Determinants of Stock Market

Development in Southeast Asian Countries

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Abstract

This paper examines the determinants of stock market development in Southeast Asian countries. Our findings show that income growth rate, saving rate, financial development, stock market liquidity, and macroeconomic stability are the main determinants of market capitalization. Meanwhile macroeconomic stability measured by the change in inflation and the financial crisis have had a negative effect on market capitalization, other variales have a potivive effect.

Keywords: Stock market development, ASEAN stock markets, panel data analysis

1. Introduction

Since the 1990s, there have been numerous debates as to whether stock market development has led to economic growth. The question is an important one in order to clear policy implications for countries that have financial sectors that are comparatively underdeveloped. As Levine and Zervos (1998) argued that a well-established stock market not only can mobilize capital and diversify risks between market agents but it is also able to provide different types of financial services than banking sector to stimulate economic growth. The role of financial markets has been more and more affirmed as one of the main indicators of economic stability, in which stock market indexes provides indications on the economic health of a country. However, the concern on whether developing countries themselves reap any benefits from their stock market development with the boom over the past decades still exists. New theoretical work shows that stock market development may give a big boost to the long-run economic growth in emerging markets, and new empirical evidence supports this view. For example, Demirguc and Levine (1996a), Singh (1997), and Levine and Zervos (1998) found that stock market development plays an important role in predicting future economic growth. On the contrary, some analysts view stock markets in developing countries as "casinos" that have little positive impact on economic growth.

Examine the stock market performance and economic growth of Southeast Asia countries in the last two decades, we see that there is a huge booming in financial market of those countries. The growth of these emerging markets had been so dramatic and has developed faster than ever before with the explosion of the diversified investment channels. World investors have paid more attention to Southeast Asian markets such as Singapore and Malaysia, followed closely behind are Thailand, Indonesia, the Philippines and Vietnam. This is due to their large populations which provide the potential to grow their labour intensive exports, capitalize on the process of low-cost production and most importantly is a market for more goods and services when their income grow. While the gross income of region increased by 279% from $331 billion USD to $1,257 (1990-2007), the stock market capitalization mobilized in 2007 hit an unexpected number $1,210 billion, compared with $121 billion in 1990 is 901% increase. That shows a positive relationship among two indicators. However, besides those remarkable developments, these decades have also witnessed many negative fluctuations for the ASEAN region as well as the world economy. The first noticeable was the Asian financial crisis of 1997 that caused turmoil. The composite stock index in Malaysia dropped from a high of 1237.96 to 594.44 points in 1997, the Thailand Stock Index dropped to 372.69 points in 1997 from a peak of 831.57 in 1996, etc. After ten years of recovery and enhancement of financial system, the global sub-prime crisis 2008 once more pushed the ASEAN economies turndown, plunging GDP growth from 5.75% in 2006-2008 to 1.5% in 2009. A major financial channel, the stock markets in those countries underwent difficulty as well. News of problems and failures of banking institutions, insurance giants and

eventually multinational manufacturing concerns dampened investor confidence and the outlook for the next year remains gloomy.

The above vacillations of the financial market and the stock-economic relationship have long been of interest to many researchers. However, few researchers have paid attention to the whole ASEAN stock markets and measured the impact of the world crisis 2008 so far. Therefore, the purpose of this research is to identify the main determinants that affect financial market performances of six Southeast Asian countries namely Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam in the long run. The research also examines the impacts of the two crises 1997 and 2008 to ASEAN stock market volatility. Finally, the paper will further investigate the relationship between financial intermediary development and stock market development. As Demirguc and Levine (1996b) have shown that countries with well-developed financial intermediaries tend to have well-developed stock markets. Hence, we intend to examine if this complementary relationship exists in our research.

2. Model for estimation

The research employs the Constant Coefficients Model using Pooled OLS Method to examine determinants of ASEAN stock market development. This method can be applied here rather than estimating the equation in one cross section, which would be wasteful as it would leave out information in the data set. Besides, the research do not employ the more popular models whinch are Fixed Effect Model and Random Effect Model due to their limitation to test panel unit root

and cointegration in unbalance panel data. Moreover, the Random Effect Model also requires number of cross section identifiers higher than number of variables that our research can not meet. Therefore, the Pooled OLS method is used as the most appropriate one; also it can extend the number of observations. It is simpler to conduct and is defined according to the following regression model:

$$y_{it} = \alpha + \beta X_{it} + \mu_{it}$$
$$i = 1,......,N \; ; \; t = 1,.......,T_i$$

Where:

✓ y_{it} indicates the dependent variable

✓ X_{it} determines the vector of k explanatory variables.

✓ α: constant coefficients

✓ β: the vector of coefficients.

Variables are presented in table 1 and explained as follows:

Dependent variable

Stock market development (CAP): is measured by Market capitalization (also known as market value). This measure equals the value of listed shares divided by GDP. The assumption behind this measure is that overall market size is positively correlated with the ability to mobilize capital and diversify risk on an economy-wide basis.

Independent variables

_1._ Income growth rate (GDP_RATE): is annual percentage growth rate of GDP at market prices based on constant local currency. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included

Table 1: Variables summary

VARIABLE	DEFINITION	EXPECTED SIGN
Dependent Variable CAP	Market capitalization to GDP	
Independent Variables		
GDP_RATE	Income growth rate	(+)
TRADE	Value traded per GDP	(+)
TURN	Turn over ratio	(+)
SAVE	Gross domestic saving per GDP	(+)
CRE	Credit to private sector rate % of GDP	(+)
M2	Liquid liabilities of financial system (M2/GDP)	(+)
INF_CHANGE	Inflation change	(-)
CRI	Crisis - dummy variable	(-)

in the value of the products. Because higher income usually goes hand in hand with better defined property rights, better education, and a better general environment for business, we expect it to have a positive effect on the stock market capitalization.

The research measures the *stock market liquidity* in two ways.

2. First, value traded (TRADE): % of stock value traded per GDP, measures the value of stock transactions relative to the size of the economy.

3. Second, turnover ratio (TURN): calculated as the ratio of the total value traded by stock market capitalization measures the value of equity transactions relative to the size of the equity market.

The above two liquidity indicators do not directly measure how easily investors can buy and sell securities at posted prices. However,

they do measure the degree of trading in comparison to the size of both the economy and the market. Therefore they positively reflect stock market liquidity on an economy wide and market wide basis. Moreover, these two measures complement each other. For example, in Indonesia the ratio of value traded to GDP is 1.8%, but the turnover ratio is 219%, which means that Indonesia is a small but active market. In contrast, in Taiwan the value traded to GDP ratio is 151%, but turnover ratio is 24%, which means that Taiwan is a big but relatively inactive market.

4. Gross domestic savings (% of GDP) (SAVE): Gross savings are calculated as gross national income less total consumption, plus net transfers. The saving rate is calculated as the ratio of gross saving to GDP. Like financial intermediaries, stock market intermediate savings to investment projects. Usually the larger the savings, the higher the amount of capital

flows through the stock market. Thus, we expect savings to be an important determinant of stock market capitalization.

Financial intermediaries are measured by two following indicators:

5. Financial resources provided to the private sector (CRE): credit to private sector rate % of GDP. Private credit is the most comprehensive indicator of the activity of commercial banks. It captures the amount of external resources channelled through the banking sector to private firms. In addition, it measures the activity of the banking system in one of its main function: channelling savings to investors.

6. Liquid liabilities of the financial system M2/GDP (M2) includes all loans, purchases of non-equity securities, trade credits and other accounts receivable for the repayment provided for the private sector to GDP. We use liquid liabilities of the financial system to proxy M2. Liquid liabilities consists of currency held outside the banking system plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries. The M2 to GDP ratio is an indicator of the size of the banking sector in relation to the economy as a measure of financial depth, therefore we expect a positive relationship with the market capitalization.

Macroeconomic stability

7. Economy stabilization: inflation change (INF_CHANGE): we use the difference of inflation rates to measure macroeconomic stability. We calculate the change of this year's inflation rate from last year. Inflation change is used because we believe that high, stable inflation may not represent much instability, but inflation rates that bounce around a lot probably do represent macroeconomic instability. Hence, the expected relation is negative.

8. Financial crisis (CRI): is measured by a dummy variable (0,1) and value at 1 when crisis occurs - Asia crisis (1997,1998) and word crisis (2008). As Dirk (2006), crisis causes some negative impacts to the development of financial as well as stock market.

From the discussion above, the suggested model employed in this paper is as follow:

CAP = f (CRE, CRI, GDP_RATE, INF_CHANGE, M2, SAVE, TRADE, TURN)

3. Data collection and research methodology

For the data with two dimensions times series and cross sections, the paper uses the panel data analysis via Constant Coefficients Model, Pooled OLS Method, panel unit root test as well as panel cointegration test to examine the main explanatory variables of stock market developments in selected ASEAN countries in the long run. Cointegration analysis allows using non-stationary (series) data so that avoid the spurious regression results as Utkulu (1997). The "cointegration" concepts were first introduced by Granger (1981) then developed by Engle and Granger (1987). The non-stationary and stationary states are the crucial concepts of this method. It means that econometric analysis, both non-stationary and stationary processes might be linked by equi-

librium relationships that is called the cointe-grated equation and maybe interpreted as a long-run equilibrium relationship among series.

The paper will examine the Southeast Asian stock exchanges including Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam by employing the pooled estimation at fixed effects level. In the paper, all data are annually and taken from World Development Indicators of the World Bank, ASEAN Development Outlook 2009 for during the periods from 1990 to 2008.

4. Estimation results and discussion

Table 2 summarizes the results of regressions on determinants of market capitalization from pooled data on six countries of ASEAN region for the period from 1990 to 2008.

Regression no.1: Basic regression

CAP = f(CRE, GDP_RATE, SAVE, TRADE)

The basic regression includes the main indicators of stock market development including the market capitalization as a proxy of dependent variables, the GDP growth rate, savings rate, domestic credit to the private sector divided by GDP, and value traded to GDP ratio are explainable variables. The result shows that all these four variables have positive and significant effects on market capitalization. When income growth rate increases by one percentage, market capitalization increases by 2.89 percentage points. Thus, the income level pushes the development of the stock market.

When the savings rate increases by one per-centage point, market capitalization increases by 1.56 percentage point. This implies that most of the increase in savings is channeled through the stock markets. If domestic credit to the private sector divided by GDP increases by one percentage point, market capitalization increases by 0.35 percentage point. Thus, financial intermediary development promotes stock market development. If value traded to GDP ratio increases by one percentage point, market capitalization increases by 0.76 per-centage point. Therefore, stock market liquidity also has a positive effect on market capitalization.

The research's result is matched with findings of Garcia and Liu (1999) which examined ASEAN and Latin American exchanges from 1980 to 1995. Economic growth, savings rate, credit to private sector and value traded have a positive impact on stock exchange performance. However, as to their conclusion, one per-centage increase of economic growth can only boost 0.007 percentage point of capitalization while our result shows 2.89%. The reason for their low rate might be because it was done in the eighties and early nineties.This financial channel was not highlydeveloped and banking sectors still play a main role in boosting economic income.

Regression no.2: examines the effects of another measure of financial intermediary development on market capitalization

CAP = f(GDP_RATE, *M2*, SAVE, TRADE)

Basic model: CAP = f(GDP_RATE, *CRE*, SAVE, TRADE)

Table 2: Regressions on determinants of market capitalization from pooled data

Regression No.	(1)	(2)	(3)	(4)	(5)	(6)
Income growth rate	2.889940***	3.283821***	4.611204***	2.919198***	2.439791***	1.750877**
	0.845814	0.871884	1.047921	0.839894	0.863952	0.809019
Saving rate	1.558379***	1.910953***	3.787218***	1.369620***	1.802165***	1.390788***
	0.330463	0.295002	0.321510	0.337136	0.345680	0.310539
Credit to private sector to GDP ratio	0.351439***		0.312539***	0.389052***	0.335299***	0.350378***
	0.074494		0.083197	0.075559	0.074393	0.069794
Liquid liabilities to GDP ratio		0.166977**				
		0.1027878				
Value traded to GDP ratio	0.756176***	0.675765***		0.776268***	0.733966***	0.817212***
	0.067963	0.070363		0.067982	0.068266	0.064270
Turnover ratio			0.293096**			
			0.095610			
Inflation change				-1.412264**		
				0.579558		
Financial Crisis 1997,1998					-28.89019**	
					12.75522	
World Crisis 2008						-57.54589***
						8.229927
R^2	0.694586	0.693232	0.607774	0.699783	0.699086	0.732689
Figures in the parentheses are p values. *, ** and *** denote significance at the 0.10, 0.05 and 0.01 levels, respectively.

Note: Regression results are from pooled estimation. Fixed effects are employed in the regressions. The dependent variable is the ratio of market capitalization to GDP. The standard errors are in parentheses. Data are for six countries for 1990-2008. The six countries are Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Source: World Development Indicators..

To test the effects of another measure of financial intermediary development on market capitalization, regression (2) includes liquid liabilities to GDP ratio (M2) instead of domestic credit to the private sector to GDP ratio (CRE). According to the regression result, the thesis observes that the income growth rate, savings rate, the liquid liabilities to GDP ratio, and the value traded to GDP ratio all have positive and significant effects on market capitalization. When liquid liabilities to GDP ratio increases by one percentage, market capitalization increases by 0.17 percentage. This means that financial intermediary development has a positive effect on market capitalization. Comparing regressions (1) and (2), we find that both measures for financial intermediary development have positive and significant effects on stock market capitalization. In addition, domestic credit to the private sector divided by GDP seems to be a better measure of financial intermediary development and a better predictor of market capitalization. This is consistent with our expectations. As argued by Gregorio and Guidotti (1995), domestic credit to the private sector to GDP ratio has a clear advantage over measures of monetary aggregates such as M1, M2, or M3, in that it more accurately represents the actual volume of funds channeled into the private sector.

Regression no.3: examines the effects of another measure of stock market liquidity

CAP = f(CRE, GDP_RATE, SAVE, ***TURN***)

Basic model: CAP = f(GDP_RATE, CRE, SAVE, ***TRADE***)

To test the effects of another measure of stock market liquidity, regression (3) includes the turnover ratio instead of the ratio of value traded to GDP. The turnover ratio has a positive and significant effect on stock market capitalization, while the effects of all other variables do not change. When the turnover ratio increases by one percentage point, market capitalization increases by 0.29 percentage points. Comparing regressions (1) and (3), we can see that the value traded to GDP ratio with the higher coefficient (0.76%) is a better measure of stock market liquidity, and plays a more important role in determining stock market capitalization.

The result is rather different compared with the findings of Naceur (2005) which investigate the determinants of Mena Stock Exchange. By using the same method, he found that value traded plays a more important role in explaining stock market capitalization while the coefficient of turnover ratio is not significant. Levine (1991) pointed out that value traded and turn over ratios are good proxies of market liquidity but the result might be differentiated by exchange.

Regression no.4: measures the impact of macroeconomic stability to the stock market development

CAP = f(CRE, GDP_RATE, ***INF_CHANGE***, SAVE, TRADE)

The research adds measures of macroeconomic stability to the basic regression. In regression (4) the research includes the difference in inflation rate. The income level, savings rate, domestic credit to the private sector divided by GDP, and value traded to GDP ratio

all have positive and significant effects on market capitalization. However, the change in inflation has a negative and significant effect on market capitalization, which indicates that macroeconomic stability does play an important role in determining market capitalization but in a reversed way.

Also employing the impact of inflation change to stock exchange development, Garcia and Liu (1999) and Naceur (2005) conclude that the change in inflation has a negative and insignificant effect on market capitalization, which indicates that macroeconomic stability does not play an important role in determining market capitalization. However, Yartey (2008) have found that inflation has a positive sign even though it is not statistically significant.

Regression no.5: examines the impactss of the Asia crisis (1997,1998) on the volatility of stock exchange

CAP = f(CRE, GDP_RATE, SAVE, TRADE$_,$**CRI$_{97}$**)

To test the effects of this turmoil crisis (1997 and 1998), a dummy variable is added into the basic regression. This dummy variable is defined as 1 for the year of 1997, 1998 and 0 for the others. It is designed to reflect the impact of bankruptcy on the financial system in Asia in 1997, 1998 originated from Thailand. Regression shows that beside the basic determinants, the dummy variable has a negative and significant effect on market capitalization, which indicates that this Asian crisis has a strong impact on stock market development of the region to make market capitalization fall 28.89%.

Regression no.6: examines the impact of the world crisis (2008) to the votality of ASEAN stock exchanges

CAP = f(CRE, GDP_RATE, SAVE , TRADE$_,$**CRI$_{08}$**)

As regression result in column (6), we see that the recent sub-prime crisis in 2008 began from the failures of large financial institutions in the United States has negative impacts on the stock development of the region and hit this financial channel very hard, plunging the market capitalization down 57.54%. Compared with the Asia crisis, this turmoil has a global affect and makes a sharp reduction in the value of equities (stock) and commodities worldwide that still un-recovered after two and a half years, the stock markets in those countries still underwent difficulty. With recession setting into developed markets, there are also contagious effects on other financial markets which investors termed global financial crisis till now.

In summary, two interesting results are obtained from the above regressions. First, the growth rate, the savings rate, financial intermediary development (measured by both domestic credit to the private sector divided by GDP and liquid liabilities divided by GDP), stock market liquidity (measured by both the value traded divided by GDP and turnover ratio), are important predicators and have the positive relationship in examining the market capitalization. Second, macroeconomic stability (measured by the change in inflation) and the financial crisis (both Asia 1997 and world crisis 2008) impact the exchange development

in an opposite way. Especially, the crisis is the most impacted indicator that affects the market capitalization down 29-58%, this result is also the answer of the second hypothesis that the crisis does strongly impact the votality of stock markets in ASEAN countries.

5. Conclusion and policy implications

5.1. Conclusion

By using Fisher combined Johansen cointegration test and the Constant Coefficients Model using Pooled OLS, we find that the income growth rate, saving rate, financial intermediary development, stock market liquidity, and macroeconomic stability are important predictors of market capitalization and those variables have the positive long run relationship with market capitalization. This finding is consistent with Wongbangpo and Sharma (2002), Ramin and Tiong (2000) where growth rates are related to stock market performance. The governments of Singapore, Malaysia, Thailand, Indonesia, Philippines and Vietnam are consistently focusing to improve the countries' economic development thereby encouraging financial stability, consistent with Beck and Levine (2004) which stated that stock market development is strongly correlated with growth rates of real GDP income.

The research also confirms that macroeconomic stability (measured by the change in inflation) and the financial crisis (both Asia 1997 and world crisis 2008) have a negative impact on the exchange development. Especially, the crisis is the most impacted indicator that plunging the market capitalization turndown 29%-58%. The research also con-

firms that financial intermediaries and markets are complements instead of substitutes.

In addition, the research found some differences in stock market development among these countries. As examined, a more developed stock market in Singapore and Maylasia due to the sustained economic growth, the higher saving rate, the more liquid stock market, and the more developed banking sector in these two countries. The less developed exchanges are Thailand and Indonesia due to the smaller market in term of value traded to GDP, and unstable politics also partially affect stock market performances of those countries. Noticeably, the Philippines is the longest standing exchange in the region but also is the lesast developed mainly due to its illiquidity and lower saving rate. The last country is Vietnam with the new establishment since 2000, this country is trying to build up an attractive financial mechanism, however, giving that the fluctuant economy, small market size and low liquidity, its performance is not remarkable so far.

5.2. Policy implications

From economic theories, the results of this paper as well as based on the reality of the Southeast Asia, some important strategies are given so that the stock market of the region can be improved:

First, the evidence indicates that economic development plays an important role in stock market development. Thus, it is important to liberalize the economy when undertaking financial liberalization.

Second, stock market liquidity has a positive effect on market capitalization. In Indonesia and the Philippines, even though their stock exchanges have long been established but low liquidity hinders the development of stock markets, the stock market has not been yet an attractive financial channel. Therefore, those countries should enhance liquidity through which these countries can promote their stock market development. They should also increase the number of instruments traded on those stock exchanges to promote liquidity and risk diversification. Improving efficiency of trading systems should be paid attention in order to determine the ease and confidence with which investors can buy and sell their shares. For the new established exchange as Vietnam, besides above, the government's strategy should continue to encourage listing on the stock market of additional shares of State Ownership Enterprises (SOEs) to expand the current limited pool of instruments, privatize more SOEs, as well as encourage SOEs to rise long-term funding through the issuance of fixed income securities.

Third, gross domestic savings play an important role in determining the long run development of the stock market. However, a major problem facing in ASEAN countries, like many developing countries, is the low, unstable savings rate and less attractive financial promotion policies. Thus, fiscal incentives should be provided to financial institutions to encourage them to mobilize more savings.

Fourth, the stock market is a complement rather than substitute for the banking sector. Thus, policies should be put in place to promote the efficacy of the banking sector. One of the first policies is to have less state involvement in the system. This includes cutting back on public ownership of financial institutions and minimizing monetary financing of budget deficits, linking the development of securities market with the development of capital markets, money markets, insurance markets. Besides, a more opened approach to multinational banks and other institutions which would also benefit the industry in terms of financial innovation. A stronger, more transparent institutional and legal framework should consolidate the sector. Some developing financial intermediaries can promote stock market development with the successful examples of Singapore, Malaysia and Thailand exchanges.

Lastly, crises and contagion seem to be the price that some countries have to pay to integrate the international financial system. The challenge for policymakers is to manage the process as to take full advantage of the opportunities, while minimizing the risks. ASEAN countries should ensure that the financial system is prepared to cope with foreign capital flows and external shocks. More comprehensive policies for risk management are needed to build solid economies, in particular in terms of regulation and supervision of the financial system.

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