



RELATIONSHIP BETWEEN STOCK MARKET AND ECONOMIC DEVELOPMENT IN THAILAND: EMPIRICAL TEST OF THE WHOLE STOCK MARKET AND EACH INDUSTRY IN 1998-2012

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This study examines the bi-directional relationship between stock market and economic development through capital formation in Thailand in 1998 - 2012. While most research to date studied the impact of the entire stock market to economic growth, this paper will examine the impact of the whole stock market and each industry in the Stock Exchange of Thailand (SET) on the economy. It is hypothesized that there is positive causal relationship between the stock market and economic development in Thailand. The Regression Analysis method is utilized in the study. The result shows that there is positive bi-directional relationship between stock market development and economic growth through gross capital formation. At the industry level, the service and technology industries have significant positive effect to economic growth while the other six industries are not found to have significant impact on the national economic growth.

Keywords: Stock market development, Economic development, Gross capital formation, and Stock Exchange of Thailand (SET).

Introduction

Stock market is an importance tool for firms in raising funds for their expansion. A pricing process rewards the well-managed firms to have greater allocation of new investment resources from issuing new stocks. This increases the level of capital formation and private investment and in aggregate enhances the economic growth.

The stock market in Thailand has become an important source of funds for private firms after the Asian financial crisis in 1997. Stock Exchange of Thailand (SET) is considered as a growing emerging capital market. Since 1997, market capitalization increased from 1,200 billion baht to about 10,000 billion baht in 2012 in which the major issuers of equities are in the eight diversified business sectors.

Thailand is also a part of Asian Economic Community (AEC) which has ASEAN Exchanges plan. ASEAN Exchange is collaboration from Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. The collaboration aims to promote the growth of the ASEAN capital market by streamlining ASEAN access, introducing cross-border harmonization and creating ASEAN centric products. The ASEAN Exchanges collaboration will bring greater investment opportunities to more people as well as bring greater liquidity to collaboration members. This collaboration aims to expand opportunities for fund raising channel. (SET, 2012)

According to the Eleventh National Economic and Social Development Plan, which is a master plan, the Thai government is allocating more budgets and also implementing policies to promote the service and industrial sectors. The gross domestic product (GDP) of the nation is driven more by the service and industrial sectors especially from the hospitality and tourism sector, and also from the export sector.

There is the debate on the relationship between stock market and economic growth. The results from studies are different in countries. Well-developed stock markets have increased saving and capital accumulation, which leads to the economic growth. Also the causality exists between well-developed stock market and economic development. Studies especially in Asia found a significant positive relationship of stock market to economic development but the causality does not exist. However, some studies examined the weak or even negative relationship among them.

This study examines the bi-directional relationship between stock market and economic development through the capital formation in Thailand in 1998 - 2012. While most research to date studied the impact of the entire stock market to economic growth, this paper will examine the relationship of the whole stock market and each industry in the Stock Exchange of Thailand (SET) with the economic development.

It is hypothesized that there is positive causal relationship between the stock market and economic development in Thailand. In terms of measurement, the market capitalization per GDP is used to measure the stock market development, gross capital formation per GDP is used to represent capital accumulation, and real GDP growth rate is used for economic development.

The linkage between the stock market and economy is an interesting area to study in order to contribute meaningful policies. This study aims to provide useful recommendation in designing more appropriate policy to stabilize the financial market. Furthermore this aims to also recommend the promoting of particular industries to generate the economic growth.

Stock Market and Economy in Thailand

Stock Exchange of Thailand (SET)

From the information of The Stock Exchange of Thailand (SET), The Stock Exchange of Thailand (SET) is a juristic entity set up under the Securities Exchange of Thailand Act, B.E. 2517 (1974). Operations started on April 30, 1975. On January 1, 1991 its name was formally changed to "The Stock Exchange of Thailand" (SET). It operates mandatory to be a market or center for the trading of listed securities, and promoter of financial planning, as well as providing related services connected to such activities, without distributing any profits to members. The main operations include securities listing, supervision of listed companies and information disclosure, trading, market surveillance and member supervision, information dissemination and investor education.

The SET's primary roles are as follows: first, serving as a center for the trading of listed securities. Second, providing the essential systems needed to facilitate securities trading. Third is undertaking any business relating to the Securities Exchange, such as a clearing house, securities depository center, securities registrar, or similar activities. Fourth, undertaking any other business approved by the Securities and Exchange Commission (SEC). (SET, 2012)

SET Index is a composite index representing the price movement for all common stocks trading on the SET. The market capitalization-weight price index method is applied with the base

day of April 30, 1975. SET Index is calculated from the prices of all common stocks on the main board, The SET also provides industry group indices and sectoral indices (SET,2012).

There are eight industries in the Stock Exchange of Thailand including agro and food, consumer products, financials, industrials, resources, services, property and construction, and technology (SET,2012).

The stock market in Thailand has become an important source of funds for private firms after the Asian financial crisis in 1997. Since 1997, market capitalization increased from 1,200 billion baht to about 10,000 billion baht in 2012 in which the major issuers of equities are in the more diversified business sectors. From the date in 2013, there are 479 listed companies in SET.

Thailand’s Economic Growth

The information from National Economic and Social Development Board (NESDB) states that the economic growth rate of Thailand was at 5-6 percent from 1983 to 1986, and then increased to two digits from 1987 to 1990. The GDP was at the high level of 8-9 percent until 1995 before the economic crisis in 1997, when Thailand experienced a negative economic growth rate. The economic recovery took place in 1999 and the growth rate was at an average of 4-6 percent in 2000-2007. Thailand faced another economic recession in 2007-2008, which caused a 2.25 percent negative growth rate.

After economic crisis, GDP was increased by 5.8 percent and 7.8 percent in 2009 and 2010 respectively from the economic recovery, strong domestic demand, and higher export. In 2011, economy was expanded only 0.1 percent, mainly due to severe flood which significantly damages the consumption, investment, industrial production, export, and tourism sector while agriculture production slightly expanded. In 2012, GDP was at 6.4 percent supporting from private consumption, private investment, and government spending. During most of the period, Thailand had a satisfactory level of economic development, with increases in the international trade, international trade, as well as service level. (NESDB, 2009-2012)

The economic growth in Thailand is driven most by consumption, private investment spending, and the export value. The value of the GDP derives from three major sectors: the agricultural, industrial, and service sectors.

Table 1. Percentage of Gross Domestic Product (GDP) from Each Production Sector

	1998-2002	2003-2007	2008-2012
Agricultural Sector	10.69%	10.42%	10.68%
Industrial Sector	39.11%	40.54%	43.37%
Service Sector	50.20%	49.04%	45.95%

Source: National Economic and Social Development Board, 1998-2012.

The structure of the GDP value changed from highly generated by agricultural sector to be mostly generated by service and industrial sectors. According to the information from table 1, the industrial and service sector has increased its importance in the economy lately. The value of

industrial productions in the GDP was on average 39.11 percent during 1998-2002, and had kept increasing most of the time to 43 percent in recent periods. The service sector is the most important in terms of GDP generation. The service sector value has changed with a small range of 45-50 percent of the GDP during the past decade. (NESDB, 1998-2012)

The Thai economy is mainly driven by sharp increases in manufactured exports and also the service sector. Trade and financial openness has increased. The level of exports increased dramatically. Thailand had a trade deficit from 1983 to 1997, and since then we have had a trade surplus. The highest value of the export comes from the industrial sector. The capital inflow and outflow have been increased during the last 25 years as a result of the higher degree of openness, especially in terms of foreign direct investment. (Laokulrach, 2011)

The Eleventh National Economic and Social Development Plan, the master plan of policies for 2011-2015 also states that it is necessary to find new sources of income generation from potential services sector and creative economy as there are more constraints on the income earned from the manufacturing and the agricultural sectors due to limited industrial locations and arable land, changing climate situation, and environmental regulations.

Literature Review

There are growing literatures debating on the relationship of stock market and economic development. Most studies aim to learn if the stock market brings the economic growth or another way around. In the developed market, most research shows the strong positive causal relationship of them. Some studies in the emerging markets discover weak relationship or even negative relationship of stock market and economic growth.

Endogenous growth models focus on the relationship between financial development and long-run economic growth via the channel of transmission. From the studies, a well-developed stock market should increase saving and capital accumulation, which leads to the economic growth. Stock markets facilitate the capital allocation to the corporate sector with the lower cost of capital. The studies of Levine and Zervos (1993 and 1998), Rousseau and Wachtel (2000), and in Beck and Levine (2004) show that stock market development is strongly correlated with the growth rate of real GDP per capita.

Levine and Zervos (1998) examined a sample of 47 countries over the period 1976-1993 and found that stock market liquidity is positively and significantly correlated with the current and future economic growth, capital accumulation, and productivity development. From study of Dow and Gorton in 1997, the main role of the stock market is signaling the information to evaluate, finance, and monitor the securities. Banks may be equally effective as the efficient resource allocation.

The stock prices stimulate current consumption spending through the wealth effect. The burst of consumption spending helped propel aggregate spending and sustain the record-length economic expansion from 1991 to 2001 in United States of America. An increase in stock prices reduces the cost of capital, which enhances the firms' investment spending and economic activity. The nation's economic performance influences the nation's stock market. People pay higher prices for stock shares as companies' sales and profits increases during economic expansion (Thomas, 2006).

Many studies are done for the countries in Asia. Leigh in 1997 found that well functioning stocks market can perform its functions through pricing of shares in Singapore and leads to economic development. But the causality relationship between stock market and economic development is not found.

Caporale, Howells, and Soliman (2004 and 2005) used the quarterly data from year 1979 to 1998 to find the causal relationship of stock market and economic development through its impact on investment in Chile, Greece, Korea, Malaysia, and Philippines. A pricing process rewards the well-managed firms to have lower cost of capital and hence ensures a greater allocation of new investment resources and in aggregate enhances the economic growth. Investors are encouraged by high market liquidity to invest in equities, increasing the flow of capital and enhance the economic growth in long-run. The causality is not found in Philippines but in other 4 countries.

Study in West African Monetary Union by Tachiwou in 2009 suggests that stock market development being proxy by market capitalization and total trade value causes economic growth. This study suggests that costs of raising funds in West African Monetary Union's stock market should be downward to enhance its competitiveness and improve the attractiveness as a major source of raising funds for corporations.

Some works show the weak or negative relationship of stock market and economy. Singh and Weisse in 1998 did the research on developing countries in the 1980s and 1990s. He found that stock market does not have significant relationship with long run economic growth due to the volatility and arbitraging process which causes deficient investment allocation. There is too high vulnerability of share prices to be signals for resource allocation. Stock markets promote only short-term profits rather than long term vehicle to raise funds. Baotai and D.Ajit in 2013 found a negative relationship between real stock market development and real GDP growth in China in the long run as the result of government intervention and illiquidity. The study of developed countries shows the significant relationship of stock and economic development, but in developing counties, they are not robustly correlated (Harris, 1997).

Research Method

The study aims to explore the bi-directional relationship of stock development and economic development through the capital formation. The quarterly time series data from 1998 to 2012 were used in the regression analysis.

It is hypothesized that there is bi-directional positive relationship between the stock market and economic development through capital formation in Thailand. The development in stock market should generate higher level of private investment, and bring economic growth. The economic expansion of the nation should encourage corporations to invest more, which leads the higher demand and development of stock market.

In terms of measurement, the market capitalization per GDP was used to measure the stock market development, gross capital formation per GDP was used to represent capital formation, and real GDP growth rate was used for economic development. The data were collected from National Economic and Social Development Board, Stock Exchange of Thailand (SET), and Bank of Thailand (BOT).

The Path Regression Analysis method was utilized in the study. The stock market as a whole was studied as well as each of the eight industries from the SET, namely the agro and food, consumer products, financials, industrials, resources, services, property and construction, and technology industries, to test their impact on economic growth.

The models in the hypothesis are as followed:

$$\text{GDP}_t = a + b_1\text{GCAP}_t + b_2\text{MKTCAP}_t$$

$$\text{GCAP}_t = a + b_1\text{MKTCAP}_t$$

and

$$\text{MKTCAP}_t = a + b_1\text{GCAP}_t + b_2\text{GDP}_t$$

Where

GDP is real GDP growth rate

GCAP is gross capital formation per GDP

MKTCAP is market capitalization per GDP

The researcher used a 95 percent level of confidence in the study. The correlation among variables was tested to avoid multi-collinearity problem. The researcher used the standardized beta to measure the relationship of the independent variable to the dependent variable. The adjusted R square measures the determinant degree of each model. The Durbin-Watson value was used to identify if there was an autocorrelation among the independent variables. The Durbin-Watson value of the model with 2 independent variables with 60 observations should be 1.514-1.652.

Results of the Study

Each pair of independent variables had a correlation value of not more than 0.75, which meant that there is no multicollinearity between the independent variables so the multiple regression analysis could be applied in this study.

The model with the 95% confidence level shows that the economic growth is positively affected by the growth of stock market and capital formation growth, with coefficient of the determinant of 0.824. The capital formation is also positively impacted by the stock market. So the stock market development affects positively to the economic development through the capital formation process.

$$\text{GDP}_t = 2.53 + 0.541\text{GCAP}_t + 0.459\text{MKTCAP}_t$$

(2.913) (2.473)

$$R^2 = 0.824, \text{ F Sig.} = 0.018, \text{ Durbin-Watson} = 1.558$$

$$\text{GCAP}_t = 19.39 + 0.742\text{MKTCAP}_t$$

(8.434)

$$R^2 = 0.643, \text{ F Sig.} = 0.000, \text{ Durbin-Watson} = 1.700$$

Note: The number in parenthesis is t-statistics.

Considering the impact of each industry in the Stock Exchange of Thailand on the economic growth, the data of market capitalization per GDP of each industry was used in the study. The results show that the service sector and technology sector have significant positive effect on the economic growth. The other six industries which are agro and food, consumer products, financials, industrials, resources, and property and construction have no significant impact on the economic growth.

The result of service industry:

$$\text{GDP}_t = 2.44 + 0.587\text{GCAP}_t + 0.439\text{SER_CAP}_t$$

(3.144) (2.349)

$$R^2 = 0.710, \text{ F Sig.} = 0.029, \text{ Durbin-Watson} = 1.587$$

$$\text{GCAP}_t = 21.63 + 0.742\text{SER_CAP}_t$$

(5.215)

$$R^2 = 0.650, \text{ F Sig.} = 0.037, \text{ Durbin-Watson} = 1.654$$

Note: The number in parenthesis is t-statistics.

The economic growth of the nation is significant positive affected by the gross capital formation and the growth of service industry in the equity market. The gross capital formation is strongly affected by the development of market capitalization in service sector as the standardized beta is 0.742 and also with t-value of 8.434. The service industry development in the stock market can significantly improve the capital formation which brings the economic growth.

The result of technology sector is as follow:

$$\text{GDP}_t = 2.42 + 0.623\text{GCAP}_t + 0.428\text{TECH_CAP}_t$$

(3.157) (2.170)

$$R^2 = 0.688, \text{ F Sig.} = 0.042, \text{ Durbin-Watson} = 1.551$$

$$\text{GCAP}_t = 21.44 + 0.339\text{TECH_CAP}_t$$

(2.013)

$$R^2 = 0.620, \text{ F Sig.} = 0.05, \text{ Durbin-Watson} = 1.567$$

Note: The number in parenthesis is t-statistics.

The result shows that technology sector market capitalization also significantly increases the economic development via the capital formation process.

This study also tested the positive impact of the economic growth to the development of the stock market to consider if the bi-directional relationship of stock market and economic development exists.

$$\text{MKTCAP}_t = 204.45 + 0.215\text{GCAP}_t + 0.785\text{GDP}_t$$

(2.423) (9.054)

$$R^2 = 0.781, \text{ F Sig.} = 0.000, \text{ Durbin-Watson} = 1.625$$

Note: The number in parenthesis is t-statistics.

With 95% level of confidence, the result shows the significant positive impact of the economic growth and the development of gross capital formation on the stock market development. The model has 0.781 coefficient of the with no auto-correlation problem from the value of Durbin-Watson of 1.625.

Service sector and Technology sector development are also positively affected by the economic and capital formation development with 95% confidence level. The result of service sector is as follow:

$$\text{SER_CAP}_t = 28.87 + 0.493\text{GCAP}_t + 0.540\text{GDP}_t$$

(2.349) (2.574)

$$R^2 = 0.616, \text{ F Sig.} = 0.030, \text{ Durbin-Watson} = 1.631$$

Note: The number in parenthesis is t-statistics

The result of technology sector:

$$\text{TECH_CAP}_t = 20.38 + 0.445\text{GCAP}_t + 0.610\text{GDP}_t$$

(2.170) (2.973)

$$R^2 = 0.627, \text{ F Sig.} = 0.019, \text{ Durbin-Watson} = 1.570$$

Note: The number in parenthesis is t-statistics

Conclusion and Recommendations

The results confirm the bi-directional relationship of stock market development and economic development in Thailand. The stock development increases the gross capital formation which also affects positively to the economic growth. The development of stock market is the alternative method of raising funds for private sector to increase their investment activities which leads to the economic growth. Looking into the industry level, the study shows that the development of service and technology industries increases the investment and economic activities of the nation.

The economic development and gross capital formation also have significant positive effect on the stock market development as a whole and also to the service and technology sector development. The increasing in economic activities can increase the profit performance of the corporations which encourage investors to invest in the stock market and price of stocks can be increased.

This result is consistent with the view that stock market development enhances economic growth. Furthermore, it is in line with the economic structure of Thailand in which the service sector has contributed the highest percentage in the country's GDP followed by the industrial and agricultural sectors during the past two decades. Hospitality and tourism sub-sector in service industry generates the highest contribution in GDP of Thailand.

Based on the results, and also to achieve the Eleventh National Economic and Social Development Plan of finding new sources of income generation from potential services sector and creative economy, the government should sustain the development of service and technology industries to promote employment and the country's long-term economic growth. Government should facilitate the fund raising channel in the equity market to corporations especially for service and technology industries. The support should be more provided to the small and medium size firms providing them opportunity to expand their operations bringing higher capital formation and economic development. Government should also support public companies to benefit from the ASEAN Exchange to be the fund raising alternative leading to the stock market and economic development.

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