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## The Relationship between Capital Market and Economic Growth in Thailand

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### ABSTRACT

The aims of this study were twofold: 1) to overview the capital market and economic growth in Thailand; and 2) to examine the relationship between economic growth and the capital market, including the stock market and bond market after the financial crisis in 1997.

Both descriptive and quantitative analyses were employed in this study. The descriptive analysis explained the structure and development of the capital market in Thailand. A cointegration and causality test were employed for the quantitative analysis in order to investigate the long-term relationship and pairwise relationship between the variables. The variables used in this study were time series data, including gross domestic product (GDP), market capitalization in the Stock Exchange of Thailand, and the outstanding debt instrument in the bond market for the period 1997-Q1 through 2016-Q4.

The results of the study showed that, one, during the past two decades, both the stock market and bond market in Thailand tended to have greater development, especially with the bond market growing more than 20 times. Regarding the stock market, it collapsed in the 1997 financial crisis in Thailand, and after that crisis, it slowly recovered. At present, the stock market is over 5 times larger than the bond market. The second result from the study indicated that economic growth had positive impacts on both the stock market and bond market. As the Thai economy has expanded, private companies and households have received higher incomes and have become wealthier, thus promoting savings and investment through the capital markets. At the same time, the stock market has also supported economic growth by funding allocation to private investment, leading to the enlargement of the manufacturing sector and employment. However, the bond market was not seen to have a significant effect on the economic growth in Thailand during this period of time.

*Keywords: Capital Market, Economic Growth, Cointegration, Causality*

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## Introduction

In general, capital market acts as intermediaries between savers and borrowers. It offers many of financial instruments that enable economic agents to invest and exchange risk through financial assets with the various alternative yields, liquidities and risk characters. At the same time, it also allocates funds to the public and private sectors who want to borrow, consume and invest in various economic developmental projects. Both stock market and bond market help government, bank and corporation to raise long term capital for financing many new projects. As a result, these promote the expansion of economic activity including consumption, production, investment and commerce.

Over the past three to four decades, many countries have turned to a policy of greater financial liberalization including Thailand. Thus, financial liberalization has played an important part in various aspects of economic development. In general, financial liberalization is the deregulation of domestic financial markets together with the relaxation of the capital flow. In case of Thailand, for instance, there were relaxing foreign exchange regulations to increase flexibility for Thai residents in overseas investment and in foreign exchange risk management (Bank of Thailand, 2012). As a result, these promoted international trade together with investment and borrowing in the international financial markets. In addition, it also supported the expansion of domestic capital markets from the higher of capital inflow and new comers from aboard to stimulate the competition and modern financial innovation in Thailand during this period of time.

At present, the relationship between capital market and economic growth is widely studied in various aspects including developing and developed countries. Many studies revealed that the growth of the capital market as a tool for fast-tracking economic progress in developing economies (Isenmila & Adewale, 2012). However, capital market might not perform efficiently in small developing market. Therefore, it is not feasible for these countries to promote stock markets because of their high costs and the poor financial structures. In addition, Ali Abbas and Christensen (2007) revealed that domestic bond market had positive impacts on economic growth through investment efficiency or factor productivity rather than the volume of capital accumulation itself.

The main question of this paper, we should ask “Does capital market support economic growth?” and “Does the expansion of Gross Domestic Product (GDP) or economic growth encourage the enlargement of stock market and bond market?” Direct fund raising types both

stock market and bond market play the crucial role to raise and allocate funds to the public and private sectors in Thailand.

### **Research Objective and Scope**

This study aims to examine the relationship among these variables including stock market, bond market and economic growth in Thailand during the period of 1997 to 2016. The paper can be divided into three sections. First, overview of capital market and economic growth in Thailand are reviewed. Second, the results are examined by unit root test, cointegration test and Granger causality test for investigation the relationship between capital market and economic growth. Finally, some conclusions are drawn.

### **Literature Review**

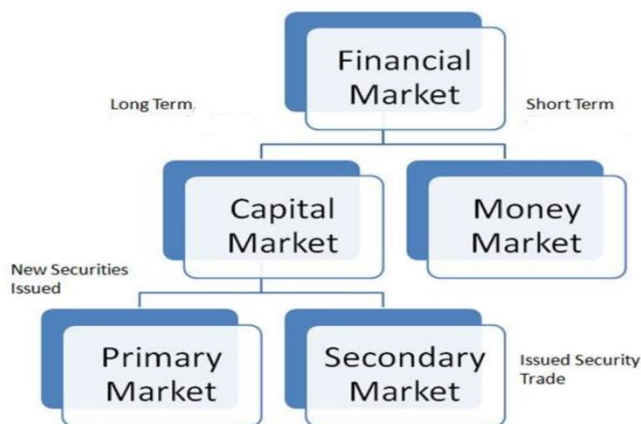
Recently, the studies regarding the relationship between capital market and economic growth have been extensively analyzed both in developed and developing countries. Most of the past studies tended to agree that capital market including stock market and bond market had positive impact on economic growth such as Henry (2000). He showed that stock market liberalization led private investment booms and economic expansion for 11 developing countries both in Latin America and Asia namely Argentina, Brazil, Chile, Colombia, India, Korea, Malaysia, Mexico, Philippines, Thailand and Venezuela in the period of 1985 to 1994. This was because it may reduce the country's cost of equity capital by allowing for risk sharing between domestic and foreign agents. In addition, the future marginal productivity of capital increase caused investment boom as well. As a result, the deregulation of capital movements helped increase in capital inflows and followed by interest rate reduction. Therefore, this encouraged the expansion of the economy.

Another point of view, some studies focused on the relationship between financial sector development and economic growth such as King and Levine (1993). The study presented the consistent with Schumpeter's view from 80 countries over the 1960–1989 periods that financial system was able to promote economic growth. Financial sector development both in banking system and stock market were robustly correlated with future rates of economic growth, physical capital accumulation, and economic efficiency improvements. Choe and Moosa (1999) also concluded from the studies in the same way that financial liberalization and the development of financial markets such as stock market and bond market conducted some positive effects on economic growth.

In addition to bank and stock market, bond market was another major source of long term capital. It provided long-term funding for public and private expenditures. At the same time, it was another important channel for savers to search for their return. Many previous studies paid attention to this channel in order to examine its role to economic growth. Ali Abbas and Christensen (2007) showed that domestic bond market had positive impacts on economic growth through investment efficiency or factor productivity rather than the volume of capital accumulation itself in 93 low-income countries and emerging markets from 1975 to 2004. Bond markets were able to help strengthen money and financial markets, boost private savings, as well as spur investment. In addition, the study found that bond market had linkages to key macroeconomic, financial and institutional variables such as private saving and financial depth. Levine and Zervos (1998) found the same thing that they also showed a strong positive link between financial development and economic growth.

### Capital Market in Thailand

In general, financial market consists of money market and capital markets. Money market mainly refers to financial market where financial instruments with short-term maturities and high liquidity are traded for example treasury bills, bills of exchange and promissory note. These issued by governments, financial institutions and large corporations.



**Figure 1** Financial Market Structure

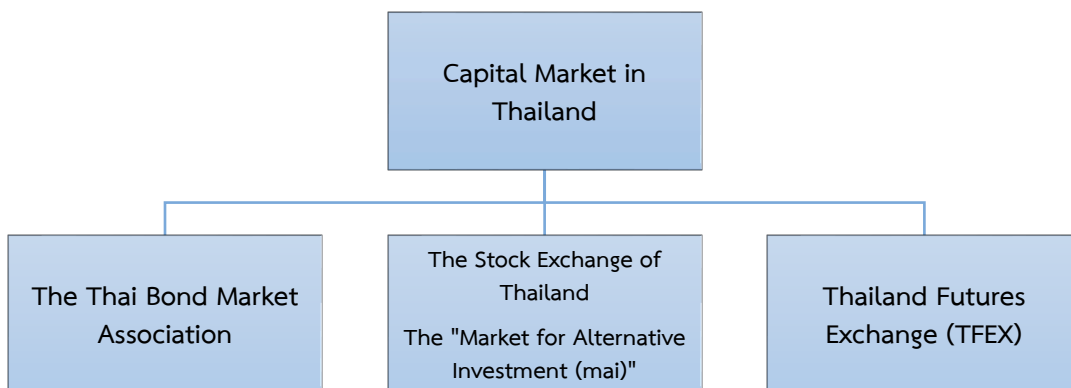
Source: Anand (2016)

A capital market is a financial market dealing with long-term debt or equity trading that capital is provided for periods longer than one year. The capital market is included of two sub-markets: the primary market and the secondary market. For the primary market, it deals with

the newly issued securities and is responsible for creating new long term capital. At the same time, secondary market manages the trading of previously issued securities in the market such as stock and bond in order to maintain liquidity for investors. A capital market with high liquidity and high transparency is attractive for investors as well.

In this study, I would like to investigate only secondary market that plays an important role in providing liquidity. Secondary market in Thailand consists of the three major parts which are:

1) The Stock Exchange of Thailand (SET) and The "Market for Alternative Investment (mai)" both of them play the major role to trade common stock. The Stock Exchange of Thailand (SET) is the main national stock exchange of Thailand. It was incorporated under the Securities Exchange of Thailand Act, B.E. 2517 (1974) and the operations started on April 30, 1975 (Stock Exchange of Thailand, 2017a). SET is a nonprofit organization and would like to promote savings and long-term capital funding for the economic development of the nation. For mai market, it was established under The Securities Exchange of Thailand Act. Its aims are to create new fund-raising opportunities for innovative business with high potential growth as well as provide a greater range of investment alternatives for investors. As the same time, the mai market provided opportunities for entrepreneurs and small and medium-sized firms to access funds. It officially commenced operations on June 21, 1999 (Stock Exchange of Thailand, 2017b).



**Figure 2** Capital Market in Thailand

2) The Thai Bond Market Association (Thai BMA) is a secondary market for bonds trading both government and private bond in Thailand. It was granted the license of a securities related association under the SEC Act named as “The Thai Bond Market Association (Thai BMA)” on September 8, 2005 (Thai Bond Market Association, 2017). Thai BMA plays the essential roles

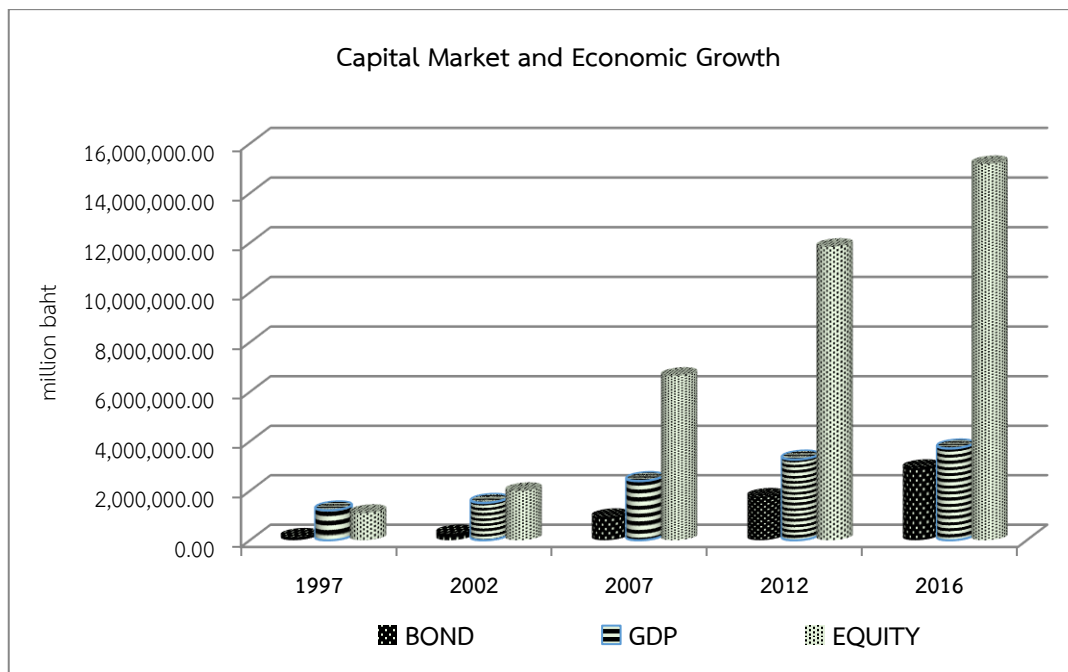
in four main areas including debt securities trading, bond Information center, bond market development and standardization for trading. Bond markets have long been a source of long term financing for both governments and corporates. It acts as a mechanism for the transformation of savings into financing for the real sector. Therefore, it provides an alternative source of fund for borrowers as well. However, bond market has a small portion in the financial system comparing to stock market because of the later development of bond market. Bond market development occurred after the stock market for about 3 decades in Thailand. In addition, Thai people have little knowledge about debt instrument in the past therefore it is not popular for investors.

3) Thailand Futures Exchange (TFEX) is the future market in Thailand. It has been operating under derivatives ACT of B.E. 2546 (2003) which allows TFEX to trade Futures, Options and Options on Futures. Derivatives permitted underlying assets such as stock index, individual stocks, interest rate, exchange rate and commodities (Thailand Futures Exchange, 2017). The futures market allows people to set their future sale prices in order to protect their positions against price fluctuations by futures trading. This certainly helps agents to reduce their risk. In addition, many speculators pay attentions to take profit from price fluctuation in future market as well.

However, Thailand Futures Exchange still has small size comparing to the other two markets above. Therefore, in this study, attention will be paid only on the stock market and the bond market in order to investigate the relationship between capital markets and economic growth.

### **Capital Market and Economic Growth Perspective**

For capital market and economic growth perspective in Thailand (Figure 3), during the past two decades, we find that both stock market and bond market in Thailand tended to have greater development especially bond market growing more than 20 times. For stock market, it collapsed after the 1997 financial crisis in Thailand. After that time, it slowly recovered. At present, the stock market is over 5 times larger than the bond market.



**Figure 3** Capital Market and Economic Growth in Thailand

Source: Bank of Thailand (2017) and Office of the National Economic and Social Development Board (2017)

At the same time, Gross Domestic Product (GDP) has continued to grow about 3 times which is the lowest compared to the stock market and the bond market around 10 and 20 times respectively. It indicated that financial sector was growing faster than the real sector delivering better financial depth<sup>2</sup>. The higher financial depth reflects the development of capital markets both broadly and deeply. The larger size of the stock market and the bond market will encourage savings and investment through transferring money into manufacturing sectors and service sectors. As a result, these support the expansion of economic activity, employment and economic growth.

### Methodology

For the study of capital market and economic growth in Thailand, it investigates the relationship among bond market, stock market and economic growth by using quarterly time

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<sup>2</sup> Financial depth measures by the ratio of total financial assets, including equities, fixed income and bank deposits to gross domestic product (GDP).

series data from 1997 to 2016. The tools of this study consist of 3 applications including unit root test, cointegration test and causality test as follow:

### Unit Root Test

In general, most of time series data are non-stationary. The movements of stochastic process depend on time trend as well as the variance of the series is diverging to infinity with time trend. The relationships between these series data are likely to be spurious regression with high R2 values but no economic meaning. Therefore, unit root is employed to test these data in order to check for stationary. For data stationary, the popular methods are Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979, 1981) and Phillips-Perron (PP) test (Phillips & Perron, 1988). Both of them test for the existence of a unit root, if the process has a unit root then it is a non-stationary time series. It means that the movements of stochastic process depend on time trend as well as the variance of the series diverges to infinity with time trend. For unit root test, the null hypothesis of the ADF and PP tests is that the variable is non-stationary. It is the method to determine whether the time series data is consistent with I(1) process with a stochastic trend (non-stationary) or I(0) process, that is stationary.

For unit root test, equations can be expressed as:

$$\Delta y_t = \mu + \gamma y_{t-1} + \sum_{i=2}^{\infty} \beta_i \Delta y_{t-i+1} + \varepsilon_t \quad (1)$$

(no time trend)

$$\Delta y_t = \mu_1 + \gamma y_{t-1} + \mu_2 t + \sum_{i=2}^{\infty} \beta_i \Delta y_{t-i+1} + \varepsilon_t \quad (2)$$

(with time trend)

$y_t$  = time series data

$\varepsilon_t$  = error term

### Cointegration Test

Cointegration test has become popular in many empirical studies. It is adopted to tests for the relationship among non-stationary time series variables. If two or more series have a unit root or I(d) process, whereas a linear combination of them is stationary or I(0), then these time series are cointegrated. It means that there exist long run relationships. The study employs this



tool to check for long run relationships among Gross Domestic Product (GDP), stock market and bond market in this study.

### Causality Test

Granger causality test has been widely used in economics to investigate the pairwise causal relationship between variables. When the variable  $x$  can explain behavior of variable  $y$ , and reduce variable  $y$ 's conditional variance:  $x$  causes  $y$ . The opposite circumstance will be expressed as  $y$  causes  $x$ . If both are true, both  $x$  and  $y$  maintain a feedback relationship or bi-directional causality. If neither is true then both  $x$  and  $y$  has independent relations or no causality. Thus, results of causality test indicate a feedback phenomenon between variables in three ways: uni-directional, bi-directional, and no causality. It is based on a bivariate linear autoregressive model of two variables (Granger, 1969) as follow:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^P \alpha_i \Delta Y_{t-i} + \sum_{i=1}^P \beta_i \Delta X_{t-i} + e_t \quad (3)$$

( $X_t$  causes  $Y_t$ , if  $\beta_i$  is not equal to zero)

$$\Delta X_t = a_0 + \sum_{i=1}^P a_i \Delta Y_{t-i} + \sum_{i=1}^P \gamma_i \Delta X_{t-i} + u_t \quad (4)$$

( $Y_t$  causes  $X_t$ , if  $\gamma_i$  is not equal to zero)

### Empirical Results

The relationships of variables are examined by cointegration test for the long run relationship and Granger causality test for pairwise variable relationship. However, it is also necessary first to determine whether time series data is stationary by using unit root test.

### Unit Root Test

The relationship between capital market and economic growth is examined by cointegration test and Granger causality test. This study investigates the role of capital market including outstanding value of bond market (BOND) and market capitalization in stock exchange of Thailand (EQ) towards economic growth. However, it is necessary to first determine whether time series data is stationary by using unit root test.

The results from these time series data are reported in Table 1

**Table 1** ADF and PP test statistics

Unit Root Test	ADF-Test		PP-Test	
	No Trend	Trend	No Trend	Trend
GDP	1.3241	-3.3144	1.5011	-3.1914
BOND	3.2187	-0.2045	3.9047	-0.0941
EQ	0.9714	-2.1228	1.5971	-1.7641
$\Delta$ GDP	-6.1241*	-7.6047*	-9.7183*	-9.1352*
$\Delta$ BOND	-6.0671*	-8.9715*	-7.1404*	-8.3214*
$\Delta$ EQ	-5.9521*	-6.8818*	-6.6063*	-6.1489*

Note: \*denotes significance at the 5% level and  $\Delta$  is first different

As can be seen from Table 1, ADF and PP test statistics indicate that all of variables namely GDP, BOND and EQ are non-stationary at their level. It cannot reject null hypothesis that there is a unit root process. They have a unit root because of the movements of stochastic process depending on time trend. After data at level using first difference, the results show that all of these variables are achieved stationary or I (1) process.

### Cointegration Test

For the study of the relationship between capital market and economic growth, to investigate the long run relationship among these key variables including GDP, BOND and EQ are necessary first to determine. This study employs Johansen's cointegration test (Johansen 1988, 1991). It is one of various popular tools in empirical economic study. The cointegration results including maximum eigenvalue and trace tests as Table 2

**Table 2** The results of cointegration test

Hypothesizes	Trace	P-value	Max-Eigen	P-value
No. of CE(s)	Statistic		Statistic	
None*	33.6883	0.0169	24.0210	0.0190
At most 1	9.6672	0.3072	7.3381	0.4499
At most 2	2.3291	0.1270	2.3291	0.1270

Note: Trace test and Max-eigenvalue test indicate 1 cointegrating equation at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

As can be seen from Table 2, Trace statistic and Max-eigenvalue statistic from cointegration test indicate that all variables have long run equilibrium with 1 cointegrating equation at the 0.05 level. Both of them reject the null hypothesis of no cointegration. In case of cointegration,

the levels of these variables are non-stationary but cointegrated. It means that all of these variables including GDP, BOND and EQ have a long run relationship or there exists a linear combination.

**Causality Test**

In this section, Granger causality test is employed to investigate relationship among variables including Gross Domestic Product (GDP), outstanding value of bond market (BOND) and market capitalization in stock exchange of Thailand (EQ) to explain the relationship between capital market including stock market together with bond market and economic growth. The results of causality test are presented as follows:

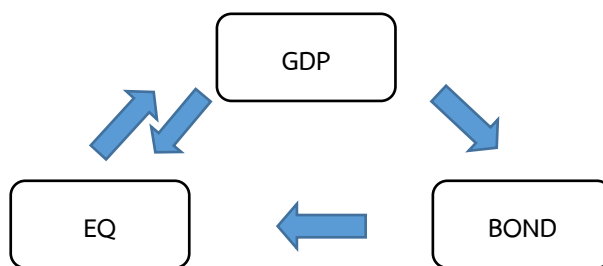
**Table 3** The results from causality test

Variables	Relationship	F-statistic	P-value
$\Delta$ EQ and $\Delta$ BOND	$\Delta$ BOND $\longrightarrow$ $\Delta$ EQ	3.32066	0.0291*
$\Delta$ GDP and $\Delta$ BOND	$\Delta$ GDP $\longrightarrow$ $\Delta$ BOND	5.1975	0.0029*
$\Delta$ EQ and $\Delta$ GDP	$\Delta$ EQ $\longrightarrow$ $\Delta$ GDP	6.8204	0.0005*
	$\Delta$ GDP $\longrightarrow$ $\Delta$ EQ	2.9482	0.0492*
The rests	No causality		

Note: A  $\longrightarrow$  B denotes causality running from variable A to variable B

\* denotes significance at the 5% level

The results from causality test in Table 3, it can be expressed as the following:



**Figure 4** The relationship between variables

As can be seen from Table 3 and Figure 4, the results from Granger causality analysis reveal the important linkages that economic growth had positive impacts on both stock market and bond market. As the expansion of Thai economy, private companies and households become higher income and wealth. Therefore, it promoted savings and investment through the

capital markets. At the same time, stock market also supported economic growth through funding allocation to private investment leading to the enlargement of manufacturing sector and employment. However, bond market has no significant effect on economic growth in Thailand during this period of time from its small size. In addition, Thai people have little knowledge about debt instruments therefore they are not popular. But it supported to drive the expansion of stock market by acting as the alternative to manage portfolio investment and risk diversification for investors.

### **Conclusions**

The aims of this study were to 1) investigate the overview of capital market and economic growth in Thailand; 2) examine the relationship between economic growth and capital market including stock market and bond market after the financial crisis in 1997. The data covered the period of 1997-2016. Capital market including stock market and bond market played the important role to raise and allocate fund to public and private sectors in Thailand. During the past two decades, both stock market and bond market tended to have greater development especially bond market growing more than 20 times. For stock market, it collapsed after the 1997 financial crisis in Thailand. After that crisis, it slowly recovered. At present, the stock market is over 5 times larger than the bond market. Whereas, Gross Domestic Product (GDP) has continued to expand about 3 times which is the lowest compared to the stock market and the bond market around 10 and 20 times respectively. Financial sector enlarged faster than the real sector leading to better financial depth.

For the relationship between capital market and economic growth, the results of this study revealed that economic growth had positive impacts on both stock market and bond market. At the same time, stock market also supported economic growth via funds allocation to private investment leading to the enlargement of manufacturing sector and employment. However, bond market has no effect on economic growth. But it supported to drive the expansion of stock market by acting as the alternative to manage portfolio investment and risk diversification for investors.

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