

Macroeconomic Factors and Stock Price in Malaysia

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Abstract

Stock prices move every seconds, up and down, and it never waits for an investor to make a decision. Investors, economists and the policy makers needs to understand the macroeconomic factors that influences the stock price as the factors plays a critical role in shaping the stock market. Furthermore, economists and policy makers should know how to react when the factors change, while investors should understand whether or not they should invest their money. Seven macroeconomic variables were collected for this study, which is the earnings per share, lending interest rate, consumer price index, gross domestic product, average crude oil price, dividend per share, and narrowed money supply (M1). However, due to strong correlation among the variables, earnings per share, gross domestic product, the average crude oil price, and narrowed money supply is excluded in regression model. Dividend per share, consumer price index, and lending interest rate is used in this study. The results of this paper reflected that gross domestic product, oil price and money supply are strongly correlated; inflation is statistically significant and positively influence the stock price, and finally the lending interest rate negatively influence the stock price.

Keywords: Macroeconomic; money supply; lending interest rate; inflation; stock price

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1.0 Introduction

Stock markets are affected by internal factors such as liquidity, performance, earnings and other macroeconomic factors such as economic condition of the country, political stability, changes in policies, and many more. Stock prices movement depending on the information revealed and investors can formulate strategies to gain profit from the changes in price. Whether an investor would hold a long-term position or short-term position, for an investor to be able to formulate a reliable strategy to invest, the investor should have the skill to be able to determine the price movement consistently.

Stock market has become easily accessible with internet these days. Many banks provide investors with easy to manage online investment accounts which has a lower cost. The banks that provide this service also offers competitive price in order to attract investors to use their services, which made investors today being able to enjoy the low cost and efficient trading experience. However, this brings many inexperienced investors to enter into the stock market, clouded with the image of wealthy investors in the Wall Street. Many investors attempted to profit from the stock market but failed, especially young investors who can afford to take bigger risk, in return for bigger rewards. Investors try to predict the market movement and invest in the particular market with optimism, but they disregarded macroeconomic variables that would affect the stock prices. Other than that, the economists, policy makers, and other professionals involved in the capital market faces challenges in predicting the market movements.

Fundamental analysis is a method that examines economic and financial related factors and helps to evaluate the value of the firm. The general rule in fundamental analysis is that, when the stock price of a firm is undervalued, investors should buy, and when the stock price is overvalued, investors should sell. Fundamental analysis should take into consideration of macroeconomic variables such as gross domestic product (GDP), inflation (measured by consumer price index, CPI), lending interest rate and other fundamental factors, these variables together have potential to influence the stock prices of a company.

Many models evaluate the company's value by looking at the internal factors such as Capital Asset Pricing Model (CAPM), it is used to calculate the risk and expected return of investment, which help investors to make their investment decision; Dividend discount model (DDM) is a model that helps to evaluate a company's value based on discounted dividend. The other commonly used Discounted Cash Flow (DCF) model came help to decides if a company is overvalued or undervalued. However, external factors too would affect companies in different ways, for example, the 2007 and 2008 financial crisis affected the financial sector in which many big financial institutions were shut down, bailed out, or acquired, such as AIA bailed out by the government, Lehman Brother acquired by other institution, and American Home Mortgage which filed for bankruptcy; whereas the non-financial sector doesn't absorb as much impact as the financial sector. Other external factors such as narrow money supplies, lending interest rate, and consumer price index would also affect the company's stock price, as in economy, these factors would affect how much disposable income a consumer have, and whether or not they are more willing to save or spend, which will push the demand and supply of product and services in all the different sectors.

This article aims to study the relationship between macroeconomic variables and the stock price, whether the variables would affect the price positively or negatively in Malaysian stock market. By the end of the study, this paper should be able to see the relationship of tested macroeconomic variables and the stock prices, result from this study should help investors, policy makers and economists to understand the variables that would influence the movement of stock prices.

This paper is organized into four sections. The first section gives an introduction to the stock market and explains the importance of looking into the relationship between macroeconomic variables and stock price. The second section discusses the Efficient Market Hypothesis theory and the findings on the variables. Section three discusses about the data and the methodology; followed with section 5 on results and analysis. The final section gives the conclusion and discusses the limitation and future scope.

2.0 Literature review

Efficient Market Hypothesis describes market as fully efficient if stock prices reflect all the available information in the market (Fama, 1970). Fama (1965) explains that in the weak-form of EMH, the current prices fully reflect all information in historical prices, in other word, no investors could profit from methods formulated based on historical price patter; prices in a semi-strong EMH will react instantaneously to new publicly available information; and a strong-form EMH would affect the stock prices regardless if the new information is available publicly or privately. EMH is used to explain how stock prices behave when new information is announced. Ibrahim and Abdul Rahman (2003), and Balkiz (2003) found out Malaysia follows the weak form of EMH because the results rejected the random walk theory. Study by Suleman, Hamid, Ali Shah, Akkash, and Shahid (2010) shows that Malaysia is one of the country where investors can gain arbitrage benefits because of the market inefficiency.

In determining the macroeconomic variables that affect stock prices in United Arab Emirates (UAE), Al-Tamimi, Alwan, & Abdel Rahman (2011) developed an empirical model to explain the relationship of EPS and DPS, price of crude oil, GDP, CPI, lending interest rate, and money supply. His study found out that dividend per share has the most influence on UAE stock price, result also shows narrowed money supply and GDP has positive relationship with the stock prices and the inflation and interest rate have negative relationship with stock prices.

Dividends are profit sharing distributed to shareholders periodically by a company using the company's earning, it is decided by the board of director and issued as cash, stock, or other properties. Dividend as a factor that affect stock prices has been studied by many researchers and produced mixed result, one of the prominent study that argues dividend have no impact on the company's stock price is a series of paper written by Modigliani and Miller (1958, 1961, 1963).

Modigliani and Miller (1958) proposed a theorem, which is well known as Modigliani and Miller's theorem (MM's Theorem) today, the theorem states dividend policy would not influence, and Modigliani and Miller's studies are supported by other researchers such as Friend and Puckett (1964) and Black and Scholes (1974). However, there are also studies that argue otherwise, the change in dividend payment had a significant positive relationship with the company's stock price in Fama and Blahak (1968). Study by Fama and Blahak (1968) was supported by Capstaff, et al. (2004), where the study shows stock market reacts to positive dividend announcements. Bhattacharya (1979, 1980) shows that dividend policy can be used to anticipate a company's future performance, and when the changes in dividend yield is low, the stock returns is higher.

Inflation affects a country in many ways, it would affect buyer's purchasing power which would lead to the changes of behaviour of how people spend their money. For stock market, Fama and Schwert (1977) found out inflation influence the stock price negatively, while other studies such as Hardouvelis (1988) shows no significant relationship. Theoretically the effect of inflation rate can be seen in the consumer price index (CPI); it shows the price movements of goods and services. Geetha, Mohidin, Chandran, & Chong (2011) reinvestigate the influence of inflation rate on stock prices in three different countries, Malaysia, United States, and China, the study found out the stock prices in these three countries have positive relationship with inflation.

Ibrahim (2003), Mukherjee & Naka (1995), and Chaudhuri & Smiles (2004) found out that GDP have statistically significant positive relationship with the stock price. These studies supported the result in Al-Tamimi, Alwan, & Abdel Rahman (2011), in which the result shows GDP have positive impact on stock prices in UAE.

3.0 Methodology

3.1 Data classification

Random samples of 10 companies were selected considering data availability. Five of the ten companies are chosen from financial sector (Public Bank, Malayan Bank, CIMB Bank, RHB Bank, and AM Bank), and other five are from non-financial sector (Genting, Petronas, IOI, Telekom, and Digi). Companies are chosen based on data availability and without any other preferences. The variables in this paper is based on the study conducted by Al-Tamimi, Alwan, & Abdel Rahman (2011), where they proposed a simple empirical model to study the relationship of macroeconomic variables with the stock price in UAE stock market.

The model proposed is, $stock\ price = f(eps, dps, ol, gdp, cpi, int, ms)$ and the variables used in the model to test the extent Malaysian market is affected by the macroeconomic variables. These variables are earnings per share which is represented as EPS, the dividend per share which is represented as DPS, oil price which is represented as OL, gross domestic product which is represented as GDP, inflation is reflected in consumer price index (CPI), lending interest rate which is represented as INT, and narrowed money supply which is represented as MS.

Regression will be carried out to test the relationship among the listed macroeconomic variables and the stock prices. The criteria of the data are as follows; data of 10 companies for the period of 10 years were collected from 2005 to 2014, stocks are picked randomly from Bursa Malaysia under the condition that five companies are from financial sector and five companies are from non-financial sector. The end of year's stock prices for each companies will be used to calculate the data. The data from 10 companies will be sum up and divided by 10 to get the average price for each years.

The dividend per share and earnings per share will be calculated annually. The narrowed money supply (M1) is used to represent the money supply in the formula. The absolute value of GDP, interest rate and CPI is used. The annual average crude oil price is used for OL. Multicollinearity is an issue when running multiple regression. Hence, to avoid running the test with variables that are highly correlated, the variables will be checked if there is any high correlation among each of the variables.

3.2 Correlation Results and analysis

Any variables that have correlation factor higher than 0.7 will be dropped off, as suggested by Anderson, Sweeney, and Williams (1996) as it may indicate that there is problem.

Table 1: Correlation Test

	EPS	DPS	INT	CPI	GDP	OL	M1
EPS	1						
DPS	0.319093	1					
INT	(0.75009)	0.13797	1				
CPI	0.924669	0.013126	(0.88488)	1			
GDP	0.944819	0.093757	(0.84643)	0.990084	1		
OL	0.879295	0.175146	(0.52616)	0.786934	0.831383	1	
M1	0.911728	0.088569	(0.88583)	0.980741	0.98505	0.747661	1

Based on Table 1, the M1, OL, and EPS have strong correlation with other variables, as suggested earlier. These three variables would be dropped off, due to strong correlation with almost all other variables. M1 which have coefficient of 0.91 with earnings per share, 0.98 with CPI, 0.99 with GDP, and 0.75 with M1 was chosen to be dropped off. The OL also have high correlations with most of the other variables. Furthermore, Malaysian petrol price was subsidized by the government prior to December 2014, therefore OL was dropped off as it is assumed to have no effect on the economy as the petrol and diesel prices are subsidized.

Earnings is used to generate dividends, even though Al-Tamimi, Alwan, & Abdel Rahman (2011) suggested to drop DPS because earnings is more reliable as dividends are generated from earnings, however, even though there is no strong correlation between EPS and DPS, EPS is dropped from regression model instead of DPS, because the EPS has strong correlation factors with most of the variables, which is 0.92 with CPI, 0.94 with GDP, 0.88 with OL, and 0.91 with M1, other than that, the relationship of dividends and share price would also help in determining whether the Modigliani and Miller theorem which suggested dividends will not influence the valuation of the company is applicable in Malaysian stock market.

Other than that, GDP and CPI also show strong correlation with each other with the correlation coefficient value of 0.99, which is almost 1.00. To see the impact of inflation on the stock price in Malaysia, CPI was selected and GDP is dropped from regression model, by definition, CPI is used to measure the inflation experienced by consumers on daily basis, however, GDP is adjusted to inflation, furthermore GDP is determined by many other factors other than inflation experienced by the country, government and consumers such as nation's income and government spending, in this case GDP is not useful to determine the effect of inflation on Malaysian stock market.

From the result of correlation test, the macroeconomic variables EPS, GDP, OL and M1 is excluded from regression model, and the variables that remains to be tested in the regression model are DPS, INT, and CPI, as shown in Table 2.

Table 2: Macroeconomic Factors

	DPS	INT	CPI
DPS	1		
INT	0.13797	1	
CPI	0.013126	(0.88488)	1

Table 3: Regression output for both sectors

Regression Statistics		
R square	0.931516335	
Coefficients		
	Coefficients	P-value
Intercept	(11.78544353)	0.307234
DPS	0.159341241	0.019613
CPI	0.195554865	0.038072
INT	(0.886468779)	0.264442

3.3 Hypothesis

3.3.1 DPS

H_0 : There is no significant relationship between DPS and stock price.

H_1 : There is a significant relationship between DPS and stock price.

3.3.2 INT

H_0 : There is no significant relationship between INT and stock price.

H_1 : There is a significant relationship between INT and stock price.

3.3.3 CPI

H_0 : There is no significant relationship between CPI and stock price.

H_1 : There is a significant relationship between CPI and stock price.

4.0 Discussion

The regression result as shown in Table 3 is reflected in the model $Y = -11.7954 + 0.1593 (DPS) + 0.1956 (CPI) + (-0.8865) (INT)$, explains 93.15% of the variations since the R-squared is equals to 0.9315, this shows the model have an accuracy of 93.15%. From the table, we can see that the P-value of DPS which is 0.0196 and the P-value of CPI which is 0.0381 are both less than alpha 0.05, therefore the null hypothesis is rejected. The variables DPS and CPI are both significant, and from the positive coefficients for these two variables, we can say that DPS and CPI both have positive relationship with Malaysian stock price. The P-value of INT which is 0.2644 however, is higher than alpha 0.05, therefore null hypothesis is accepted and the result is non-significant, INT does not influence the stock price.

The significance of the variable DPS from this study differs with the MM's Theorem in Malaysian stock market, and supports Fama and Blahnik (1968). The positive coefficient and significant P-value shows that DPS have positive relationship with the stock price. The findings in this study which show the inflation is significant and positively related to the stock price is inconsistent with Geetha, Mohidin, Chandran, & Chong

(2011), their study also found out that inflation have relationship with the stock price, and the inflation influence the stock price positively. The result for the variable INT which have negative coefficient but it is non-significant in this study, is consistent with the result obtained by Al-Tamimi, Alwan, & Abdel Rahman (2011). They suggested this could be the result from availability of portfolios and investor's liquidity.

Suleman, Hamid, Ali Shah, Akkash, and Shahid (2010) tested the weak-form market hypothesis in Malaysia and the empirical result shows that Malaysia follows the weak-form EMH. The result from this study also indicates that Malaysia could be following the weak-form EMH, because the macroeconomic variables DPS and CPI have significant relationship with stock prices, it indicates that investors could expect how the stock price would move by studying the changes in DPS and CPI, this shows an investor will be able to use fundamental analysis to earn profit.

For comparison purpose, the stock prices were divided into two group, financial sector and non-financial sector in order to see their relationship with the macroeconomic variables, the simplified result is shown in Table 4 for financial sector and Table 5 for non-financial sector.

Table 4: Regression output for financial sectors

<i>Regression Statistics</i>		
Multiple R	0.958930337	
R Square	0.91954739	
Adj. R Square	0.879321086	
Standard Error	0.584426992	
Observations	10	
	<i>Coefficients</i>	<i>P-value</i>
Intercept	1.439422597	0.871355
DPS	0.181164462	0.004315
CPI	0.072735042	0.267539
INT	(1.199829797)	0.084348

Table 5: Regression output for non-financial sectors

<i>Regression Statistics</i>		
Multiple R	0.962418756	
R Square	0.926249861	
Adj. R Square	0.889374792	
Standard Error	0.972025191	
Observations	10	
	<i>Coefficients</i>	<i>P-value</i>
Intercept	(25.01030967)	0.127927463
DPS	0.13751802	0.088381191
CPI	0.318374687	0.01822924
INT	(0.573107761)	0.574617793

From Table 4, we can see that the model explains 91.95% of the variations with R-squared value equals to 0.9195. The coefficient for all the variables are similar to the result from the regression on both sectors, which show positive relation between DPI and CPI with stock prices. However, in financial sector, only DPI is significant with the P-value less than alpha 0.05, CPI and INT appear to be non-significant in influencing the stock prices for financial sector with P-value higher than alpha 0.05.

Table 5 shows the result for non-financial sector, the model for non-financial sector explains 92.62% of the variations with R-squared equals to 0.9262. Similar to the result tested for both sectors and financial sectors, DPS and CPI shows positive coefficient while INT appears to be negative, the differences for non-financial sector is, the only significant variable is CPI with P-value less than alpha 0.5, whereas the DPS and INT shows non-significant relationship with stock prices for non-financial sector.

5.0 Conclusion

Malaysian market follows the weak-form of EMH, investors can predict the stock price movement based on historical data or news announcement. The findings are dividend per share and consumer price index is significant and have positive relationship with stock prices. The lending interest rate influence the stock price negatively, however the lending interest rate is non-significant. When compared the result for financial sector and non-financial sector, the coefficient for all the variables for both sectors are similar, the result shows dividend per share and consumer price index have positive relationship with stock prices and lending interest rate shows negative relationship with stock prices. However, dividend per share is the only significant variables among the other variables for financial sector, while the consumer price index is the only significant variable that affect stock price for non-financial sector.

Data used in this study consists of 10 years' period (2005 to 2014), which includes the data from 2007 to 2008 during the financial crisis. The crisis might affect Malaysian financial sector more than non-financial sector, and therefore the result might have been different if the data collected is prior to the crisis or after the crisis. There were seven macroeconomic variables to be tested at the beginning of this study, however, due to strong correlation, only three variables, dividend per share, consumer price index, and lending interest rate is studied. Due to strong correlation between some of the variables, one was forced to be taken down, for instance GDP and CPI with correlation coefficient of 0.99, CPI was chosen while GDP was dropped from regression model, and the result for GDP was not studied. Variables such as DPS is less reliable as compared to EPS, because EPS is the source for DPS and dividend payment is not compulsory, however EPS was dropped from regression model instead of DPS because EPS appear to have strong correlation with most of the variables.

Future research can focus on observations prior to, or after the 2007 and 2008 financial crisis, the result might be different especially for data collected from financial sector, because the crisis leaves more impact on financial sector, for instance the big financial institution such as AIA was bailed out by the U.S. government.

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7.0 Disclosures

The authors declare no conflict of interest.

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