

MACRO-ECONOMIC IMPACT ON STOCK PRICES



<https://journal.unpas.ac.id/index.php/jrak/index>

Sugiyanto¹✉, Toufiq Agung Pratomo Sugito Putra²

^{1,2}Institut Manajemen Koperasi Indonesia

✉ ugie@ikopin.ac.id

Jl. Jatinangor KM. 20, 5, Cibeusi, Sumedang, Kabupaten Sumedang

Article Info

History of Article

Received: 13/10/2020

Revised: 6/3/2021

Published: 25/4/2021

Jurnal Riset Akuntansi Kontemporer

Volume 13, No. 1, April 2021, Page 13-19

ISSN 2088-5091 (Print)

ISSN 2597-6826 (Online)

Keywords: exchange rates; inflation; economic growth; interest rates; stock returns

Abstract

Macroeconomics is an integral component of economic activity. The goal of this research is to demonstrate the effects of the macro-economic effect on stock returns with a more focused and tailored scope of the financial sector. This research uses a quantitative methodology with mathematical techniques, data used in the period 2001-2018, time series models with Vector Autoregressive (VAR) approaches where the data used are stationary and not co-integrated. The VAR model shows that if there is a parallel interaction between the measured variables, these variables can be considered similarly so that there are no more endogenous and exogenous variables. The findings showed that inflation, exchange rates and interest rates have no significant effect while economic growth had an impact on stock returns in the financial sector on the Indonesian stock exchange in 2001-2018.

INTRODUCTION

Trade tensions between the two major World Economic countries, namely the United States and China, will cause the amount of demand for ASEAN products produced by China to increase and raise the question that ASEAN countries are trading iron, aluminium, and other commodity goods to be shipped from China and the United States. This will contribute to lower market costs and unwanted local producers. Indonesia's trade balance in 2017 reported an increase in surplus compared to the previous year. Indonesia's trade deficit surplus in 2017 grew to \$11.83 billion from a broader non-oil budget surplus. Indonesia's GDP is the 16th largest in the world, exceeding \$1.4 trillion in 2017 (WEF 2018).

The event of a trade war between America and China certainly involves the performance of the stock price listed on the Exchange. The decline is a sign that the company's performance is declining. This is due to the decline in exports. Although major exports declined from the market, some export goods were transferred to the domestic economy, but in practice, certain markets shrank because the global market could not sustain all the output originally intended for export.

The U.S. and Chinese trade wars against Indonesia had two direct influences from the financial crisis, which were characterized by unstable financial circumstances, as financial institutions and exchange rates did not work as expected. The first impact is on the rupiah exchange rate. The rupiah exchange rate was 13,543 Rupiah at the beginning of 2018, fluctuating in mid-September 2018. The highest value was September 5,

2018, Rupiah exchange rate which broke down the US dollar totalling 14,927 rupiahs. It naturally leads to panic among companies that rely on imported raw materials. The decline in the rupiah also contributed to the increase in commodity prices that eventually triggered inflation.

The second impact on the success of the Stock Exchange in Indonesia. Foreign ownership, which still controls part of the Indonesia Stock Exchange (IDX), is vulnerable to the global financial situation on the Indonesia stock exchange. Soon, many investors who bought their funds to the Indonesia Stock Exchange (IDX) suffered tremendous losses. In this case, given the investor's investment in a company, Indonesia is economically uncertain and agrees to invest based on the return on the shareholding in a company. It is therefore important to know the macroeconomic variables that affect inventory returns.

The effects of the American and Chinese trade wars had an impact on the return of Indonesia Stock Exchange shares in the financial sector. Interestingly, financial sector stocks always increase despite the trade wars of the United States and China, this indicates that the financial sector is the most stable stock sector in Indonesia. Here's a picture of financial sector stocks in Indonesia.

Based on Figure 1 shows that financial sector stocks showed an increase, the decline occurred at the time of covid-19 which impacted all countries in the world. Financial sector shares in Indonesia are divided into five sub-sectors, namely bank sub-sector, financing institution sub-sector, securities company sub-sector, insurance sub-sector and other sub-sectors.



Figure 1. Financial Sector Stocks

The reason that the financial sector shares have increased is that investor confidence in the domestic economy has boosted banking sector stocks. Banking became one of the sectors that grew significantly entering the second semester of 2019. Indonesia Stock Exchange (IDX) data as of June 14, 2019, shows that in the sector, the financial sector became the second-largest sector by growing year to date (ytd) by 7.86%. The growth was supported by the rapid rise of shares of major banks such as PT Bank Central Asia Tbk (BBCA), PT Bank Rakyat Indonesia Tbk (BBRI) and PT Bank Mandiri Tbk (BMRI).

This condition is different from financial sector stocks that fall into the category of insurance sub-sectors that show low liquidity, there are 14 insurance companies listed on the Indonesia Stock Exchange until January 2018. But the majority of insurance company stock movements are not very liquid or rarely transacted, unlike stocks from other financial sectors such as banking and multi finance.

Shares in the securities sector also showed stability, except for the covid-19. However, the banking sector is a reference to the increase in financial sector stocks, that is because the trading volume, such as in May 2017 reached 240,022 shares with 6,548 transactions. Of these transactions, the trading value of shares reached Rp164.35 trillion. Of the number of stock transactions during the month, the market share of banking sector shares is the largest. The banking stock market share reached 26.8%.

Not only that, when looking at this IDX data, banking stocks also have the largest market capitalization. The banking stocks that have the largest market capitalization are PT Bank Central Asia Tbk (BCA) which ranks third. Compared to the total market capitalization of the exchange, BCA's market capitalization reaches

6.70%. The second banking stock market capitalization is the shares of PT Bank Rakyat Indonesia Tbk (BBRI), PT Bank Mandiri Tbk (BMRI) and PT Bank Negara Indonesia Tbk (BBNI). These stocks were included in the 10 stocks with the largest market capitalization during May 2017. Bank Danamon Tbk (BDMN) shares made the biggest profit during the first half of 2017.

In Arbitrage Pricing Theory (APT) there is a one-price rule (one market rule) where the same asset must not be traded at a lower price to receive the value of arbitration (buying commodities at low prices but then selling at higher prices to generate risk). Thus, in the event of a difference between the purchase price of an asset and the selling price of an asset, the market will automatically return the asset price to its balance. The APT model shows that stock returns are a linear function of various macroeconomic variables and their responsiveness to change. These factors are denoted by parameters that calculate the intensity of the properties for each cause. APT is a general approach to price estimation based on a single market rule.

Research conducted by Naveed & Muhammad (2016) and Ruslim & Michael (2019) showed that inflation has an influence on stock prices, but research conducted by Azwar, et. al (2011) shows the opposite that inflation has no influence on stock prices. This condition indicates the need for research that focuses on one sector of the economy because each sector of the economy has different characteristics. Research on the influence of exchange rates on stock prices has different results found in previous research Khan, et. al., (2017); Ozlen & Ergun (2012); Utami, et. al., (2015) showed that the exchange rate has an influence on the share price. Meanwhile, research conducted by Utami, et. al., (2015) showed that the exchange rate has no influence on the share price. This is because the economic sectors studied are different, so it is important to focus more research on more specific economic sectors to test the consistency of the influence of exchange rates on stock prices.

Research on the effect of interest rates on stock returns was conducted by Khan, et. al., (2017); Adriana & Perdana (2019); Utami, et. al., (2015); and Setiyono, et. al., (2018) shows that there is an influence of interest rates on the share price. Meanwhile, research conducted by Dwialesi & Darmayanti (2016) showed that interest rates have no influence on stock return. This is because there are differences in the research period, the economic sector studied, resulting in a difference in the results of the research. Research on economic growth on the current share price maish tends to be a little, the study is not much like other macroeconomics, such as inflation, exchange rates or interest rates. Research conducted by Naveed & Muhammad (2016) showed consistent results that economic growth influences stock prices.

The urgency in conducting this research is to provide certainty academically and practically related to the macroeconomic influence on the share price, the declining share price will certainly have implications on the price obtained by investors. Price is a comparison of initial costs with the results obtained by investors. For stocks, the initial cost is the purchase price and the result is the difference between the purchase price with the selling price (capital gain). The investment price will be directly proportional to the risk borne by an investor. The higher the expected price, the higher the level of risk that must be borne by investors.

METHOD

The objects examined in this study are macroeconomic factors consisting of exchange rates, economic growth, interest rates and inflation as free variables and stock prices as bound variables, research conducted on the Indonesia Stock Exchange financial sector in the period 2001-2018. The type of research used is descriptive and verificative, descriptive research is used to obtain an overview of macroeconomic factors consisting of exchange rates, economic growth, interest rates and inflation as well as an overview of stock prices on the Indonesia Stock Exchange in 2001-2018. Verificative research is used to test the influence of macroeconomic factors consisting of exchange rates, economic growth, interest rates and inflation on stock prices on the Indonesia Stock Exchange in 2009-2018.

This study uses a time series model with Vector Autoregressive (VAR) approach where if the data used is stationer and not integrated, or will be continued with Vector Correction Model (VECM) if the data used is stationary but there is co-integration. In verification, data analysis will be used VAR approach if the data used stationer and not co-integration, or continued with VECM if the data used stationer but there is co-integration. The analysis tools used are shazam, reviews and excel programs.

The VAR model shows that in simultaneous equations if there is a simultaneous relationship between the observed variables, they should be treated equally so that there are no more endogenous and exogenous variables. The VAR model can answer the difficult challenges encountered due to structural models that should refer to the theory. In other words, the VAR model does not depend much on the theory, but only needs to determine the variables that interact with each other (cause) that need to be included in the system and the number of lag variables that need to be included in the model that is expected to capture the interrelationship between variables in the system.

RESULT

The results of the multicollinearity test explains the relationship between variables of economic growth, inflation, interest rates and exchange rates of only 0.3, below 0.7, so it can be concluded that there are no symptoms of multicollinearity in the model. Variables conducted in autocorrelation tests are inflation, exchange rates, interest rates, economic growth and stock prices in the financial sector listed in IDX from 2001 to 2018. The variable is conducted an autocorrelation test to determine the presence or absence of deviations of classical assumptions.

Autocorrelation tests are used to determine whether or not there is a deviation of the classic assumption of autocorrelation, i.e. a correlation that occurs between residuals on one observation and another observation on a regression model. The condition that must be met is the absence of autocorrelation in the regression model. A frequently used testing method is to test the breach-Godfrey serial correlation LM test using E-Views.

The data test results show Prob. F 0.6373 and Prob. Chi-Square 0.4630. In the results of the study, the regression model experienced autocorrelation symptoms. The Prob Chi-Square value, which is the P-value of the Breusch-Godfrey Serial Correlation LM test, is 0.4630 where > 0.05 so that means no serial autocorrelation issues. In the test of normality, decision-making was based on Kolmogorov-Smirnov.

Based on the data shows that the value of Sig is 2.00 which means greater than 0.05, so it can be concluded that the research data is distributed normally.

Table 1. Regression Test Results

R-Square	0.4812
R-Square Adjusted	0.3216
Variance Of The Estimate-Sigma**2	1107.1
Standard Error Of The Estimate-Sigma	33.274
Sum Of Squared Errors-Sse	14393.
Mean Of Dependent Variable	25.222
Log Of The Likelihood Function	-85.6978

Table 2. Analysis of Variance from Mean

ANALYSIS OF VARIANCE - FROM MEAN				
	SS	DF	MS	F
REGRESSION	13350.	4.	3337.6	3.015
ERROR	14393.	13.	1107.1	P-VALUE
TOTAL	27743.	17.	1631.9	0.058

Viewable from Table 1, the regression test result was obtained that the value of R^2 Adj is $-0.32 = 32\%$, this result shows that the independent variable can explain dependent variables by 32%, so it can be concluded that this model is worth using. Based on Table 2, the P-Value F value of 0.058 is above 0.05, so it can be concluded that the four variables of inflation, interest rates, economic growth and exchange rates have no significant effect on stock returns. The P-Value of the exchange rate of 0.697, the interest rate of 0.119, the economic growth of 0.025 and the exchange rate of 0.926.

DISCUSSION

The results of this study showed that of the four variables of research, namely exchange rates, inflation, rates and economic growth showed that exchange rates, inflation and interest rates did not influence stock prices, while economic growth influenced stock prices. This indicates that, the results of previous research that stated that economic growth affects stock prices, showed the same in this study.

The exchange rate did not affect the share price in this study which had a difference with research conducted by Khan, et. al., (2017); Ozlen & Ergun (2012); Utami, et. al., (2015) showed that the exchange rate influences the share price. Meanwhile, research conducted by Azwar, et. al., (2016) showed that the exchange rate does not influence the share price. This is because the economic sectors studied are different, so it is important to focus more research on more specific economic sectors to test the consistency of the influence of exchange rates on stock prices.

Inflation does not affect stock prices, the results of this study are different from previous research conducted by Naveed & Muhammad (2016); Michael (2019) showed that inflation has an influence on stock prices, but research conducted by Azwar, et. al., (2016) shows otherwise that inflation does not affect stock prices. This condition indicates the need for research that focuses on one sector of the economy because each sector of the economy has different characteristics.

Interest rates do not influence stock prices, this study is different from research conducted by Khan, et. al., (2017); Adriana & Perdana (2019); Setiyono, et. al., (2018); and Utami, et. al., (2015) indicates that there is an influence of interest rates on the share price. Meanwhile, research conducted by Dwialesi & Darmayanti

(2016) showed that interest rates have no effect on stock returns. This is because there are differences in the research period, the economic sector studied, resulting in a difference in the results of the research.

Related to the variables of economic growth, this study has similarities with previous research that indicates the influence of economic growth on the share price, as done by Naveed & Muhammad (2016) shows consistent results that economic growth influences the share price.

Wong (2017) examined the relationship between real exchange rate returns and real share price returns in Malaysia, the Philippines, Singapore, Korea, Japan, the United Kingdom (United Kingdom) and Germany. The Constant Conditional Correlation (CCC) or Dynamic Conditional Correlation (DCC) - multivariate Generalized Autoregressive Conditional Heteroskedasticity (MGARCH) model shows that real exchange rate returns and real share prices are found to be negative and significant for Malaysia, Singapore, Korea and other countries. the UK meanwhile became an insignificant relationship for the Philippines, Japan and Germany. In general, the exchange rate market is important in influencing the stock market.

Empirical evidence of the relationship between exchange rates and stock prices varies although the theory suggests a causal relationship between these variables Lin, (2012) and Tsai (2012). This study examined the relationship of real exchange rate yields and real share price yields in Asian economies, namely Malaysia, Philippines, Singapore, Korea, Japan, United Kingdom (UK) and Germany in a multivariate framework using the Constant Conditional Correlation (CCC) or Dynamic Conditional Correlation (DCC) - Multivariate Generalized Autoregressive Conditional Heteroskedasticity (MGARCH) model. Additional variables included in the multivariate framework are the return on real United States (U.S.) stock prices, differences in real interest rates and relative demand. These variables can affect the exchange rate market and the stock market. Investigation of the relationship between real exchange rate returns and real share price returns in a multivariate framework rather than in terms of bivariate will result in stronger conclusions. Thus, from some of the studies referred to, the results of research in developed countries there is a one-way relationship in which the exchange rate affects the share price, and there is no reciprocal relationship that the share price can affect the exchange rate, this is the same as the study of the authors in Indonesia.

Related to the influence of inflation on stock prices, in developed countries the results of research conducted by Antonakakis, et. al., (2017) stated that the relationship between stock prices and inflation can be negative or positive, depending on the strength of the various theoretical channels in force. In this study, we tested dynamic conditional correlations of stock prices and inflation in the United States during the period 1791-2015 in varying time frames. The results of our empirical analysis reveal that the correlation between inflation and stock prices in the United States develops heterogeneously over time. In particular, correlations were significantly positive in the 1840s, 1860s, 1930s and 2011s, and vice versa were significantly negative.

The movement of real share prices can affect the inflation rate through the effect of wealth, namely through its impact on consumption and therefore aggregate demand. Simo-Kengne, et. al., (2015), discusses four different channels of influence for share prices on consumption: First, the realized wealth effect implies that rising share prices have a direct positive effect on shareholder consumption as a consequence of realized profits. Second, the unrealized wealth effect refers to an increase in consumption expenditure based on expectations that the current rise in share prices will result in higher future income and wealth. Third, the effect of liquidity constraints implies that rising share prices increase the value of the collateral that households can borrow to increase their consumption with financial constraints. Fourth, the effect of the value of a stock option, implies that the increase in the share price leads to an increase in the value of the shareholder's option which can translate into higher consumption regardless of whether the profit is realized or not. In other words, real share prices and inflation tend to be positively linked through wealth effects. Thus, from some of the studies referred to, the results of research in developed countries have a one-way relationship in which inflation affects stock prices, and there is no reciprocal relationship that stock prices can affect inflation.

Related to the influence of interest rates on stock prices, in developed countries the results of research conducted by Ndlovu, et. al., (2018) conducted research to assess the relationship of macroeconomic variables: inflation, growth in the amount of money supply, Interest rates and exchange rates using quarterly data from 1981 to 2016 on stock prices for Johannesburg Shares. The study used co-integration tests, vector error correction models, variance decomposition and impulse response functions to understand variable relationships. In the long run, interest rates, money supply and inflation have a positive relationship with the share price while the exchange rate negatively affects the share price. Unidirectional causality is found running from exchange rates and interest rates to stock prices and also interest rates and exchange rates have causality to the amount of money in circulation. Variance decomposition stipulates that shocks in the share price constitute the majority of the change itself for all periods over the short and long term while also strengthening the outcome of causality shocks in stock prices and exchange rate shocks impacting on the changes themselves, as well as the function of impulse response further confirming the causal relationship between variables and stock prices.

Hamrita & Trifi (2011) used 3-month American Treasury securities and the S&P 500 index using wavelet analysis with monthly data from 1990 to 2008 and concluded that stock prices moreover interest rates are not interdependent while exchange rates have a two-way relationship with stock prices. The results of research conducted by Jareño & Negrut (2016), in the United States during the research period of 1995 to 2004, stated that interest rates have a one-way relationship to the share price. Thus from some of the researches referred to, the results of research in developed countries there is a one-way relationship in which interest rates affect the price of shares, and there is no reciprocal relationship that the share price can affect interest rates.

Consistently the influence between economic growth and stock prices, it can be seen from research in the United States, Croatia, Singapore and the United Kingdom. For emerging market countries there are different patterns of economic growth in emerging market countries showing differences, such as Mugambi & Okech, (2016) conducting research in Kenya on the bank's financial sector that shows that economic growth does not affect stock prices. Meanwhile, Murunggi (2016) researching insurance companies in Kenya shows that economic growth affects the share price. The difference in the results of the study shows that the pattern of the relationship between economic growth and stock prices shows inconsistencies. This research shows that there is no influence between stock prices and economic growth.

Macroeconomic influence patterns on stock prices in Indonesia show economic growth influences the share price of Adiyadnya, et. al., (2016), while other research shows economic growth does not influence the share price of Kewal (2012). Economic growth seems to be the same as other macroeconomic variables in the context of research in emerging market countries, not even showing the consistency of the influence of economic growth on stock prices. Differences in economic growth do not affect the share price in emerging countries, including Indonesia because in the country there is an economic disparity. Economic growth is only felt by some people, so economic growth up or down is not a consideration for investors in deciding the share price.

Indonesia's slowing economic growth, as it did in 2014 at a projected 5.1%, has resulted in the pace of banking loans slowing to 12% in the year. The economic slowdown also impacted the ability to pay debtors' debts, namely the ratio of non-performing loans (NPL) of customers. National economic growth contraction of 5.32% in the second quarter of 2020 has affected the performance of the banking sector. First, the decline in credit growth due to slowing demand. Along with that, banks also selectively channel credit to maintain asset quality. Second, non-performing loans (NPLs) are increasing. During the current crisis, many debtors requested credit restructuring. However, there are debtors who before the pandemic had problems, so the bank's NPL went up. Third, limited transactions so that the company's turnover decreases. That lowers the ability to pay interest and principal instalments to banks. This indicates that increasing economic growth will have an impact on the increase in the share price of the financial sector.

CONCLUSION

The results of this study indicate that for variables economic growth consistently affects stock prices in the financial sector, but on other variables such as exchange rates, interest rates and inflation shows that there is no influence. The results of this study have differences with the results of research in developed countries that showed a consistent influence on stock prices, while research in emerging market countries showed similarities that to the differences in research results seen in terms of the research period.

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