

THE FOLLIES OF FINANCIAL LIBERALIZATION: SOME STATISTICAL EVIDENCE FROM MALAYSIA

Chow Fah Yee

Centre for Quantitative Methods, Faculty of Information & Quantitative Sciences
University Technology MARA, Shah Alam, Malaysia
Email: yeechowfah@yahoo.com.my

Eu Chye Tan

Faculty of Economics & Administration
University of Malaya, 50603 Kuala Lumpur, Malaysia
Email: tanec@um.edu.my

Abstract

The link between financial liberalization and the performance of the banking sector is assessed here by employing two techniques. Firstly, using firm level data of Malaysian domestic banks to assess the allocative efficiency of the banking sector. Results revealed that all save one of the banks analyzed have not become more efficient after the banking sector is liberalized. Secondly, the link between financial liberalization and the banking sector crisis is assessed by mobilizing macroeconomic data and multivariate logistic regression technique. Results suggest that financial liberalization, bank's lending rates and the ratio of M2 to foreign exchange reserves do contribute significantly to the 1997 banking crisis in Malaysia.

Keywords: Financial liberalization, Banking Crisis, Logistic Regression.

1. Introduction

The current financial meltdown that swept across the globe jolt to memory the importance of a sound and efficient banking system. News of a fire-sale of Bears Stearns Inc. on March 2008 stunned Wall Street and pummelled global financial stocks. This was just the beginning of the global financial storm. By now (March 2009) in USA alone, there are already 14 banks that are declared insolvent while the exports of several Asian countries (namely, Japan, Taiwan and South Korea and Singapore) have plunged. The trail of destruction caused reminisces the 1997 East Asian financial crisis (EAFC). Malaysia was one of the countries that was severely affected then.

Besides Malaysia, Thailand, Korea, Indonesia and the Philippines were also badly hit. The toll of the crisis was enormous as it persisted and spread to the real sector. On average, these five economies shrank about 7.7%, with many millions of people sustaining livelihood losses. (Yellen, 2007). The East Asian financial crisis of 1997 highlighted the link between financial liberalization and instability of the banking sector. All five countries had deregulated their banking systems some time before the onslaught of that banking debacle. Malaysia, went through two banking crises. The first crisis was in the mid 1980's and the second being the 1997 EAFC. The crisis of 1980s was short and less severe compared to the 1997 crisis. The ringgit (Malaysian currency) depreciated against the US dollar by nearly 50%, while the stock market contracted by more than 60%. Real output declined by 6.7% after 12 years of uninterrupted expansion, averaging 7.8% per annum before the onslaught of the EAFC. Per capita income in nominal terms declined by about 30% from US\$4284 in 1997 to US\$3018 in 1998. This had a bearing on the real sector of the economy. Significant numbers of people were being retrenched. This resulted in immense human suffering due to lack of social safety nets.

This paper aims to contribute to the literature on the link between financial liberalization and the performance of the banking sector by: a) using firm level data of Malaysian domestic banks to assess the allocative efficiency of the banking sector. Specifically, it tries to determine whether financial liberalization in Malaysia was able to promote a competitive environment that could boost the efficiency of banks in terms of reduction in intermediation spreads; and b) mobilizing macroeconomic data to assess the contribution of financial liberalization to the banking crisis of 1997.

2. Banking Institutions and Financial liberalization in Malaysia

The banking system in Malaysia consists of the central bank (Bank Negara Malaysia), banking institutions and other financial institutions as shown in Table 1. The banking system is the largest component, accounting for about 70 per cent of the total assets of the Malaysian financial system (Bank Negara Malaysia, 1999). The banking institutions are traditionally the largest mobilizers of deposits. Recent statistics show that they still are: in 2005, for example, the banking institutions mobilized around 83% of the total deposits of the financial system and held about 67% of the financial system's total assets.

The 1997 financial crisis revealed the structural weakness of the Malaysian financial system. Strong loan growth between 1994 – 1997, which averaged about 25% per annum, had led to the high loan exposure of the banking system. In addition the underdeveloped bond market also resulted in the banking system providing a significant portion of the private sector financing, thereby increasing the concentration of risk in the banking sector. The crisis also exposed the vulnerability of the finance companies, whose business was mainly hire purchase financing and consumption credit. Thus the industry became highly vulnerable amidst rising interest rates and a slowdown in the economic activity. Hence a merger programme for the finance companies was initiated in January 1998 to consolidate and rationalize the industry. In 1999, the domestic banking banks were given the flexibility to form their own merger groups and to choose their own leader in each group to lead the merger process. By 2001, the domestic banking sector was subsequently merged into 10 banking groups as shown in Appendix 1.

Malaysia began financial liberalization on October 1978, however, on several occasions, the deregulation process had to be put on hold or reversed when the economy faced adverse shocks. Malaysia's banking sector is considered fully liberalized on February 1991.

Table 1: The Malaysian Financial System

Financial Institutions	Financial Markets
Banking System • Bank Negara Malaysia • Banking institutions - Commercial banks (including Islamic Banks) - Finance companies - Merchant banks • Others - Discount houses - Representative office of Foreign banks - Offshore banks in Labuan Non-Bank Financial Intermediaries (NBFI) • Provident and pension funds • Insurance companies (including Takaful) • Development finance institutions • Saving institutions - National savings bank - Co-operative societies • Other NBFI - Unit trusts - Pilgrims fund board - Housing credit institutions - Cagamas Bhd. - Credit guarantee corp. - Leasing companies - Factoring - Venture capital	Money & Foreign Exchange Markets • Money market • Foreign exchange market Capital market • Equity market • Bond market - Public debt securities - Private debt securities Derivative markets • Commodity Futures • KLIBOR Futures Offshore market • Labuan International Offshore Financial Centre

Source: Bank Negara Malaysia, *The Central Bank and the Financial System in Malaysia, A Decade of Change, 1999*

3. Allocative Efficiency of Malaysian Banks : A Cost Ratio Analysis

The banking system of a country in its role as an intermediary, performs the crucial task of channeling resources from savings to investment. With financial liberalization, banks are expected to be more efficient in their operations. This implies narrowing the margin between what they pay for financial resources (the deposit rate) and what they earn on them (the loan rate). The difference between the deposit rate and the loan rate is referred to as the interest spread (or margin). For the Malaysian banks, margin is the main source of their profits (Cheah, 1994). In a fully liberalized environment, competition should reduce spreads and enhance bank performance and efficiency. According to Lin (1990), the ability of the banks to reduce their lending margins without crippling the system's financial health is an indicator of the efficiency of the banking system. Hence margin can be regarded as an indicator of the banks' efficiency in financial intermediation.

Revell (1980) conducted a comprehensive survey on the cost of intermediation and interest-rate margin. The main objective was to investigate an assumed increase in the cost of intermediation in the OECD countries. In this paper, the cost-ratio analysis procedure established by Revell is adopted to evaluate the efficiency of the banking system. By comparing two series (pre-liberalization and post-liberalization) of cost data of the banks, we would be able to ascertain whether the banking system's cost of intermediation has increased or decreased over time. This in turn allows us to infer about banks' efficiency following financial liberalization. In computing the cost ratio, the gross earning margin being a proxy for the cost of intermediation would appear in the numerator. While the total assets of the banking institutions would be the denominator.

The items that are extracted from the income statements of banks to calculate the gross earning margin figures are: 1. Interest received 2. Interest paid 3. Other income. Items 1 and 2 include only interest received and paid on loans and deposits. Interest and income from other sources such as investment in securities, foreign exchange operation and other fees and commission are found in item 3. The sum of 1, 2 and 3 gives the broadly defined margin received by banks in their financial operations. This sum is referred to as the gross earning margin (G.E.M), which is also referred to as the "banker's spread". Hence, the required cost ratio is GEM divided by the bank's total assets. Related data of selected banks in Malaysia are compiled from 1987 to 1997. These years are chosen based upon data constraints. 1987 is the earliest year that has data in the form of aggregation described above, or in a form, from which the required data can be extracted from the published sources. While, 1997 is the last year in the series due to the banking merger exercise that followed after the financial crisis of 1997. The crisis had affected a number of banks adversely. There is also the issue of the bank entity itself. Banks that are chosen are those that have been established long enough (at least from 1987 to 1997) and have not encountered significant changes in management or mergers during the period under study. A number of banks in the Malaysian banking system have gone through mergers during the 1990's. Mergers give rise to considerable consolidation in banks' accounts making it very difficult to compare the banks' accounts from one period to another, especially if previous period is before the merger. Owing to the above constraints, only seven of the Malaysian domestic banks are selected for a cost ratio analysis. The main sources of statistical information are the Balance Sheets and Profit and Loss Accounts of the banking institutions. The cost ratio series from these banks provide an indication of the banking institutions' efficiency over the years, especially before and after financial liberalization.

The mean (or average) intermediation spread is calculated for both the pre liberalization years (1987 – 1991) and for the post liberalization years (1992 – 1997). From these mean values (as seen in Table 2), it would seem that most of the banks (five out of seven) showed an increase in the spread in the post liberalization period. Only banks F and D had a reduced G.E.M/Total Assets ratio in the post liberalization period. In order to investigate if there were indeed significant changes in the mean ratios between the pre and post-liberalization periods, statistical analysis using the non parametric method is employed here. Non parametric test is used when the distribution of the data is not normal. From Table 3, the test reveals no significant difference in the GEM ratio between pre and post liberalization periods for all banks except for Bank D. This implies that the intermediation spread of all the banks sampled did not change materially with financial liberalization except for one, i.e. Bank D. Hence, the results generally indicate that a more liberalized environment in Malaysia did not seem to have enhanced bank efficiency in terms of reducing the bankers' spread. Out of seven, only one bank had a lower average intermediation spread in the post-liberalization period.

Table 2: Mean GEM/Total Assets Ratio for Both Periods

Bank	Pre ($\bar{x}_{pre}$)	Post ($\bar{x}_{post}$)	Diff erence ($\bar{x}_{pre} - \bar{x}_{post}$)	Change
A	4.6654	5.2742	-0.6087	Increase
B	4.2819	4.6962	-0.4142	Increase
C	3.0960	3.4383	-0.3423	Increase
D	3.4375	2.9766	0.4609	Decrease
E	3.3941	3.5260	-0.1319	Increase
F	3.3054	3.0860	0.2194	Decrease
G	3.1883	3.6083	-0.4200	Increase

Table 3: Mann-Whitney U Test Results

Bank	Pre ($\bar{x}_{pre}$)	Post ($\bar{x}_{post}$)	Diff erence ($\bar{x}_{pre} - \bar{x}_{post}$)	p-values	Results
A	4.6654	5.2742	-0.6087	0.361	Not significant
B	4.2819	4.6962	-0.4142	0.144	Not significant
C	3.0960	3.4383	-0.3423	0.068	Not significant
D	3.4375	2.9766	0.4609	0.028*	Significant
E	3.3941	3.5260	-0.1319	0.361	Not significant
F	3.3054	3.0860	0.2194	0.361	Not significant
G	3.1883	3.6083	-0.4200	0.068	Not significant

* p-value < 0.05

4. Financial Liberalization and Banking Sector Stability

Agrawal (1992) pointed out that liberalized financial markets have been associated with certain undesirable outcomes that may offset the benefits of financial liberalization. Amongst them include increased use of credit to purchase assets and finance consumption, asset price inflation and volatility, and financial fragility. It was noted also that financial liberalization often leads to the prices of shares, real estate first rising sharply, inducing many people to invest or speculate in these markets with some funds borrowed from banks at very high real interest rates. The prices later decline, causing many people who had earlier borrowed at high real interest rates to become insolvent and this leaves the banks with a large portfolio of non-performing loans which eventually causes their insolvency.

Demirguc-Kunt and Detragiache (1998) and also Cole and Slade (1998) stressed that financial liberalization is a contributing factor to the banking crises that had occurred. Demirguc-Kunt and Detragiache explored empirically the relationship between banking crises and financial liberalization in 53 countries (including Malaysia) during 1980 – 1995 using a multivariate logit framework and found that banking crisis are more likely to occur in liberalized financial systems. The results derived showed a number of factors including adverse macroeconomic developments, bad economic policies as being the other potential explanatory variables. When these factors are controlled for, financial liberalization exerts a significantly, negative effect on the stability of the banking system. Zhuang (2002) also tested empirically the link between financial liberalization and bank instability. The factors considered in these studies included both bank specific and macroeconomic variables. The ratio of M2 to foreign exchange reserves, total bank loans divided by the country's GDP and the current account balance have been found to affect bank stability. Akyuz (2004) stressed that in developing countries, domestic financial cycles are often associated with sharp swings in external capital flows and exchange rates. Further, the great susceptibility of domestic financial condition in developing countries to currency instability is due primarily to the existence of large stocks of public and private debt denominated in foreign currencies. In his opinion, this is the main reason why currency crises in emerging markets spill over to domestic financial markets, not bad macroeconomic policies, as he felt that the large majority of the countries in East Asia have track records of sustainable development and macroeconomic discipline.

5. The Logistic Regression Model

The logistic regression model can be expressed as follows:

$$P(Y_i = 1) = \frac{1}{1 + e^{-Z}}, \quad i = 1, \dots, N \quad \text{----- (1)}$$

Where

$Z = b_0 + b_1X_1 + b_2X_2 + \dots + b_MX_M$

P = the probability that the observed value Y takes the value 1

N = the number of observations

X = the explanatory variables

M = the number of explanatory variables

Y = the dependent variable ; Y=1 for bank crisis period and Y=0 for non crisis period.

It is a cumulative logistic distribution function with P representing the probability of a bank crisis which can be estimated. Logistic regression is appropriate when the dependent variable is grouped into discrete states. The explanatory variables include the financial liberalization variable and other control variables. Like most studies on financial liberalization, the removal of interest rate controls is considered the centerpiece of financial liberalization. For Malaysia, it is only on February 1, 1991 that the BLR (base lending rate) was freed from the administrative control of the central bank.

In this study the control variables that capture the characteristics of the banking system namely, ratio of M2 to foreign exchange reserves (an indicator of vulnerability to sudden capital outflows) and lending rate are included. The ratio of M2 to foreign exchange reserves is a measure of the country's ability to withstand the pressure of substituting foreign currency for domestic currency by investors. A rise in the M2/ foreign exchange reserves ratio implies a decline in the foreign currency backing of the short-term domestic currency liabilities of the banking system. Hence this would make the banking system vulnerable to sudden capital outflow. Malaysia opened its capital account as part of its ongoing financial liberalization program. With this development, there was a massive inflow of foreign capital, in particular portfolio investment. When the crisis precipitated, these funds took flight easily. As noted by Chan-Lau (1998), the private capital flows to the five economies most affected by the EAFC, reversed from a net inflow of US\$93 billion in 1996 to a net outflow of US\$12 billion in 1997.

Lending-deposit rate spreads were used by both Zhuang (2002) and Chenard (1997) as an indicator of distress and problems in the banking sector. The rationale being, after financial liberalization, banks are free to set the rates charged on borrowing. Hence, banks could be motivated to profit from the new found freedom of setting interest rates, as long as interest gains are larger than the loss from the increased risk. The same has been expressed by Akyuz (1993). In essence, this means that unregulated financial markets can lead to higher interest rates and greater risk-taking. Hence, both the lending-deposit spread and the lending rates will be used here for the analysis. Apart from these variables, the rate of real GDP growth as a macroeconomic variable (Rgdpgrow) is also included, given that adverse shifts in the macroeconomic condition of a country could weaken its financial sector.

Based on the criteria of goodness of fit, predictive efficiency of the model and statistical significance of individual predictor variables as given by Menard (2001), the following model is considered the most appropriate to address the banking crisis hypothesis of this study. Three of the predictor variables; financial liberalization (Fin Lib), ratio of M2 to foreign exchange reserves (M2tofor) and bank lending rates (Lend) are statistically significant. The following two tables furnish the results of the model used.

Table 4: Logistic Regression Results

Predictors	B	S.E	Wald	Df	Sig.	Exp (B)
Fin. lib.	5.34	2.50	4.52	1	0.033**	208.26
M2tofor	1.58	0.72	4.43	1	0.030**	4.85
Lend	2.20	1.00	4.69	1	0.030**	8.73
Rgdpgrow	0.33	0.25	1.84	1	0.180	1.39
Constant	-38.00	15.70	5.85	1	0.016**	0.0000

Notes:

- i) B = the logistic regression coefficient
- ii) S.E. = standard error of the coefficient
- iii) Wald = Wald statistic to test the significance of the individual coefficient
- iv) df = degree of freedom
- v) Sig. = the p-value for the Wald statistic
- vi) Exp(B) = the odds ratio of the independent variable
- vii) ** Indicates significance level of 0.05

The odds ratio for the financial liberalization variable is 208. This implies that when all the other variables are held constant, the liberalization of the banking sector increases the odds of a banking crisis occurring. Specifically, with financial liberalization the banking sector is 208 times more likely to encounter a banking crisis. The other two variables, namely ratio of M2 to foreign exchange reserves (m2tofor) and lending rates of the commercial banks (lend) could also raise albeit to a much smaller extent the odds of a banking crisis happening, as they grow. The odds ratio of the lending rates is 8.7. This implies that with a one unit increase in the lending rates, the banking sector is 9 times more likely to encounter a banking crisis. The classification table below suggest that this model predicted the outcome (banking crisis) very well. The percentage of the non-occurrence of the crisis correctly predicted is 100 per cent; while the percentage of occurrence of the crisis correctly predicted is 87.5 per cent, giving an overall success rate of 98.4 per cent.

Table 5 : Classification Table for Prediction of Banking Crisis

Observed		Predicted		
		Crisis		Percentage Correct
		0	1	
Crisis	0	54	0	100.0
	1	1	7	87.5
Overall percentage		98.4		

6. Conclusion

The impact of financial liberalization on the performance and stability of Malaysian banks has been assessed based upon cost ratio analysis and logistic regression analysis. The cost ratio analysis has revealed that all save one of the banks analyzed, have not become more efficient (in terms of having a lower intermediation spread) after the banking sector is liberalized. This indicates that a liberalized environment alone was not sufficient to promote keen competition among the banks, conversely, the banks seem to be able to keep a larger spread.

The logistic regression analysis showed that financial liberalization could independently exert a negative effect on the stability of the banking sector when other factors (macroeconomic variables and bank specific factors) are controlled for. Besides financial liberalization, the factors that could contribute significantly to a banking sector crisis were the M2 to foreign exchange reserves ratio and the banks' lending rates. This implies that financial liberalization encouraged higher interest rates and greater risk taking, while capital account liberalization attracted mobile capital that caused damaging effects to the economy for the period studied.

Hence, for Malaysia, the results suggest that financial liberalization had contributed to the 1997 banking crisis. The crisis also has a lot to do with the banking sector's performance but not much with the country's macroeconomic condition. This is plausibly due to financial liberalization without adequate financial regulation. In a liberalized environment and in the absence of adequate monitoring, banks are likely to take greater risks. The process of financial deregulation should be accompanied by an adequate system of laws and regulations. Supervision of banking institutions is just as important if not more important than for non-financial public listed firms. Regulatory agencies should ensure that financial institutions are transparent, responsible and accountable in their operations. With half the world in recession now, in no small part due to unfettered financial liberalization, the case for greater prudential financial regulation is crystal clear.

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Appendix 1: Merger Programme for Malaysian Domestic Banking Institutions

Source: Bank Negara Annual Report, 2001

Original Anchor Banking Group	Merged with	Resultant Entity after Merger
1. Affin Bank Berhad Group Perwira Affin Bank Bhd Asia Commercial Finance Bhd Perwira Affin Merchant Bank Bhd.	BSN Commercial Bank (M) Bhd BSN Finance Bhd BSN Merchant Bankers Berhad	Affin Bank Berhad Affin ACF Finance Berhad Affin Merchant Bank Berhad
2. Alliance Bank Berhad Group Multi-Purpose Bank Berhad	International Bank Malaysia Bhd Sabah Bank Berhad Sabah Finance Berhad Bolton Finance Berhad Amanah Merchant Bank Berhad Bumiputra Merchant Bankers Bhd	Alliance Bank Berhad Alliance Finance Berhad Alliance Merchant Bank Berhad
3. Arab-Malaysian Bank Bhd. Group Arab-Malaysian Bank Berhad Arab-Malaysian Finance Bhd Arab-Malaysian Merchant Bhd	MBf Finance Berhad	Arab-Malaysian Bank Berhad Arab-Malaysian Finance Berhad Arab-Malaysian Merchant Bank Berhad
4. Bumiputra Commerce Bank Berhad Group Bumiputra Commerce Bank Berhad Bumiputra Commerce Finance Berhad Commerce International Merchant Bankers Berhad		Bumiputra Commerce Bank Berhad Bumiputra Commerce Finance Berhad Commerce International Merchant Bankers Berhad
5. EON Bank Berhad Group EON Bank Berhad EON Finance Berhad	Oriental Bank Berhad City Finance Berhad Perkasa Finance Berhad Malaysian International Merchant Bankers Berhad	EON Bank Berhad EON Finance Berhad Malaysian International Merchant Bankers Berhad
6. Hong Leong Bank Berhad Group Hong Leong Bank Berhad Hong Leong Finance Berhad	Wah Tat Bank Berhad Credit Corporation (Malaysia) Berhad	Hong Leong Bank Berhad Hong Leong Finance Berhad
7. Malayan Banking Berhad Group Malayan Banking Berhad Mayban Finance Berhad Aseambankers Malaysia Bhd	The Pacific Bank Berhad PhileoAllied Bank (M) Berhad Sime Finance Berhad Kewangan Bersatu Berhad	Malayan Banking Berhad Mayban Finance Berhad Aseambankers Malaysia Berhad
8. Public Bank Berhad Group Public Bank Berhad Public Finance Berhad	Hock Hua Bank Berhad Advance Finance Berhad Sime Merchant Bankers Berhad	Public Bank Berhad Public Finance Berhad Public Merchant Bank Bhd
9. RHB Bank Berhad Group RHB Bank Berhad RHB Sakura Merchant Bankers Bhd	Delta Finance Berhad Interfinance Berhad	RHB Bank Berhad RHB Delta Finance Berhad RHB Sakura Merchant Bankers Berhad
10. Southern Bank Berhad Group Southern Bank Berhad	Bah Hin Lee Bank Berhad United Merchant Finance Berhad Perdana Finance Berhad Cempaka Finance Berhad Perdana Merchant Bankers Bhd	Southern Bank Berhad Southern Finance Berhad Southern Investment Bank Berhad