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Analysis of the Relationship of Macroeconomic Factors to Emerging Market Stock Prices

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Abstract: ***Investment plays a role as one component of national income, Gross Domestic Product (GDP). One investment instrument that is considered important in development in each country is the capital market because of its function as the monetary intermediation of every world economy. In the era of globalization, the existence of developed countries and developing countries greatly influences the economic situation of a country, because it will have an impact on the level of state income. This study focuses on analysis relating to macroeconomic factors that influence stock prices in developing countries.This research is descriptive and verification uses a time series methodology with a Vector Autoregressive (VAR) approach where if the data used is a statsioner and is not cointegrated, or will be followed by a Vector Correction Model (VECM). Research data in the form of secondary data with literature and documentation. The countries of China, South Korea, Taiwan, India, Brazil, and Indonesia are the focus of research taken by purposive sampling. The results of the study show that during 2017 market capitalization increased rapidly to nearly $ 100 trillion. Judging from the composition of the market, almost half (43%) of the stock market is controlled by America, but when viewed from previous years, in fact America has experienced a shrinkage from 50% in 2000 to 43% in 2017, as well as Europe (outside the UK) has contracted from 18% in 2000 to 15% in 2017. Increasing markets are Asia (excluding Japan) and emerging markets. Asia (outside of Japan) has grown from 5% to 15%, while emerging markets have grown initially from less than 1% in 2000 to 6% in 2017. From the composition of the market it can be seen that in developed countries namely America and Europe, although it has a large composition but shows a downward trend while the market that is experiencing an increase is a group of developing countries or better known as emerging markets.***

Keywords: Macroeconomic Factors; Stock Price; Emerging Market

1. Introduction

Investment plays a role as one component of national income, Gross Domestic Product (GDP) and Domestic Product (GDP). Increasing investment is an important factor that plays a strategic role in the growth and economic development of a country. The money market, capital market, goods market and foreign exchange market are alternative instruments of investment. One investment instrument that is considered important in development in each country is the capital market because of its function as the monetary intermediation of every world economy.

Competent capital markets can drive economic growth and prosperity by stabilizing the financial sector and providing important investment channels that contribute to attracting domestic and foreign capital. Capital markets serve as a valuable tool for mobilization and austerity allocations that are very important for economic growth and efficiency (Nkoro & Uko, 2013). In its development, the capital market offers a variety of maca, instruments with different levels of risk and benefits such as stocks, bonds, mutual funds, and others. Shares are one form of investment that is in demand by the public. Stock plays an important role in financial instruments, where shares can be used to generate money, either by stock issuers, investors or third parties (Agus Arianto Toly, 2009).

The development of the stock market can be measured by three basic traditional characteristics, namely stock market size as measured by stock market capitalization and stock market liquidity measured by the total traded value and turnover ratio. An index that is commonly used, as a measure of the stock market is market capitalization. Market capitalization is equal to the total value of all listed shares.

In proving the theory of theory, several studies have been carried out in various countries (developed and developing countries) with the aim of knowing the pattern and direction of the relationship of each macroeconomic variable to stock prices both in the short and long term. (Gan, Lee, Hwa, Yong, & Zhang, 2006) state that investors generally believe that monetary policy and macroeconomic events have a large influence on stock price movements. The study of the impact of macroeconomic variables is complicated by the nature of the interaction of various factors and the time lag applied. Because of the country's economic liberalization, cross-border factors have played an important role in the impact of the transmission of economic conditions.

When macroeconomic conditions in a country experience changes both positively and negatively, investors will calculate the impact on the company's performance in the future, then make a decision to buy or sell the shares of the company concerned. This sale and purchase action will result in changes in stock prices, which in turn will affect the index of capital in the country.

2. Theoretical

2.1 Market Efficiency Concept

The efficient market concept discusses how markets respond to information and influence securities prices. Efficient markets are markets that reflect all available information (Fama, 1970). Jogiyanto (2010) states that an efficient market condition is if the market reacts quickly to reach a new equilibrium price that fully reflects available information.

This study focuses on the semi-strong hypothesis. In fact, the semi-strong hypothesis states that all publicly available information is included in the current price; i.e. asset prices

reflect all available public information. The semi-strong hypothesis is used to investigate the positive or negative relationship between stock returns and macroeconomic variables because it postulates that economic factors are fully reflected in stock prices. Public information can also include data reported in the company's financial statements, the company's financial situation, for analysis of pharmaceutical companies. Therefore, information is public and there is no way to generate profits using information that is known to others. So the existence of market analysts is needed to be able to understand the broad implications of financial information and to understand the processes in the product market and inputs.

2.2 The Arbitrage Pricing Theory

Developed by Ross (1976), Arbitrage Pricing Theory (ATP) proposes a multifactor approach to explain asset prices through price arbitrage (APT) theory. This APT model is based on the law of one price where the same assets cannot be sold at different prices to get arbitrage benefits (buying low-priced assets, at the same time selling at a higher price so as to obtain profit without risk) Therefore, if there is a difference in the purchase price of the asset and the selling price of the asset, the market will immediately return the asset price to its equilibrium point. The APT model assumes that returns from securities are a linear function of various macroeconomic factors and the sensitivity of their changes. These factors are represented by the specific coefficients of factors that measure the sensitivity of an asset for each factor. APT is a different approach to determining the price of an asset and it derives essentially from the law of one price.

Ross (1976) added that patrons would sell shares if the expected risk premium on shares was lower. Patrons will buy shares if the risk premium is higher, until both sides of the equation are balanced. Investors can get this formula back into balance by using the term arbitration.

According to Chen and Ross (1986), individual stocks depend on factors that are anticipated and not anticipated. They believe that most of the profits realized by investors are the result of unexpected events and these factors are related to the overall economic conditions. In fact, although the return of assets can also be influenced by a non-systematic effect on the economy, the return on large portfolios is mainly influenced by systematic risk because idiosyncratic returns on individual assets are canceled through a diversification process.

2.3 Emerging Market

Emerging markets or more widely known with emerging markets are considered important to drive growth in the global economy. Emerging markets are able to quickly industrialize and adopt free markets or mixed economies (Amadeo, 2018). Adoption of the type of free market and mixed economy is inseparable from the development of economic systems that are used and developed by various countries.

At present, it is estimated that China and India are the largest emerging markets. The income of the countries of China and India which are home to 40% of the world's workforce and population currently reaches $ 27.8 trillion. Greater than other developed countries.

Given that emerging markets are an economic transition period from developing economies to advanced economies, the Financial Market Encyclopedia (in Cristina & Gheorghe, 2011) groups emerging markets in three different categories, namely:

1) The most advanced markets
2) Narrow emerging markets
3) Emerging market-latent

In the category of the most advanced markets, countries such as Malaysia, Mexico, South Korea, Taiwan and Thailand are in it. These countries have very low inflation rates and have stability in exchange rates. Despite having a developed financial and banking system, and having an opening to international financial markets as stocks and bonds, and trading and settlement of securities that are traded in relatively sophisticated mechanisms, these countries cannot be treated as developed countries. This is because the countries included in the category of the most advanced market have a high level of vulnerability to possible exchange rate volatility and the stock market.

2.4 Macroeconomic meanings

The macroeconomic role in improving stock performance is explained by Chen et al (1986) by using Arbitrage Pricing Theory (APT) developed by Ross (1976) as the basis for proving that macroeconomic variables have a systematic influence on stock prices. The APT approach states that indicators are taken into consideration by investors in investing in the capital market in addition to fundamental matters that are also technical in nature, namely macroeconomic variables because technical or external factors also have great potential for changes in stock prices in the capital market. The following section will discuss theoretical conceptual and empirical evidence related to four macroeconomic variables, namely inflation, interest rates, money supply and foreign exchange rates.

3. Method

The objects examined in this study are macroeconomic factors which consist of currency exchange rates, interest rates, the amount of money in circulation, and inflation as an independent variable, and stock prices as dependent variables. The study was conducted on emerging market countries in the period 2007-2017.

The type of research used is descriptive and verification. This study uses a time series methodology with a Vector Autoregressive (VAR) approach where if the data used is a statsioner and is not cointegrated, or it will be followed by a Vector Correction Model (VECM).

The data source used in this research is secondary data. Secondary data used is previously available data obtained from other parties, collected from various documents,

literature, articles and scientific writings. Secondary data is used taking into account that this data has data validity guaranteed by other parties so that it is reliable to use in research. Data collected includes exchange rate data, interest rates, money in circulation, emerging market country inflation in 2012-2017 and stock performance data from emerging market countries during the 2012-2017 period.

This study uses literature studies and documentation in data collection.

a) Literature review. In this study, researchers examined the theories obtained from literature, articles, journals, and the results of previous research so that researchers could understand the literature relating to the research in question.
b) Documentation. In this study, researchers collected annual data for the period 2012-2017 through various published state economic reports.

Population is the entire data or object under study in the form of certain characteristics of symptoms, phenomena, events, and events (Susetyo, 2010: 139). Population refers to all groups of people, events, or interesting things that the researcher wants to investigate (Sekaran, 2014: 265). Based on the understanding of the population, then in this study the population of all emerging market countries is made. According to (Sunyoto, 2011) the sample is part of the number and characteristics of the population. In this study, the sample was part of emerging market countries, namely as many as 6 countries consisting of China, South Korea, Taiwan, India, Brazil, and Indonesia which were taken by purposive sampling.

4. Results and Discussion

4.1 Stationary Test

Null Hypothesis: INTEREST_RATE_AVERAGE has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.521365	0.1128
Test critical values:	1% level	-3.481623	
	5% level	-2.883930	
	10% level	-2.578788	

*MacKinnon (1996) one-sided p-values.

Interest_rate_average data is not stationary at the level, because prob adf (0.1128) is greater than alpha 5% (0.05).

4.2 Exchange Rate

Null Hypothesis: EXCHANGE_RATE_AVERAGE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.869026	0.7953
Test critical values:	1% level	-3.480818	
	5% level	-2.883579	
	10% level	-2.578601	

*MacKinnon (1996) one-sided p-values.

The exchange_rate_average data is not stationary at the level, because prob adf (0.7953) is greater than alpha 5% (0.05).

4.3 Cointegration Test

Date: 01/08/19 Time: 22:20
Sample (adjusted): 2007M03 2017M12
Included observations: 130 after adjustments
Trend assumption: Linear deterministic trend
Series: INTEREST_RATE_AVERAGE EXCHANGE_RATE_AVERAGE INFLASI_AVERAGE BROAD_MONEY_AVERAGE STOCK_PRICE_INDEX_AVERAG
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.255990	**99.61697**	**69.81889**	0.0000
At most 1 *	0.184504	61.17594	47.85613	0.0017
At most 2 *	0.135822	34.66135	29.79707	0.0127
At most 3 *	0.077022	15.68438	15.49471	0.0468
At most 4 *	0.039690	5.264876	3.841466	0.0218

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Based on the comparison of Trace Statistic and Critical Value with 0.05 Alpha in this cointegration test, it can be stated that there is cointegration or long-term relationship between variables in this study. The existence of cointegration in this study is stated by the results of the Trace Statistic comparison (99.61697) greater than Critical Value Alpha 0.10 (69.81889).

4.4 World Market Capitalization for 2004-2017

The development of the stock market can be measured by three basic traditional characteristics, namely stock market size as measured by stock market capitalization and stock market liquidity measured by the total traded value and turnover ratio. An index that is commonly used, as a measure of the stock market is market capitalization. Market capitalization is equal to the total value of all listed shares (Alajekwu & Achugbu, 2012). The development of world market capitalization from 2004 to 2017 is presented in the following figure.

Figure 1: World Market Capitalization for 2004-2017
Source: Bloomberg

The image shows the value of the shares of all countries in the world. It can be seen that during 2017 market capitalization increased rapidly to almost reach $ 100 trillion. Judging from the composition of the market, almost half (43%) of the stock market is controlled by America, but

when viewed from previous years, in fact America has experienced a shrinkage from 50% in 2000 to 43% in 2017, as well as Europe (outside the UK) has contracted from 18% in 2000 to 15% in 2017. Increasing markets are Asia (excluding Japan) and emerging markets. Asia (outside of Japan) has grown from 5% to 15%, while emerging markets have grown initially from less than 1% in 2000 to 6% in 2017.

From the composition of the market, it can be seen that in developed countries, namely America and Europe, despite having a large composition, it shows a downward trend while the market that is experiencing an increase is a group of developing countries or better known as emerging markets.

When macroeconomic conditions in a country experience changes both positively and negatively, investors will calculate the impact on the company's performance in the future, then make a decision to buy or sell the shares of the company concerned. This sale and purchase action will result in changes in stock prices, which in turn will affect the index on capital in the country (Sampurna, 2016).

High inflation is usually associated with overheated economic conditions. That is, economic conditions experience demand for products that exceed the capacity of their product offerings, so prices tend to increase. High inflation will also cause consumer purchasing power to decline, and reduce the real income that investors get from their investments (2012). Inflation movements in developed countries and emerging markets are presented in the following figure:

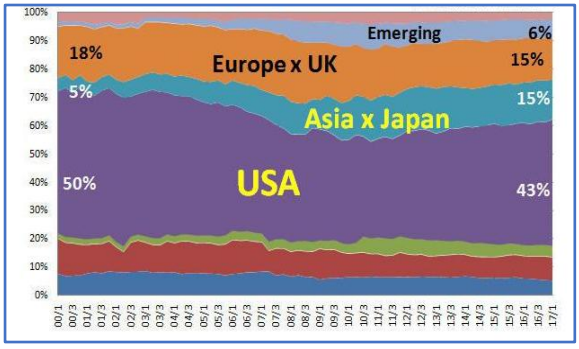

Figure 2: World Market Composition 2000-2017
Source: PPCA Inc

Emerging markets are exchanges of developing countries that have characteristics that are very different from those of developed countries (Bekaert and Harvey, 1997). There are four distinctive features of emerging market exchanges, namely having a high rate of return, very low correlation with advanced markets, predictable returns on shares because they are inefficient, and high volatility. When viewed from risk and return there are some special characteristics possessed by emerging market stocks, among others: 1) high volatility, 2) offering a high expected return, because emerging markets experience quite amazing growth, and 3) low correlation between emerging market with advanced stock markets. This low relationship will provide greater benefits for investors to diversify internationally.

In addition, the developing stock market also has general characteristics, namely large foreign capital inflows into this market. As noted by (Kawakatsu & Morey, 1999) due to financial liberalization the number of foreign portfolio investment flows to emerging markets in 1985 reached a value of 136 million US dollars. The Institute of International Finance said that the flow of non-resident capital to emerging markets will increase to US $ 1.1 trillion in 2017, and will continue to rise to US $ 1.2 trillion in 2018.

Fundamental analysis learns everything from the economic conditions of a country (external factors) to the financial conditions and conditions of company management (internal). In conducting fundamental analysis, an investor must consider various aspects of both micro and macro economics.

In deciding to invest in a company in one country, of course considering macroeconomic factors is very important to do. The economic condition in a country is an important assessment for investors to use as a consideration in determining investment. According to Sunariyah (2004) changes and developments that occur in various economic variables of a country will have an influence on the capital market. If a country's economy grows well, seen from macro variables such as controlled inflation and an attractive monetary situation, investors will be interested in investing their funds in the stock exchange. Likewise, on the contrary, if a country's economy experiences a decline in performance, investors will withdraw funds invested in the exchange.

Aggressive changes to the economy of a country will have direct implications for stock price movements. As in 2008 there was a sharp decline, especially in markets in emerging market countries. This is influenced by the global economic crisis which has pushed the fall in the value of shares in almost a portion of the world's shares within one year. The fall of most shares in the world drastically in 2008 showed that all countries, especially emerging market countries, received considerable negative effects from the global economic crisis. To reduce the adverse effects of the global economic crisis, governments in various countries took various economic and financial policies, especially related to macroeconomic indicators such as raising interest rates or tightening foreign currency traffic.

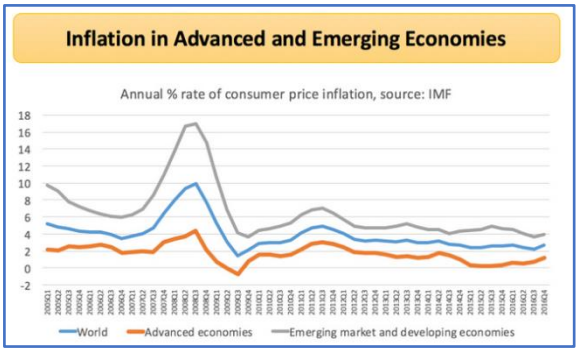

Figure 4: Inflation Rate in the World, Advanced Countries and Emerging Market Countries
Source: IMF

Based on the table above, it can be seen that the inflation rate in Emerging market countries is much higher than in the world and developed countries. One reason why inflation in developing countries tends to be higher is that many of these countries experience rapid economic growth compared to slower growth in developed countries.

Fast growth can cause excessive demand and a positive output gap that causes demand-pull inflation. This also causes inflation to drive costs for example due to increased global demand for raw materials. The second reason why inflation in developing countries is higher is because many of these countries have exchange rates that are volatile and do not always have an established central bank to operate monetary policy.

Therefore, if a fast developing country has a large current account balance deficit, this can lead to a large depreciation in their exchange rates. One effect of this is a big jump in important import prices such as food and energy.

The exchange rate indicates the amount of domestic money a country needs to buy and exchange one foreign currency. With the weakening (depreciation) of a country's exchange rate against the US dollar, it will cause the price of domestic commodities to be relatively cheaper in the international arena. can be bought.

In addition to inflation and exchange rates, interest rates are also an attraction for investors, because with high interest rates investors will invest their capital in the form of deposits, this will have an impact on reduced investment in shares.

The relationship between macroeconomic variables and stock prices has been examined since the 1970s, initially research on macroeconomic relations to stock prices focused on developed countries, especially in the United States or European Union as done by (Fama, 1981), (Mukherjee & Naka, 1995), (Cheung & Ng, 1998), (Nasseh & Strauss, 2000). The results of research in developed countries such as Britain, Canada, France, West Germany, Italy show a pattern of relations from each of the different macroeconomic variables. For interest rate variables, most researchers stated that they had a positive effect (Cheung & Ng (1998), Nasseh & Strauss (2000), Mukherjee & Naka (1995), McMillan (2001), (Chaudhuri & Smiles, 2004), (Benaković & Posedel, 2010) The influence of the exchange rate variable on stock prices is positively stated by (Ajayi & Mougoue, 1996), the relationship is negative for countries with export-dominated economies and positively affect countries dominated by imported economies. for the influence of inflation on stock prices where several studies state that the relationship is positive (Engsted & Tanggaard, 2002) and (Sharpe, 2002) and partly states the relationship of inflation to stock prices is negative (Benaković & Posedel, 2010).
The pattern of influence of each macroeconomic variable on stock prices also shows differences in results based on time period. In developed countries, inflation has a positive influence in the long run but in the short term has no effect ((Ajayi & Mougoue, 1996), (Mukherjee & Naka, 1995), (Salameh, Al-Zu'bi, Al-Zubi, & Magableh, 2012) Another study conducted by (Ratanapakorn & Sharma, 2007) investigated long-term and short-term relationships in the US during the period 1975 to 1999. The study concluded that money supply, inflation, exchange rates, industrial production, exchange rates and rates interest has a positive effect on stock prices in the long run.

The correlation between stock market returns and macroeconomic fundamentals is important for academics and policy makers, but the reach and direction of the relationship is still vague and inconclusive for economies that are growing and developing or called emerging markets (Issahaku, 2013). Although there are various empirical studies about the impact of macroeconomic fundamentals on the stock market index, most of these studies usually focus on the industrial economy and the impact of these macroeconomic variables on the stock market index in less developed countries is less clear. In particular, how these developing markets react to changes in fundamental macroeconomic variables such as the money supply, industrial production and inflation and crude oil prices, are still unspoiled areas (Hosseini, Ahmad, & Lai, 2011). There are mixed results on the effects of macroeconomic changes on the stock market. Evidence from several studies in developing countries such as (Bondzie, Fosu, & Okyere, 2014), (Issahaku, 2013) all build a significant positive relationship between exchange rates and the stock market. Conversely, (Ajayi & Mougoue, 1996) reported a significant inverse relationship between exchange rates and the stock market. Although these findings indicate a causal relationship between exchange rates and stock market volatility, the level and direction of other macroeconomic variables remains inconclusive.

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