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The Relationship Among Capital Market Development, Money Market Development, and Economic Growth: Evidence From Indonesia

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ABSTRACT

The aim of this research is to test long-run and short-run causal relationship among capital market development, money market development and economic growth in Indonesia. Using Vector Error Correction Model (VECM), the result show us that capital market development granger causes money market development and economic growth. Economic development granger causes money market development. There are no long-run relationship found in our model. Based on these results, the paper argues that stock market development has an important role to promote economic growth in Indonesia and dispromote money market development.

JEL Classifications: E01, E44, E47.

Keywords: Money Market Development, Capital Market Development, Economic Growth, Vector Error Correction Model.

1. INTRODUCTION

The relationship between financial market development and economic growth has been a debate in the literature. In which direction do not produce the same consensus. The debate focus whether the financial market of development cause economic growth or conversely, whether the economic growth led to financial market development, or whether there is a two-way relationship? Some previous studies found a link unidirectional that high economic growth creates a demand for financial instruments and encourage financial market effectively respond the request (Gurley and Shaw, 1955; Patrick, 1966).While several of other studies find the opposite relationship, where the development of financial markets facilitate economic activities to encourage economic growth (Romer, 1990; Masoud and Hardaker, 2012).In addition to unidirectional relationship, some studies find a two-way relationship between the development of financial markets and economic growth (Demirguc-Kunt and Levine, 1996; Enisan and Olufisayo, 2009).

Rose and Marquis (2009: 5) states financial market instrumental in facilitating the flow of funds, flow of financial services, income, and financial claim. This study expands the understanding by classifying financial market into two: money market and capital market. Rose and Marquis (2009: 12) states money market designed to make short-term loan, while capital markets are designed for long-term loan. Money market brings together individuals and institutions that have surplus funds with individuals and institutions while experiencing temporary shortages of funds. Thus the money market allows individuals or institutions to manage their liquidity position, working capital and speculation. Capital market brings the institution as those who need long-term funding by institutions and individuals as parties who have excess funds in the long term. Thus the capital market allows the institution issuing long-term debt instruments represent income claims in the future, in order to buy equipment, buy machinery, build new buildings and facilities.

The differences of this study and previous studies lie in the investigation of the relationship between the capital market and money market. The increasing development of capital market in Indonesia is shown by the increasing number of listed companies, the size of the market capitalization and a greater value of shares trade, a phenomenon that is common in emerging markets in developing countries. On the other hand, the role of money market in developing countries, serving not only fund short-term borrower, but also serve the long-term fund borrower, facing a major challenge as the increasing role of capital markets. This condition, in the long run will continue, pushing money market take a more focused role to serve short-term borrower fund, and not serve the long-term borrower fund. Thus, the development of capital markets can hinder the development of money market in developing countries, as more and more companies listed on the capital market can make the decision to use existing instruments in the capital markets to meet the needs of long-term investment funds.

To see the relationship short-term and long-term relationship between financial market development and economic growth, data analysis in this study using the Vector Error Correction Model (VECM).Where there are two prerequisites are fulfilled by the characteristics of the data in this study is a data stationary at first difference and to cointegration. Stability test model conducted by Cusum Test. Interpretation of the analysis of Impulse Response Function (IRF) is use to able to see an-endogenous variable responses to a particular shock. Interpretation Variance Decomposition analysis is done to see how a change in a variable which is indicated by the error variance, is influenced by other variables.

Structure of this paper is organized as follows. Inthe second part briefly described the problem of theoretical and empiric the relationship between financial development and economic growth. In third part elaborated methodology used in this study. In fourth section described the results of research and discussion. Last session, in the fifth session is the conclusions drawn.

2. METHODOLOGY

2.1. Data

The data used in this research is secondary data such as amount of loans extended by banks to the private sector represent money market development (MON), the number of stock market capitalization divided by Gross Domestic Product represents capital market development (CAP) and the gross domestic product represents economic growth (GDP). All data are annual data for the period 1988 to 2012 and obtained from the World Bank.

The financial data that are time series tend to show deterministic or stochastic trend, so the OLS regression analysis technique produces spurious regression. Cointegration analys is can be used to identify common stochastic trend between different financial variables and at the same time to avoid the problem of spurious regression. Cointegration analysis uses regression analysis to examine the long-run linkages between financial variables and allows us to consider the short-run adjustment to deviation from the long-run financial equilibrium. If co-integrated variables, the financial variables can also indicate the presence of long-run relationship (Fabozzi, 2014).

2.2. Analysis Method

There are two popular methods for testing cointegration tests that Engle Granger and Johansen-Joselius tests. This study uses Johansen-Joselius test method because this method has advantages over methods Engle Grager tests. Fabozzi (2014: 205) states the problem in the method of Engle Grager tests include: first, when the sample size infinity cointegration test results yielded the same result regardless of the variables which are used as the dependent variable. This problem is greater when the test is carried out on three or more variable. Second, error used in the test cointegration only an estimate and is not true error.Thus, the estimation error can cause the regression errors. Third, Engle-Gragercointegration test cannot detect multiple co-integrating relationships.

Test of cointegration using Johansen test is very sensitive to the selection of lag length. So, before using the test of cointegration by Johansen-Joselius, do the optimum lag test first. Selection of optimum lags in accordance with the smallest lag obtained by VAR Lag Order Selection Criteria. There are five criteria, among others, sequential modified LR test statistic (LR), final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion. Each of these criteria states the greatest absolute value at lag is the optimum lag.

After obtained the optimum lag based VAR Lag Order Selection Criteria. The next step is to determine the root unit testing to know the data stationary. Co integration test by Joselius Johansen test requires the stationary data in first difference. The units root test done using Augmented Dickey-Fuller. First, unit root test performed on the data level. If all of data don't stationary at the level, do test of unit root in the first difference. If all of the data is stationary at the first difference, then it can be tested by Johansen cointegration test.

After previously obtained optimum lag and data stationary at first difference, the next phase is testing Johansen test. Johansen test using two statistical criteria for testing cointegration is λ trace statistic test and maximum eigenvalue test. The λ trace statistics test and maximum eigenvalue test to verify the null hypothesis that there are no cointegration relations. Alternative hypothesis is contained at least one cointegration vector.

2.3. Research Model

Development of a model with an error vector component models (VECM) is carried out after obtained the cointegration test results that state there is cointegration and stationary data at first difference. Engle and Granger (1987) suggests VECM is a special form of VAR to the data first difference and co-integrated. VECM can show into the equation as follows:

$$\Delta Z_t = \prod Z_{t-1} + \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + ... + \Gamma_{p-1} \Delta Z_{t-p+1} + e_t \quad ...(1)$$

Where,

α_{11} and α_{21} : error correction coefficient, show how much Δy_t and Δx_t respond to cointegrating error $y_{t-1} - \beta_0 - \beta_1 \beta_{xt-1} = e_{t-1}$

3. RESULTS

3.1. Uji Stasionaritas Data

Before cointegration test using Johansen Test, do the stationary data test. Johansen test requires the data to be stationary at the first difference. So do the stationary test using Augmented Dicky Fuller test to determine whether there is a unit root in the data. Data is said to be stationary if there is no unit root. Thus the null hypothesis is formulated as follows. $H_{0:}$ Data has a unit root.

Tabel 1
Summary of Results Unit Root Test Using Augmented Dicky Fuller

Order	*MON*		*CAP*		*GDP*	
	t-Statistic	*Prob.*	*t-Statistic*	*Prob.*	*t-Statistic*	*Prob.*
Level	-1.420574	0.5553	-2.493659	0.1293	2.729242	1.0000
First Difference	-3.585784	0.0145	-6.384874	0.0000	-3.124736	0.0386

Table 1 shows the stationary data test results. The t-statistic result on stationary test at data level indicate the probability is greater than 5%, so that H_0 is received, the data has a unit root or not stationary. Do the stationary data test again to the first difference and result t-statistic that has a probability of less than 5%, so that H_0 and H_1 accepted, which means that the data does not have a unit root, or data stationary at first difference. Thus it can be cointegration test using Johansen Test..

3.2. Uji Kointegrasi (Johansen Test)

Table 2
VAR Lag Order Selection Criteria

Lag	*Log L*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-741.6352	NA	1.26*e* + 27	70.91764	71.06686	70.95003
1	-687.5921	87.49839	1.76*e* + 25	66.62782	67.22469	66.75736
2	-666.7386	27.80471*	6.07*e* + 24*	65.49891	66.54343*	65.72560*
3	-659.8024	7.266506	8.77*e* + 24	65.69546	67.18764	66.01930
4	-648.2253	8.820631	9.98*e* + 24	65.45003*	67.38986	65.87102

** indicates lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion*

Cointegration test using Johansen test is very sensitive to the amount of lag, so before testing the cointegration do the election on optimal lag based on the criteria in VAR Lag Order selection. Table 2 shows the criteria for optimum lag is the lag 2, shown by most of the criteria.

After ascertained the data stationary at first difference and unknown optimum lag is two, then testing as a prerequisite Cointegration VECM model building. The null hypothesis in testing cointegration can be formulated as follows, $H_{0:}$ there is no cointegration. Table 3 shows the results of testing cointegration where there are two criteria that can be used are Trace Statistic and Maximum Eigenvalue. The probability of each of these criteria on the first line results (none *) is below 5% which means that H_0 is rejected and H_1 accepted. Cointegration Test showed that there is cointegration on VECM model.

Tabel 3
Summary of Results Johansen Test of Cointegration

Hypothesized No. of CE(s)	*Trace*			*Maximum Eigenvalue*		
	Statistic	*Critical Value*	*Prob*	*Statistic*	*Critical Value*	*Prob*
None*	32.43335	29.79707	0.0243	23.38159	21.13162	0.0237
At most 1	9.051757	15.49471	0.3606	5.528391	14.26460	0.6742
At most 2	3.523367	3.841466	0.0605	3.523367	3.841466	0.0605

*Trace test indicates 1 cointegratingeqn(s) at the 0.05 level, *denotes rejection of the hypothesis at the 0.05 level, **Mac Kinnon-Haug-Michelis (1999) p-values.*

*Max-eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values*

Analysis of the relationship short-term and long-term approach based VECM. There are three models which built according to the number of existing variables. At first model, Money Market Development (MON) as the dependent variable, and other variables as the independent variable. At second model Capital Market Development (CAP) as the dependent variable, and other variables as the independent variable. At third model, Economic Growth (GDP) as the dependent variable and other variables as independent variable.

Long-run relationship between MON, CAP, and GDP can be seen from the coefficient Error Correction Term (ECT) in each model that created. Coefficient of value ECT should be worth negative coefficient with a smaller probability of 1%, 5%, or 10 %. According to analysis results in Table 4 none of coefficient of ECT coefficient has a probability in accordance with the provisions, thus H_0 : there is no long-run relationship is accepted. This means that there is no long-run relationship between money market development, capital market development and economic growth in each model.

Short-run relationship between MON, CAP, and GDP can be seen from each coefficient significance model. At first model, the coefficient of capital market development at lag 2, and coefficient of economic growth at lag 1 and 2 are significant. Coefficient of capital market development shows negative signs which means that capital market development has a negative short-run relationship to money market development, or in short-term capital market development has a negative effect to money market development. Coefficient of economic growth shows positive signs, which means that economic growth has a positive short-run relationship to money market development, or in the short-term the economic growth has a positive effect to money market development.

At second model, there are no variables that have a short-run relationship to capital market development. At the third model, the coefficient of capital market development in lag 1 shows a significant and positive sign to economic growth. That means, capital market development has a short-run relationship to economic growth, or in the short-term economic growth is influenced by capital market development.

Testing of jointly influence of independent variable between lag 1 and lag 2 performed by Wald Test. At the first model chi-square value for capital market development and economic growth that has a probability of less than 5%, which means that there are together influences between variables of lag 1 and lag 2. Likewise for the third model, the value of Chi-Square for capital market development has a probability of less than 5%, which means there is a together effect between variables of lag 1 and lag 2.

Table 4
Summary of Results Granger Causality Based on Vector Error Correction Model

Indicators	*Lag*	*Model 1 MON as a Dependent*		*Model 2 CAP as a Dependent*		*Model 3 GDP as a Dependent*	
Long-run causality:							
ECT		0.12	-	-0.09	-	0.22	-
Short-run causality:							
MON	1	-0.15	-	0.79	-	1.56	-
	2	-0.01	-	0.16	-	-1.79	-
CAP	1	-0.04	-	-0.33	-	2.24	**
	2	-0.28	**	-0.27	-	-1.35	-
GDP	1	2.93	***	-1.59	-	-0.08	-
	2	1.25	**	-1.49	-	-0.30	-
MON(1) X MON(2)		-	-	3.05	-	2.54	-
CAP(1) X CAP(2)		8.33	**	-	-	18.1	***
GDP(1) X GDP(2)		39.8	***	1.58	-	-	-
R-squared		0.82		0.48		0.72	
F-statistic		9.30		1.89		5.32	
Prob(F-statistic)		0.00	***	0.14	-	0.00	***
Serial Corelation		0.07	No	0.32	No	0.43	No
Heteroskedastisity		0.16	No	0.72	No	0.19	No
Normality		0.94	No	0.28	No	0.67	No

*ECT: Error Correction Term Coefficient, MON: Money Market Development, CAP: Capital Market Development and GDP: Economic Growth. We use Wald Test to test joint effect independen variable on dependen variable. We use Breusch-Godfrey Serial Correlation LM Test to test serial correlation, Breusch-Pagan-Godfrey test to test heteroskedastisity and Jarque-Bera test to test normality. * significant at 10%, ** significant at 5%, *** significant at 10%, - not significant*

Probability value of F-Statistic is the basis for the admissibility of three models. Of the three models, the first model and the third have a probability less than 5%, while the second model has a greater probability of 5%. Thus the first model and the third are accepted, whereas the second model is rejected. Eachmodels which accepted not have a serial correlation problem, heteroscedasticity and normality.

Further discussion on Impulse Response Function (IRF) and Variance Decomposition (VD) will focus on the first and second models. Value of IRF and VD will mean when VECM stable. So that before the analysis of IRF and VD, stability model with Cusum Test has to be done. The test results of Cusum test can be seen in figure 1. All of the Cusum value is between the red lines or a probability of 5% shows that the first and the second models are stable.

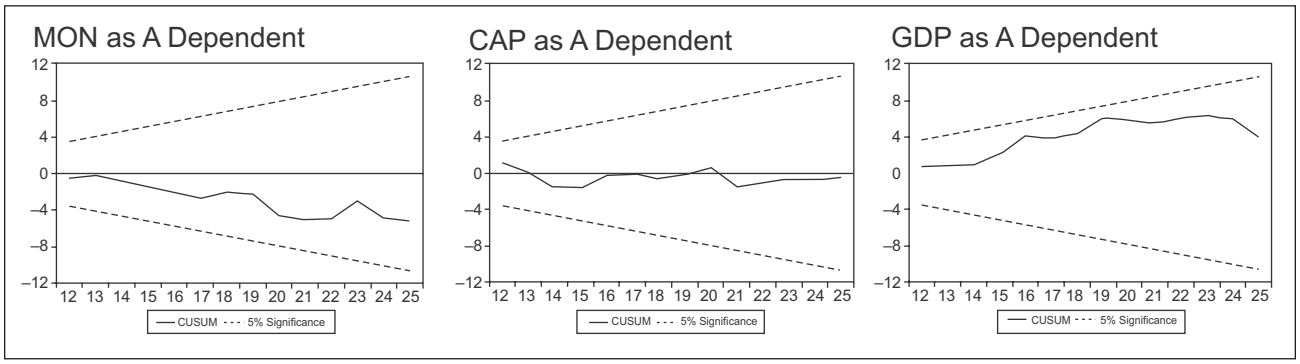

Figure 1: Custom Test of VECM Stability

Table 5 shows the analysis results of the IRF using the first model. The obtained results of each variable response to these variables and other variables. Response of money market development (MON) to itself shows that the value increasingly large, the meaning is the earlier money market development has a positively affect to the current money market development.

Table 5
Results Impulse Response Function

Period	*Response of MON*			*Response of CAP*			*Response of GDP*		
	MON	*CAP*	*GPD*	*MON*	*CAP*	*GPD*	*MON*	*CAP*	*GPD*
1	3.92	0.00	0.00	-0.85	12.24	0.00	4.86	1.00	3.37
2	3.85	3.03	7.45	2.18	6.03	-3.34	3.53	3.47	3.87
3	5.33	6.31	9.88	1.07	2.96	-0.25	2.48	8.52	3.93
4	4.93	3.59	9.42	1.00	8.89	3.33	-4.39	2.76	4.48
5	4.18	0.88	8.40	1.66	9.94	1.76	-8.74	1.46	4.84

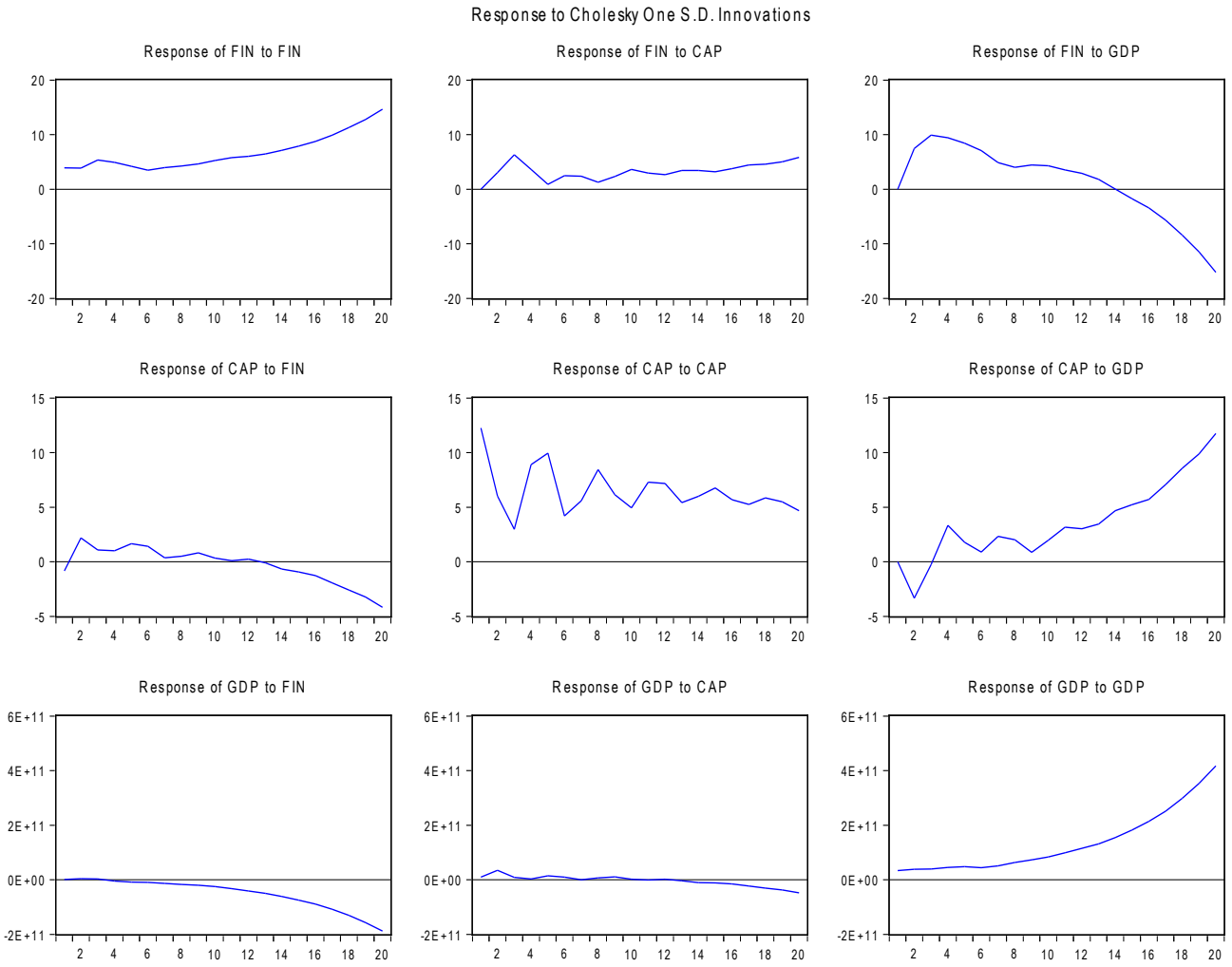

Figure 2: Impulse Response Function

Table 6
Variance Decomposition

Period	*Variance Decomposition of MON*			
	S.E.	*MON*	*CAP*	*GDP*
1	3.92	100.00	0.00	0.00
2	9.75	31.79	9.71	58.49
3	16.16	22.48	18.78	58.73
4	19.68	21.45	16.00	62.53
5	21.82	21.12	13.17	65.69
Period	*Variance Decomposition of CAP*			
	S.E.	*MON*	*CAP*	*GDP*
1	12.27	0.47	99.52	0.00

Period	Variance Decomposition of MON			
	S.E.	MON	CAP	GDP
2	14.25	2.71	91.78	5.50
3	14.59	3.12	91.59	5.27
4	17.44	2.52	90.11	7.36
5	20.22	2.55	91.20	6.24
Period	Variance Decomposition of GDP			
	S.E.	MON	CAP	GDP
1	3.52	0.01	8.14	91.83
2	6.28	0.32	32.99	66.68
3	7.46	0.33	24.68	74.97
4	8.72	0.50	18.18	81.31
5	1.01	1.11	15.58	83.29

4. CONCLUTION AND IMPLICATIONS

Based on the analysis of three models of *Vector Error Correction Model* (VECM) in this study, the first and third models are acceptable, while the second model is unacceptable. Based on the results of the three models analysis then did not reveal any long-term relationship between *capital market development* (CAP), *money market development* (MON), and the *gross domestic product (GDP)*. Short-term relationship was found, on the first model, *capital market development* (CAP) in the second lag has negative effect to *money market development* (MON), while the *gross domestic product (GDP)* in the first and second lag have positive effect to *money market development* (MON). *Impulse Response Function* at first model shows the shock on MON, GDP and CAP responded positively by MON. Shocks of GDP and CAP responded positively by MON in the second year until the fifth year, while in the first year is not responded. Results of analysis of variance decomposition of the first equation shows that MON define itself one hundred percent in the first year, while in the second year until the fifth year MON is determined dominantly by GDP, then by MON, and the latter by CAP.

Short-term relationship also was found on a third model that is only the CAP in the first lag has a positive effect to GDP. The third model of *Impulse Response Function* shows shock on GDP and CAP responded positively by GDP. Shock of MON responded positively by GDP only in the first year to third year. While the fourth year and fifth year responded negatively. The result of third equation of variance decomposition analysis shows that the GDP fluctuations determined dominantly by itself. CAP is a secondary determine dominantly to the fluctuation of GDP, and MON is the lowest deciding to fluctuations in GDP.

Based on the first model of MON and CAP relationship shows a negative correlation, it means that capital market development has a negative effect to the money market development. This negative correlation becomes important finding in this study, which is a negative correlation between MON and CAP may also be found in other developing countries, such as found in Indonesia. Other key findings revealed in the second model where the development of the capital market has a positive effect to *gross domestic product.*

Increasing the role of capital market is important to note in order to increase the *gross domestic product* in developing countries.

Banking institution to improve its quality of services immediately and increase short-term loan product that is a maximum period of 5 years. Banking institution to establish a reserve of high liquidity immediately, to absorb shock as decreasing of economic growth, loan portfolio which targeting to the labor-intensive businesses, and to SMEs. Starting in the second of this study it required resilience of the banking institutions in the medium term (5 years), because of shocks (fluctuations) GDP and capital market dominance is still going to happen.

The success of the capital market in the second year will has a positive influence to GDP because the capital market began to transform itself, including the strengthening of opportunities in the form of regulations and legislation. If there is a money market shocks, economic growth should be stable so that no economic slowdown in the money market shocks began in the fourth year, although predicted that the economic growth occurs due to the dominance of capital markets.

References

Atje, R., and B. Jovanovic,(1993), Stock Markets and Development. European Economic Review 37: 632-640.

Arestis, P., P. O. Demetriades, and K. B. Luintel, (2001), Financial Develiopment and Economic Growth: The Role of Stock Markets, Journal of Money, Credit and Banking 33(1): 16-41.

Demirguc-Kunt, A. and R. Levine, (1996), Stock Markets, Corporate Finance, and Economic Growth: An Overview,The World Bank Economic Reiew, 10(2): 223-239.

Demirguc-Kunt, A. and R. Levine, (1996). Stock Market Development and Financial Intermediaries: Stylized Facts. The World Bank Economic Review, 10(2): 291-321.

Demirguc-Kunt, A. and V. Maksimovic, (1996), Stock Market Development and Financing Choices of Firm,The World Bank Economic Review, 10(2): 341-369.

Enisan, A. A. and A. O. Olufisayo, (2009), Stock Market Development and Economic Growth: Evidence from Seven Sub-Sahara African Countries, Journal of Economics and Business, 61: 162-171.

Gurley, J. G., and E. S. Shaw, (1955), Financial Aspects of Economic Development,The American Economic Review, 45(4): 515-538.

King, R. G. and R. Levine, (1993), Finance and Growth: Schumpeter Might be Right, The Quarterly Journal of Economics, 108(3) 717-737.

Levine, R. and S. Zervos, (1996), Stock Market Development and Long-Run Growth,The World Bank Economic Review, 10(2): 323-339.

Levine, R. and S. Zervos, (1998), Stock Market, Banks, and Economic Growth,The American Economic Review 88(3): 537-558.

Majid, M. S. and Mahrizal, (2007), Does Financial Development Cause Economic Growth in The ASEAN-4 Countries?, Saving and Development 31(4): 369-398.

Masoud, N. and G. Hardaker, (2012), The Impact of Financial Development on Economic Growth: Empirical Analysis of Emerging Market Countries, Studies in Economics and Finance 29(3): 1086-7376.

Nagaishi, M., (1999), Stock Market Development and Economic Growth: Dubious Relationship, Economic and Political Weekly 34(29): 2004-2012.

Niblock, S. J., P. Heng and K. Sloan, (2014), Regional Stock Market and The Economic Development of Southeast Asia, Asian Pacific Economic Literature, The Australian National University and Wiley Publishing Asia Pty Ltd. 47-59.

Patrick, H. T., (1966), Financial Development and Economic Growth in Underdeveloped Countries, Economic Development and Cultural Change 14(2): 174-189.

Romer, P. M., (1990), Endogenous Technological Change, Journal of Political Economy 98(5): S71-S102.

Rose, P. S. and M. H. Marquis, (2009), Money and Capital Markets, Tenth Edition, McGraw-Hill.

Todaro, M. P., and S. C. Smith, (2012), Economic Development, Eleventh Edition, Addison-Wesley Pearson.

Wiel, D. N., (2013), Economic Growth, Third Edition, Pearson Education Limited.

Yu, J., M. K. Hassan and B. Sanchez, (2012), A Re-examination of Financial Development, Stock Markets Development and Economic Growth, Applied Economics 44: 3479-3489.