

# FINANCIAL DEEPENING AND INTEREST RATE RELATIONSHIP IN FACING THE ASEAN ECONOMIC COMMUNITY 2015: VECM AND PANEL DATA APPROACH

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## *Abstract*

*The relationship of the financial deepening to the interest rate has become an important study for the Southeast Asia countries, especially preparation for entering the ASEAN Economic Community (AEC) in 2015. This study will explore the effect of interest rates on deposits and credit to the financial deepening in ASEAN 5. By using VECM showed that Indonesia, the Philippines and Singapore possessed a similar pattern where lending rates negatively affect financial deepening, while the deposit rate positive effect. In contrast to Malaysia and Thailand, deposit rates had a negative impact on financial depth, while the loan interest rate was positive. Meanwhile, using panel data for the ASEAN 5 showed that the effect of interest rates on loans to the depth of the financial sector is negative, whereas the effect of deposit rate was positive*

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*Key words: Financial Deepening, Deposit, Lending, Interest Rate.*

## INTRODUCTION

In the face of an ASEAN Economic Community by 2015, ASEAN 5 still leaves the problem of the financial deepening. The financial deepening is the ratio of broad money and GDP. For Singapore, Malaysia and Thailand already above 100%, while for Indonesia and the Philippines is still around 50%. It shows that the latter two

countries are still experiencing a shortage of money in the economy (World Bank, 2013).

Discourse about the relationship between financial development with economic growth has begun long ago. King & Levine (1993) advocate this phenomena as the Schumpeter's views (1911) that the financial system can promote economic growth or finance cause growth, in the contrary to the opinion of Robinson (1952) states growth cause finance. The milestone of this discourse occurred since McKinnon and Shaw published their book on early 1970s about financial repression reduce economic growth. McKinnon-Shaw paradigm recommend to refuse the ceiling policy on interest rate and credit, whereas to encourage liberalization. The McKinnon-Shaw paradigm massively influence on the world's financial policy. Liberalization of the financial sector is implemented by all countries with very varied effects. There are successful countries, but also many countries that failed. Diaz-Alejandro (1995) notes the failure of the implementation of financial sector liberalization in the Southern Cone countries of Latin America with a very famous paper "Good-by Financial repression and Hello Financial Crash".

On the other hand, McKinnon-Shaw model brings the excitement of economists to prove the effect of financial development on economic growth or financial-growth nexus. The topics of study financial-growth nexus is mostly done and support the McKinnon-Shaw model conducted among others by Fry (1978), King & Levine (1993) and Levine (1997). Fry (1978) present an empirical test of McKinnon-Shaw model on focusing the role of financial condition. This study emphasizes that financial condition affect saving and economic growth. In this context, financial condition is much broader than financial deepening. If the traditional financial deepening is the ratio of broad money and GDP, the financial condition include performance the financial sector more broadly covers money, foreign exchange, credit and stock market.

Similarly, King and Levine (1993) proves the Schumpeter's opinion that the financial development to encourage economic growth using data on 80 countries over the 1960-1989 period. The study used indicators of financial development in terms of narrow and broad. In a narrow sense to use financial depth, while in a broader sense include deposit, credit, and private funds. Various measures of the level of financial development are

strongly associated with real per capita GDP growth, the rate of physical capital accumulation, and improvements in the efficiency with which economies employ physical capital.

Several recent studies of finance-growth nexus, the majority of studies continue Fry (1978) and King & Levine (1993) using panel data. Khalifa (2002) examines the nature and direction of the relationship between financial development and economic growth using both time-series and panel data from 30 developing countries for the period 1970–1999. Calderon & Liu (2003) employ the Geweke decomposition test on pooled data of 109 developing and industrial countries from 1960 to 1994 to examine the direction of causality between financial development and economic growth. Christopoulos & Tsionas (2004) investigate the long run relationship between financial depth and economic growth for 10 developing countries,, trying to utilize the data in the most efficient manner via panel unit root tests and panel cointegration analysis. Nazmi (2005) estimates using rolling panel data on five countries from Latin America consist of Argentina, Brazil, Chile, Colombia, and Mexico for the period 1960–1995. Ito (2006) investigates a panel encompassing 87 less developed countries on Asia over the period 1980 to 2000. Liu & Hsu (2006) try to examine the relationship between financial development and the source of growth for three East Asian economies, namely, Taiwan, Korea, and Japan. Chinn & Ito (2006) investigate whether financial openness leads to financial development after controlling for the level of legal development using a panel encompassing 108 countries over the period 1980 to 2000. Gries, et al (2009) tests for causality between financial deepening, trade openness, and economic development for 16 sub-Saharan African countries. These studies generally strengthen the McKinnon-Shaw view by emphasizing that each country has its specific characteristics, resulting in different outcomes.

Meanwhile, there are few research finance-growth nexus certain country-specific. Hondroyannis et, al (2005) assess empirically the relationship between the development of the banking system and the stock market and economic performance for the case of Greece over the period 1986–1999. Odhiambo (2005) investigates the link between money and physical capital in the finance motive for economic development, as postulated by McKinnon (1973) using South African data. Liang & Teng (2006) investigate

the relationship between financial development and economic growth for the case of China over the period 1952–2001 using vector autoregressive (VAR) framework. Abu-Bader & Abu-Qarn (2008) examine the causal relationship between financial development and economic growth in Egypt during the period 1960–2001 within trivariate vector autoregressive (VAR). Yang & Yi (2008) explore the causal relationship between financial development and economic growth utilizing the superexogeneity methodology for Korea during 1971–2002. Ang (2008) estimates a six-equation model of financial development and economic growth for Malaysia during 1960–2003. Therefore, the purpose of this paper will explore the effect of interest rates on deposits and credit to the financial deepening in ASEAN 5

### **Literature review**

Early studies on finance-growth nexus, still discussing the validity of the McKinnon-Shaw argument. Fry (1978) presents an empirical test of models of finance in economic development developed by McKinnon-Shaw. The results of pooled time series analysis using annual observations for seven Asian less developed countries (LDCs) – Burma, India, Korea, Malaysia, Philippines, Singapore Taiwan support the view that financial conditions do influence saving and growth. It also tests their alternative theories of the way in which financial conditions affect saving and economic growth.

King and Levine (1993) are also still discussing about the McKinnon-Shaw model, adjusted for the classical view of the financial sector relationship with growth as has been suggested by Schumpeter in the early 20th century. The research are consistent with the view that financial services stimulate economic growth by increasing the rate of capital accumulation and by improving the efficiency with which economies use that capital. Based on the empirical results they conclude that Schumpeter might have been right about the importance of finance for economic development.

Levine (1997) compile previous research on the finance-growth nexus than just discourse since Schumpeter, Robinson, Goldsmith to the McKinnon-Shaw has a significant impact as bandwagoning policy liberalization in financial sectors around the world in the decade of the 1970s until now. Financial development and long run growth has an important corollary, although financial panics and recessions are critical issues, the finance-

growth link goes beyond the relationship between finance and shorter-term fluctuations.

Meanwhile, recent studies using more varied methods to explore the finance-growth nexus among others such as causality, cointegration, VAR, VECM, GMM, also static and dynamic panel data. The patterns of causality between financial depth with economic growth made by several researchers using causality test. Khalifa (2002) examines time-series and panel data from 30 developing countries for the period 1970–1999. The empirical results strongly support the view that financial development and economic growth are mutually causal, that is, causality is bidirectional. Calderon & Liu (2003) employs the Geweke decomposition test on pooled data of 109 developing and industrial countries from 1960 to 1994. The Granger causality from financial development to economic growth and the Granger causality from economic growth to financial development coexist. The paper finds that financial development generally leads to economic growth.

Gries, et al (2009) tests for causality between financial deepening, trade openness, and economic development for 16 sub-Saharan African countries. The Hsiao-Granger method is used to add to the existing empirical evidence. Only limited support is found for the popular hypothesis of finance-led growth. Yang & Yi (2008) explore the causal relationship between financial development and economic growth in Korea, utilizing the superexogeneity methodology. They find that financial development control causes economic growth, but the reverse is not true. The empirical results provide evidence in favor of the 'finance causes growth' view for the case of Korea while rejecting the 'growth causes finance' view.

Several studies using VAR and VECM are Hondroyiannis et, al (2005), Liang & Teng (2006) and Abu-Bader & Abu-Qarn (2008). Hondroyiannis et, al (2005) assess empirically the relationship between the development of the banking system and the stock market and economic performance for the case of Greece over the period 1986–1999 using VAR/VECM models. The findings show that both bank and stock market financing can promote economic growth, in the long run, although their effect is small. Liang & Teng (2006) investigate the relationship between financial development and economic growth for the case of China over the period 1952–2001.

The empirical results suggest that there exists a unidirectional causality from economic growth to financial development, conclusions departing distinctively from those in the previous studies. Abu-Bader & Abu-Qarn (2008) examines the causal relationship between financial development and economic growth in Egypt during the period 1960–2001. The results strongly support the view that financial development and economic growth are mutually causal, that is, causality is bi-directional. They find that financial development causes economic growth through both increasing resources for investment and enhancing efficiency.

Some researchers also apply dynamic data panel to explore in the pattern of the relationship between finance and growth. Christopoulos & Tsionas (2004) investigate 10 developing countries. This research use threshold cointegration tests, and dynamic panel data estimation for a panel-based vector error correction model. The empirical results provide clear support for the hypothesis that there is a single equilibrium relation between financial depth, growth and ancillary variables, and that the only cointegrating relation implies unidirectional causality from financial depth to growth. Nazmi (2005) estimates using rolling panel data on five countries from Latin America consist of Argentina, Brazil, Chile, Colombia, and Mexico for the period 1960–1995. Evidence from Latin America provides support for the main result of the model by showing the positive impact of deregulation a financial development on investment.

## RESEARCH METHODS

### Model

This research used two methods of econometric consist of Vector Error Correction Model (VECM) and Panel Data. In general, the standard model used in this studies above is to follow the model developed by King & Levine (1993) and Levine (1997) are as follows:

$$\pi_t = \alpha_0 + \alpha_1 r_t + \alpha_2 i_t + \varepsilon_t \quad (1)$$

Where  $\pi_t$  is financial deepening (M2/GDP), and deposit interest rate as  $r_t$  and lending interest rate as  $i_t$ .

The VECM of deposit interest rate ( $r_t$ ) and lending interest rate ( $i_t$ ) of financial deepening model ( $\pi$ ) can be expressed as follows:

$$\Delta\pi = \mu_t + \gamma_1 Z_{t-1} + \sum_{i=1}^{kr} \beta_1 \Delta r_{t-i} + \sum_{i=1}^{ke} \beta_2 \Delta e_{t-1} + \eta_t \quad (2)$$

Where  $Z_{t-1}$  is the error correction term obtained from the cointegration equation.  $\gamma_1, \beta_1,$  and  $\beta_2$  are estimation parameters of deposit interest rate and lending interest rate,  $\eta$  is stationary random process with zero mean and constant variance.

Meanwhile the formula used to estimate the panel data is as follows:

$$\pi_{it} = \alpha_0 + \alpha_1 r_{it} + \alpha_2 i_{it} + \varepsilon_{it} \quad i=1,2\dots N, t=1,2\dots T \quad (3)$$

The data used in this study are (fd) that is the ratio of broad money (m2) and real gdp, deposit interest rate, and lending interest rate. The data used is annually since 1986 to 2013 were taken from the world bank. The all data used in the form of percentage.

## RESULTS AND DISCUSSIONS

### First cointegrating of VECM

The results of the first cointegrating of ASEAN-5 counties is presented below (t-ratios are in the parentheses):

#### Indonesia

$$FD = 89.52829 + 27.729475DEP - 13.18296 LEND$$

(1.87158) \*\*                      (- 2.28173) \*\*

#### Malaysia

$$FD = -561.5253 - 172.7154DEP + 159.0211 LEND$$

(-6.29770) \*\*\*                      (6.56965) \*\*\*

#### Philippines

$$FD = 4.023117 + 16.50128DEP - 15.02171LEND$$

(2.83066) \*\*\*                      (- 2.57890) \*\*

#### Singapore

$$FD = 369.6665 + 42.07229DEP - 94.30112LEND$$

(3.58801) \*\*\*                      (- 5.04938) \*\*\*

#### Thailand

$$FD = -377.0092 - 33.48752DEP + 49.70583LEND$$

(-1.68088) \*                      (1.86241) \*

Based on the results of VECM showed that there are interesting relationships and consistent. The result indicated that Indonesia, the Philippines and Singapore possessed a similar pattern where lending rates negatively affect to financial deepening, while the deposit rate positive effect. In contrast to Malaysia and Thailand, deposit rates had a negative impact on financial depth, while the loan interest rate was positive.

### Panel Data

In the analysis of panel data will be compared to results from fixed and random effects model. To select the two models used Hausman test, if test results significantly, then the model used is a fixed effects model. Based on the results of the Hausman test set that was used is random effects model. The results of this study indicate that jointly ASEAN 5 shows that the effect of interest rates on loans to the financial deepening was negative, whereas the effect of deposit rate was positive.

**Table 1.** Dependent Variable: Financial Deepening (FD)

	Fixed Effect		Random Effect	
	Coefficient	t-test	Coefficient	t-test
Constanta	151,876	21,8435***	151,572	22,0767***
DEP	4,7754	3,7349***	4,72746	3,7535***
LEND	-9,27657	-6,8134***	-9,21825	-6,8707***
R-squared	0,578238			
R-squared adjusted	0,558312			
F-statistic	29,01957			
Breusch-Pagan LM test			1,00895	
Hausman Test			1,32363	

### CONCLUDING REMARKS

This study explored the effect of interest rates on deposits and credit to the financial deepening in ASEAN 5. By using VECM showed that Indonesia, the Philippines and Singapore possessed a similar pattern where lending rates negatively affect financial deepening, while the deposit rate positive effect. In contrast to Malaysia and Thailand,



deposit rates had a negative impact on financial depth, while the loan interest rate was positive. Meanwhile, using panel data for the ASEAN 5 indicated that the effect of interest rates on loans to the depth of the financial sector is negative, whereas the effect of deposit rate was positive.

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