Macroeconomic effect on stock price: Evidence from Indonesia

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CHRONICLE	ABSTRACT
	Investment decision making by Engineering Managers needs to take into account microeconomic and macroeconomic factors in a country. The role of Engineering Managers in making decisions is crucial and very important. Technical Managers need to consider macro-economic effects such as the US dollar exchange rate against the rupiah, the interest rate set by Bank Indonesia, inflation, especially during the preparation of the Budget Plan (RAB). This research is to analyze the macroeconomic effect on stock prices, to prove the hypothesis, a quantitative approach is used. Macroeconomics are assessed through the US dollar exchange rate, and financial statements data of banking companies. © 2021 by the authors; licensee Growing Science, Canada

1. Introduction

Technical Managers need to consider macro-economic effects such as the US dollar exchange rate against the rupiah, the interest rate set by Bank Indonesia, inflation, especially during the preparation of the Budget Plan (RAB). Banks are intermediaries who truly need community involvement in their function, banking products and services are used, similarly, the bank demands that the public raise money for banking purposes. Since the bank's business activity involves fundraising and channeling, the financial institution must maintain public trust, in order to deposit its resources with the bank, and therefore it needs to maintain its health condition by applying the Principle of Caution. Regulatory capital models consider the effect of liquidity risk on stock price (Alfonsi et al., 2020; Asmah et al., 2020; Cai et al., 2020; Gajek & Rudź, 2020; Kupiec, 2020; Rehfeldt et al., 2020; Tran et al., 2020), The higher the capital ratio (P. Li et al., 2020; Luque, 2020; Murthy & Ketenci, 2020; Rabbani, 2020; Ueda & Sharma, 2020), the less liquidity risk there is (Chakravarty & Ray, 2020; Navas et al., 2020; Shanaev et al., 2020; Smaoui et al., 2020; Z. J. Wang et al., 2020), so it will impact the stock Price (Chitradevi, 2019; Flores-Muñoz et al., 2019; X. Wang et al., 2019). The second thought argues that higher capital ratios reduce financial fragility so that it increases financial resilience (Bezemer et al., 2020; Escobar et al., 2020; Humpe & McMillan, 2020; Kind et al., 2020; Kuhl et al., 2020; Pennerstorfer et al., 2020; Pollard et al., 2020).

2. Literature review

Budget Plan (RAB) is the calculation of the amount of costs required for materials, tools and wages, as well as other costs related to the implementation of the work or project. Each engineering manager must be able to create, analyze every RAB he will make. Technical Managers need to consider macro-economic effects such as the US dollar exchange rate against the rupiah, the interest rate set by Bank Indonesia, inflation, especially during the preparation of the Budget Plan (RAB). Unemployment is when production factors are not actively involved in the production that is willing and capable of producing goods and services (Anglada, 2016; Aulin-Ahmavaara, 1989; Dernbach, 2004; Mahboob et al., 2012). Unemployment does not mean that the economy has the macroeconomic goals of absorbing all employees. Unemployment is a real problem because production is lower; thus, in the economy, scarcity occurs because the unemployed earn less income that gradually lowers their living standards (Bański & Wesołowska, 2020; Malanima, 2018; Mehmood et al., 2018; Millar, 2009; Minot et al., 2006; Shen et al., 2012). Generally, if the economy grows from time to time, it is observed. GDP growth rates and unemployment rates, generally low, are indicative of economic growth (Azolibe et al., 2020; Gelfer, 2020; Jumpah et al., 2020; Karlsson & Österholm, 2020; Martín Álvarez et al., 2020; P. H. Nguyen et al., 2020). This is because GDP is rising, the output is increasing, and the number of employees required to balance output levels increases. A good economic situation is usually going to have lower unemployment and vice versa (Barbosa-Filho, 2020; Carvalho et al., 2020; Glawe & Wagner, 2020; Samy-Kamal, 2020; Turner & Giordano, 2020; Zhang et al., 2020).

Inflation will arise if prices rise consistently and continuously (Cagliarini et al., 2011; Fooladi et al., 2020; Hubmann et al., 2020; Škare, 2012; Vaona, 2013; Yücel, 2018). In Inflation, the price of goods and services is indicated by the general increase occasionally. In these cases, prices usually rise year after year or month to month. The economy is not achieving its stability objectives with this burden (Bordo & Jeanne, 2004; Jonáš, 2001; Leith & Wren-Lewis, 2009; "Prices: No Inflation Fear," 2000; "The Budget and Economic Outlook: Fiscal Years 2010 to 2020," 2011; Silver, 2000; Sims, 1999). The average price of goods and services increases with inflation. Some prices are higher than average in terms of inflation, some below average and even falling commodity prices. The real problem is inflation because of the reduction in money buying power because the prices of products and services are increasing. This will, in turn, decrease financial wealth and livelihoods and increase long-term planning uncertainty. Wealth and revenue are generally spread carelessly across different industries and between resources (Ahmed & Kar, 2019; Aslanbeigui & Oakes, 2015; Blanchett, 2014; Bulut & Collins, 2014; Bykanova et al., 2017; Drometer et al., 2018; Fahy Bryceson & Bosse Jønsson, 2013).

Inflation and unemployment are likely to occur, at various stages in the business cycle (Brown et al., 1976; Ploch, 2011; Tyler, 1982). There will be a different chance of this problem. Sometimes the problem of unemployment falls, and inflation is something that should be taken into account. In other cases, more than inflation, unemployment needs to be considered. We will now see how these two issues relate to the two main business phases. During the recession, in general economic activity will decrease. Total aggregate demand is lowered, resulting in less production and less utilization of resources during the manufacturing process. This is the main problem of unemployment. At the same time, however, as markets tend to exceed shortages, Inflation in this phase is usually not a problem (Bersch et al., 2019; Farjadi et al., 2018; Gamble, 2018; Hindess, 2017). Economic activity increases during the expansion stage. The overall rise in demand for aggregates leads to higher production levels and higher resources. Thus, the major problem at this stage tends to be inflation. However, many people are required to meet work request with strong production and therefore unemployment is not a problem (Iqbal Anjum, 1996; T. Nguyen, 2011; Robinson & Wade, 1985; Welfens & Kauffmann, 2005).

Tariffs of interest are charges charged by banks for lending. Companies sometimes borrow the money and thus increased interest rates will directly impact the company (Aleem, 1990; Do et al., 2020; Sandberg, 2015; Sapienza, 2004; Sherer Jr. et al., 2004; Stenning & Shearing, 1984). With the rise in interest rates, interest expenses will increase. The company must raise the cost in order to pay the loan in these cases. Customers also suffer from change in interest rates. This also affects the enterprise. In such cases, To borrow money, people have to pay a greater amount, which causes large products to decrease. Stagnant growth occurs if the supply of products doesn't increase or fall too below the benchmark (Krishnan et al., 2020; Lynn et al., 2020; Sauzède et al., 2020; Usman & Nichol, 2020; J. Yang et al., 2019; Yusnaini & Nur, 2020). Economic growth generally requires increased total production of goods and services (Andari et al., 2019; Bahadori & Kashiwao, 2019; Deng et al., 2018; Ren et al., 2019; Schlüter et al., 2019; Sutherland & Ralph, 2019). This is necessary to offset the population increase and expectations of better living standards. If total output does not meet those expectations, growth is stagnant. Consequently, economic growth's macroeconomic objectives are not met. This makes it possible to combine stagnant growth with production resource quantity and quality. Detailed cause of stagnant growth. Production growth can be reduced by the number of four factors in production (Cole & Rosengaus, 2019; Huang et al., 2020; Kim et al., 2018; Mousavian & Eskandari, 2018). These factors include capital, land, labor, and business (Delgado et al., 2008; Martin et al., 2015).

Banks are all banks, including companies, institutions, and business processes (Bataev et al., 2018; Castillo-Carmelino et al., 2020; Helbekkmo et al., 2019; Shorter & Seitzinger, 2012; Wilson et al., 2014; Zveryakov et al., 2019), to be as follows defined: 1. Banks are companies that raise funds and redistribute them to the community through loans or other forms so that people's lives improve, 2. Conventional bank is a bank whose business activities are carried out conventionally and on the basis of its kind classified as commercial and rural lending banks. 3. Sharia banks, banks whose business activities are carried out using Sharia Principles consisting of Sharia Rural Financing and Sharia Commercial Banks (Darwanto & Chariri, 2019; Fidiastutik & Roziq, 2019; Kartika et al., 2019; Mukhibad & Setiawan, 2020; Ramli et al., 2020; Zulfikar & Sri, 2019). Malkiel and Fama, (1970) says an efficient market is a prerequisite in which bond prices fully reflect the information available. Market prices also react fast to new data that reflect stock price changes. In order to measure data effectively, the link between stock prices but also accounting information is examined. But what data is used to conduct effective market evaluations? (S. Brown et al., 1999), cites three major types of market efficiency: weaknesses, weak markets, semi-powerful forms and strong efficiency on the market. Valuable relevance research is interpreted as a study to establish if the value of financial statements is related to the capital market's stock price. Relevant and reliable financial reports must be created. Financial reports are considered to be important when they can be useful in predicting and confirm a business decision. Financial statements are considered important when their numbers relate strongly to the value of a company (Čabinová et al., 2020a, 2020b; Cancela et al., 2020; "Erratum Regarding Missing Declaration of Competing Interest Statements in Previously Published Articles (Journal of Accounting Education (2020) 51, (S0748575120300245), (10.1016/j.Jaccedu.2020.100670)),” 2020; Ertimur et al., 2020; Tharp, 2020), in the financial statement (Craja et al., 2020; Eberhartinger et al., 2020; Hasan et al., 2020; Lien et al., 2020; Martens et al., 2020; Yılmaz et al., 2020). Research on value relevance is split into 3, namely: a, in 'The relevance of literature pertaining to financial standard situations (W. Cai & Ye, 2020; Derevyankina & Yankovskaya, 2020; Hu & Song, 2020; Ozdemir et al., 2020; Yu et al., 2020; Zakharchenko et al., 2020).' Relative association (Comparison of land market value and alternative size, for example, the relationship between income and inventory prices), b. Studies of increased association (research whether certain financial report figures are useful for stock market explanation and return), c. Marginal studies of contents of information (This study examines whether certain accounts add information available to investors to the collection. The model (Ohlson, 1995) is the most well-known value model for the connection between business value and accounting. Ohlson's model is also an accounting model itself that includes a model that covers key values of financial intelligence. The model of Ohlson is a strong theoretical market evaluation framework that is based on basic accounting and other information related to corporate value prediction. The model is simple, in the Model investors are assuming that they are neutral, accounts are non-biased, there is no clear surplus, the role in accounting is not detailed, there is no asymmetry of information, inconsistency of tax rates, explicitly calculated actual choices and an abnormal profit and "v" self-records. In the (Ohlson, 1995) model the company's value as indicated in the stock price can be seen in (Juanamasta et al., 2019; Prabowo et al., 2020; Rusdiyanto, Agustia, et al., 2020; Rusdiyanto, Hidayat, et al., 2020; Syafii et al., 2020).

$$NP_t = NB_t + \alpha_1\, LA_1 + VL_t$$

The above equation shows that the company's value (NP_t) in time t depends on the rupiah exchange rates against the USD, Inflation SBI, and other data (VL_t) which is constantly multiplied (α1 and α2), respectively. Thus, it can be determined that the function of company value is:

$$NP_t = f\,(USD,\, SBI,\, INF,\, VL_t)$$

 Feltham and Ohlson (1995) were surprising, since it was simple to derive, however, the need for predictive dividends was eliminated, with an equal value to the current value of all expectations of dividends, when calculating the value of the company. The value is a result of the position of an investor in an enterprise reflected in the enterprise's market price. The stock price of the company reacts to the company's overall status describing the shareholder/company asset wealth investment decisions, financing, and asset management under inventory prices of companies (Cardi & Mazzoli, 2019; Schuenemann et al., 2020; Shishany et al., 2020; Vukovic et al., 2020; Zhan et al., 2020). One factor in the performance of companies in the country is the macroeconomic condition of a country (Additya, Singa, and Maulana, 2018), which can influence the movements in stock price. Investors will be greatly helped in making profitability decisions on investment by understanding and predicting macroeconomic conditions in the future so that investors can predict macroeconomic conditions in the future, and investors should also pay attention to many macroeconomic indices that are able to help them in understanding and predicting the condition of the macroeconomic. (Additya et al., 2018). Macroeconomic indicators frequently related to capital markets include fluctuation in unemployment, IDR exchange rates, inflation, interest rate, and staggered growth. The IDR exchange rate is the currency determined by the Indonesian banks based on their decision. It was valid until 1997, under the established exchange policy. Following 1997, demand and supply or market mechanisms released the IDR exchange rate versus the Dollar. The global economy entered the era of globalization, influencing movement in emerging financial markets of foreign capital. Sensitivity of the capital market is obvious in domestic fluctuations in currencies (Li et al., 2017; Manzoor & Haqiqi, 2012) in Indonesia that adheres to a fluctuating exchange rate and Rupiah appreciation may have an international impact on local competitiveness. This can reduce the output of the company to lower stock prices. If the Rupiah value decreases, the investment portfolio in which US

dollar holding investors May the Indonesian capital market check in potential domestic industries tend to increase the US dollar value by foreign investors that hold shares in the Indonesian stock exchange. The hypothesis of the research can be formulated, based on the description above:

H_1: *The IDR dollar exchange rate have a positive impact on stock prices.*

Banks directly controls the interest rate via the BI rate. The response rate of bank to achieve its intended goal (Adamović et al., 2020; Barasa et al., 2018; Mallett et al., 2012; Yalcin et al., 2014) is a BI rate that will continue to increase. The Bank of rate reflects the position on monetary policy or position set and announced by the BI to the public. Policy of low interest promotes investments rather than savings, and vice versa. The hypothesis of the research can be formulated, based on the description above:

H_2: *The interest rate of BI has a positive impact on stock prices.*

Inflation generally leads to a deterioration in the purchasing power of the public, because income levels are actually also declining (Gut et al., 2015). Development and economic dynamics affect Increased goods and services demand, one of the reasons behind inflation). The hypothesis of the research can be formulated, based on the description above:

H_3: *The inflation has a positive impact on the stock price.*

3. Methodology

In this study using quantitative Explanatory research. "Explanatory research is a research method which aims at explaining the position of the studied variables and the effects on one variable for another," said (Juanamasta et al., 2019; Prabowo et al., 2020; Rusdiyanto, Agustia, et al., 2020; Rusdiyanto, Hidayat, et al., 2020; Syafii et al., 2020). The quantitative methods are research which aims to understand as well as solve problems refers to positive or empirical considerations. The study focuses on testing theory, in particular. A sample comprises the number and features of the population. This study uses a purposeful sampling method. The intended sample is a method for determining samples for certain reasons. Sample data are inventory prices, IDR dollar currency data, interest rates for BI and inflation. There were 1,280 of a four Persero bank listed companies on the Indonesian Stock Exchange from 2010 to 2017 in this study. The library method in this research is used to obtain valid data in the form of figures taken from several literature such as the Internet, newspapers, books, and other related topics. Additionally, the publications of IDR Exchange Rate for US dollar, The Indonesian Bank's rate, inflation 2010-2017 are using the documentation techniques used in this research in the context of data searches Price reports in stock form. The data collection methodology is provided online by using www.idx.co.id, www.yahoofinancing.com, www.bi.go.id. In this study, ten dependent variables are used to create a regression model to measure the importance of corporate reporting. In this study, the variables included:

3.1 Variable

3.1.1 Dependent Variable

The dependent variable in this study is the company's value at the end of the month, which is supported by the bond market price. Price or value of stocks that are held at a specified point of time on the market, based on market situation, on the share capital market (Bouteska & Regaieg, 2020; Chiang, 2020; T. K. Nguyen & Razali, 2020; Osazevbaru & Tarurhor, 2020; Ricci et al., 2020).

3.1.2 Independent Variable

1. The IDR's exchange rate are the exchange rate established on the basis of the Indonesian banks' decision. It was only until 1997 that the exchange rate policy was in force. After 1997, demand and supply and market mechanisms released the US dollar IDR exchange rate. Banks Indonesia not only monitors and control market mechanisms Policy for intervention in the market by releasing dollars from the Indonesian (Anggitawati & Ekaputra, 2020; Darman & Hutomo, 2020; Rahim et al., 2020; Saenong et al., 2020; Saidi et al., 2020).

2. Stated that interest could be understood as remuneration for customers who purchase and sell their products by banks that follow conventional principles. The interest rate shall be money amount paid in a percentage by the borrower to the debtor. This study's interest rate is the interest rate of a Bank deposit for the one-year period of monitoring. The interest rate and for a quarter shall be adjusted to an SBI interest rate (BC & Esfahani, 2020; Fullerton & Muñiz, 2020; J. Nguyen & Valadkhani, 2020; P. R. Yang, 2020; Zhenyu & Taltavull, 2020).

3. The inflation described as an event describing a position in which goods prices increase and currency value weakens. According to the consumer price index must be first calculated before the annual inflation calculation is made or may be referred to as the Price index of customers (Walossek et al., 1996). The inflation calculation formula is:

$$\text{Inflation} = \frac{IHK_s - IHK_k}{IHK_k} \times 100\%$$

where IHK_s and IHK_k are current and previous price index, respectively.

4. Discussion

In this study the analysis model used tests the impact of the independent variables also on depending variable that use multiple regression analysis to show the correlation structure between two or more independent variables. The empirical research model is as follows:

$$NP_t = \alpha + \beta_1 USD + \beta_2 SBI + \beta_3 INF + \varepsilon \tag{1}$$

Table 1 introduces the information on Eq. (1).

Table 1
Description of the parameters

Information	Description	
NP_t	=	Stock price
α	=	Constants
$\beta1, \beta 2, \beta 3$	=	Variable regression coefficient NB_t, USD, SBI, INF,
USD	=	IDR Exchange Rate Against USD
SBI	=	BI Interest Rate
INF	=	Inflation
ϵ	=	Standard Error

4.1 Research Results Description

Descriptive analysis is necessary to provide an overview of the fluctuating variables used in this study to describe the research data's properties. The normality of the data is also tested for the distribution of the research information used. Results of the sample selection resulted in 1.280 data from four publicly owned companies in the Indonesian stock exchange listed in Indonesia which fulfilled the pre-determined criteria. The statistical data in this sample are descriptive.

Table 2
Descriptive Statistics

Variable	N	min	max	mean	Std. Dev.
Stock price	128	470.00	1327.00	5721.1484	3395.3951
Exchange Rate IDR/USD	128	9097.00	14657.00	11520.0312	1761.46531
BI Interest Rate	128	121.00	7363.00	4005.3438	26.41.41861
Inflation	128	3.07	8.40	5.2172	1.48160
Valid N	128				

The IDR-US dollar and BI exchange rate is high in relation with inflation from the above table. Inflation is below the IDR dollar exchange rate, and the BI exchange rate is well below the rupiah exchange rate of the dollar. Fair value components of BI rate are higher than financial asset and liability inflation. Successive IDR exchange rate increases in US dollars and BI rate indicate that the company includes information about its relevance to its financial assets regarding the fair value of the company. In other phrases, the exchange rate size for IDR is greater than the US dollar, and BI is higher than Inflation. When the RBI rate is set to increase, the dollar IDR exchange rate varies and stabilizes against the banks' stock prices.

4.2 Regression Analysis

All variables in the study are stable at degree 0 and can be used in a regression model directly. Results of the research variables regression will be shown below:

Table 3

Regression Analysis

Variable	Coefficient	t	Sig. t
Constant	7077.986	1.147	0.254
Exchange Rate of IDR/USD	0.185	3.477	0.001
BI interest rate	0.109	1.496	0.137
Inflation	193.490	-1.150	0.253
R = 0.743 R-Square = 0.552 F = 16.167 (0.000)			

The IDR currency has positive and influence on the dollar at 5 percent of a stock price. The result of the study means the value for stock prices of the US dollar exchange rate for IDR. The coefficient reveals a positive relation to equity prices in the IDR exchange rate to the US dollar. Investors can evaluate the stock price of a bank by using the IDR exchange rate to US dollar. IDR currency is a general anticipation for investors. From test results, investors will be keener on inventories that have a high IDR dollar-to-US exchange rate than stocks with a low IDR-to-US dollar exchange rate. Due to many investor requests for a high rate of rupiah share exchange the company's stock market price rises. In contrast to the US dollar, the IDR's low exchange rate tends to bring down stock prices. The study results conform to the findings of its study (Malau, 2018), while the variable adverse IDR exchange rate has a substantial impact on stock prices (R. Sari, 2018). The results of the VAR analysis show this, The t-statistic values are greater than the t-table value when the VAR estimate results show table values with a confidential 95 percent level of confidence. BI interest rates do not influence stock prices positively and significantly. BI interest rates do not apply with respect to stock prices, the study's results indicate. The correlation shows that the BI rate is not positive in relation to bank sector companies' share price. Investors can use the information on interest rates to assess the share prices of banking companies. For investors, the BI interest rate is indeed a general forecast. It can be said from the findings of this test that investors have a higher BI rate than stocks with lower BI interest rates. Firm's stock prices rise with a large number of requests made by investors for high BI interest rates. In contrast, a low rate of BI tends to affect the stock price. This study is not consistent with its results (Sari, 2018). Inflation doesn't influence stock prices positively and substantially. The findings of this study show that inflation is irrelevant to stock prices. These results show the inflation rate is not positively related to the bank sector's stock prices. Investors can use inflation rate information to assess the bank sector's share price. The inflation rate for investors is generally expected. The results of this test suggest that investors are more interested in high inflation stocks than in low inflation stocks. The amount of investor demands for high inflation stocks increases the company's inventory price. On the contrary, a low rate of inflation tends to influence the stock price to decrease. The results of the research differ from his findings.

5. Conclusion

Results of the test show a positive and significant statistical effect of rrupiah's exchange rate against the US dollar at a 5 percent share price, while the BI, inflation, interest rates have nothing to do with stock prices. Results of the re-search will provide potential investors or investors or with a more careful approach to considering U.S. dollar exchange rate aspects of rupiah as an investment in terms of stock prices in connection with the conclusions. The study's results will be used by banking firms in their business choices, in particular macroeconomics decisions in terms of share prices. Business decisions focus on how far bank returns are provided and the way in which banks maintain capital levels and corporate liquidity to allow investors to become interested in the business. More companies not just in the banking industry should be used for future research. Finding a macro-economic relationship on stock prices should also be done with further research over a longer period. More research should also be used not only for seven years with the annual audited report data for a longer period. More research is also investigating the significance in each stage of the company cycle of capital, macroeconomic and banking liquidity metrics, as is the case for Black research carried out (1998). Investment decision making by Engineering Managers needs to take into account microeconomic and macroeconomic factors in a country. The role of Engineering Managers in making decisions is crucial and very important. Technical Managers need to consider macro-economic effects such as the US dollar exchange rate against the rupiah, the interest rate set by Bank Indonesia, inflation, especially during the preparation of the Budget Plan (RAB). The research also shows that Technical Managers are very necessary to pay attention to the exchange rate of the US dollar against the rupiah in each of its investment decisions especially during the preparation of the Budget Plan (RAB) before contact is made.

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