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Bank Stock Returns and Economic Growth in Malaysia: An Empirical Analysis of Post-Consolidation Period

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Abstract

There has been a revival of interest in examining the link between stock market-growth and finance-growth hypotheses. However, the existing studies do not gauge the performance of bank functioning directly on the economic performance. The study, therefore, reviews and extends the empirical analysis between bank stock returns and long-run economic growth in Malaysia. Applying autoregressive distributed lag (ARDL) model, the results suggest a strong positive and significant relationship not only between stock market excess return and economic growth, but also between bank excess return and economic growth. The study also shows that this relationship is further enhanced by the development of domestic financial system.

Keywords: Stock market, banking industry, excess returns, economic growth, bounds test

1. Introduction

The Asian Financial crisis in 1997-98, which caused a dramatic devaluation of many countries' currencies and equities, has raised a great concern about the stability of financial institutions and the future of the overall economy in many countries of the world, particularly in the emerging economies. In fact, the event has significantly changed the financial system landscape from various aspects in many countries. For instance, before the crisis, Malaysia was a popular investment destination amid its stock market (KLSE, now is called Bursa Malaysia) was one of the most actively traded stock exchanges in the world with turnover higher than a much more matured exchange market such as NYSE in terms of changes in the market capitalization. Nevertheless, during the crisis, KLSE volatility level increased substantially and was once plunged below 270 points, and Malaysia's GDP was contracted by 6.2% within a short span of time in 1998.

The banking institutions, being the backbone of the economy, was in a state of urgency to be restructured in withholding any future pressures and challenges, this

was at least in the Government of Malaysia's perspective in late 1990s. The impending liberalization and globalization of the banking sector have caused the consolidation of domestic banking institutions to become inevitable. A strong and efficient banking system that is resilient was needed in order to support the financing needs of the economy so that the nation can continue to achieve a strong and sustainable growth. In view of this, the Malaysian government through the Central bank of Malaysia, Bank Negara Malaysia (BNM) has initiated a domestic bank merger program in July 1999. And then a revised merger program in October 1999 was followed suit. Subsequently, in February 2000, BNM has approved the formation of 10 anchor banking groups in the country. As of today, the total number of domestic commercial banks has remained at nine after a slight further consolidation round in the year of 2006.

From these chronological events, a thorough understanding of the relationship between bank stock and economic growth has become vital for Malaysia to assess the impact of bank stock performance on the overall economic growth. Many of the finance-growth literature reveal that financial development has a causal relationship with the economic growth. Apparently, empirical researches strongly support the view that bank institutions promote economic growth at all levels of businesses in a country. According to asset-pricing theory, stock market returns can be gauged to predict future economic growth (Fama, 1981,1990, and Schwert, 1990, cited in Cole et al., 2008, p.1). All these propositions provide important information and implications to many countries in their related policies, especially emerging economy such as Malaysia. In Malaysia, the firm-bank relationships are very closely tied together, and the sustainability of the businesses is very much depending on each other (banking sector) and majority of banks are publicly listed. Thus, the country's banking sector can be broadly represented by publicly listed banks, in which the banking industry stock returns will broadly reflect the performance of a country's banking sector.

Thus far, many existing literature has focused their studies either on the causal relationships between stock markets and economics growth, as well as financial development and economic performance. However, there is still a lack of studies related to the direct relationship of bank stock returns and economic growth in Malaysia, particularly after bank consolidation. A number of studies have revealed that actively traded bank stocks reflected the quality and efficiency of the bank loan portfolios (Bruner and Simms, 1987; Cornell and Shapiro, 1986). Since the efficiency of capital allocation and the performance of the businesses funded with bank credit reflect on the overall functioning of banks, this will directly affect banks' future cash flows, in which will be reflected in banks' stock prices. In an efficient market, there should be a significant relationship between bank stock prices and future economic growth (Cole et al., 2008). The present paper, therefore, aimed to extend the existing literature by investigating whether the bank stock returns affect the economic growth in Malaysia from 2003:M2 to 2008:M12.

This study contributes to the existing literature on finance and economic development areas of studies in a few perspectives. First, we document the long-run

relationship of bank stock returns and economic growth in Malaysia. Second, we resort to the autoregressive distributed lag (ARDL) procedure, proposed by Pesaran et al. (2001). The technique allows testing for the existence of a cointegrating relationship between variables in levels irrespective of whether the underlying regressors are I(0) or I(1). Moreover, Pesaran and Shin (1999) show that estimators of the short-run parameters are consistent and the estimators of long-run parameters are super-consistent in small sample sizes.

The rest of this paper is organized in the following manner: In Section 2, we present a brief review of the related literature. In Section 3, we describe the data and methodology. In Section 4, we report the empirical results of the study. In Section 5, we make conclusions and implications of the findings.

2. Related Literature

Many finance and economic growth theories reveal that banks play a vital role in promoting economic growth (Cole et al., 2008). To further extend this proposition, King and Levine (1993), have suggested that only well-developed banking system promotes economic growth effectively. The previous studies have shown inconsistent findings about the causal relationship between the stock market (or financial development) and economic growth. Christopoulos and Tsionas (2003) pointed out that the financial development has a causal effect on the long run economic growth based on 10 developing countries. In a study by Law (2004), he found that banking sector and stock market development promote economics growth based on 14 developing countries. Choong et al. (2005) suggests that stock market development has a significant positive long-run causal relationship with economic growth.

On the other hand, some studies have shown that there is a bi-directional relationship between the stock market and economic growth (for example; Gursoy and Muslumov). In another study conducted by Tang et al. (2007), they found that stock market and economic growth is bi-directional in many Asian countries, except Japan and Korea where the stock market positively influences economic growth.

Banking merger and acquisition activities have been perceived as part of the process of building a better and more effective banking system. This has been well documented by many related literatures, in which their studies showed that there was a positive gain on bank stock returns during the merger period (Desai and Stover, 1985; James and Wier, 1987; Cornett and De, 1991). Some other related studies have also documented the values of these banks after merging have increased (Becher, 2000; Cybo-Ottone and Murgia, 2000). Cole et al. (2008) found that bank stock returns have a positive correlation with the economic growth, but the strength of this relationship is depending on country-specific and banking institutional characteristics. Similarly, Ritter (2004) claimed that the economic growth has a significant relationship with stock returns.

In Malaysia, however, Lee (2002) found that there was no significant gain in the value of the stocks around the announcement periods of bank merger proposal. In contrast, a study conducted by Tan and Hooy (2003), their findings on the volatility level of bank stock returns between pre- (July 1997-July 1999) and post-announcement (from August 1999 to July 2001) have shown the opposite, that is, the returns have been stabilized amid volatility has decreased substantially. The major causes of the inconsistency results are mainly due to factors such as different econometric methods employed, data selection design (panel or time series), country-specific characteristics, and different selected endogenous variables tested for finance-growth relationship.

Hence, this paper is building upon some existing empirical research studies that support the view of banks do play an important role in promoting economic growth, and stock market returns do affect the economic growth. Our study aims at investigating whether bank stock returns affect the economic growth in Malaysia after domestic banking industry was consolidated.

3. Data and Methodology

The study uses monthly stock prices and market capitalizations of individual banks to calculate returns on a portfolio of nine banks in Malaysia (after consolidation). The initial intention of this study was to examine bank stock returns and economic growth between the periods of 2001 (after bank consolidation) and 2008. However, due to availability of data, the sample period of 2003 – 2008 was chosen. The monthly stock prices and market capitalizations of nine banks and the market price index are extracted from Yahoo Finance. Industrial production index (IPI), 3-month Treasury bill rate, financial development indicators are collected from International Financial Statistics (International Monetary Fund). Table 1 summarises the data sources and definitions of the relevant variables under study.

Table 1: Descriptions and sources of the variables

Variable	Descriptions	Source
Dependent variable		
Economic growth rate (EG)	EG = LN (IPI_t/ IPI_{t-1}) Subscript *t* denotes time period t. Since monthly GDP series is not available for Malaysia, we use industrial production index (IPI) as a measure of GDP.	International Financial Statistics (IFS), International Monetary Fund (IMF)
Independent variables		
Lagged market excess return (RM)	$RM_t = \ln(PM_t / PM_{t-1}) - RF_t$. RM_t is the excess return on the market index in Malaysia for period t (here t is month). PM_t is the market price index at the end of period t. The excess return is measured as the difference between the continuous return	Yahoo Finance

	and the risk-free rate (*RF*). For the risk-free rate, we use three-month Treasury Bill rate.	
Lagged excess stock returns of the banking industry (RB)	$RB_t = \sum_{j=1} w_{jt} R_{jt}$, where $w_{jt} = \frac{MC_{jt(t-1)}}{\sum_{j=1} MC_{jt(t-1)}}$, $R_{jt} = \ln(P_{jt} / P_{jt-1}) - RF_t$. Subscript *j* denotes the individual bank *j* in banking sector in Malaysia. R_{jt} is the excess return of bank j in the sector for period t (here t is month). The excess return is computed as the continuous stock return less the risk-free rate (RF). For the risk-free rate, we use the three-month Treasury Bill rate. W_{jt} is the weight of bank *j* in the banking sector for period t, where weights are based on market capitalization (MC). In other words, the weight of bank *j* in period t is the market capitalization of bank *j* at the end of period (t-1) divided by the total market capitalization of the banking sector at the end of period (t-1) and remains constant within period t.	Yahoo Finance
Financial development Indicators		
Private credit (CREDIT)	The value of the credit issued by the deposit-taking banks and other financial institutions to the private sector. The variable is constructed following the methodology of Beck et al. (2000) based on the data from International Financial Statistics.	International Financial Statistics (IFS), International Monetary Fund (IMF)
Narrow monetary aggregate, M1 (**M1**)	The value of the liquid liabilities of the financial system (currency held outside the banking system plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries) divided by GDP. The variable is constructed following the methodology of Beck et al. (2000) based on the data from International Financial Statistics.	International Financial Statistics (IFS), International Monetary Fund (IMF)

Table 2: Summary descriptive statistics

	ER	RM	RB	M1 (Ringgit Billion)	CREDIT (Ringgit Billion)
Mean	0.003	-0.026	-0.010	129.720	1174.480
Median	0.004	-0.019	-0.006	124.023	1159.228
Standard Deviation	0.044	0.045	0.025	28.196	165.569
Sample Variance	0.002	0.002	0.001	794.991	27413.026
Skewness	0.497	-0.850	-0.916	0.362	0.406
Minimum	-0.080	-0.201	-0.105	87.476	942.628
Maximum	0.144	0.080	0.072	182.839	1496.235
Observations	71	71	71	71	71

Following Pesaran et al. (2001), we constructed the vector autoregression (VAR) of order *p* (VAR(*p*)) as follows:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i Z_{t-i} + \varepsilon_t \quad (1)$$

where Z_t is the vector of both X_t and Y_t, where Y_t is the dependent variable (EG) and X_t is the vector matrix represents a set of explanatory variables (stock market return (RM), bank excess return (RB), financial development indicators (M1 and CREDIT)). $\mu = [\mu_Y, \mu_X]'$, t is a time or trend variable, and β_i is a matrix of VAR parameters for lag i. According to Pesaran et al. (2001), the dependent variable must be I(1) variable, but the regressors, or explanatory variables can be either I(0) or I(1).

We can further develop a Vector Error Correction Model (VECM) as follows:

$$\Delta Z_t = \mu + \alpha t + \lambda Z_{t-1} + \sum_{i=1}^{p-1} \gamma_i Y_{t-i} + \sum_{i=0}^{p-1} \gamma_i X_{t-i} + \varepsilon_t \quad (2)$$

where $\Delta = 1 - L$ and $\alpha = [\alpha_Y, \alpha_X]$. We partition the long-run multiplier matrix as follows:

$$\lambda = \begin{bmatrix} \lambda_{YY} & \lambda_{YX} \\ \lambda_{XY} & \lambda_{XX} \end{bmatrix}$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If $\lambda_{YY} = 0$, then *Y* is I(1). In contrast, if $\lambda_{YY} < 0$, then *Y* is I(0).

The VECM framework discussed in Equation (2) is important in examining of at most, one cointegrating vector between endogenous variable (Y_t) and a set of explanatory variables (X_t). Further, following the assumptions made (unrestricted intercepts and no trends) and restrictions imposed ($\lambda_{XY} = 0, \mu \neq 0$ and $\alpha = 0$) by Pesaran et al. (2001) in Case III, we re-construct Equation (2) to derive the following Unrestricted Error Correction Model (UECM) to examine the long run relationship between excess returns financial development indicators and economic growth.

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{t-1} + \sum_{i=1}^{p} \beta_3 \Delta Y_{t-i} + \sum_{i=0}^{p} \beta_4 \Delta X_{t-i} + u_t \quad (3)$$

where u_t is the white noise error term; Δ is the first difference operator; and p is lag structure, which determined by Akaike's information criterion.

There are two steps in examining the long-run relationship between economic growth and its explanatory variables. First, we estimate Equation (3) by ordinary least square (OLS) technique. Second, we examine the long run relationship by imposing the restriction that all estimated coefficients of lagged one level variables equal to zero. That is, the null hypothesis of no long-run relationship against its alternative hypothesis of a long-run relationship. In order to test the existence of a long-run relationship between economic growth and its determinants, we use *F*-statistic, which has a non-standard distribution that depends on few factors such as sample size, the inclusion of intercept and trend variable in the estimation, and number of regressors. If the computed *F*-statistic is less than lower bound value, we do not reject the null hypothesis of no long run relationship. In contrast, if the computed *F*-statistic is greater than upper bound value, we reject the null hypothesis and conclude that there is a steady state long-run equilibrium between the variables under study. However, if the *F*-statistic lies within lower and upper bound values, then the results are inconclusive and the stationarity of the series must be examined and investigated.

4. Results and Interpretation

The analyses start by estimating a number of base models, that is, economic growth is solely depends on the stock market excess return and banking sector excess return, separately. The results are shown in Model [1] and [2], Table 3. The results suggest that both excess returns have a statistically significant and positive effect on economic growth. However, the estimated coefficient of stock market excess return (0.276) is smaller than banking sector excess return (0.631). The coefficient of stock market excess return implies that a one-standard deviation change in market stock return (27.6%) would promote economic growth by 0.69% (0.276×0.025) while a one-standard deviation change in banking sector excess return (63.1%) would promote economic growth by 2.839% (0.631×0.045). The summary of descriptive statistics for some relevant variables is shown in Table 2. This finding is different from Cole, et al. (2008), who find a much stronger growth-return effect in stock market compared to banking sector.

We extend the analysis by including both market and banking sector return simultaneously, as shown in Model 3. In this model, market excess return is set as the control variable. The major message is that bank stock returns represent the market's expectation of the future cash flows for the banking sector, which include cash flows from loans to privately held as well as publicly held firms while stock market returns should represent the market's expectations of future cash flows to publicly trade firms, which ignoring expectations about cash flows to privately held firms (Cole, et

al., 2008, p. 1001-1002). The results show a very strong connection between excess returns (both stock market and banking sector) and long-run economic growth. The coefficient of these returns remains positive and significant at 10% significance level or better. A one-standard deviation change in market stock return (34.1%) would promote economic growth by 0.85% (0.341×0.025) while a one-standard deviation change in banking sector excess return (58.9%) would stimulate economic growth by 2.65% (0.589×0.045). This may suggest that banking sector is more important than stock market in emerging market such as Malaysia. This finding is not surprising as commercial banks are usually the main channel of credit for private firms. Again, we confirm that the return of banking sector is greater than stock market in stimulating long-run economic growth

We have conducted a sensitivity analysis to gauge the consistency and validity of these findings. In examining the independent link between excess stock returns and economic growth, we considered a set of additional control variables for domestic financial system, that is, we included measures of the size (M1) and efficiency of the financial system (private credit). The link among financial development, bank excess return and economic growth can be illustrated as follows: the more developed and efficient is the domestic banking system, the more information about future economic growth is contained in the stock prices of the banking sector (Cole et al., 2008). These did not alter findings for both market and bank excess returns on economic growth. Moreover, the coefficient on M1 and CREDIT are positive and statistically significant, as shown in Models [4] and [5]. This suggests a very strong robust link between financial development and economic growth when using both size and efficiency measures of financial intermediary development.

We also empirically examine the hypothesis that banking sector return and financial development are complementary with respect to enhancing financial allocation of resources, and thereby promoting economic growth. Hence, the analysis focuses on the banking excess return (RB) and the interactive term between banking excess return and financial development indicators (RB*M1 and RB*CREDIT). The results are shown in Models [6] and [7]. We find the same results as compared to Models 1-4: stock market excess return and financial development indicators (M1 and CREDIT) are positively and statistically significantly linked with economic growth. The interactive terms are positive and significantly related the economic growth, whereas banking excess return alone is negative and significant. Cole et al. (2008) also find a statistically significant negative relationship between bank excess return and economic growth, but they use data for 18 developed and 18 emerging markets. This provides strong evidence that banking sector only has a positive effect on economic growth if the development of domestic financial system has achieved a certain minimum level. The findings confirm our expectation that domestic financial system strengthens the link between bank excess returns and economic growth.

Table 3: Long-run ARDL estimations of excess returns, financial development and economic growth in Malaysia

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Intercept	0.008*** (3.928)	0.005 (0.878)	0.014** (2.674)	-0.066 (-1.176)	-0.630*** (-6.514)	-0.096 (-1.351)	-0.174* (-2.193)
RM	0.276*** (3.926)		0.341*** (3.725)	0.519*** (5.728)	0.122*** (6.056)	0.535*** (3.842)	0.162** (3.289)
RB		0.631* (1.693)	0.589* (1.773)	0.227* (1.663)	0.161** (3.169)	-18.117* (-1.806)	-24.952*** (7.062)
M1				0.021* (1.752)		0.028* (1.789)	
CREDIT					0.107*** (6.918)		0.032** (2.586)
RB*M1						3.882* (1.822)	
RB*CREDIT							0.023*** (7.065)
Diagnostic checking							
Adjusted R^2	0.839	0.851	0.889	0.883	0.987	0.838	0.967
AR(1)	1.490 [0.221]	0.562 [0.458]	0.386 [0.684]	0.462 [0.633]	5.223 [0.103]	0.782 [0.465]	2.335 [0.244]
ARCH(1)	0.469 [0.496]	0.099 [0.754]	0.019 [0.891]	0.503 [0.481]	1.882 [0.146]	0.645 [0.424]	0.040 [0.841]
RESET	1.674 [0.135]	1.164 [0.287]	1.752 [0.197]	2.141 [0.151]	0.101 [0.763]	1.767 [0.192]	0.741 [0.437]

Notes: Values in bracket [ ] are probability value of the test statistics. Values in parentheses ( ) are *t* value of the test statistics. AR(1) is Breusch-Godfrey serial correlation LM test with lag 1, null hypothesis: no autocorrelation; and ARCH(1) is heteroskedasticity test with lag 1, null hypothesis: no heteroskedasticity; RESET is Ramsey RESET test, null hypothesis: the model is correctly specified.
*, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

5. Conclusion

The present paper extends the existing studies on finance-growth nexus by investigating the long-run relationship between bank excess return and economic growth in Malaysia after bank consolidation period from 2003:M2 to 2008:M12. Specifically, the paper investigates whether banking industry stock returns contain information about future economic growth after the bank consolidation event.

Using bounds testing approach, it is found that stock excess returns of the banking sector is crucial in predicting future economic growth and that this link is independent of the relationship between market stock returns and economic growth, as shown in the previous studies. It is also shown that the predictive power of bank stock returns is strongly influenced by the development of domestic financial system. The findings strengthen the expectation that banking industry would promote economic performance if they had well-developed and sophisticated financial system.

The study has contributed to the existing finance-growth studies in two aspects. First, we confirm the significant positive relationship between finance and growth at industry level that is banking industry stock returns. Hence, a bank stock return is a good indicator of the overall performance of bank credit activities and can be used to predict future economic performance. Second, we also show that not only stock market excess return is crucial for economic growth, but also that the domestic financial system can significantly promote economic development. The policy implications are clear: It is crucial to promote the transformation of domestic banking sector, which will lead to an increasing movement towards external financial liberalization and interact with internal financial reforms. Hence, the transition and consolidation of the domestic banking industry is a must in dealing with the pressure of financial liberalization and globalisation, and continue to achieve a strong and sustainable economic development.

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