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EXAMINING THE EFFECT OF STOCK MARKET DEVELOPMENT ON ECONOMIC GROWTH IN THAILAND

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ABSTRACT

Thailand's stock market is considered a fast-emerging market in Asian. Previous studies indicate that the stock market (SM) in Thailand plays a vital role in boosting the economy. However, initial studies suggest that per capita GDP growth and liquidity of the stock market development (SMD) are fluctuating and the gap is very big. This study examines the impact of SMD on Economic Growth (EG) in Thailand. The indicators used for SMD are stock turnover ratio (STO) and the total value of the traded stock (TVS). EG is measured using per capita gross domestic product (GDPC). Also, two macroeconomic variables are included, which is the inflation rate and the real interest rate. A time-series data from 1985 to 2018 is used and analyzed using the autoregressive distributed lag (ARDL) bound testing approach to cointegration as well as error correction model. The findings indicate that the impact of SMD is significant on EG. STO and TVS are statistically significant in the long run but the effect for STO and TVS is positive and TVS is negative. In the short run, all indicators are not significant. So, the findings show that by increasing STO, SMD and EG will also increase. Further research is needed to look at the effect of the legal system and macroeconomic policies in Thailand as well as its effect on SMD.

Keywords: Economic growth, stock market development, stock turnover ratio, total value of the traded stock, Stock Market Liquidity

INTRODUCTION

Financial institutions are an essential intermediary that helps to meet the demand for capital in expanding a business or trade. Commonly referred sectors are the banking sectors and stock market sectors. In banking sectors, several policy changes were implemented over the years due to globalization and liberalization to help secure the financial institutions (Munusamy & Assim, 2019). So, the process of obtaining bank loans becomes rigid where financial capacity, such as repayment ability, is taken into consideration (Mariadas, Abdullah, & Abdullah, 2019). Stocks market (SM) is another channel that offers the opportunity to raise and achieve the desired financial needs. It provides an opportunity for the participant to directly involve in investment, monitor their trading and diversify their portfolio. Customization on investment length is available based on the investors' interest without interfering with the corporation's objective for investment. So, the production process can continue without any disruption. It promotes a highly liquid SM where a corporation can quickly increase its capital at lower transaction costs. As the size of the SM grows along with a highly liquid SM, it will positively contribute towards economic growth (EG) as the market can serve the needs.

Several studies have identified stock market development (SMD) as one of the contributing factors (Valickova, Havranek, & Horvath, 2015) as well as good indicators for EG (Mun, Siong,

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& Thing, 2008). However, some studies indicate a detrimental effect of SMD, or financial development in general such as Al-Zubi, Al-Rjoub, and Abu-Mhareb (2006), and Iheanacho (2016).

Previous findings vary due to several reasons; countries and time, the model used, methodology as well as the indicators used to represent financial development. These findings are significant as it helps to shape the policy and attention that the government and central bank will take. A robust financial system must be ensured and revised from time to time as misallocation of resources may disrupt economic development.

In looking at the effect of SMD and EG, Thailand becomes a latent focus. Despite that Thailand is the first country affected by the Asian Financial crisis in 1997/1998 before propagated to other Asian countries (Ibrahim, 2011), Thailand Stock Exchange (SET) continues to take into effect even after the crisis and it keeps on growing (Laokulrach, 2014).

In measuring the liquidity of the SM, indicators used is Stock Turnover Ratio (STO) measured as the percentage of GDP while Total Value of Traded Stocks (TVS) as the percentage of GDP will indicate the soundness of the macroeconomic policies implemented along with a good legal system that will protect the investors. It also will reflect the effectiveness of the SM in promoting a lower transaction cost. In measuring EG, GDP per capita (GDPC) is now commonly being used compared to GDP (Hamzah, Abdullah, & Hamid, 2019). Studies that utilized GDPC include Law, Naseem, and Kutan (2017); Samargandi, Fidrmuc, and Ghosh (2014) and Zhang, Wang, and Wang (2012).

Table 1: Thailand's GDPC Growth, TVS and STO

	GDPC Growth	TVS	STO
2009	-1.18954	44.94743	71.55531
2010	6.988481	65.20897	80.08846
2011	0.357024	58.05293	80.17881
2012	6.740728	60.07964	61.28225
2013	2.222433	83.24623	98.74275
2014	0.550266	76.26069	72.17022
2015	2.719976	67.61012	77.78619
2016	2.971633	78.8157	80.92073
2017	3.665574	74.57654	61.868
2018	3.80127	76.5442	77.19412

Source: World Development Indicators

In 2009, Thailand recorded negative GDPC growth (-1.19%). But, in 2010, Thailand had shown a remarkable improvement when GDPC growth increased to 6.99% with an increase in TVS and STO as well. In 2012, GDPC growth was at 6.7%, but STO depicts a sharp decline, from 80.2% to 61.3%, which is down by 18.9%. In 2014, STO which indicates liquidity went down again and this time it is lower than TVS, which is the first time in the past ten years. Also, GDPC growth was only 0.55% compared to 2.22% in the previous year. In 2017, STO went down again to the lowest value within the observed period and the gap with TVS is 12.71%. However, GDPC growth is now at 3.66%. Hence, the question of whether STO and TVS contribute to the growth of GDPC arises.

The objective here is to examine the dynamic impact of STO and TVS on EG as it measures liquidity in SM as well as investors' protection and effectiveness of the SM to promote lower transaction costs. In analyzing the data for Thailand from 1984 to 2018, the Autoregressive

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Distribution Lag (ARDL) approach to cointegration is being used. Interest rate and inflation rate also being utilized as the macroeconomics variables in the analysis.

LITERATURE REVIEW

The primary function of the SM is to maximize the facilities and transform the savings into an investment for the real sector. The process helps to accelerate the mobilization of savings while trying to provide a better quantity and quality investment. Transaction costs will also become lower and the exchange of productivity gains will be encouraged (Nelson, 1966). Corporate sectors also will compete to obtain investors' confidence and increase the funds. So, the investment will become more efficient. Even though savers or investors would like to keep their investment short and can withdraw their money easily and independently (Boubakari & Jin, 2010), SMDs, through its system, manage to facilitate the long term investment. Levine (1991) highlighted two main advantages of SMDs. First, the system allows the trading process to continue without disrupting the production process. This would include even the trade of ownership. Secondly, through the system in SMDs, participants can diversify their portfolio and accommodate their needs, especially for the risk-averse groups.

In market-based theory, a functional financial system is crucial in achieving as well as promoting economic performance. Based on this theory, the market should be big and highly liquid. So, better profit and incentives will be made available as well as help to enhance corporate governance. Also, through customization of risk management devices, it will facilitate and diversify the risk (Levine, 2002). Hence, it promotes savings, capital allocation and promotes long-run EG (Demirgui-kunt & Levine, 1996).

A country with a highly active and liquid SM will have a greater influence on EG compared to countries where their SM is small and less liquid (Bernard & Austin, 2011; Boubakari & Jin, 2010). In a highly liquid SMD, firms can easily increase capital as the SMD facilitates in capital allocation and growth. Combine with lower transaction cost; it will lead to a more attractive supply of stocks. Investors who demand the stocks are more interested in having a higher return from their investments with a lower risk of investment. Therefore, liquidity and the size of the SM are essential and refer to the growth in the SMDs itself. While in defining SMD, attention should be given towards the stock market's ability to meet the economy's needs. However, it does not mean that we should put liquidity and market size aside because liquidity and market size contribute towards the ability of the SM to serve. The size of the SM also closely related to SM liquidity and more liquid SM would be able to accommodate more financial needs (El-Wassal, 2013).

In measuring liquidity, commonly used indicators are the total value of stock traded (TVS) over GDP which is equal to total shares traded on the SMD exchange divided by GDP and stock turnover ratio (STO). Demirgui-kunt and Levine (1996) use these two indicators to measure liquidity. However, these two indicators are chosen because their studies involve forty countries and therefore, the ability to collect data was quite limited. TVS is important as it shows how active an SMD is and shows how active the transaction is, compared to the size of the economy. It should complement with market capitalization ratio. An SMD may indicate a big size of capital, but if the total value traded is very small, so it would indicate that it is not active and capitalize is not being mobilized efficiently. STO, on the other hand, is the value of total shares traded over market capitalization. It indicates the transaction cost and activeness of trading as to the size of the SMD.

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If the value is high, then it shows that the transaction cost is low, and vice versa. It also should complement with market capitalization ratio and TVS. Even when market capitalization is small but the value for turnover ratio is high, it indicates that the market is very active.

Compare with the banking sector, the SMD possesses one distinctive advantage, i.e., it allows the investors with liquid financing an opportunity to diversify their portfolios as they see fit. Information on the performance on the portfolio is easily accessible in assisting the investors in making the appropriate decision. So, as SMDs develop, banks may feel that the business is in jeopardy as the attention is now directed towards SMD.

Looking at the issue, Demirgüç-Kunt and Maksimovic (1996) conducted a research on the firms' choice of financing. The study focusses on thirty developing and industrialized countries. The samples were taken from 1980 to 1991. The result opposes the idea of losing business by banks to SMDs. Instead, the study stated that in a developing SMD, as the function of SMDs improves and produces a higher debt-equity ratio, banks' business will flourish. But, if SMDs were already developed, further improvement in SMDs will cause a substitution of equity for debt financing. Hence, the SMD and the banking sector are a compliment and not a substitute.

As for the effect of SMD on EG, previous works of literature stated that the effect might vary between countries, depending on the empirical model used and the method of analysis (Nyasha & Odhiambo, 2018). Boubakari and Jin (2010) conducted their research on five Euronet Countries, which consists of Belgium, France, Netherlands, Portugal, and the United Kingdom. The sample was taken from 1995 – 2008. Using Granger causality test to look at the effect of SMD towards EG, they found that SMD provides a positive effect towards EG in France, Netherlands and the United Kingdom but not significant for Belgium and Portugal. This also proves the leading role that SMD plays towards boosting EG even for developed countries like France and the United Kingdom. One of the similarities that cause the significant effect of the SMD was that the market is active and possess high liquidity. The indicators for the SMD were market capitalization, TVS and STO while growth is measured using GDP and foreign direct investment.

Aigbovo and Izekor (2015) also study the connection between SMD and EG but focus their study on Nigeria from 1980 – 2011. The time-series data were analyzed unit econometric analysis, consists of unit roots test and co-integration test. It is then followed by error correction estimation and Granger causality test. The proxies for SMD were market capitalization, STO, TVS, and All Shares Index. As for EG, the proxy used was real GDP. The results indicate that in the long run, STO and market capitalization induce a positive effect. But in the short run, STO, TVS and all share index are positively significant.

In the case of Malaysia, Choong et al. (2005) conducted research using data from 1987 – 2000 to also look at the effect of SMD on EG. The proxy for EG is per-capita nominal GDP, while SMD is measured through its size and liquidity. So, proxies for SMD size and liquidity are TVS and STO respectively. The bound testing approach is used to analyze the data followed by the Granger causality test. The result revealed that SMD and EG are co-integrated in the long run. Also, the effect is positive and significant. Granger causality test revealed that SMD Granger caused EG. In analyzing the effect of SMD, Demirgui-kunt and Levine (1996) postulate five indicators; SM size, SM liquidity, SM concentration, SM volatility, institutional development and integration with the world capital market. The study was conducted on forty-four countries over the period of 1986 to 1993 and the objective was to see and compare the development that took place in SMDs and banking sectors within the focus countries. The proxy that normally being used

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for the market size is the market capitalization and being a hypothesis to be positively correlated with risk diversification and capital mobilization. Liquidity is being measured using two indicators, the TVS and STO. The TVS should complement market capitalization to indicate that the SMDs are big and active while the STO will complement the total value of stocks traded over GDP. Malaysia has been cited in this study to have high market capitalization and TVS, but the turnover was below average. Market concentration, on the other hand, refers to the domination of the SMDs by big companies. So, high concentration is bad because these companies would control the SMD. The share of the market capitalization from the ten biggest companies is taken into the calculation and to measure volatility, a standard deviation estimate on market returns is utilized.

In Thailand, Laokulrach (2014) examined the relationship between SMD and EG. The finding revealed a bi-directional relationship between the two. The study looked at the capital accumulation from eight sectors, namely, agriculture sector, food sector, consumer products, financials, resources, services, property, and constructions. Quarterly data from 1998 to 2012 was taken from the Thailand Stock Exchange (SET). The data was also taken from the Bank of Thailand. Path regression analysis was used to analyze the data. The indicators used are real GDP growth rate, market capitalization over GDP and gross capital formation over GDP.

RESEARCH METHODOLOGY

In this section, the objective is to outline the econometric procedures in testing time-series data. The process discusses will follow the procedure suggested by Nkoro and Uko (2016) in analyzing the time-series data using the ARDL Cointegration technique, which is based on Pesaran, Shin and Smith (2001) and Pesaran and Shin (1998). The analysis will start by identifying the stationarity of the variables using the unit root test. Next, the cointegration test is engage using the ARDL cointegration technique as the technique able to incorporate the short-run and long-run relationship between the variables in a single equation. Then, the Error Correction Model (ECM) approach is utilized to test the short-term adjustment of the model. Finally, the model will be tested for its robustness using the Ordinary Least Square (OLS) method to test the association of the ARDL model with ECM.

By adopting the model by Demirgui-kunt and Levine (1996), the model is being adjusted to include STO and TVS which are disaggregated from SMD.

$$GDPC_t = \beta_0 + \beta_1 STO_t + \beta_2 TVS_t + \beta_3 X_t + \varepsilon_t \quad (1)$$

where $GDPC_t$ is real GDP per capita, STO_t is the stock turnover ratio as the percentage of GDP, TVS_t is the total value of traded stock and X_t is the control variables (interest rate and inflation rate). β_0, $\beta_1 - \beta_2$ and ε are the constant, estimated parameter in the model and error terms, respectively.

This study will employ a time-series data for Thailand. The data for the analysis is extracted from the World Development Indicators (WDI). Data analysis was made using Microfit 5.0 and Eviews 9.0.

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RESEARCH FINDINGS

Unit Root Test

The unit root test is conducted prior to the cointegration test. It will test the variables' order of integration. So, the Augmented Dickey-Fuller test is utilized. In dealing with variables with a different order of integration, whether it is *I(0), I(1)* or combination of both, it is preferable to conduct unit root test even though ARDL cointegration does not require it (Nkoro & Uko, 2016).

GDPC, TVS and RIR for Thailand depict a stationary result for a level test, either for constant or constant with the trend. But, for the first difference, constant as well as constant and trend revealed a 5% and 10% confidence level respectively. STO and INF results indicate that all results are non-stationary for both.

Table 2: Unit Root Tests

Series	Level		1st Difference	
	Constant	Constant + Trend	Constant	Constant + Trend
GDPPC	-0.36	-1.70	-3.56**	-3.53*
	(0.90)	(0.72)	(0.01)	(0.06)
TVS	-1.74	-3.24	-3.81**	-4.64**
	(0.40)	(0.10)	(0.01)	(0.01)
STO	-4.74***	-5.09***	-4.44***	4.35**
	(0.00)	(0.00)	(0.00)	(0.01)
RIR	-2.21	-3.01	-7.19***	-7.04***
	(0.21)	(0.15)	(0.00)	(0.00)
INF	-3.25**	-4.47**	-8.43***	-8.39***
	(0.03)	(0.01)	(0.00)	(0.00)

Note: *, ** and * represent significance level at 10%, 5% and 1% respectively. The figures in ( ) are the p-value.**

The findings on the unit root test indicate that the ARDL model is applicable in analyzing the data.

Autoregressive Distributed Lag (ARDL) Estimates

A cointegration test is necessary for establishing a stronger statistical and economic model. In modelling the variables, short-run information and long-run information are brought together. Also, it is necessary to test whether the empirical model establishes to possess a substantial long run relationship (Nkoro & Uko, 2016).

In this study, the sample size is relatively small due to data availability. So critical value for F-Test suggested by Narayan (2005) is utilized in comparing the critical value outlined by Pesaran et al. (2001). The latter utilized a large sample size in their study and is not applicable in analyzing data with smaller sample sizes (Narayan, 2004). The null hypothesis indicating no cointegration is rejected if the F-Test is above the upper bound of the critical values. If the value of F-Test is lower than the lower bound, then H_0 is accepted, indicating that there is no integration between the used variables. However, if the F-Test value lies between the lower bound and the upper bound, the result of the inference is inconclusive.

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Table 3: ARDL Bounds Test Results

Country	F-Statistics	
Thailand	8.1627***	
Critical Value	Lower Bound	Upper Bound
1%	5.856	7.578
5%	4.154	5.540
10%	3.340	4.624

Table 3 depicts the F-Test results for Thailand where the value is above the upper bound (1%). So, the null hypothesis of no cointegration is rejected and accepts that there is a long-run cointegration between GDPC, STO, TVS, RIR, and INF for Thailand.

Long Run Coefficient

Table 4: Long Run Coefficient

Indicators	Coefficient	t-value	p-value
STO	0.6909***	2.6324	0.01
TVS	-0.4173*	-1.8491	0.07
RIR	0.0379	0.1206	0.90
INF	0.1302	0.6641	0.51
C	2.8418***	4.8497	0.00
T	0.0132	1.5029	0.14

As for the estimated long-run coefficient estimation in Table 4, the results depicted in the table are with natural logarithm; hence, the coefficients do not need to be multiplied into a percentage (Law et al., 2017). Based on the results, STO is statistically significant and the effect on EG is positive. In the long run, a 1% increase in STO will increase EG by 0.69%, ceteris paribus. The findings support the previous findings by Bernard and Austin (2011); Boubakari and Jin (2010) and Choong et al. (2005). The result indicates that cointegration exists between STO and EG in the long run. In contrast, TVS is also statistically significant but the effect on EG is negative. This indicates that in the long run, a 1% increase in TVS will reduce EG by 0.41%, ceteris paribus. This finding is contrary to the one made by Aigbovo and Izekor (2015).

Short Run Coefficient

Table 5: Short Run Coefficient

Indicators	Coefficient	t-value	p-value
dSTO	0.0538	1.3921	0.17
dTVS	-0.0435	-1.2341	0.22
dRIR	0.0095	0.1168	0.90
dINF	0.0325	0.5748	0.57
dT	0.0033	0.9681	0.34
ECM(-1)	-0.2502***	-2.4888	0.01

Based on **Table 5**, the short-run results suggest that STO, TVS, RIR, and INF are not significant. Just like the coefficient, in the long run, the coefficient for TVS is negative but not statistically significant. ECM, however, is negative and significant, indicating the existence of a long-run relationship between the variables. The adjustment speed is equal to 25% each year.

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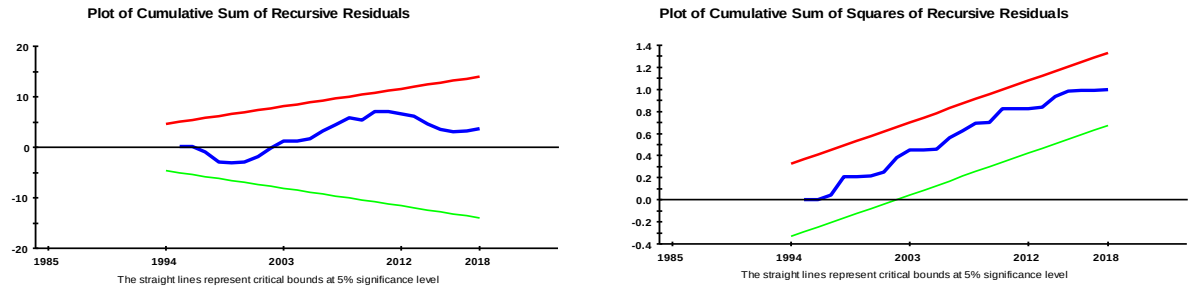
Stability Test

The following step is to look at the stability test of the estimated coefficient of the ECM empirically (Pesaran & Shin, 1998). For this, the cumulative sum of recursive residuals (CUSUM), as well as the cumulative sum of squares of recursive residuals (CUSUMSQ), is conducted. The results are as follow:

Figure 1: Plots of CUSUM and CUSUMQ statistics



Based on Figure 1**: Plots of CUSUM and CUSUMQ statistics**, it is shown that the model is within the critical line, which is at a 5% confidence level. Hence, the stability of the coefficient is confirmed for long-run growth. The CUSUM and CUSUMSQ that have been plotted are within the critical bound limit, illustrated by upper and lower bound straight lines.

Based on the analysis and findings made, it shows that STO and TVS do affect EG in the long run (i.e. cointegration). However, since the effect of STO is positive and significant, it is recommended that Thailand should focus more or STO compared to TVS to increase EG. Hence, the research objective is achieved.

CONCLUSION

In this study, the dynamic impact of Stock Market Development on Economic Growth in Thailand has been examined in which the data are from 1984 to 2018 has been used. In conducting the analysis, the ARDL Bound Testing Approach to Cointegration has opted. The analysis meant to investigate the long run and short run estimation.

The empirical results in this study stated that liquidity, represented by Stock Turnover Ratio, is positive and statistically significant in the long run. Whereas total value of traded stocks, which represents the soundness of the macroeconomic policies, is statistically significant in the long run but the effect is negative. However, the results for the short run showed that all indicators are not statistically significant, but still total value of traded stocks indicates a negative relationship.

Hence, the results indicate that liquidity is important in pursuing economic growth for Thailand and steps need to be taken to strengthen the legal system and fortify the macroeconomic policies. As one of the fast-emerging markets in the ASEAN region, Thailand has shown that Stock Market Development has played an effective role in providing a source of funds. Despite being the first country to be affected by the Asian Financial Crisis, Thailand has shown that Stock Market

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Development is able to assist the economy to grow. Further studies need to be conducted to understand the effect of the legal system in implementing Thailand's macroeconomic policies.

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