs) which provide financing, especially to certain strategic sectors of the economy.

### 3. Literature Review

There are a number of studies on the determinants of bank profitability. The study on the determinants began as early as 1979 when Short (1979) examined the relationship between profit rate and the bank concentration. Classifying the determinants to internal and external determinants, Bourke (1989) extended this study to banks in twelve countries in Europe, North America and Australia. Further study performed by Athanasoglou et al. (2008) classified the determinants to three specific aspects: bank-specific, industry-specific and macroeconomic determinants of bank profitability.

Liquidity risk is considered as an important internal determinant of bank profitability because it can be a source of bank failures. It arises from the

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possible inability of a bank to accommodate decreases in liabilities or to fund increases on the assets' side of the balance sheet (Athanasoglou et al. 2006). To avoid insolvency, banks often hold liquid assets that can be easily converted into cash. However, liquid assets are usually associated with lower rate of return; therefore, the higher liquidity would be associated with lower profitability. This is supported by Molyneux and Thornton (1992) who prove that there is a weak negative relationship between the level of liquidity and bank profitability. However, Bourke (1989) found that there is a strong and positive relationship between them.

As for the credit risk, Cooper et al. (2003) found that changes in credit risks may reflect changes in the health of a bank's loan portfolio which may in turn affect the bank's performance. Duca and McLaughlin (1990) found that the variation in bank profitability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. Further research by Miller and Noulas (1997) found that there is a negative relationship between the credit risk and bank profitability, meaning that the more the banks were exposed to high-risks loans, the higher the accumulation of unpaid loans and, therefore, the lower the profitability.

Capital is also found to be another important internal determinant of bank profitability. Bourke (1989), Molyneux and Thornton (1992), Berger (1995b), and Goddard et al. (2004), showed that there was a positive relationship between bank capitalization and profitability. Athanasoglou et al. (2006) and Berger (1995b) suggested that capital is better modeled as an internal determinant of bank profitability, as higher profits may lead to an increase in capital and it also implies that well-capitalized banks face lower risks of going bankrupt, which reduces their costs of funding.

Size is used to capture the impact of bank size on performance. Short (1979) provide evidence which suggested that size is closely related to the capital adequacy of a bank, and that relatively large banks tend to raise less expensive capital, therefore, produces higher profit rates. Akhavein et al. (1997) reveals that there is a positive and significant relationship between size and bank profitability. Boyd and Runkle (1993) found that the large size of the institution may result in economies of scale which in turn may reduce the costs of gathering and processing information. Berger (1987), Miller and Noulas (1997), and Athanasoglou et al. (2008) showed that few cost savings can be achieved by increasing the size of banking firm. Athanasoglou et al. (2006) and Amel et al. (2004) suggested that the effects of the bank size on profitability may be positive up to a certain limit and beyond that point it could be negative due to various factors such as the sample country selected and period of study. Therefore, the relationship between the bank size and its profitability is expected to be uncertain due to the difference in various factors.

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In all businesses, higher expenses mean lower profits and vice versa. As pointed out by Bourke (1989), reduced expenses improved the efficiency and hence raise the profitability of a financial institution, implying a negative relationship between an operating expenses ratio and profitability. Recent studies on bank efficiency can be found in Berger and Humphrey (1997), Berger and Mester (1997), and Berger et al. (2000). Therefore, the relationship between the operating expenses and the bank profitability is expected to be negative, meaning that the lower the operating expenses, the higher the bank profitability.

Three external measures have been considered in this study to reflect the macroeconomic conditions of the sample countries: inflation, GDP growth and interest rates. Inflation may effect costs and thus revenues of any businesses. Revell (1979) pointed out that the effect of inflation, however, depends on whether banks' wages and other operating expenses increase at a faster rate than inflation. According to Perry (1992), the effect of inflation on bank performance depends on whether the inflation is anticipated or unanticipated. Anticipated inflation rate implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs and thus produces positive impact on bank profitability. On the contrary, unanticipated inflation could lead to improper adjustment of interest rates and hence to the possibility that costs could increase faster than revenues (Anthanasoglou et al. 2006). Consequently, there is a negative impact on bank profitability. However, most studies (e.g. Bourke 1989; Molyneux and Thornton 1992) found a positive relationship between inflation and bank performance.

GDP growth is a measure of economic activity of a country. Higher economic growth encourages banks to lend more and permits them to charge higher margins, as well as improving the quality of their assets. Neely and Wheelock (1997) used per capita income and suggest that this variable has a strong positive effect on bank earnings. Pasiouras and Kosmidou (2007) also found a positive relationship between real GDP and the bank profitability. Demirguc-Kunt and Huizinga (2000) and Bikker and Hu (2002) findings suggest that there is a correlation between banks profits and business cycle.

Though fee-based income as a proportion of total income has becoming more importance for many banks, net interest income remains an important net cash flow for banks. As a result, variations in interest rates remain an important determinant of bank profitability. Samuelson (1945) earlier provided this issue. He shows that under general conditions, banks profits increase with rising interest rates. He notes:

"The banking system as a whole is immeasurably helped rather than hindered by an increase in interest rates and commercial banks would profit more than savings bank.." (Samuelson 1945, p. 25).

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Short (1979) also found a positive relationship between nominal interest rates and return on capital. In addition, Flannery (1983) concluded that the reported profits by banks generally fluctuate little when market interest rates change.

### 4. Data and Research Methodology

This study uses income statement and balance sheet of commercial banks of Malaysia and People's Republic of China which are extracted from the BankScope database for the period 2001 to 2007. The data set consists of four state-owned commercial banks in People's Republic of China which are the BOC, the ICBC, the CCB, and the ABC, and the nine local commercial banks in Malaysia which are Affin Bank, Alliance Bank Malaysia, AmBank, CIMB Bank, EON Bank, Hong Leong Bank, May Bank, Public Bank and RHB Bank.

In order to get a picture of the performance of the banking institutions, we employ two measures of profitability, ROAA and ROAE. ROAA reflects the ability of a bank's management to generate profits from the bank's assets and it is calculated as net profit after tax divided by total assets. ROAE, on the other hand, indicates the return to shareholders on their equity. Average assets and average equity are used in order to capture any differences that occur in assets and equity during the fiscal year.

Five variables have been identified as internal determinants: ratio of net loans to deposit and short-term funding, ratio of loan loss provisions to net interest revenue, ratio of equity to total assets, ratio of non-interest expense to average assets, operating expenses and size which is measured by the natural logarithm of the accounting value of bank's total assets. The liquidity risk is represented by bank's liquidity assets to total assets. Holding liquidity assets reduces the risk that banks may not have sufficient cash to meet unexpected deposit withdrawals or new loan demand, thereby forcing them to borrow at excessive costs. Thus, as the proportion of liquid assets increases, bank's liquidity risk decreases.

For the credit risk, theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, we expect a negative relationship between ROAA (ROAE) and credit risk. Banks would, therefore, improve profitability by improving screening and monitoring of credit risk. Additionally, central banks set some specific standards for the level of loan-loss provisions to be adopted by the country's banking system. In view of these standards, bank management adjusts provisions held for loan losses, the level of which is decided at the beginning of each period (Anthanasoglou et. al. 2006).

According to Kosmidou (2008), capital adequacy can be measured by the equity to total assets ratio. The higher the capital to assets ratio, the lower the

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leverage and therefore the lower the risk. Regarding the operating expenses, the total cost of a bank can be separated into operating cost and other expenses (including taxes, depreciation etc.). In this study, only operating expenses can be viewed as the outcome of bank management. Since improved management of the operating expenses will increase efficiency and therefore raise profits of banks, the ratio of these expenses to total assets is expected to be negatively related to profitability.

The last internal factor involved in this study is the bank size. Generally, the effect of a growing size on profitability has been proven to be positive to a certain extent. However, due to some other reasons, for banks that become extremely large, the effect of size could be negative. Hence, the size and–profitability relationship may be expected to be non-linear (Anathanasoglou et. al. 2006). Like any other firms, the environment in which banks operate may also influences their performance. Therefore, in addition to the factors mentioned earlier, macroeconomic factors which include real GDP, inflation rate and real interest rates are included in this study.

Gross domestic product (GDP) is among the most commonly used macroeconomic indicators, as it is a measure of total economic activity within an economy. The real GDP growth used in this study is expected to have a positive impact on bank profitability according to the literatures (e.g. Pasiouras and Kosmidou 2007; Kosmidou 2008). Inflation is another important macroeconomic indicator. It affects both the costs and revenues of banks. However, the relationship between the inflation and the bank profitability depends on whether the inflation is anticipated or unanticipated (Perry 1992). Even though there were studies supporting the positive relationship between inflation and bank profitability (e.g. Bourke 1989, Molyneux and Thornton 1992), but in this study, it is expected to be uncertain and depends on the analyzed results.

As for the interest rate, according to previous study, there is a positive relationship between the interest rate and bank profits. Samuelson (1945), for example, indicates that bank profits increases as interest rate rises. This study will further explore the relationship between bank profitability and the real interest rate. All the dependent and independent variables are listed in Appendix A. Our empirical analysis is based on panel data fixed effect model that incorporates balanced annual data series of Malaysia and China. We established evidence for the ratios and performance link in these two countries by estimating the following equation:

$$\text{Performance}_{jt} = a + bX_{jt} + c\text{INTR}_{jt} + d\text{RATIO}_{jt} + e_{jt} \dots\dots\dots(1)$$

where  $X_{jt}$  is control variables that comprise of external variables described earlier. The coefficient for RATIO, d, i.e. the slope coefficient, provides the direct influence of internal ratios described earlier on performance of banks

for Malaysia. The interactive dummy ( $INTR_{jt}$ ) is defined as the product of country dummy  $j$  and ratios of banks (RATIO) and the estimated coefficient ( $c$ ) measures the slope differential that characterizes country specific experience. The sum of Malaysia's slope coefficient ( $d$ ) and coefficient of interactive dummies ( $c$ ) (slope differential) measures unique slope coefficient for another country investigated, China. The direction and degree of influence of banks' ratios on performance of banks in this country is dictated by the sum of slope and interactive dummy coefficient ( $d+c$ ).

### 5. Results and Discussions

Estimations of equation (1) provide direct influence of selected ratios on performance of banks. In addition to Malaysia, the estimated regression also generates additional insights into the experience of China, as reflected by the slope differentials. Table 1 shows the estimation for the link with ROAE as the measure for banks' performance. As shown by the slope coefficient in Table 1, only credit ratio contributes significantly to performance of banks in Malaysia. This slope is significantly less than 0 at 5% level. This implies that the higher the credit ratio results in lower profit, which is consistent with the findings from Miller and Noulas (1997). This contribution, however, is not true for China, which is shown by the sum of the slope coefficient ( $d$ ) and the slope differentials ( $c$ ) for the country. For China, the link is true for capital ratios and operating ratios with capital ratio is significantly greater than 0 at 10% level and operating ratio significantly less than 0 at 10% level. This implies that, unlike banks in Malaysia, the strength of capital and the level of operating expenses do matter for banks' performance in China.

Results are similar when performance is measured by ROAA. Findings presented in Table 2 shows that credit ratio, capital ratio and operating ratio do influence performance of banks as measured by ROAA in Malaysia. Capital ratio is significantly greater than 0 at 5% level. Credit ratio and operating ratio is significantly negative related to bank performance in Malaysia. The negative significance of these two ratios is also true for China. Banks in China, however, is not influenced by capital strength when performance is measured by ROAA. Regardless of measures of performance employed, liquidity and size are not significant factors that contribute towards profitability of banks in Malaysia as well as China.



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**Table 1: Ratios and Performance (ROAE)**

Variable	Liquidity		Credit		Capital		Operation		Size	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Constant	20.59	1.02	17.75	7.44**	-1.37	-0.20	25.28	4.362*	-52.85	-1.01
GDP	1.48	1.83*	-1.16	-3.01**	0.36	0.46	0.54	0.446	3.17	2.98**
Inflation	0.17	0.21	1.84	2.43**	1.31	2.92**	1.01	0.273	-0.50	-0.76
Interest Rates	-0.38	-1.30	0.04	0.54	-0.48	-1.56	0.01	0.096	-0.33	-1.22
Interactive Dummy (China):	-0.34	-2.32**	0.19	1.25	-0.51	-0.44	-9.38	-1.193	-9.20	-2.77**
Ratio	-0.14	-0.53	-0.33	-7.49**	1.26	1.32	-7.26	-3.734	13.53	1.22
Adjusted R Square	0.57		0.66		0.55		0.61		0.64	
Net Direct Effect of Liquidity on China	-0.48	-1.38	-0.14	-0.96	0.75	1.88*	-16.63	-1.888*	4.33	0.52
Null: interactive dummy is zero Chi-Squared	5.39**		1.57		0.20		1.42		7.68**	

Notes:

1. The above panel regression estimates for Equation (1) with ROAE as dependent variable.
2. Single asterisk (\*) indicates significance at 10% level and double asterisk (\*\*) indicates significance at 5% level.

**Table 2: Ratios and Performance (ROAA)**

Variable	Liquidity		Credit		Capital		Operation		Size	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Constant	0.94	1.50	1.22	7.19**	-0.13	-0.42	1.50	7.32**	0.26	0.13
GDP	0.10	3.66**	-0.03	-2.15**	0.06	1.72*	0.09	3.64**	0.17	4.24**
Inflation	0.01	0.27	0.04	3.00**	0.05	2.24**	0.02	0.78	-0.01	-0.44
Interest Rates	-0.04	-3.50**	-0.02	-3.13**	-0.05	-3.20**	-0.03	-4.24**	-0.04	-3.59**
Interactive Dummy (China):	-0.02	-5.66**	-0.01	-2.19**	-0.12	-2.24**	-0.90	-5.16**	-0.34	-3.86**
Ratio	-0.01	-0.07	-0.01	-2.87**	0.12	2.80**	-0.28	-3.79**	0.14	0.34
Adjusted R Square	0.85		0.91		0.83		0.90			
Net Direct Effect of Liquidity on China	-0.02	-2.47	-0.02	-4.77**	0.01	0.14	-1.18	-5.26**	-0.20	-0.60
Null: interactive dummy is zero Chi-Squared	31.99**		4.80**		5.02**		26.64**		14.93**	

Notes:

1. The above panel regression estimates for Equation (1) with ROAA as dependent variable.
2. Single asterisk (\*) indicates significance at 10% level and double asterisk (\*\*) indicates significance at 5% level.

## 6. Conclusion

This paper examines the relationship of some internal factors which are extracted from banks account (balance sheets and/or profit and loss accounts) with banks performance in Malaysia and China. The empirical

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results indicate that the variable of credit risk is negatively related to ROAA for banks in both countries. However, for the ROAE, the credit risk is negatively related to Malaysian banks profitability only. The effect of capital on banks performance is rather mixed. Capital strength and the ROAE of China's banks profitability are positively and significantly related. This factor, however, is not significant for Malaysian banks. Operating expenses is significantly negative related to banks performance in both countries when performance is measured by ROAA. When ROAE is employed as measure of performance, this relationship remains true only for China. Liquidity and size of banks somehow do not have any influence on the performance of banks for both countries. In general, the ultimate effect of financial ratios on banks performance varies across sample countries and may critically influenced by other country-specific factors.

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### Appendix A

#### The dependent and independent variables

Variable	Measure	Notation
<b>Dependent Variable</b>		
Profitability	Net profits after taxes/assets or Net profits after taxes/equity	ROAA or ROAE
<b>Determinants</b>		
Liquidity risk	Net Loans/ Deposits and Short-term funding	LQ
Credit risk	Loan-loss provisions/Net interest revenue	CR
Capital	Total Equity/assets	CAP
Operating expenses	Non-interest expenses/Average assets	OPE