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Do Stock Market Development Variables and Economic Growth Variables have a similar Relationship in Different Countries?

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Abstract: This paper examines the relationship between stock market development and economic growth variables in Malaysia and Thailand. We investigated the relationship by using correlation and regression methods for the data from 1988 to 2012 obtained from World Bank data base. Economic growth variables used were gross domestic product and inflation, while stock market development variables were market capitalisation and total value of shares traded. In regression gross domestic product was the dependent variable while market development indicators were independent variables. The result for Malaysia revealed that growth domestic product and market variables have positive increasing trend and positive correlations between them. Inflation was found to have positive correlations with market capitalisation and negative correlation with the total value of shares traded. The regression results show that market capitalisation has positive while the total value of shares traded has negative relationships with gross domestic product. In Thailand gross domestic product and market variables have positive increasing trend and positive correlation. Market variables revealed negative correlations with inflation. The regression results show a positive relationship between market variables and gross domestic product. We found that not all stock market development and economic growth variables show a similar relationship in different countries.

Key words: *economic growth; stock market development; market capitalisation; total value of shares traded; relationship.*

1. INTRODUCTION

Good achievements in economic gross can be attained with the help of the good financial market. The financial market is the interactions of the demands from the lenders who need funds to finance their projects and the supply from the investor with surplus funds for investments. One among the components of the financial market is the stock market. In a stock market, companies obtain funds to finance their projects or business by issuing short or long term securities and other financial derivatives. On the other hand, investors invest their funds in securities issued through the stock market. The easy access to the funds through the market and other financial channels induce the economic growth by increasing the level of investments and cause the smooth flow the business.

The relationship between economic growth and market development is very important in predicting the performance of the market in stimulating the growth of the economy. It was found that some factors of market development have a direct relationship with economic growth of the country, among the factors include market capitalisation (MC), total value of shares traded (STV) and turnover of the stock market [1].

This paper intends to firstly describe annual characteristic of market development and economic growth factors of each country; Malaysia and Thailand. Secondly, to find if the market development and economic growth factors of each country have the same behavior (trends). Lastly establishes linear relationship between gross domestic product (GDP), MC and STV of each country; Malaysia and. Thailand.

2. LITERATURE REVIEW

The assessment of the impact of the capital market on socioeconomic development in Nigerian revealed that there is a relationship between the market and economic variables, but that relationship of market variables

does not impact well. This study used the regression method on data collected from the Nigerian stock market for a period from 1981 to 2008; GDP was used as a proxy for socioeconomic development and market capitalisation as a proxy for stock market [2]. The influence of the economic growth of the stock market in Romania for a period from 2000 to 2009 revealed a positive correlation which indicates the existence of the relationship between the economic growth and the stock market. The study also suggested that economic growth stimulates financial development [3]. The regression ran on 46 observations of quarterly series data from 2000 to mid 2011in Kenya revealed the positive relationship between economic growth as indicated by GDP and stock market development as indicated by Market capitalisation and the stock traded volume [4].

The use of correlation and Granger Causality Regression Techniques to find the correlation and causality between the stock market and macroeconomic variables in India by using annual data from 1981 to 2006, found no causal relationship between the stock market indicator and real gross domestic product in India. The study concluded that Bombay stock exchange indicator used in the study cannot serve as an indicator for the India's growth and development [5]. While the other study in India revealed no causal relationship between the stock market indicator and real gross domestic product, another study in Nigeria using the same method of Johansen co-integration and Granger causality for the data from 1990 to 2010, revealed a long term relationship between economic growth and market capitalisation [6].

An investigation of the relationship between economic growth measured using GDP per capita and stock market development measured using the size of the market and liquidity in Pakistan, concluded by addressing the importance of the increasing both the size and liquidity of the market in order to achieve economic growth[7].The extent to which the small stock market influences the economic growth was tested by using regression tree techniques, this study revealed that the economic growth and financial development in countries with low market capitalisation have negative relationship with stock market development as compared to the countries with higher market capitalisation which show positive relationship among economic growth, financial development and stock market development [8].

The investigation on the efficiency of the Nigerian capital market by using regression analysis and the data from 1961 to 2004 revealed a link between economic growth and market capitalisation; also the study found that the stock market has less contribution to the economic growth [9]. The examination of the relationship between macroeconomic variable and stock market performance using the data from 2006 to 2011, produced mixed results, firstly the study found the gross domestic product, exchange rate and unemployment have positive relationships with the stock market, and on the other hand, inflation and prime lending rate were found to have a negative relationship with the market variables [10]. The examination of the influence of the economic growth and capital market development in Romania by using regressions and vector autoregressive revealed that there exists a feedback effect between capital market development and economic growth, and the two variables were found to have positive correlation, but the economic growth was found to have strong influence to the capital market [11]

3. DATA METHODOLOGY

This study aims to establish the relationship stock market development and economic growth variables using a set of data for Malaysia and Thailand. The data used were collected from the World Bank database, covered, 25 observations from years 1988 to 2012.Correlation analysis was used to find the correlation between GDP, MC, STV and inflation (INFL). The linear regression method was used to establish linear relationship between GDP, MC, and STV. The data were measured in US dollar (USD). In this study the economic growth is presented by GDP and INFL while the capital market development is presented by MC and STV. This study regressed GDP on MC and STV for each country using the following regression models.

$$GDPM = C+\beta 1MCM + \beta 2STVM + \varepsilon 1 \quad \text{.....(1)}$$

$$GDPT = C+\beta 1MCT + \beta 2STVT + \varepsilon 2 \quad \text{.....(2)}$$

Where

GDPM and GDPT are the gross domestic products for Malaysia and Thailand respectively. They are the dependent variables.

Cs are the regression constants for equations 1 and 2 above.

MCM and MCT are independent variables for the market capitalisation for Malaysia and for Thailand respectively.

STVM and STVT are independent variables for a total value of shares traded in Malaysia and Thailand respectively.

B1s are the slopes of the equations for the MCM and MCT for Malaysia and Thailand respectively

B2s are the slopes of the equations for the STVM and STVT for Malaysia and Thailand respectively

$\varepsilon 1$ and $\varepsilon 2$ are the standard errors (residues) of the estimate for equation 1 and 2 above.

C, $\beta 1$, $\beta 2$ and ε are not the same for the two equations.

4. RESULT

The table 1 shows descriptive statistics for GDPM, MCM, STVM GDPT, MCT and STVT. These statistics are mean, maximum, minimum, standard deviations and other measures of distribution. On the side of Malaysia the table 1 shows averages for GDPM, MCM and STVM are 1.24E+11, 1.89E+11, 7.20E+10, respectively. The GDPM of ranges from USD 3.53E+10 to USD 3.04E+11 The MCM of Malaysia ranges from USD 2.33E+10 to 4.76E+11with an average MCM of USD 1.89E+11. The STVM averaged to 7.20E+10; with the highest value of USD 1.74E+11 and minimum value of USD 2.62E+9. MCM has a higher standard deviation of 1.20.E+11 while STVM has the smallest of 5.26E+10 The table1 reveals that GDPM has the highest values of skewness, and Jarque-Bera of 0.985741 and 4.067738 respectively, while MCM has highest Kurtosis 2.893552. STVM shows the smallest Skewness, Kurtosis and Jarque-Bera value of 0.457184, 1.973054 and 1.969467 respectively.

On the side of Thailand the table 1 shows the averages for GDPT, MCT and STVT are 1.72E+11, 1.10E+11, 8.17E+10, respectively. The GDPT ranges from USD 6.17E+10 to USD 3.66E+11. The MCT of Thailand ranges from USD 8.81E+9 to 3.83E+11with an average market capitalisation of USD 1.10E+11. The STVT in Thailand averaged to USD 8.17E+10; with the highest value of USD 2.32E+11and minimum value of USD 5.60E+9.MCT has a higher standard deviation of 9.22.E+10 while STVM has the smallest of 6.56E+10. Also the table1 reveals that MCT has the highest values of skewness, Kurtosis and Jarque-Bera of 1.326906, 4.470429 and 9.588416 respectively, while GDPT shows the smallest Skewness, Kurtosis and Jarque-Bera value of 0.945829, 2.873571and 3.744122 respectively.

Table 1. Descriptive statistics of Malaysia and Thailand

	MALAYSIA			THAILAND		
	GDPM	MCM	STVM	GDPT	MCT	STVT
Mean	1.24E+11	1.89E+11	7.20E+10	1.72E+11	1.10E+11	8.17E+10
Maximum	3.04E+11	4.76E+11	1.74E+11	3.66E+11	3.83E+11	2.32E+11
Minimum	3.53E+10	2.33E+10	2.62E+09	6.17E+10	8.81E+09	5.60E+09
Std. Dev.	7.78E+10	1.20E+11	5.26E+10	8.46E+10	9.22E+10	6.56E+10
Skewness	0.985741	0.768239	0.457184	0.945829	1.326906	1.124265
Kurtosis	2.864771	2.893552	1.973054	2.873571	4.470429	3.449796
Jarque-Bera	4.067738	2.470934	1.969467	3.744122	9.588416	5.477294

Figure 1 below shows the trend of GDPM, MCM and STVM. The vertical line of the graph represents values of GDPM, MCM and STVM measured in USD while the horizontal axis shows the number of years from 1988 to 2012.The graph was obtained after plotting GDPM, MCM and STVM against a number of years. The upper curve marked with smaller triangles is the MCM curve, most of the time the MCM curve is above the GDPM and STVM except in 1997 the curve was under both GDPM and STVM, and also in 2008 the curve was under GDPM curve. The figure 1 below also shows that MCM curve is increasing with the time period. The MCM was USD 2.33E+10 in 1988 increased by a factor approximate factor of 4.02 to USD 9.36E+10 in 1997. From 1997 MCM increased by 5.1 times to USD 4.76E+11 in 2012.

The middle curve is GDPM; between 1992 and 1997 the curve is below MCM and STVM, after 1997 the GDPM curve is in the middle between MCM and STVM, except for the year 2008 the curve was above MCM curve. The curve increases as the time period increases. GDPM was USD 3.53E+10 in 1988 it increased by a factor of 2.8 to USD 1E+11 in 1997. From 1997 the GDP increased by a factor of 3.0 to USD 3.04E+11 in 2012.The last curve is STV curve, the curve is below MCM and GDPM between the periods of 1998 to 2012, the curve also increases with the time period. STVM was USD 2.62E+09 in 1988 increased by an approximate factor of 58.4 to USD 1.53E+11 in 1997. From 1997 the STVM increased by 0.8 times to USD 1.24E+11 in 2012, in generally the STVM grew by 47.5 times from 1988 to 2012.

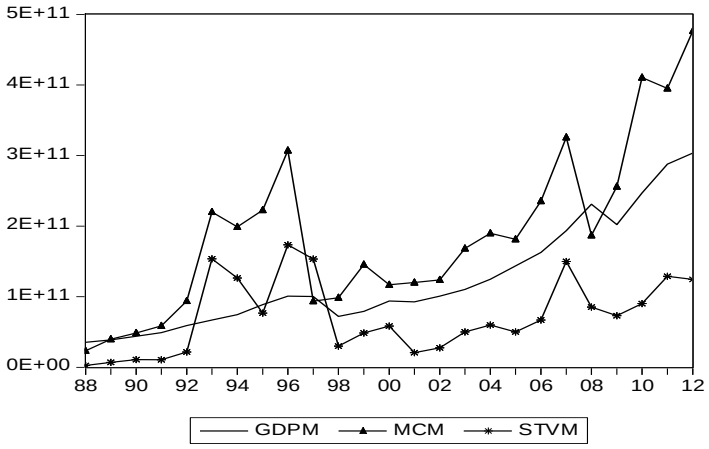

Figure 1. The trends of GDPM, MCM and STVM

Figure 2 below shows the trend of GDPT, MCT and STVT. The vertical line of the graph represents values of GDPT, MCT and STVT measured in USD while the horizontal axis shows the number of years from 1988 to 2012.The graph was obtained after plotting GDPT, MCT and STVT against a number of years. The upper curve represents the GDPT curve, the curve is found to increase with the time period. GDPT was USD 6.17E+10 in 1988 increased by 2.4 times to USD 1.51E+11 in 1997. From 1997 the GDP increased by 2.4 times to USD 3.66E+11 in 2012.The middle curve is MCT; the curve most of the time is below GDPT and above STVT. The curve increases as the time period increases. MCT was USD 8.81E+09 in 1988 increased by a factor approximate factor of 2.7 to USD 2.35E+10 in 1997. From 1997 MCT increased by 16.3 times to USD 3.83E+11 in 2012. The last curve is STV curve, the curve is below GDPT and MCT, the curve also increases with the time period. STVT was USD 5.6E+09 in 1988 increased by an approximate factor of 4.3 to USD 2.42E+10 in 1997. From 1997 the STVT increased by 9.5 times to USD 2.29E+11 in 2012.

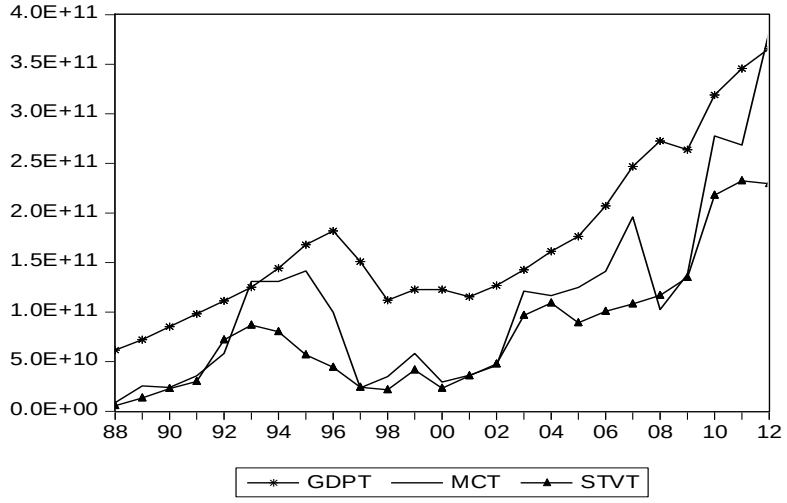

Figure 2. The trends of GDPT, MCT and STVT

The Table 2 below shows the correlation matrix results for the GDPM, MCM, STVM, INFLM, GDPT, MCT, STVT and INFLT. On Malaysia side the correlation coefficient between GDPM and MCM is 0.858799, while the correlation between GDPM and STVM is 0.472943. Both MCM and STVM produced correlations of -0.114and 0.031822 respectively with INFLM. On Thailand side, the correlation coefficient between GDPT and MCT, is 0.89695, while the correlation between GDPT and STVT is 0.925952. INFLT produced the correlations of -0.15893 and is -0.18858 with MCT and STVT respectively.

Table 2. Correlation Matrix Malaysia and Thailand

MALAYSIA			THAILAND		
	GDPM	INFLM		GDPT	INFLT
GDPM	1	-0.01462	GDPT	1	-0.17758
MCM	0.858799	-0.114	MCT	0.89695	-0.15893
STVM	0.472943	0.031822	STVT	0.925952	-0.18858
INFLM	-0.01462	1	INFLT	-0.17758	1

The table 3 below shows the result obtained after running the regression of GDPM on MCM and STVM. From the table, we see that C is equal to 2.34E+10 while MCM and STVM coefficients are 0.657238 and -0.331235 respectively. The t-statistics for MCM and STVM are 7.096917 and -1.570346 respectively. The coefficient of determination R squared is 0.763990 and the Durbin-Watson statistic of 1.550724.

Table 3. Regression results Malaysia

Dependent Variable: GDPM				
Method: Least Squares				
Sample: 1988 2012				
Included observations: 25				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.34E+10	1.53E+10	1.530721	0.1401
MCM	0.657238	0.092609	7.096917	0.0000
STVM	-0.331235	0.210931	-1.570346	0.1306
R-squared	0.763990	Mean dependent var		1.24E+11
F-statistic	35.60819	Durbin-Watson stat		1.550724

The table 4 below shows the result obtained after running the regression of GDPT on MCT and STVT. From the table, we see that C is equal to 7.39E+10 while MCT and STVT coefficients are 0.219632 and 0.904978 respectively. The t-statistics for MCT and STVT are 1.063257 and 3.115325 respectively. The coefficient of determination R squared is 0.864357 and the Durbin-Watson statistic of 0.713434.

Table 4. Regression results Thailand

Dependent Variable: GDPT				
Method: Least Squares				
Sample: 1988 2012				
Included observations: 25				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.39E+10	1.05E+10	7.009636	0.0000
MCT	0.219632	0.206565	1.063257	0.2992
STVT	0.904978	0.290492	3.115325	0.0050
R-squared	0.864357	Mean dependent var		1.72E+11
F-statistic	70.09534	Durbin-Watson stat		0.713434

DISCUSSION OF RESULTS

The results obtained in Table 1 above for skewness, Kurtosis and Jarque-Bera indicate that the GDPM, MCM STVM, GDPT, MCT and STVT distributions are not normally distributed, are skewed to the right, and with GDPM and MCT show the highest skewness of 0.985741 and 1.326906 for Malaysia and Thailand. The results of trends in figure 1 for Malaysia show that GDPM, MCM and STVM have positive trends with MCM grows at the higher rate compared to GDPM and STVM which grow at the rate below MCM. While in Thailand the trends show that GDPT, MCT and STVT have also positive trends with GDPT grows at a higher rate compared to MCT and STVT which grow at a lower rate below GDPT.

In Malaysia the variables show different degrees of relationship to each other. MCM shows a positive significant relationship with GDPM and a negative relationship with INFLM, this means that MCM is increasing when GDPM is increasing, while MCM is increasing when INFLM is decreasing. The higher positive correlation coefficients between GDP and MC, GDP and STV, means these three variables have positive linear associations, when one tend to increase the other variable also will tend to increase and the opposite is true for all variables.

In Thailand MCT shows a positive significant relationship with GDPT and a negative relationship with INFLT; this means MCT has a positive linear association with GDPT in such a way that MCT is increasing the GDPT is increasing, while MCT shows a negative association with INFLT, when MCT is increasing the INFLT is decreasing. On the other hand STVT shows a positive significant relationship with GDPT and a negative relationship with INFLT; this means STVT and GDPT have a positive association and are increasing together, while STVT and NFL have a negative association when STVT is increasing INFLT is decreased.

On Malaysia side the results of regression show that MCM has positive impact to the GDP with a positive coefficient of 0.657 while STVM shows a negative relationship to GDPM with a coefficient -0.331. The contribution of the MCM and STVM are very small and their coefficients are statistically different from zero. If STV is constant, for every USD 100 increase in MCM, We expect GDPM to increase by USD 65.7, and if MCM is constant, for every USD 100 increase in STVM, We expect GDPM to decrease by USD 33.1.In Thailand side the results of a regression show that MCT and STVT have positive impact to the GDPT with positive coefficients of 0.219632 and 0.904978 respectively. The contribution of the MCM and STVM to GDPT is very small, the STVT coefficient is statistically different from zero while the MCT coefficient do no statistically differ from zero. If STVT is constant, for every USD 100 increase in MCT, We expect GDPT to increase by USD 21.9632, and if MCT is constant, for every USD 100 increase in STVT, We expect GDPT to increase by

USD 90.4978.

5. CONCLUSION

This paper intended to find if the market development variables produce the same impact on economic growth variables of Malaysia and Thailand. We found that the market development and economic growth variables distributions are not normally distributed and have positive increasing trends in both countries. From the results MCM, STVM have positive correlation with GDPM while MCM shows negative correlation with inflation and STVM has positive correlation with inflation. On the other hand MCT, STVT have positive correlation with GDPT while MCT and STVT show negative correlation with inflation. The regression result revealed that GDPM has a positive relationship with MCM and negative relationship with STVM while in Thailand GDPT has a positive relationship with both MCT and STVT. From the discussion we found that the MCM and MCT have positive relationships with their respective GDPM and GDPT while STVM has a negative relationship with GDPM and STVT has a positive relationship with GDPT.

These results indicate that not all stock market development variables and economic growth variables show a similar relationship in different countries since market capitalisation and gross domestic product showed a similar relationship in Malaysia and Thailand, but the total value of shares traded and, gross domestic product show different relationships in Malaysia and Thailand.

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