Lending Interest Rates' Relationships of Malaysia and Other Countries

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Abstract: This paper is to examine the relationship of Malaysia's lending interest rate with other countries which include China, Singapore, United States, Indonesia and Thailand. Those five countries are Malaysia's major trading partners. The daily base lending interest rates from 2006 to 2014 were applied to this study. The associations of the interest rates were tested by coefficient correlation and multivariate regression analysis. Results showed that Malaysian lending interest rate is significant and positively related to those of China, Thailand and the United States. Among the five countries' interest rates, only the changes in interest rates of China, Thailand and the United States would affect Malaysia's lending rate. The independence of monetary policy would hardly be expected by the Malaysian authority, Bank Negara, in its decision on lending interest rate. In addition, it may affect the trade finance and money market hedge decisions by the international traders. This study provides an overview and guidance to the government authorities in making more effective decisions related to monetary policy, international trade and foreign exchange exposure in order to strengthen the economy.

Keywords: lending interest rate; monetary policy; trade finance

JEL Classification: E4; F3

1. Introduction

Interest rate, the cost of borrowing and return on investment of a financial asset, is part of economic mechanism. An increase in interest rate is an increase in the opportunity cost of household consumption. Thus, an increase in interest rate would reduce household consumption. In addition, firms would rather cut down on their investments than to finance their equipment and machineries at higher interest rate. Since the household consumption and firms' investments are the components of GDP, the GDP of a country would also be affected by an increase in interest

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rate. Indeed, Qi, Bin and Alexiadis (2012) stated that not only consumption and investment would be affected by interest rate, but also national savings, demand for domestic currency, prices of commodities and balance of payment. This statement shows the significant role of interest rate in affecting the economy of a country.

Interest rate is also a determinant used in monetary policy. According to Case and Fair (2004), in an effort to stimulate the economy, the central bank would expand the money supply and lower interest rates. This policy is called easy monetary policy. Tight monetary policy is implemented as an effort to restrain the economy, in which the money supply is contracted, and pushed the interest rates higher. Indeed the authors pointed out that in practice, the interest rate values are chosen by the authorities and the money supply is a consequence, rather than vice versa. Thus, interest rate plays a significant role in the decisions of monetary policy.

Changes in interest rates would affect money market, labor market, property market, stock market and market of goods and services. Rising interest rates would have an adverse impact on investors' confidence in the property market. Higher interest rates would cause higher borrowing costs; thus, reducing investments in the property and stock markets as well as goods and services market. Such reduction would affect the national income and the economic growth negatively. Najarzadeh, Ashena and Jezdani (2012) further confirmed that the interest rate and investment are key variables affecting the rate of economic growth. Ahmad, Rehman and Raoof (2010) also noted that changes in interest rates increase the cost of a business and reduce stock returns. GRK, Cvetkovic and Vidas (2008) added that interest rates have direct influence on banks' decision in security investments and stock market price.

Knowing that interest rate is one of the economic mechanisms, how the interest rate is determined or related is questioned. Should the interest rate of a country be determined by the domestic variables, or should it be influenced by or related to the interest rates of other countries too? In other words, is the interest rate implemented in one country independent from the rest of the world, and thus does the country enjoy independent monetary policy? As such, this paper intends to investigate the relationship between interest rates in Malaysia and interest rates in other countries. The findings would indicate the level of dependence of the interest rate of the country compared to others. Thus, it would assist the authorities, especially the central bank, in making decisions related to interest rates and monetary policy in order to come out with more effective policies in stimulating the economy. Indeed, this paper focuses on the relationship between lending interest rate of Malaysia and its trading partners. Having any differences in the lending interest rates among those countries would affect the international traders' decisions in trade financing; and thus affecting trade activities and current account balance of the country. Should there be any difference and relationship among those countries, lending

rates would also affect the decisions on money market hedge, especially that of with foreign exchange exposure.

The objective of this paper is to examine the relationship between the daily lending interest rates of Malaysia and those of China, Singapore, the United States, Indonesia and Thailand. Those five countries analyzed are Malaysia's close trading partners, and-data from January 2006 to December 2014 were used.

2. Literature Review

Interest rate is defined as the price of money which is the amount of interest payable per unit of time expressed as a percentage of the amount borrowed (Alao, 2010). Ahmad et al. (2010) defined it as the cost of money, while Ozun (2007) defined it as a measure of the time value of money, which explained the volatility in stock returns.

There are various types of interest rates, which include base lending rate (BLR), base financing rate (BFR), and interbank offer rate (IBOR). BLR is the ceiling, average or minimum lending rate prescribed by central bank to be offered by commercial banks and finance companies to their customers (Bank Negara Malaysia, 2010). BFR is offered by Islamic banks, in which the funding is provided through contracts compliant. IBOR is the interest rate offered by banks when lending to each other. Normally, this rate is used as the basis for determining the cost of borrowing, particularly the Euro Dollar and syndicated loans (Mahmood, 1994). LIBOR, the London Interbank Offered Rate, is a daily reference rate based on the interest rate at which banks borrow unsecured funds from other banks in the London money market (or interbank market). It is the most widely used short-term interest rate as benchmark in the world (Fukuda, 2011).

The literature has mostly been focusing on the determinants of interest rates. Some of the determinants discussed are monetary policy, oil price, gross domestic product (GDP), investment and financial growth rate. According to Kim and Sheen (2000), Najarzadeh et al. (2012), monetary policy has a significant effect on interest rate and its volatility in the short term. Indirectly, the unemployment rate would also affect the level of interest rate. Having high unexpected unemployment rate would increase an expectation on monetary expansion; thus, reduces the interest rates. Wu (2010) revealed that changes in oil prices would also affect the interest rate. Interest rates have both, direct and indirect relationships with economic growth (Najarzadeh et al., 2012). Interest rate is also positively related to investment and money demand (Kudlacek, 2009), but negatively related to the supply of loanable funds (Brock, 1996).

The relationship of the interest rates between one country and the others are also found in the literature. However, those studies focused on the relationship between or among the developed countries. This paper, on the other hand, analyzes the interest rates' relationship of Malaysia with those of Malaysia's closed trading partners. Those trading partners include both developed and developing countries; the United States, Singapore, China, Indonesia and Thailand.

The daily interest rates of the two regions, the United States and Europe, are closely related. The results showed that the two regions are interdependent to each other. However, the U.S. interest rates have greater effect on Europe, than vice-versa (Ehrmann & Fratzscher, 2004). The results varied when the study was done in shorter periods. The U.S. and European interest rates had a weak relationship from 1974 to 1978, while from 1979 to 1984, the interest rates' relationships between the two nations were strong (Kirchgassner & Wolters, 1987). Fung and Isberg (1992) claimed that the U.S. interest rates caused the changes to the European interest rates in the period of 1981 to 1983. However, during the period of 1984 to 1988, the cause-effect relationship was reversed. According to the two authors, this might be due to an expansion in the size of the European markets and an increase in the Eurodollar trading. The interest rates in the European countries under European Monetary System (EMU) are integrated to each other in the long-run (Zhou, 2003).

In relation to the developing countries, Srivyali (2004) found that the rate of interest in India responded well to those of the U.S. and Japan, both in short-run and long-run. For the Asian countries, Chinn and Frankel (1995) claimed that the rate of interest in Malaysia, Hong Kong and Taiwan cointegrated with those of the U.S. and Japan. The interest rates of South Korea, Indonesia and Thailand, on the other hand, only cointegrated with Japan, while Singapore's interest rate cointegrated with the U.S. alone.

Most of the previous studies examined the relationship between short-term nominal or real interest rates and certificate of deposit rates. No study has been conducted to examine the effects of interest rates on loans or lending rates. Therefore, this research intends to analyze the relationship between bank lending rates in Malaysia and bank lending rates in China, Singapore, United States, Indonesia and Thailand. There are also many studies being done on the relationship between interest rates and other macroeconomic variables, which is not the focus of this study.

3. Methodology

In analyzing the relationship between the lending rates of Malaysia and those of its trading partners, the data on lending interest rates prescribed by the countries' central banks were collected. The daily base or prime lending interest rates for the

conventional bank loans were between January 2006 and December 2014 from the central banks of the sample countries. Malaysia's close trading partners, which include the United States of America, Singapore, China, Indonesia and Thailand, were selected due to the possible impact of lending rates on trade financing decisions of their international trades; and thus would affect the trade and current account balance of a country, generally, the country's economy. Those secondary data were obtained from Datastream.

In order to identify the behaviors of the lending rates of different countries from 2006 to 2014, descriptive statistics and time series graphs were done. The central tendency is identified in descriptive statistics. The time series graphs show the movements of the daily lending rates in eight years. The inferential statistics such as correlation and multivariate regression equation were conducted to measure the relationship between the lending rates of Malaysia and those five foreign countries. Pearson correlation analysis was utilized to measure the relationship between two variables; with correlation value may range between +1 and -1. Multivariate least square regression analysis measures a linear relationship between numbers of independent variables (Xs) with a dependent variable (Y). The results indicate whether there is a positive or negative relationship between the independent variables and the dependent variable, as well as the expected value of the dependent variable when the independent variables increase or decrease. The applied multivariate least square regression equation is as follows:

$$Mi_t = \alpha_1 + \beta_1 USi_t + \beta_2 Si_t + \beta_3 Ci_t + \beta_4 Ti_t + \beta_5 Ii_t + \varepsilon_t \qquad \text{(Eq. 1)}$$

where, Mi_t is bank lending interest rate of Malaysia at time t; USi_t is bank lending interest rate of the U.S. at time t; Si_t is the bank lending interest rate of Singapore at time t; Ci_t is bank lending interest rate of China at time t; Ti_t is bank lending interest rate of Thailand at time t; Ii_t is bank lending interest rate of Indonesia at time t; ε_i is independently distributed random error term with zero mean and constant variance; α_1, β_1,……,β_5 are the parameters to be estimated.

4. Empirical Results

The relationships of the banks' lending interest rates of Malaysia and its five major trading partners were analyzed using correlation coefficient and multivariate least square regression. Before conducting the analyses, the behaviors and the movements of the daily lending rates of the six countries were explored through descriptive statistics and time series graphs.

4.1. Interest Rates Behaviors

Table 1 and graph 1 show the descriptive analysis and the time series graphs of bank lending rates in six countries, respectively. Malaysia's lending rate was at the

highest level in nine years at 6.72% from mid of 2006 to end of 2008, before it dropped to the lowest rate at 5.51% at the end of 2009, i.e. during the US subprime mortgage crisis. The rate was consistent at 6.53% from December 2011 throughout. Meanwhile, China, Thailand and Indonesia experienced the same plummeting impact of lending rates as Malaysia during the US subprime mortgage crisis. Indonesia's lending rate had the second highest deviation after the U.S. It plummeted from the highest point of 12.75% in 2006 to 5.75% in 2012.

The lending rate of the United States started declining at the end of 2007 from the highest rate of 8.25% to the lowest rate of 3.25% in 2009 onwards. Due to the crisis in the country, the U.S had its biggest deviation as compared to the other five countries. Singapore, on the other hand, had fixed lending rate throughout the nine years at the rate of 4.25%. Due to its constant value, Singapore's rate could not be applied in the regression equation. Thus, the Singapore's rate is independent from all other rates, regardless of weakening or strengthening economy. This caused Singapore to ensure that its interest rates are in line with market conditions; and that need to be supported by a set of monetary policies.

Table 1. Descriptive Analysis: Lending Interest Rates of the Six Countries (2006 – 2014)

	Mean	Minimum	Maximum	Std. Dev.
Malaysia	6.41	5.51	6.72	0.37
The U.S.	4.51	3.25	8.25	1.99
Singapore	4.25	4.25	4.25	0.00
China	6.12	5.35	7.45	0.63
Thailand	6.97	6.05	7.75	0.51
Indonesia	7.68	5.75	12.75	1.83

4.2. Correlation

The correlation table in Table 2 portrays that all correlations between the two countries' lending rates are positive, except for the correlation with Singapore. The lending rate in Malaysia has the highest correlation with Thailand. After Thailand, China and the U.S lending rates are also closely correlated to Malaysia with correlations of more than 0.5. Only Indonesia's lending rate is less correlated with Malaysia. Meanwhile, Indonesia is closely correlated to Thailand. Singapore's lending rate is totally independent at zero correlation with the other countries. The results indicate that Malaysia's lending rate is positively related to its trading partners, except Singapore.

Table 2. Pearson Correlation of Bank Lending Rates of Six Countries (2006 – 2014)

		Malaysia	The US	Singapore	China	Indonesia
The US	Correlation Sig. (2-tailed)	0.631 *0.000*				
Singapore	Correlation Sig. (2-tailed)	0.000 *0.000*	0.000 *0.000*			
China	Correlation Sig. (2-tailed)	0.756 *0.000*	0.436 *0.000*	0.000 *0.000*		
Indonesia	Correlation Sig. (2-tailed)	0.468 *0.000*	0.120 *0.000*	0.000 *0.000*	0.120 *0.000*	
Thailand	Correlation Sig. (2-tailed)	0.818 *0.000*	0.691 *0.000*	0.000 *0.000*	0.589 *0.000*	0.666 0.000

4.3. Regression Analysis

Multivariate least square regression analysis was conducted to examine the objective of this paper, that is, the relationship between Malaysia's lending rate and the lending rates of Malaysia's five close trading countries. The applied model as in Eq 1 is:

$$Mi_t = \alpha_1 + \beta_1 USi_t + \beta_2 Si_t + \beta_3 Ci_t + \beta_4 Ti_t + \beta_5 Ii_t + \varepsilon_t$$

Singapore's lending rate was not included in the model as independent variable due to its constant interest rate for the entire duration of eight years. The variable was rejected by the analysis program. Thus, Singapore's lending rate is perfectly independent.

The results in Table 3 indicates that $Mi_t = 2.132 + 0.019USi_t + 0.271Ci_t + 0.343Ti_t + 0.004Ii_t + \varepsilon_t$, All those coefficients are significant at 1%, except for Indonesia. Thus, Indonesia and Malaysia's interest rates are not significantly dependent to each other. The other 3 countries' lending rates are positively related to Malaysia's lending rate, which means, the higher the lending rates of those countries, the higher the lending rates of domestic banks in Malaysia. Among the three countries, Thailand's lending rate has the greatest impact on Malaysia, followed by China and the U.S.

The value of R^2 in Table 3 of 0.790 indicates how well the goodness of fit of the model is. Thus, the lending rates of China, Indonesia, the United States and Thailand could contribute 79% to the changes in Malaysia's lending rate. Adjusted R^2 value is 0.789, indicating that lending rates of China, Indonesia, the U.S. and Thailand could affect the lending rate of Malaysia at 78.9 %. There are another 21.1 % for other countries to substantially affect the lending rates of Malaysia. The F test shows that the regression equation as a whole is statistically significant. The variance inflation factor (VIF) shown in the table above indicates that the

multicollinearity does not exist in the regression estimation. The reported VIFs are all less than 5, despite of having high R^2 in the regression estimation.

The findings of the two analyses, correlation and multivariate regression, concluded that the lending interest rates between Malaysian banks and foreign banks of Thailand, China and the U.S., are positive and significantly related. The null hypothesis that there is no relationship between the domestic and foreign banks' lending rates is to be rejected. This result is consistent with the results obtained by Chinn and Frankel (1995) who reported that Malaysia cointegrated with the U.S. and Japan. The lending rates of Indonesia and Singapore, however, are found to not have significant relationship with the domestic lending rate. The findings on Singapore's lending rate contradicted the findings of Chinn and Frankel (1995). According to the two authors, Singapore's real rate of interest cointegrated with the U.S. alone. This paper shows no relationship between Singapore's lending rate with the other four countries above. Chinn and Frankel (1995) also claimed that Indonesia and Thailand are closely related to Japan instead of the U.S.

Table 3. Relationship between Domestic and Foreign Bank Lending Rates (2006 - 2014)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant	2.132***	.071		29.995	.000		
China	0.271***	.011	.423	23.948	.000	.432	2.313
Indonesia	0.004	.005	.020	0.846	.397	.254	3.938
The U.S.	0.019***	.004	.090	4.264	.000	.300	3.338
Thailand	0.343***	.015	.494	23.001	.000	.293	3.417
R	0.889		Adj R^2	0.789			
R^2	0.790		Sig. F Change	0.000			

Dependent Variable: Malaysia

Predictors: (Constant), Thailand, China, The U.S., Indonesia

*significant at 10%; **significant at 5%, ***significant at 1%

5. Conclusion

The findings of this paper suggested that there is a positive relationship between Malaysia's lending rate and the lending rates of Thailand, China and the US. Changes in lending rates in those countries could influence the domestic lending rate. Thus, the null hypothesis that there is no relationship between Malaysia and other countries' lending rates is rejected.

The results could be related to some policy implications. The implication is that financial markets in Malaysia could not be excluded from the effects of monetary policy changes occurred in the financial markets of those countries, specifically, Thailand, China and the U.S. Thus, independent monetary policy would hardly be expected by the authorities in Malaysia. The monetary policy decision maker, Bank Negara Malaysia, has to consider the interest rates offered and monetary policy implemented in Thailand, China and the U.S. This is to ensure the effectiveness of the policy in achieving the desired objectives.

The influence of foreign lending rates on domestic rates would also affect the trade finance decision made by international traders. The decrease in the lending interest rates of one country will encourage the traders to take more credits or trade financing from that country for trade activities. Thus, this would affect the trade and current account balances, investment growth and exchange rates between the two countries.

Due to the significant impact of the changes in lending rates of China, Thailand and the United States on Malaysia, this shows how money market hedge could be used by the international traders for foreign exchange exposure management. Indeed, such relationship could affect the exchange rates of the countries.

Indonesia and Singapore's lending rates, on the other hand, are not significantly related to Malaysia's lending rate. Even though those two countries are very closed to Malaysia, any changes in their rates and their monetary policies would not affect Malaysia.

6. References

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7. Appendix

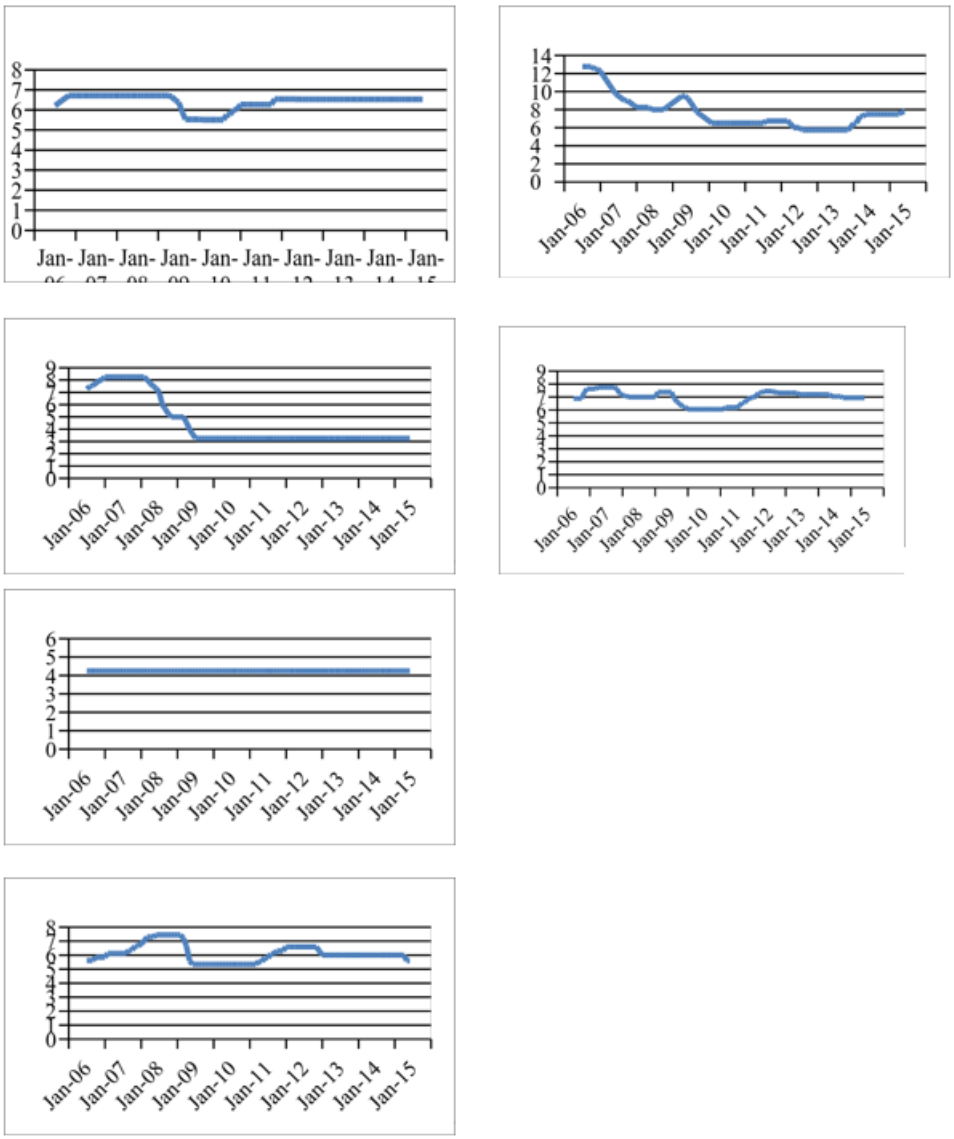

Figure 1. Time Series – Lending Interest Rates of Six Countries (2006 – 2014)