

The Relationship between Capital Adequacy Ratio and Stock Price of Banking Institutions: Evidence from Malaysia

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Abstract

This study is carried out in order to examine the relationship between capital adequacy stock price of Malaysia banking institution. It was in responses to the decision made by the Malaysia Central Bank, Bank Negara Malaysia (BNM) that required every bank in Malaysia to implement the latest international banking regulation — Basel III. In order to further understand that relationship deeper, this study employed linear regression analysis to examine the relationship between capital adequacy ratio and stock price of Malaysia banks. The data was derived from 8 local licensed commercial banks from 2005 to 2014. The findings showed that the capital adequacy ratio has no impact on the bank's stock price. It was different from the finding of positive influence of financial distress on the bank's stock price. Nevertheless, these findings were important as it evidenced that the new banking regulation is insufficient to help address financial distress of bank and public confidence in Malaysia.

Keywords: Capital adequacy ratio, Basel III, stock price, financial distress indicator, Malaysia

1. Introduction

It may have been ages ago, but global financial crisis 2007-008 have played a significant role in human history. In fact, the devastation was so high that it threatened the collapse of many large financial institutions, which was luckily prevented by bailout 'from respective national governments (Kentaro, 2005). It saved the banks from facing a complete evaporation of liquidity by depositors' panic in attempting in liquidating assets deposited in the banks.

So, what causes the worst financial crisis since Great Depression of 1930 (Roubini, 2009) happened? Based on the findings from Financial Crisis Inquiry Commission (2011), the widespread failures in financial regulation and supervision have left the financial system to be vulnerable and unmonitored. It subsequently led to failure to be alerted on unaccounted risk exposure to the financial system. It is these cumulated over the years of unknown risks that threaten the stability of financial market of the world.

Consequently, international regulators set forth the creation of Basel III, an international financial regulation that regulates the capital requirements of the banking institution (Bank for International Settlements, 2015). In 1989, Bank Negara Malaysia (BNM), the central bank of Malaysia, introduced the Capital Adequacy Framework to setup the computation of minimum capital required by a banking institution (Thiam, 2007). This framework was developed based on the 1988 Basel Capital Accord to cover on credit risk and market risk exposed by a banking institution (Bank Negara Malaysia, 2009). In fact, the banking institutions in Malaysia are required to maintain a minimum 8% of Risk-Weighted Capital to be considered capital stable. However, the Basel I tiring that time only covered credit risk and was only able to further cover the market risk in 1996 (Wan Ismail, 2014).

In 2007, BNM deployed a two staged Standardized Approach and the Internal Ratings Based (IRB) Approach to fully corporate the Basel II, which superseded the Basel I in June 2004 (Wan Ismail, 2014). According to Bank Negara Malaysia (2016), phase I was scheduled to be implemented earliest in 2008 and all banks are required to adopt the Standardized Approach for the credit risk and Basic Indicator Approach for the operational risk, while phase 2 was scheduled to be implemented earliest in 2010.

In 2010, with in response to the global financial crisis 2007-2008, BNM has started to require every bank in Malaysia to adopt the Basel III and to provide Basel III disclosure by 2013. In fact, according to Bank Negara Malaysia (2011), BNM supported the implementation of Basel III's reform measures to strength the existing capital and liquidity standards for banking institutions in Malaysia by implementing the reform package in accordance to the globally-agreed implementation timeline from 2013 — 2019.

According to Chalermchatvichien, Jumreomvong & Jiraporn (2014), Basel III was originally developed to address the deficiencies of in financial regulation revealed in the global financial crisis 2007-2008 by setting up greater capital, leverage and liquidity requirement. Its development was to answer the call for greater amount of capital and stronger definition of a bank's capital to better capture relevant risk correctly (Bank for Intemational Settlements, 2014). In essence, it is an improvise Yersion of Basel II that have failed to alert the failure and degradation of banking in global financial crisis 2007-2008.

Therefore, it is clear that Basel III functions as a set of guidelines to help regulators, investors, and various stakeholders to monitor the financial health of the banking institution and expose the bankruptcy risk of a bank Yet, research evidences by Flannery (2013) and Dowd, Hutchinson, Ashby & Hinchliffe (2012) indicated that the capital adequacy framework developed by Basel Committee is flawed. The failure of taking into the account of asset-liabilities mismatch and moral hazard has limited the validity and reliability of the measurements of the capital requirements. It contradicted with the aims set forth by the

Basel Committee for the development and imposed on Basel Accord. Therefore, this study will embark on a journey to examine the relationship between capital adequacy ratio and market share price. For a better comparison purpose, that relationship will compare with the relationship between a different financial distress indicator (namely Altman's Z-Score Model) and market share price to better understand the effectiveness of capital adequacy ratio is serving as a financial distress indicator

The purpose of this study is to:

1. To examine the relationship between capital adequacy ratio and stock price
2. To examine the relationship between financial distress indicator and stock price.

The findings of this study will delve deep to understand how effective it is capital adequacy ratio in monitoring a bank's risk and provide public confidence. It is great importance that the new found knowledge gained in this study will better allowed us to seek new alternatives to strengthen the public confidence through various financial factor

The remainder of this paper is structured as follows. The next section provides the literature review and theoretical framework. The third section discusses methodology. Findings and analysis are described in the fourth section. Finally, we present overall conclusions in the fifth section.

2. Literature Review and Theoretical Framework

2.1 Underpinning Theory

For this study, the concept of efficient market hypothesis (EMH) is the undermining theory this study based on. Originally, this theory was independently developed by Paul A. Samuelson and Eugene F. Fama in 1960s. In fact, this theory was first given form by 'Paul Samuelson in 1965 in his article of 'Proof that Properly Anticipated Prices Fluctuate Randomly' and later operationalized by Eugene Fama (Lo, 2007).

According to Malkiel (1991) efficient market hypothesis stated that a capital market is said to be considered efficient only if all the relevant information that can influence the stock price are fully and correctly reflects into the stock price immediately. It can further have subdivided into three variant form that based on the type of information been absorbed into stock price. The weak form of EMH claimed to only reflects all past publicly available information, while the semi-strong form of EMH reflects all public available information instantly. The strong form of EMH supposed to be able reflects all information instantly, including hidden information.

Lo (2007) explained that the EMH tells us that there is no accident of nature that the stock prices are completely random and unpredictable. The changes of the stock prices are in fact the direct result of many active market participants attempting to profit from their information. Hence, driven by profit maximization, investors will try to incorporate their information advantages as soon as possible into the stock prices to be the first in gaining the profit opportunities, while quickly eliminate the profit opportunities of others from the same information. If all of these were to occur instantaneously, Lo (2007) explained that it will lead to the creation of highly efficient market, which the market prices will reflect of all available information in the market. Therefore, there are no profits can be gained from information-based trading as such profits are already captured into the market prices. Therefore, it is impossible to

consistently "beat the market" in a highly efficient market as there is near to non-existent of profit advantages to be taken

Regardless whether the EMH is true or not, it is still a cornerstone of the financial investment theory and that EMH will be used as an underlying concept to relate the relationship of stock price with capital adequate ratio and financial stress indicator. And, in the context of Malaysia, recent studies by Ali, Md Nassir, Hassan, & Abidin (2009) and Tuyon & Jasman (2016) have provided empirical evidence that Malaysia is in weak—form of efficiency market. Under these form of EMH, this study believed that the public available information such as capital adequate ratio and financial stress indicator will be absorbed and reflected in the stock price of the individual bank. Therefore, it is in hope that the EMH can be used as an underlying basis to explain how does the stock price of a bank can be affected by the capital adequate ratio and financial stress indicator of the bank, while allowing this study to empirically examine the significance of the impact of the impact of the capital adequate ratio and financial stress indicator on the stock price of a banking institution.

2.2 Capital Adequacy Ratio

Berger & Bouwman (2012) empirically examines the relationship between the capital and performance of a bank in term of survival and market share. It also explored the level of capital of a bank in various scenario and situation such as financial crisis, economic turbulence and normal times that occurred in the U.S. Study results proved that the bank capital improves the company performance of a smaller bank in any situation, while the bank capital only improves the company performance the medium or bigger banks during banking crises. It implied that the importance of capital in determining the survival of any banks and having adequate of capital will at least help the banks in faring well during financial crisis. The same support was found in Dao & Ankenbrand (2014) that concluded the capital risk is positively statistically significant to the degree of capital adequacy in Vietnamese banking sectors. It empirically supported the reason why capital regulation used this approach to contain the banking risk.

However, Miu, Ozdemir & Giesinger (2010) stated in the conclusion of their study of the impact of capital buffer on capital stability that no amount of capital is a substitute for sound risk and capital management. They advised that certain cautious still need to be remained when relying on capital buffers for the aversion of as crisis and should place more emphasis on developing better risk and capital management processes, and maintaining higher quality capital. This is somewhat supported by Fahnery (2013)'s study on evaluation of the impact of "adequate" capital into different risky categories such as equity holders, debt holders and government and that the definition of "adequate" capital were defined in terms of accounting ratio in Basel Accord. The study result stressed that the book capital was able to reflect the assets risk, but does not reflect the solvency of the bank. Moreover, both studies specifically used banks from U.S as study sample, which is hard to say will be the same for other countries. Therefore, the actual impact of adequate capital ratio on the financial system as a whole and in different level is still inconclusive.

2.3 Financial Distress Indicator

According to Zhao (2016), financial distress can be defined as the intermittent state between solvency and insolvency states. It is viewed differently from insolvency as the cost of entering into financial distress is different from when a company is having insolvency (Pumanandam, 2007). In fact, financial distress is a

condition of a company that has difficulty of paying off financial obligations to creditors, employees, and shareholders, but yet not required to liquidate their assets and declared bankrupt. Hence, it can be considered there is still some hope in recovering from their distress situation. Nevertheless, a financially distressed company has higher chance of entering the state of bankruptcy.

Typically, a financially distressed company will have certain "symptoms" by incurring extra costs due to (1) higher possibility of losing customers, key employees and valuable suppliers (Titman, 1984), (2) higher possibility of increasing deadweight losses through failure in meeting debt payment, increase of interest expense and decrease of operational working capital and (3) higher possibility of increasing opportunity cost when the company has to forgo NPV positive projects due to lack of, funding and when external financing are more costly than internal financing (Froot, Scharfstein, & Stein, 1993). Hence, financial stress indicator is a good measurement of the financial condition of a company.

Based on empirical evidence provided by Tan & Floros (2013) the risk, which calculated using Altman's Z-Score model, is negatively related to the bank's capital based on the of the relationship between bank efficiency, risk and capital in the context of Chinese commercial banks. The study result is further supported by Bhagat, Bolton & Lu (2015), which conducted a study on the relationship between the company size and risk-taking among financial institution during the period of 2002-2012 in U.S. It used Altman's Z-Score model as their primary risk measurement and Merton distance to default (Merton DD) as their secondary risk measurement. In fact, the Z-Score model was able to further provide even more consistent evidence of their findings through the examination of the relationship between the components of Z-Score model (Return of Assets (ROA), Capital Adequacy Ratio (CAR) and Stand Deviation of ROA) with the Company size.

2.4 Stock Price

Stock market or stock price normally being used as a gauge on public sentiments of a company. In fact, seasoned equity is one of the investment tool that relied on the stock price of the company to price their share offering. Therefore, it is a good substitute measurement for public confidence of a bank.

In Gunther, Levonian & Moore (2001), it stated that stock prices are able to provide supervisory usage for the regulator as stock price contains investors' point of views on the financial condition and prospects of a banking institution. In fact, their studies evidenced that the information of investors' views on the financial condition of a banking institution are useful and not redundant.

It is even more impressive that studies such as Curry, Elmer & Fissel (2003), Krainer & Lopez (2004), and Berkowitz, Kumar & Langberg (2009) have revealed that the market related variables are indeed able to improve their financial distress prediction. In fact, Cumy, Elmer & Fissel (2003) that conducted a study to assess the extent of stock market information ability to help bank regulator to identify a bank's financial distress status has yield positive findings. Their study used a variety of stock return and market related variables to improve the predictive ability of their CAMEL rating model in the context of U.S. publicly traded banks from 1996-1998. This is further supported by Berkowitz, Kumar & Langberg (2009), which conducted a study of the behaviour of Stock prices and bond yields for prediction of financial collapse of financial institution during financial crisis 2007 — 2008 in the context U.S. banking services. Their study provided an empirical evidence that bank failure can be predicted using stock prices and bond yields. Both studies have provided the empirical evidence that stock price has predictive information in whether a bank is to be entering financial distress or not and it improved the results of

financial distress prediction when combined with other financial ratios. Moreover, it is further suggested by Krainer & Lopez (2004) that the used of securities market variables such as stock return and bond yield spreads is able to improve the supervisory rating on the bank holding companies.

Even Naouar (2010) has provide an empirical evidence that the equity market signal were able to outperform methodology based on accounting information and it was able to anticipate in a timely manner. Therefore, the stock prices are an ideal measurement to evaluate risk a bank bear.

2.5 Capital Adequacy Ratio and Stock Price

Several studies have provided evidences that the announcement of financial regulatory change was viewed unfavourable. According to studies such as Eyssell & Arshadi (1990), Cooper, Kolari & Wagster (1991) Madura & Zarruk (1993), Rizzardi (2011) and Chia, Yahya, & Muhammad (2015) have concluded that the stock price of the banking institution in overall reacted negatively in response to the first announcement of Basel Accord Capital Adequate Framework with minor results for stock price reacted positively or unaffected.

However, studies result from Lu, Shen & So (1999) and Chen (2010) reported otherwise. Lu, Shen & So (1999) reported that the announcement of Basel I has a non-positive effect on the stock price of big commercial banks, but it gives of positive effect towards the stock price of small commercial banks. Meanwhile, Chen (2010) argued that the market-valued capital ratios is negative con-related to stock price due to relation with sensitivity to the risk factor, while the capital adequate ratios is positive correlated to stock price.

The mixed results from all the past study results concluded the fact that the capital adequacy ratio has an impact on the stock price of a banking institution. It implied to us that the investors do take into account of the capital stability of the bank for their investment activities. In fact, Chen (2010) suggested that the market-valued capital ratios are more useful in serving as an indicator of identifying whether a bank is financially distress or not compared to capital adequate ratio

.Even study from Estrella, Park & Peristiani (2000) stated that capital ratios have long been a valuable tool for assessing the safety and soundness of banks. Their study in comparing the effectiveness of three different types of capital ratios — risk-weighted, leverage, and gross revenue ratios in predicting bank failure has yield the result that capital ratios can be used as financial distress predicting. It concluded that the risk weighted ratios, which was the cornerstone of Basel Accord's Capital Adequate Framework, perform better than the other ratios in predicting bank failure. Therefore, one can simply draw out a conclusion from these is that the capital adequate ratios contains certain amount of substantial information, in term of bankruptcy risk, and it have an impact of stock price of a banking institution.

2.6 Financial Stress Indicator and Stock Price

Past studies have shown that there exists a relationship between a company's financial distresses with stock return. According to Dichev (1998), a financially distressed company should experience low stock returns compared to company that are not financially distress. It implied the fact with the bankruptcy risk is non-systematic risk and that there is negative correlation between financially distress indicator and stock return. This is supported by the empirical results of Altman & Hotchkiss (2009) and George & Hwang (2010) that the market value of a financially distressed company is lower than the book value of the company.

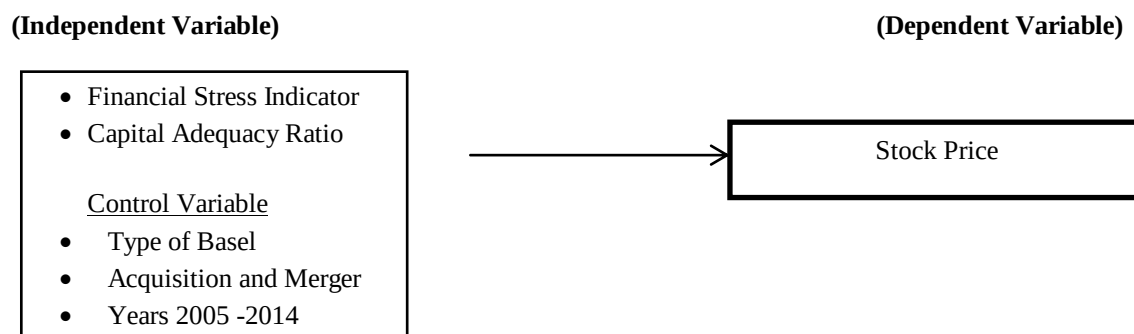
However, study result from Gao, Parsons & Shen (2013), Guo & Jiang (2015) and Zhao (2016) suggested otherwise as the stock price increase with higher financial distress indicator. Gao, Parsons & Shen (2013) concluded that there is on the positive relationship between equity return and financial distressed indicator based on the sample size of more than 36,000 company from 30 countries from 1992 until 2010. In fact, the study show evidence that the high return of stock return is strongly linked to the overconfidence of the investors. Similar result was achieved by Guo & Jiang (2015)'s study on the relationship between financial distress risk and equity returns. It is reported that the financial risk is positively correlated to the future excess stock market return. Surprisingly, it also revealed that stocks that provide a poor hedge against financial distress risk are to have high expected return. Even though the reliability of Zhao (2016) is low, Zhao (2016) reported that a positive relationship between Z-Score between stock return after examining based on companies' data of Apple, HP and Lenovo, the three major technology companies in U.S. from 2004 — 2014. All three study results implied that the stock price has positive correlation with bankruptcy risk.

Yet, according to Aßmuth (2015), the risk of bankruptcy has an impact the stock price of a company, but those results are inconclusive and circumstantial. In fact, the study concluded that whether a stock prices increase or not for a financially distress company depend entirely on the company's future prospect rather just based on the financial ratio of the company. Therefore, it is actually hard to pin down the relationship as it is based on investor's sentiments.

2.7 Theoretical Framework

Prior to design the research method, it is important to understand how the relationship between the variables is assumed to behave and relate to each other. Below here is the model of theoretical framework for this study:

Figure 2.1: Research Framework and Variables Used



2.8 Research Hypotheses

Based on the readings and studies done above, hypothesis of this research is developed as followings.

H1 : There is a significant relationship between capital adequacy ratio and stock price.

H2: There is significant relationship between financial stress indicator and stock price.

3. Methodology

3.1 Research Design

The research philosophy adopted for this study is positivism. Based on Saunders, Lewis & Thornhill (2016), positivism is a philosophical stance that study the social reality based on observation to come out generalization conclusion. In fact, it is entirely based on the idea of carrying detaching mindset towards the study and remaining neutral and unbiased towards the collected data. Hence, it is able to yield better clarified result that is based on untainted pure data. Therefore, it is most suitable for this study that examined the relationship of financial data and stock price through a third person point of view.

It is an undeniable fact that investors are the main players in stock market. However, they are not the only group of people that has the most influence to the stock price of a firm. Stakeholders such as regulators and firm's own employees have much indirect influence to the stock price of a firm. Therefore, it is wise to approach this study in a detach manner to avoid any incorrect assumptions

3.2 Sampling

As the scope of this study is the Malaysia bank, thus the number of licensed banks that currently still operating in Malaysia should be the size of this study. However, given the difficulties to standardize the stock price of various banks from all around the world, the data size is further narrow down to all the Malaysia banks that have common shares traded in the Kuala Lumpur Stock Exchange (KLSE) Main Market. Further justification is that the financial data published by the foreign banks, which operate in Malaysia, have little to no connections to the stock performance of the foreign bank, which usually traded in foreign market. Therefore, the sample size for this study will be the local bank in Malaysia that traded in Malaysia stock market. Below here is the extracted list of Malaysia local licensed banking institution from Bank Negara Malaysia and their corresponding KLSE stocks:

Table 1: List of Malaysia local licensed banking institution

Licensed Banking Institutions in Malaysia	Corresponding KLSE Stock
Affin Bank Bhd	5185
Alliance Bank Malaysia Bhd	2488
AmBank (M) Bhd	1015
CIMB Bank Bhd	1023
Hong Leong Bank Bhd	5819
Malayan Banking Bhd	1155
Public Bank Berhad	1295
RHB Bank Bhd	1066

3.3 Data Collection

Financial data for the independent variables will be collected from annual reports above mentioned banks, whereas the data for the stock price will be collected from Yahoo Finance or another online website.

3.4 Measurement of Variables

3.4.1 Stock Price

In order to increase accuracy of the data, this variable will follow a number of assumptions:

- This variable will employ the use of average weekly adjusted closing price as the variables' value.
- Each variable's value is to represent their respective annual report for the year.
- The variable's value will further be annualized and underwent logarithms transformation.
- It is assumed that the impact of published financial data only affect the on the announcement date until the next publication. Therefore, the stock prices between these two announcement dates will be the older announcement data's stock price.

Below here is the formula:

Average Stock Price

$$\frac{\sum_{t=1}^{t-1} \text{Adjusted Closing Price}}{1}, \text{ where } t = \text{the next annual report}$$

$$\text{Stock Price} = \log (\text{Average Stock Price} * 52)$$

3.4.2 Financial Distress Indicator

Due to majority of the financial distress indicator in past studies, such as Samarakoon & Hasan (2003), Kutum (2015) and Zhao (2016), based from Dr Edward Altman's original Z-Score model. Therefore, this study will as well use the same model for calculating the variable's value. Below here is the formula:

$$Z \text{ — Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E, \text{ where}$$

A = Net Working Capital /Total Assets

B = Retained Earnings /Total Assets

C = EBIT (Earnings before Interest and Taxes) / Total Assets

D = Market Value of Equity /Total Liabilities

E =Sales /Total Assets

3.4.3 Capital Adequacy Ratio

Due to majority of the capital adequacy ratio in past studies, such as Thiam (2007), Dao & Ankenbrand (2014) and Zhao (2016) based on total capital ratio or weighted capital ratio. Therefore, this study will as well use the same measurement this study. Below here is the table depicting the type of capital adequacy ratio is to be collected for each respective Basel Accord:

Table 2: List of Capital Adequacy Ratio

Basel Accord	Capital Adequacy Ratio
Basel 1	Basel I Risk Weighted Capital Ratio (Without deducting proposed dividend)
Basel 11	Basel II Risk Weighted Capital Ratio (Without deducting proposed dividend)
Basel 111	Total Capital Ratio

3.4.4 Type of Basel

As mentioned in Capital Adequacy Ratio that there are three different type of Basel Accord used in this study, thus Type of Basel will serve as a control variable to allow us have better clarity in weightage of Basel Accord. Below here is the list of values that will be assigned for Type of Basel:

Table 3: List of Type of Basel

Basel Accord	Type of Basel
Basel 1 & Basel 11	1
Basel 111	0

The design for the above list in such that the higher value serves as an indicator of higher risk for the capital adequacy ratio. Therefore, Basel I and Basel II will have higher risk while Basel III will have lower risk as Basel III's capital adequacy ratio have better risk absorption.

3.4.5 Acquisition and Merger

As merger and acquisition of a bank by a fellow bank happened, the change in size of capital and quality of assets will affect the financial distress indicator and capital adequacy ratio for the anchor bank. Thus, this control variable serves as a risk factor for when a merger or acquisition of fellow banking institutions occurs. Below here is the list of values that will be assigned for Acquisition & Merger:

Table 4: List of Acquisition & Merger

Description	Acquisition & Merger
Anchor bank has not acquired/merged with another bank.	0
Anchor bank has acquired/merged with another bank.	1

The design for the above is to create a measurement to understand if the acquisition and merging of a bank will create a sudden change of financial distress indicator and capital adequacy ratio for the anchor bank. It is also used to understand whether the rate of convergence of Malaysia banking institution will have any impact on the performance of banking industry as a whole.

3.4.6 Year Based

This study is primarily a cross-sectional based study as the financial data to be collected represent a snapshot of a particular financial year. However, the sample data is to be collected stretched for ten years. Thus, there will be complication in attaining analysis accuracy if one of the financial years has more

influence in the result than the other. Therefore, the additional of year-based control variables is required to account for the significance of each year of data on the study as a whole.

3.5 Data Analysis

As previously mentioned that regression analysis will be the research method of this study, it is assumed that descriptive statistics, normality test, and multicollinearity test to be carried as well. The data analysis will be carried out in following sequence: descriptive statistics, normality test, multicollinearity test and regression analysis.

3.6 Empirical Model

Since the objective of this study is to examine the nature of relationship between financial distress indicator and stock price of Malaysia local banking industry, hence the most suitable research method to achieve this objective is regression analysis. Therefore, the research method to perform a linear regression between the financial stress indicator, capital adequacy ratio and stock price. Below here is the assumed regression equation on the relationship model:

$$Y = \alpha + \beta_1 \alpha_1 + \beta_2 \alpha_2 + \beta_3 \alpha_3 + \beta_4 \alpha_4 + \beta_5 \alpha_5 + \beta_6 \alpha_6 + \beta_7 \alpha_7 + \beta_8 \alpha_8 + \beta_9 \alpha_9 + \beta_{10} \alpha_{10} + \beta_{11} \alpha_{11} + \beta_{12} \alpha_{12} + \beta_{13} \alpha_{13} + \beta_{14} \alpha_{14}$$

where Y is stock price, α is constant, α_1 to α_{10} is control variables for year 2005 to 2014, α_{11} is Z-Score, α_{12} is CAR, α_{13} is type of Basel, α_{14} is acquisition and merger and β_1 to β_{14} is the sensitivity of attached independent variable to stock price.

4. Findings and Analysis

4.1 Descriptive Analysis

Table 5 provides summary statistic for the research variables. Based on Table 5, it can be said that the sample data collected is equally distributed in term of years as there will be 8 data for each year respectively. However, it cannot be said the same for the Type of Basel and Acquisition & Merger as both the control variables are uncontrollable and uniquely mirrored the condition of Malaysia local banking institution.

Table 5: Summary Statistic for the Research Variables

Control Variables		Frequency		Percent	Valid Percent	Cumulative Percent
Y2005	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2006	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2007	Valid	0	72	90.0	90.0	90.0

		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2008	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2009	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2010	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2011	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2012	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2013	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Y2014	Valid	0	72	90.0	90.0	90.0
		1	8	10.0	10.0	100.0
		Total	80	100.0	100.0	
Type of Basel	Valid	0	16	20.0	20.0	20.0
		1	64	80.0	80.0	100.0
		Total	80	100.0	100.0	
Acquisition & Merger	Valid	0	78	97.5	97.5	97.5
		1	2	2.5	2.5	100.0
		Total	80	100.0	100.0	

Below is the descriptive statistics for independent variables. In order to check the distribution structure of independent variables, a descriptive statistic with skewness and kurtosis was performed. Based on the results from Table 6, the following were obtained:

- Skewness of Z-Score 0.627 with standard error 0.269. Since skewness falls outside of range of -0.538 to +0.538, it can be concluded that the distribution of Z-Score is significantly non-normal and positive skewed.
- Skewness of CAR 0.04 with standard error 0.269. Since skewness falls within the range of -0.538 to +0.538, it can be concluded that the distribution of CAR is significantly normal.

- Kurtosis of Z-Score 0.730 with standard error 0.532. Since kurtosis falls within the range of -1.064 to +1.064, it can be concluded that the distribution of Z-Score is significantly normal in terms of kurtosis.
- Kurtosis of CAR = -0.247 with standard error = 0.532. Since kurtosis falls within the range of -1.064 to +1.064, it can be concluded that the distribution of CAR is significantly normal in terms of kurtosis.

Table 6: Descriptive Statistics of Independent Variables

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Z-Score	80	.2109	.6349	.399597	.0725587	.627	.269	.730	.532
CAR	80	.11550	.17960	.1455893	.01424877	.004	.269	-.247	.532
Valid N (listwise)	80								

Below is the test of normality. Based on the result of Shapiro-Wilk, p-value of 0.285 is greater than a value of 0.05. Therefore, it can be concluded that the data for Annualized Stock Price comes from a normal distribution.

Table 7: Normality Test of Annualized Stock Price

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Annualized Stock Return	.107	80	.024	.981	80	.285

a. Lilliefors Significance Correction

Since the VIFs of all control and independent variables are lesser than 5, there is more than 20% of variance of the independent variables are not shared with other independent variables. Therefore, it can be concluded that the data for Y2005, Y2006, Y2007, Y2008, Y2009, Y2010, Y2011, Y2013, Y2014, Z-Score, Capital Adequacy Ratio, Type of Basel and Acquisition & Merger are not correlated to each other.

Table 8: Multicollinearity Test of Independent Variables

Coefficients ^a		
Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
2005	.530	1.888
2006	.499	2.006
2007	.513	1.948
2008	.517	1.934
2009	.534	1.871
2010	.547	1.830
2011	.535	1.871
2013	.534	1.872
2014	.553	1.807
Acquisition & Merger	.833	1.200
Z-Score	.878	1.139
CAR	.828	1.207

a. Dependent Variable: Annualized Stock Return

Excluded Variables ^a							
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1 2012	^b -	-	-	-	.000	-	.000
Type of Basel	^b -	-	-	-	.000	-	.000

a. Dependent Variable: Annualized Stock Return

b. Predictors in the Model: (Constant), CAR, 2009, Z-Score, 2010, 2005, Acquisition & Merger, 2014, 2008, 2013, 2011, 2007, 2006

4.3 Regression Analysis

Below is the hypothesis developed for the regression analysis between the relationship of independent variables, control variable and dependent variable:

Ho: The regression fit is not good.

H1: The regression fit is good.

Table 9: Linear Regression Analysis

Variable	Expected Signs	Coefficient, β	t-Statistic	Prob.
Year				
2005	-	-0.278	-2.019	0.047*
2006	-	-0.149	-1.053	0.296
2007	-	-0.220	-1.577	0.119
2008	-	-0.237	-1.700	0.094
2009	-	-0.108	-0.788	0.433
2010	-	-0.106	-0.781	0.437
2011	-	-0.880	-0.645	0.521
2013	-	0.003	0.025	0.980

2014	-	-0.034	-0.256	0.798
Acquisition and Merger	?	0.167	1.521	0.133
Z-Score	?	0.368	3.443	0.001***
CAR	?	0.050	0,459	0.648
Constant		1.827	4.833	0.000***
R-squared	0.329			
Adjusted R-squared	0.209			
F- Statistic	2.741			
Sig 2 tails	0.004***			

*p < .10, **p<.05, *** p<.01

Dependent variable: Annualized stock return using log (average stock price*52), 2005 to 2014 is the indicator variable for year 2005 to 2014. Acquisition and Merger= Dummy equal to 1 for anchor bank has acquired /merged with another bank year; 0 otherwise, Z Score= $= 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$, where A = Net Working Capital /Total Assets, B = Retained Earnings /Total Assets, C = EBIT (Earnings before Interest and Taxes) / Total Assets, D = Market Value of Equity /Total Liabilities, E =Sales /Total Assets Board size, CAR= Capital Adequacy Ratio equal to 1 for Basel I & II; 0 for Basel III

In order to test the above hypothesis, linear regression was performed. Based on the results, the following were obtained

- Adjusted $R^2 = 0.209$, 20.9% of the variance in time can be explained by Z-Score and Y2005.
- F-value = 2.741 with p-value = 0.004. Since p-value is less than a value of 0.05
- HI is accepted. Therefore, it can be concluded that the regression fit is good.
- Only one independent variable and one control variable are significant.
 - Z-Score (t-value 3.443 with p-value = 0.001)
 - Year 2005 (t-value -2.019 with p-value = 0.047)
- The strength of the relationship of independent variables with dependent variables are in the following orders:
 - Z-Score ($\beta=0.368$)
 - Year 2005 ($\beta=-0.278$)
- Regression Equation:
 - Stock Price = $1.827 + (0.368*Z\text{-Score}) + (-0.278*Year\ 2005)$

Based on the result from the analysis of above sections, the hypotheses that were developed it can be concluded in such that:

HI : There is a significant relationship between capital adequacy ratio and stock price

Hypothesis I is rejected. The regression analysis from Table 9 has proven that the capital adequate ratio has no significant impact on the stock price of a banking institution.

In comparison to most of the past research studies such as Eyssell & Arshadi (1990), Cooper, Kolari & Wagster (1991), Madura & Zarruk (1993), Rizzardi (2011) and Chia, Yahya, & Muhammad (2015) as well as Chen (2010) and Estrella, Park, & Peristiani (2000), this study's result greatly denied the conclusion came by their studies. One of the two possible reasons are that those studies are mainly announcement of the implementation of new capital adequacy ratio rather than the actual impact of the implementation regulation. The impact of announcement is measured over a compared to the longer time frame of the impact measured by this study.

It is also possible that the peaceful time period from 2005-2014 is not able to cause some significant relationship between capital adequacy ratio and stock price to be measured. According to Berger & Bouwman (2012), the bank capital only improves the company performance the medium or bigger banks during banking crises. As most banks measured in this study are either medium or bigger banks, it is entirely possible that investors did not take any account of the capital adequacy ratio as it is not in a turbulence time.

Another possible reason is the difference of time period of measurement. Majority of the past studies such as Lu, Shen & So (1999), Estrella, Park & Peristiani (2000) and Chen (2010) focused on Basel I and/or Basel II, which unlike this study that stretch out to Basel III. Even though the weightage of the Basel III is smaller (20%) compared to the Basel I and Basel II (80%) in this study, it is entirely possible that the small amount of Basel III data has provide an entirely different insight on the relationship between capital adequacy ratio and stock price.

H2: There is significant relationship between financial stress indicator and stock price.

Hypothesis 2 is accepted. The regression analysis from Table 9 has proven that the financial stress indicator has significant impact on the stock price of a banking institution.

In comparison with research studies by Gao, Parsons & Shen (2013), Guo & Jiang (2015) and Zhao (2016), it is safe to conclude that the relationship between financial stress indicator and stock price is not affected by the difference of the nation's development status and industries. All of those research studies came to the same conclusion as this study but differ in term of nation's development status — between newly industrialized countries (such as Malaysia) and developed countries (such as the United States), and the composition of firms - between wider range of choice of industries, focused in IT manufacturing industry, and focused in banking institution. In fact, it is safe to assume that the type of nation's development status and type of industries has little to none impact on the relationship between financial distress indicator and stock price. Therefore, it reaffirms the reason that the positive relationship financial distress indicator and stock price is the overconfidence of the shareholders in higher return for higher risk regardless the difference in nature of business model or nation development factor. It fully complied with the financial concept of risk-return trade off higher levels of risk are associated with high potential return. This in turn may have answered the reason why contradicting conclusion was formed by Dichev (1998), Altman & Hotchkiss (2009) and George & Hwang (2010) such that there is negative correlation between financially distress indicator and stock return. It is possible that the overconfidence shareholders have no longer views bankruptcy risk as a risk due to the availability of government guarantee. Actually, it was implied in the findings by Aßmuth (2015) that the stock price is highly determined by the future prospects of the firm rather than financially distress indicator. Thus, if the future prospect of the firm in a way is protected by government guarantee such as Malaysia's bank by PIDM and Danaharta, the bankruptcy risk

would be either reduced or eliminated. Therefore, it can be concluded that the existence of government guarantee has bigger impact on the share price rather than financial distress indicator due to the availability of fall bank plan, lowering the risk involved.

5. Conclusion and Recommendation

5.1 Summary

It is clearly provided empirical evidence that the capital adequacy ratio has no significant relationship with stock price in Malaysia banking institution. This new-found knowledge implied that the capital adequacy ratio, which was established to preserve public confidence, does not have any influence on public confidence. It is a crucial finding as it defeated one of the purposes of establishing the capital adequacy ratio in the first place.

Aside from this, the other objective of this study is to examine the relationship between financial distress indicator and stock price of Malaysia banking institution. In fact, findings from section 4 have empirically proven that there is a significant relationship between financial distress indicator and stock price of Malaysia banking institution and were consistent with the financial concept of "high risk high return". It can be implied as well that investors are overconfident of Malaysia banking institution's performance such that investors did not rush to sell off their stocks in a lower price when the banks have unfavourable bankruptcy risk. Factors such as government guarantee, relative stable financial market, and conducive economic may have influence the decision of the investors in responding to the change of financial distress indicator of the bank as per discussed in section 4.

From the above conclusion of this study, it is clear that capital adequacy ratio does not react in the anyway same as the financial distress indicator with stock price. One possible conclusion can be drawn from this finding is that both indicators measured differently in which capital adequacy ratio measured the quality of the bank assets, while financial distress indicator measured bankruptcy risk of a bank. In fact, it is possible the capital adequacy ratio in actuality is not able to limit the risk of failures of a bank as a bank can high financial distress while maintaining high capital adequacy ratio. It was consistent with the conclusion with Miu, Ozdemir & Giesinger (2010) and Flannery (2013) that no amount of capital is a substitute for sound risk and capital management.

Moreover, in term of public confidence, the capital adequacy ratio is not able to influence the public confidence. So, in times of financial crisis, a good capital adequacy ratio may not have the persuasive power to stop a bank run. In short, the capital adequacy ratio is no longer suitable to be used as an indicator to predict the change of public confidence. Therefore, financial regulators need to search for alternative methods to better monitor the risk exposed to bank and public confidence by not fully relying on the capital adequacy ratio, which is ineffective in limiting bank failure and preserving public confidence. One emerging solution was the incorporation of behavioral risk into the financial market system suggested by Tuyon & Jasman (2016) that based on Adaptive Market Hypothesis (AMH).

Nevertheless, the capital adequacy framework should be remained as part of regulatory requirements. Reason being is the capital adequacy framework help to establish a line of defence for the banking institution sectors during economic turbulence. It will act as a cushion "softer" the blow from financial crisis and helping the banks survived through the crisis. Hence, recommendation to have a deeper analysis on Malaysia banking institution's business nature in order to better customize the capital adequacy framework specifically for Malaysia.

5.2 Limitation

Nevertheless, there are actually a few limitations concerning to this study. First and foremost is the scope of analysis of this study is considered too small. Given that Malaysia government aimed to converges the banking institution of Malaysia to have a better chance for them to be in global platform, it posed a difficulty to conduct any study solely in pure Malaysia banking institution scope. Hence, it is actually hard to make a convincing conclusion for this study.

As implied from section 3, the choice of using Z-Score as measurement for financial distress indicator is questionable as well. The effectiveness of Z-Score model in predicting bankruptcy is limited given that banking institutions have off-balance sheet items. Therefore, the Z-Score model is not able to provide a faultless measurement of financial distress in this study.

However, most importantly is the measurement of off-balance sheet item. This study so far looks from the perspective of investors, which is greatly differs from the information access of a financial regulators. Besides, is it possible that public available information may be contaminated by participants' bias. Therefore, it greatly limited the scope of investigation and findings that can be achieved.

5.3 Suggestion for Future Research

It will be a great idea for future research to embark on a similar research study on the non-banking financial institution in Malaysia. In fact, findings from the Financial Crisis Inquiry Commission (2011) that the shadow banking industry played a huge role in the causing global financial crisis 2007-2008. Thus, it will be a great contribution if one would like to embark on it.

Another suggestion for future research would be using off-balance sheet items of banking institution as part of research scope. The resultants from that research would provide a better clarity of the relationship between capital adequacy ratio between stock price than one that realized on public available information.

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