

The Impact of Macroeconomics on Stock Market Index in Brazil

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ABSTRACT

A country's economy can develop rapidly if there are investments in various economic sectors. Investment has a role as one of the essential components of national income in promoting economic growth. One of the means of development in each country is the capital market, which has the function of monetary intermediation of the global economy. Macroeconomic indicators influence investment activities in a country because macroeconomic indicators are signals to investors in investing. This study's object was the macroeconomic indicators, namely interest rate, exchange rate, inflation, and money supply, and their impacts on stock prices. This study used da-ta for the 2004-2018 period. The results showed that inflation, interest rate, and the exchange rate had no impact on stock prices, while money supply impacted stock prices.

Keywords: *Macroeconomics, Stock prices, Correlations, Brazil.*

1. INTRODUCTION

mobilization and allocation of savings essential for growth and economic efficiency [1]. The development of the capital market provides various instruments with different levels of risk and return, such as stocks, bonds, mutual funds, and others. Stocks are one form of investment that interests the public. Stocks have a strategic role in financial instruments because stocks can be used to make money, as is done by issuers, investors, or third parties [2].

There are four characteristics of emerging market exchange: very low correlation with developed markets, high returns, predictable stock returns due to their inefficiency, and high volatility [3]. The same thing was also stated by reference [4], that in terms of risk and return, there were some special characteristics of emerging market stocks, including 1) high volatility, 2) high expected return, and 3) correlations that are low between emerging markets and developed stock markets.

The relationship between macroeconomic variables and stock prices has been studied since the 1970s. Initially, studies related to the relationship of macroeconomics with stock prices in developed countries, such as in the United States or European Union

countries [5]-[9]. The research results in developed countries such as the United Kingdom, Canada, France, West Germany, and Italy showed the pattern of relationships of each different macroeconomic variable. The exchange rate variable's impact on stock prices was stated to be positive by reference [10]. However, according to reference [11], the relationship between the two variables was negative for countries with an export-dominated economy but positive for countries with an economy dominated by imports.

Meanwhile, most researchers stated that the interest rate variable positively impacted [6] - [9], [12], [13]. The studies also provided different results for the impact of inflation on stock prices. Some research stated that the relationship between inflation and stock prices was positive [14], while some stated that the impact of inflation on stock prices was negative [13]. Macroeconomic factors in Indonesia indicate that there is no single macroeconomic factor affecting stock prices, which shows that in Indonesia, as a developing country, there are no certain macroeconomic factors that affect stock prices [15].

Some macroeconomic variables' impacts can vary from one market to another and from one peri-od to

another. The relationship between the stock market and macroeconomic factors will be convenient and vital for investors because this relationship's dynamics have changed [16]. Reference [17] stated that although studies that observed the causal relationship between the stock market and macroeconomic variables provided different conclusions, most of these studies agreed that there was a significant relationship between macroeconomic variables and the stock market. The different conclusions were caused by different market regulations, investors, location of the country, and other factors. Although macroeconomic variables are common, it is difficult to generalize the results because the same variables may have different impacts.

Theoretical Study

Studies of macroeconomic influences on stock prices have been conducted in emerging markets and developed countries. Studies were also conducted on literature with related themes published in the period before 2004. As in [18] macroeconomic variables, which consisted of the inflation rate, GDP growth rate, exchange rate, and money supply, had a direct relationship with stock prices in the BRICS countries (Brazil, Russia, India, China, and South Africa). In addition, research on emerging markets was also conducted in reference [19], which observed the relationship between stock prices and macroeconomic aggregates in India from April 1990 to March 2001. They did not find a two-way causal relationship of stock prices with foreign exchange reserves, real effective exchange rate, and trade balance.

Furthermore, researchers conducted a study related to the causal relationship between macroeconomic variables and India's stock prices from April 1991 to December 2005. The results showed that there was a direct relationship between money supply to stock prices. Previous research in Indonesia, Malaysia, the Philippines, Singapore, and Thailand, stated that money supply, interest rate, and exchange rate were influential factors [20]. Reference [21] stated that loan interest rate, inflation, money supply, and exchange rate were influential factors in Ghana.

Research in developed countries, in the United States study period from 1975 to 1995, found that interest rate and the exchange rate had a one-way relationship with stock prices [22]. Another research was conducted in the United States in the study period from 1974 to 1975, stated that interest rate and the exchange rate had a one-way relationship with stock prices [23]. The research results in reference [24] in Canada, France, Germany, Italy, Japan, Netherlands, United Kingdom, and the United States in the study period from 1985 to 1991 stated that exchange rate had a one-way relationship in the short term and long term with stock prices.

Further, as in [25], researched in France, Germany, Italy, Switzerland, and United Kingdom in the study period from 1968 to 1984, found that the exchange rate had a one-way relationship with stock prices. The research in Japan and the United States in the study period from 1965 to 2005 reported that inflation had a one-way relationship with stock prices [12]. Meanwhile, research in the United States in the study period from 1975 to 1999 revealed that inflation had a one-way relationship with stock prices [22].

The research conducted in Australia in the study period of 1960 to 1998, stated that the money supply had a long-term effect on stock prices [9]. The results of research in Canada, Germany, Italy, Japan, and the United States in the 1997 research period revealed that the money supply had a positive effect on stock prices [7].

2. METHODS

This study's independent variables consisted of Exchange rate, Interest rate, Money supply, and inflation, the dependent variable in this study was the stock price. Secondary data that were used were already available and obtained from other parties. Data were collected from various reliable, credible documents, literature, articles, and scientific papers. Secondary data were used to consider that these data have a validity guaranteed by other parties, so they are suitable for use in research. The data collected included data on exchange rates, interest rates, money supplies, and inflation in Brazil for the 2004-2018 period. Data sources included data on stock prices that were obtained from the monthly data at the period-end closing of the Bovespa Index and Macroeconomic variables that were obtained from monthly data from the Central Bank of Brazil

Data were analyzed using quantitative descriptive analysis. The results of a study that indicated whether or not there was influence were analyzed descriptively by comparing them with developed countries, emerging markets, and similar studies before the 2004 period.

3. RESULT AND DISCUSSION

The results showed the impact of variable X on variable Y. Interest rate was found to have no significant impact on the stock market index. Then, the exchange rate did not significantly influence the stock market index. Meanwhile, inflation did not influence the stock market index, and money supply significantly influenced the stock market index. These results indicated that only the money supply variable impacted the stock market index in Brazil, while the other variables had no significant impact.

This study's results had differences with the results of research conducted in India in the 1995-2008 period.

Several variables that supposedly influenced the price of emerging market shares, several variables (inflation, interest rate, and exchange rate) had a significant impact, while one variable (money supply) did not significantly impact [26].

Not only did it have a difference with India as an emerging market, but this study also apparently showed a difference with research in developed countries. As in reference [25], research in France, Germany, Italy, Switzerland, and United Kingdom in the 1968-1984 period, stated that inflation had a negative impact on stock prices, the interest rate had a negative impact on stock prices, and the exchange rate had a positive impact on stock prices. Meanwhile, employment and import had no impact on stock prices. Research in the US over the period 1975-1999 concluded that stock prices were formed by money supply, inflation, exchange rate, industrial production, exchange rate, and interest rate that positively impacted stock prices [22].

Reference [12] used a Cointegration analysis of macroeconomic variables (industrial production, consumer price index, money supply, long-term interest rate, and stock prices) in Ja-pan and the United States. The empirical results showed that the US's stock prices were positively related to industrial production and negatively related to consumer price indexes and long-term interest rates. However, further results indicated that money supply showed a positive but insignificant relation-ship with stock prices in the United States. In Japan, this study found that stock prices were positively related to industrial production but negatively related to the money supply. The results also showed that industrial production was negatively affected by the consumer price index and long-term interest rates.

Reference [27] was researched the United Kingdom, Switzerland, Belgium, and the United States over the period 1980-1996, stated that macro factors: formed stock prices, namely, negative inflation and money supply, gave positive impacts. Reference [28] conducted a study in New Zealand in the 1990-2003 period and stated that the macro factor that formed stock prices, namely, inflation, had a negative impact, while interest rate gave a negative impact and exchange rate gave positive impact. The real gross domestic product also impacted stock prices. A research conducted a study in Norway over the 1974-1994 period and found that interest rate negatively impacted [29]. Furthermore, oil price changes and domestic production influenced stock prices. From the research referred to, it is known that in developed countries, stock prices were negatively affected by inflation. Further, it could be affected both negatively and positively by interest rates, and it was affected positively by exchange rates and money supply.

In general, these study results are different from other studies that observed the relationship be-tween macroeconomic variables and stock prices [30]. It found

that there was a significant relationship be-tween macroeconomic variables and stock prices, such as a study conducted in Argentina, Brazil, Chile, Colombia, Mexico and Venezuela, India, Indonesia, Malaysia, Pakistan, the Philippines, South Korea, Taiwan, Thailand, Greece, Portugal, Turkey, Jordan, Nigeria, and Zimbabwe for the 1985-1997 period, a study conducted in Singapore in the 1989-2001 period [31], a study conducted in Ghana during the period 1991 to 2005 [21], and the study conducted in Indonesia, Malaysia, the Philippines, Singapore, and Thailand during the period 1985 to 1996 [20].

These studies suggested that macroeconomic determinants, which influence stock prices, consisted of inflation, interest rates, and exchange rates, were variables that could directly impact the fluctuation of emerging market stock prices. However, these studies' results differed from the result of the study in Brazil, which showed that only money supply had an impact on stock prices.

4. CONCLUSION

The results showed that inflation, interest rate, and exchange rate did not impact stock prices. Meanwhile, the money supply had an impact on stock prices. The pattern of impact in Brazil differed from the pattern of impact found in research in other emerging markets and developed countries and re-search before 2004. Thus, emerging markets provid-ed different results in the impacts of macroeconomic variables (inflation, interest rates, exchange rates, and money supply) on stock prices. Research in developed countries and the results of research con-ducted before 2004 also showed different results.

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