
| RESEARCH ARTICLE

Inflation, Interest Rate, and Exchange Rate for their Effect on Profitability and the Implications on Corporate Value: Case Studies in National Banking 2014 until 2019

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| ABSTRACT

The purpose of this study is to see how much inflation-interest and exchange rates could affect profitability and or whether the correlation-between profitability affects the corporate's book value. The research sample consisted of seven large Indonesian national banks with authorized capital above 10 trillion rupiahs with an observation period from 2014 to 2019. Data processing using Eviews 9 software, quantitative using regression linear multiple regression techniques. They indicate that inflation does not have a significant positive impact which is proxied by profitability. Interest rates have a positive but not significant to Profitability, Value Exchange does not have a positive effect significantly on Profitability and Profitability has a significant positive influence on the Corporate's Book Value.

| KEYWORDS

Inflation, Interest Rate, Exchange Rate, Profitability, and Corporate's Book Value

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1. Introduction

The corporate's profitability is the corporate's ability to create net income from activities carried out in the accounting period. Profit can be described as the performance achieved from the company's general transaction process during a certain period.

A corporation's profitability could be achieved through various efforts made during the current period. The gain is the measure of the corporate's performance as indicated by the profit generated by the corporation. The gain will reflect the effectiveness and success of overall management, where this ratio will show the balance of income and the corporate's capability to generate income at various levels of operations. In achieving large profits, management with a high level of effectiveness is needed.

Banks as established financial institutions have the authority to provide financial services such as deposits, money loans, banknote transactions, perform financial transactions from one bank to another, and several other banking transactions. The banking business used to only cover collecting funds, distributing funds, and providing bank services to customers, but now banking activities cover all the needs that customers want. Earning a profit and surviving in the banking business cannot be separated from the influence of the environment, both micro and macro, especially the economic sector, which is the habitat of the banking business. As with inflation, interest rates and exchange rates are an inseparable part of the banking business and are several factors that should be considered if a bank wishes to extend credit or borrow funds from interbank (interbank).

One of the necessary indicators for investors in evaluating the corporate's prospects in the future is to see the potential to which the corporate's profitability is growing (Tandelilin, 2010), the corporate gain is the only way to accurately assess conducive to the rate of return that might be obtained from its investment activities. Profitability will reflect the benefits of financial investment, meaning that profitability involves firm value because internal sources are getting bigger. The better the corporate's profitability growth means the corporate's prospects in the future are considered better, essentially that the corporate's value will also be assessed as getting better in front of investors. If the corporate's capable of achieving a gain boost, the stock price will also increase (Husnan, 2015).

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2. Literature review

2.1 Inflation

Based on the source or cause of the increase in prevailing prices, according to Sadono Sukirno, inflation is usually divided into three forms, namely:

- 1) Demand-pull inflation, namely inflation that will occur due to an increase in demand for a commodity.
- 2) Cost-push inflation, namely inflation that occurs due to growth in production costs.
- 3) Imported inflation, namely inflation caused by inflation in foreign countries.

From this definition, three components must be met for inflation to occur, namely:

- a. Price increase, i.e. if the price of a commodity becomes higher than the previous period.
- b. It is general, namely that the general increase in commodity prices consumed by the public is not an increase in a commodity that does not cause prices to rise in general.
- c. Ongoing continuous, the general price increase will also not cause inflation if it occurs for a moment; for example, a price increase during Eid or New Year is not inflation.

The contrary of inflation or hike is decline. Decline or deflation is a condition in which the amount of goods in circulation exceeds the number of money in circulation so that the prices of materials fall and the value of money increases.

Inflation is also used to connote growth in the money supply which is occasionally seen as a cause of rising prices. There are many ways to measure the level of inflation; the two most usually used are the CPI and the GDP Deflator. Generally, inflation was caused by an increase in the Consumer Price Index (CPI). Not only that, but inflation is also influenced by the rising prices of basic commodities. The pull of demand (excess liquidity/money/medium of exchange), as well as pressure (pressure) on production or distribution (lack of production (product or service) and/or also including lack of distribution), also causes inflation. For the first reason, it is more influenced by the role of the state in monetary policy (Central Bank), while for the second reason it is more influenced by the role of the state in executor policy, which in this case is held by the Government (Government) such as fiscal (tax levies/incentives/disincentives), infrastructure development policies, regulations, etc.

Inflation also can be divided based on the extent of influence on prices. If the price increase that occurs is only related to one or two certain goods, the inflation is called closed inflation. However, if price increases occur for all goods in general, then inflation is referred to as open inflation. Meanwhile, if the inflationary attack is so severe that all the time prices continue to change and increase so that people cannot keep the money any longer because the value of money continues to decline, it is called uncontrolled inflation (hyperinflation).

Based on the severity of inflation can also be distinguished:

- 1) Mild inflation (less than 10% per year).
- 2) Moderate inflation (between 10% to 30% per year)
- 3) Severe inflation (between 30% to 100% per year)
- 4) Hyper Inflation (higher than 100% per year)

Inflation can be determined by escalating the change in the percentage rate change in a price index. The price indexes include:

1. Consumer Price Index (CPI) or consumer price index (CPI) is an index that determines the average price of certain main commodities consumed by consumers.
2. Cost of Living Index.
3. Producer Price Index. The index escalates by the average price of commodities needed by producers to carry out the production process. The PPI is usually used to process the level of the CPI in forthcoming because changes in raw material prices increase production costs, which in turn will increase the prices of consumer goods.
4. Commodity Price Index is an index that measures certain commodities prices.
5. Price index of main goods
6. GDP deflator displays its degree adjustment in the prices of all new materials, locally produced goods, finished goods, and services.

2.2 Interest rate

According to Classical Theory, the interest rate theory is a theory of supply and demand for savings. This theory discusses the interest rate as a balancing factor between demand and supply rather than investable funds originating from savings.

The prominent function of money in classical economic theory is as a means of measuring value in conducting transactions, as a means of exchange to facilitate transactions of goods and services, as well as a means of settling debt-receivable relationships concerning the forthcoming.

Classical economic theory assumes that the economy is always in a state of full employment. In a state of full employment, all production capacity has been fully utilized in the production process. Therefore, in addition to increasing efficiency and encouraging specialization of work, money cannot affect the production sector. In other words, the monetary sector, in classical economic theory, is completely separate from the real sector, and there is no reciprocal influence between the two sectors. The concept of saving, according to the classics is said, that a person can do three things to the difference between his income and consumption expenses, namely:

- 1) first, added to the cash balance that the detained.
- 2) second, buy new bonds and
- 3) third, as a businessman, bought directly to capital goods.

According to the classical theory, a higher interest rate will push higher people's desire to save, and public saving is a function of the interest rate. This means that people will be compelled to sacrifice or reduce spending on consumption at a higher interest rate to increase their savings.

Keynesian Theory, Liquidity Preference. Keynes's theory of interest rate determination is known as the theory of liquidity preference. Keynes said that the interest rate is purely a monetary phenomenon whose formation occurs in the money market. This means that the supply and demand for money will occur at the interest rate. In Keynes's concept, alternatives to wealth deviation consist of bonds and cash. Keynes's theory assumes that the basic ownership of the form of wealth deviation is the behaviour of people who always avoid risk and want to maximize profits. Keynes disagreed with the views of classical economists who said that both the rate of saving and the rate of investment were determined entirely by the interest rate, and changes in the interest rate would cause the savings created at the full employment rate to always be equal to the investment made by businessmen.



Picture Grafik BI Rate dan & 7 Days Repo

2.3. Exchange Rate

The exchange rate (otherwise known as the exchange rate) is an agreement known as the exchange rate of currency against current or future payments between the two currencies of each country or region.

According to Sadono Sukirno (2017), the exchange rate, better known as the exchange rate, is a term in the financial sector. The quotation is defined as the exchange rate of one country's currency against another country's currency, For example, the quotation or the exchange rate of the rupiah against the United States dollar or vice versa. The selling rate is the selling rate of foreign currency by a bank or money changer, while the buying rate is the rate that the bank applies when purchasing foreign currency. The exchange rate or exchange rate consists of two parts, namely the selling rate and the buying rate.

Foreign exchange rates experience continuous changes in value and are relatively unstable. Changes in value can occur due to the changes in the demand and supply of a foreign currency value in each exchange market (foreign exchange market) from time to time. Meanwhile, if supply and demand change, they will influence the relative increase in interest rates concerning the country, both jointly and individually.

A free-floating currency exchange rate system is a system of exchange rates that are allowed to differ against each other, and currencies are determined by supply and demand. Currency exchange rates tend to change almost always as will be quoted on financial market boards, especially by banks around the world, while in the use of a currency exchange rate peg system, it is a fixed exchange rate provided that the devaluation of the currency value is based on Bretton Woods system. A country's currency can change substantially due to changes in economic socio-political conditions. The decrease and increase in the value of the currency are also carried out and intervened by the government, in this case, the Central Bank, to adjust the actual conditions in the market. The decrease or increase in government intervention is known as devaluation and revaluation.

Devaluation is said to be when a downward adjustment or, in other words, a decrease in the exchange rate is carried out by the Central Bank, and vice versa it is said to be a revaluation when the Central Bank makes an upward adjustment or in other words, increases the exchange rate. According to Mankiw (2017), "Nominal Currency Exchange Rates and Real Currency Exchange Rates" in the economic system, currency exchange rates can be divided into two types, namely:

- a. The nominal exchange rate is the comparison of the relative prices of currencies between two countries. The exchange rate between these two countries applied in the foreign exchange market (forex) is the nominal currency exchange rate.
- b. The real currency exchange rate is a comparison of the relative price of the goods in the two countries. In other words, the exchange rate real money states the price level at which we can trade goods from a country with another country's goods. The exchange rate real currency is determined by the exchange rate nominal currency and rate comparison domestic and foreign prices. So it can be concluded that the currency exchange rate is the price of the currency value of a country against another country and is carried out for exchange transactions used in conducting trade transactions, the exchange rate between two countries where the exchange rate is determined by supply and demand of both currencies.

The bilateral exchange rate is opposite to the effective exchange rate:

- a) Bilateral exchange rates involve currency pairs, whereas,
- b) The effective exchange rate is the average from the foreign currency group and can be seen as an overall measure of competitiveness against foreign while in a nominal change effective in exchange rate or nominal effective exchange rate.

An increase in the demand for currency is best due to an increase in the demand for money transactions or perhaps an increase in the speculative demand for money. Money demand transactions will be closely related to the level of business activity of the country concerned, gross domestic product (GDP), and the level of demand for workers. The higher the unemployment rate in a country, the fewer people as a whole will be able to spend money on spending on purchases of goods and services, and the Central Bank adjusts the supply of money in stock to accommodate changes in the demand for money related to business transactions.

2.4. Profitability

According to Houston (2019), profitability reflects the result of all financial policy and operational decisions. Shareholders and potential investors will focus on the company's profitability and risk because the stability of stock prices depends on the level of profits and dividends in the future. Therefore, profitability can affect stock prices, which means it affects the value of the company and the prosperity of shareholders.

Profitability has goals and benefits for business owners, management, and parties outside the company, especially those who have a relationship with the company (Kasmir, 2012).

Brigham and Daves (2019) state that profitability is the net result of several policies and decisions. Profitability ratios provide clues about a company's operating effectiveness, including showing the combined effect of liquidity, asset management, and debt on operating results.

According to Kasmir (2012), there are two types of profit, namely:

- (1) gross profit, meaning profit in a certain period that has not been deducted the costs borne by the company
- (2) net profit is profit in a certain period that has been reduced by costs that burden the company in a certain period, including tax.

The three factors that affect ROE, according to Eduardus Tandililin (2010, p. 373), namely:

- (1) net profit margin,
- (2) total asset turnover, and
- (3) debt ratio.

According to Brigham and Houston (2019), to measure profitability ratios, which reflect the net results of financial policies and operational decisions, one can use the following methods:

- (1) Operating Margins,
- (2) Profit Margin.
- (3) Return on Total Assets (ROA),
- (4) Basic Earning Power (BEP) Ratio, and
- (5) Return on Common Equity (ROE).

2.5 Corporate Value

Corporate Value is the company's performance as reflected by the stock price formed by the demand and supply of the capital market which reflects the public's assessment of the company's performance. Firm value is an investor's perception of the company, which is often associated with stock prices. The value of the company, which is formed through stock market indicators, is strongly influenced by investment opportunities. Investment spending gives a positive signal from investment to managers about the company's growth in the future, thereby increasing stock prices as an indicator of company value. High stock prices make the value of the company also high (Brealey et al., 2015).

According to Brigham and Houston (2019), the market value ratio relates to the comparison between stock prices and:

- (1) earnings per share,
- (2) cash flow, and
- (3) book value per share.

Firm value can be measured using financial ratios, namely:

- 1) Price Earning Ratio (PER). This ratio describes the market appreciation of the company's ability to generate profits;
- 2) Price to Book Value (PBV). This ratio describes how much the market appreciates the book value of a company's shares. The higher the Price to Book Value (PBV) means the market believes in the company's prospects. PBV also shows how far a company can create firm value relative to the amount of capital invested, and;
- 3) Tobin's Q. This ratio shows the current financial market estimate of the return on each incremental investment value. Tobin's Q is calculated by comparing the ratio of the market value of the company's stock to the book value of the company's equity.

According to Husnan and Pudjiastuti (2015), Price to Book Value (PBV) is a comparison between the market price and the book value of shares. Generally, for companies that have good performance, this ratio is worth above one. This shows that the stock's market value is greater than its book value.

According to Tandeliin (2010), the relationship between stock market prices and book value per share can also be used as an alternative approach to determining the value of a stock because theoretically, the stock's market value must reflect its book value. This view is generally used by investors in determining the value of the company, which is then used to determine the decision to purchase company shares.

In this study, firm value is proxied by PBV. This is based on the assumption that PBV is one of the main indicators commonly used by investors in assessing company shares. PBV can also mean a ratio that shows whether the price of a traded stock is overvalued (above) or undervalued (below) the stock's book value.

Company valuation can be influenced by many factors. The basic concept of corporate valuation used, among others, is the price is determined in a certain period, the value must be determined at a fair price, the valuation is not influenced by certain groups. Overall, several methods and practices have been established in corporate valuation, including:

1. Profit approach, including profit rate ratio technique or price earning ratio, profit project capitalization method,
2. Cash flow method, including the reduced cash flow method,

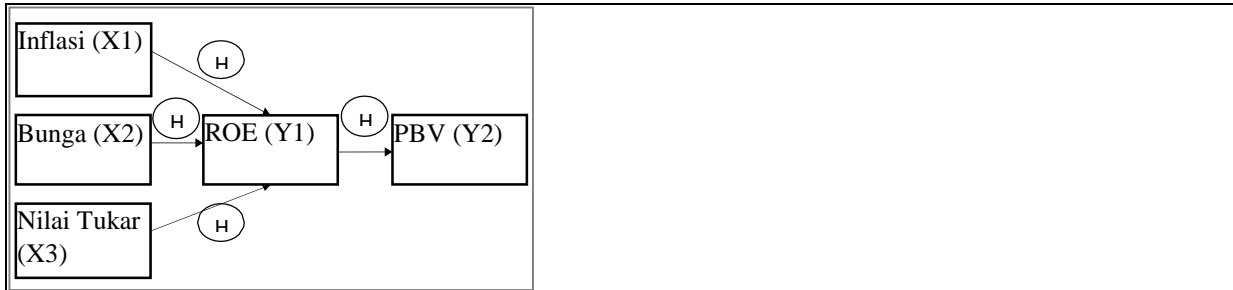
3. The dividend method, including the dividend development,
4. Asset approach, including the method asset estimate,
5. Stock value method,
6. Economic price additional method

3. Conceptual Framework

Sugiyono (2018, p. 61) explains that in quantitative/positivistic research, which is based on the assumption that these symptoms can be classified and the relationship between symptoms is causal (causation), researchers can only research a few variables.

3.1. Framework of thinking

Research framework:



3.1.1. Hypothesis Development

According to Ronny Kountur (2005:93), technically, a hypothesis is a statement of a possible relationship between two or more variables where the possibility is based on theories. The hypothesis always takes the form of a statement (declarative) sentence and relates in general and specifically one variable to another variable. Meanwhile, the hypothesis is an impermanent response to the investigation problem design (Sugiyono, 2018); therefore, the research problem formulation is commonly arranged in the form of an inquiry sentence. Based on the conceptual research framework above and the results of research that have been done previously, the hypothesis in This research is proposed as follows:

1. Effect of Inflation on Profitability

Inflation is the result of the money supply being larger than the standard guarantor, namely gold; because the supply of currency is greater, its value will decrease, causing an increase in the prices of basic commodities.

The test results of Amalia Nuril Hidayati (2016), Annisa Yasmine Adeputri Badan, and Henry Setyo Lestari (2015) figure that the inflation regression coefficient has a confident effect on profitability. This research shows a positive relationship between inflation and company profitability. The higher the inflation rate, the profitability will increase, and vice versa; if the inflation rate decreases, the profitability will also decrease.

H1: The results of previous studies are inflation has a confident effect on the profitability of the Bank

2. The Influence of Interest Rates on Profitability

Bank revenues are strongly prejudiced by the basic interest rate, which is the reference for lending and receiving third-party funds or deposits and savings. Based on previous research by Stijn Claessens a,c,d,* , Nicholas Colemanb, Michael Donnelly (El Sevier Inc. 2017), states that low-interest rates have a positive effect on ROA.

Likewise, Puguh Roni Prastowo, Rony Malavia, and Budi Wahono (2014), the results of this research shows that interest rates partially have an optimistic but not significant effect on changes in profitability with a value (sig. 0.661).

H2: Results of previous studies shows that the interest rate effect on Bank Profitability.

3. The Effect of Exchange Rates on

Bank Profitability

According to Pugh Roni Prastowo, Rony Malavia, Budi Wahono (2014), the answer of this study shows that the exchange rate partially has an optimistic but not noteworthy impact on changes in profitability. And Amalia Nuril Hidayati (2016) shows that the inflation rate and the variable exchange rate significantly impact bank profitability.

H3: The effect of the research shows that the exchange rate hurts revenue.

4. The Effect of Profitability on

The price of the corporate

Growth in profit will increase the price of the corporate if the corporate has optimized the usage of assets, growth sales of corporate products, and increased cost-efficiency. High profitability will indicate the prospect of a quality company so that the market responds positively. The form of investor participation is to buy shares that trigger an increase in stock prices and influence the growth of the corporate price.

In this regard, the outcome of previous research conducted by Hamidy, Wiksuana and Artini (2015) is in line with the outcome of a study conducted by Ida Zuhroh (2019), which states that profitability has an indirect result on secure price. Created on the previous explanation and referring to the outcome of a study on firm value, the outcome is as follows:

H4: Profitability has an optimist effect
on Company Value

3.2. Research design

In this research, the formulation of an associative problem with a causal relationship (cause and effect) is used. There is a relationship between five variables in which there are independent and dependent variables. Information is taken from certain illustrative residents or samples. The study process is reasonable, were to answer the problem formulation, concepts or theories are used so that hypotheses can be formulated. The data that has been collected is then analyzed quantitatively using descriptive and inferential statistics.

Variables And Variable Measurement

Variable

According to Creswel (2012) in Sugiyono (2018: 56), variables are appearances or features of personal or officialdoms that can be leisurely or investigated, which can be varied between people and the organization being researched. In this study, there are two kinds of variables used, namely:

a) Independent Variables (Independent Variables).

The autonomous variable is mutable that affects or reason the modification or occurrence of the dependent variable. In this study, the autonomous variable is indicators, namely: Inflation (X1), Interest Rate (X2) and Exchange Rate (X3).

b) Bound Variable 1 (Dependent Variable 1). The reliance on variable 1 is a variable that affects or become the outcome of the presence of autonomous variables. In this study, which to be the dependent variable is the probability (Y1) which is proxied by Return on Equity (ROE).

c) Bound Variable 2 (Dependent Variable 2). The reliance on variable 2 is the variable that is pretentious or which is the result of the autonomous variable. In this research, the dependent variable 2 is Firm Value (Y2) which is delegated by Price to Book Value (PBV).

Variable Measurement

The operational definition provides the information needed to measure the variables to be studied. According to Ronny Kountur (2017), the operational definition of a variable is a definition that provides an explanation of a variable in a measurable form. The operational value of the variables in this study was obtained from observations of financial statement information of several commercial banks with authorized capital above 10 trillion Rupiah for the period 2010 to 2019.

3.2. Data and Data Group Systems

The information used in this study is subordinate quantitative data based on time series and crosssection representing the people studied during a certain observation period.

The information used in this research is sourced from financial statement information occupied from the homepage of the Indonesia Stock Exchange and the homepage of Bank Indonesia, which are secondary data. Rendering to Sugiyono (2017), quantifiable information is data in the form of numbers or quantitative data that is scored (scoring).

According to Ghozali and Ratmono (2017, p. 48), there are three categories of data used in regression analysis, namely (1) time-series data, (2) cross-sectional data, and (3) collective data. data (combination of time series and cross-sectional). In this case, there is a special type of pooled data called panel data or longitudinal data or often also called micro panel data. The data that is processed from each company's financial statements that is the research sample is observed along with its development from time to time in a certain period. Thus, this study uses an assortment of time-series and cross-sectional variables which are included in the panel data type.

3.3 Method of collecting data

According to Sugiyono (2018, p. 213), data assortment can be done in numerous circumstances, numerous sources, and numerous ways. In this study, secondary data assembly was carried out using documentation techniques by downloading via the internet through the IDX's official website, namely www.idx.co.id, to obtain information on the financial statements of companies that have been published to observe and process the necessary data and information.

3.3.1 Population and Sampling Method

Population: According to Priyono (2008: 104), the population is the whole symptom or unit to be studied. Therefore, the sample must be seen as an estimate of the population and not the population itself (Bailey, 1994: 83 in Priyono, 2008: 104). In terms of making population boundaries, three criteria must be met, namely: (1) content, (2) coverage, and (3) time. In this study, the population of data and information that was processed was sourced from the financial statements of national banks that were registered on the Indonesia Stock Exchange for the period 2014 to 2019

Sampling Method: The sampling technique is a selection method. There are two sampling methods: (1) possibility selection method and (2) Non- selection method. The possibility sampling technique is a possibility sampling method that assumes that every member of the population has an equal chance of being selected as a sample. While non-possibility sampling method is a sampling technique assuming that each member of the population does not have the same opportunity. In this study, the sampling technique used is a purposive sampling technique which is included in the non-possibility sampling method.

Rendering to Priyono (2016: 118), the purposive specimen method, also called judgmental specimen, is a specimen technique that sets special criteria. The purpose of using purposive sampling is to determine the sample of a study with certain considerations so that the samples taken are by the research objectives.

The criteria used in this study to select the research sample are as follows:

- 1) The banks observed are Commercial Bank book 4 and book 3 with data for the period 2014 to 2019.
- 2) These banks certainly make a profit in the period from 2014 to 2019.

This sampling is taken from book 3 and book 4 banks, which are samples that represent Indonesian banking and Indonesia's economic growth. The development in bank profits will have an effect on growing the price of the corporate. Thus, the authors analyze the performance of these banks in the period from 2014 to 2019. Based on the sampling criteria above, the observed banks are:

| BANK NASIONAL | Modal Inti per tahun 2017 |
|--------------------------------|---------------------------|
| Bank Rakyat Indonesia (BRI) | Rp. 159 Triliun |
| Bank Negara Indonesia (BNI 46) | Rp. 139,35 Triliun |
| Bank Mandiri | Rp. 179,16 Triliun |
| Bank Central Asia (BCA) | Rp. 148,7 Triliun |
| Bank CIMB Niaga | Rp. 40,2 Triliun |
| Bank Panin | Rp. 35,51 Triliun |
| Bank Danamon | Rp. 32,18 Triliun |

Afterwards, choosing the sample, creating a module, defining the variables used in the research, and producing a hypothesis, the next page is to develop the data using deterioration investigation with secondary facts, which is pooled facts (panel data).

The data collected in this study relates to whether there is an effect of Inflation (X1), Interest Rates (X2), Exchange Rate (X3) on Profitability – Return on Equity/ROE (Y1) and its impact on Firm Value – Price to Book Value/PBV (Y2). In this study, the analysis of data calculations was carried out using the Eviews software.

3.3.2 Descriptive Statistical Analysis

According to Sugiyono (2018, p. 226), expressive statistics are statistics used to analyze data by describing or describing the data pooled as they are not the intention of making generally accepted assumptions or overviews. The first step in this research is to perform report statistical analysis. According to Ghazali (2017), descriptive statistics deliver an overview or report of data viewed through the minimum, supreme, average (mean), standard deviation, skewness, and kurtosis values. Descriptive statistical analysis was carried out based on the minimum, maximum, average (mean), and standard deviation (standard deviation) data.

3.3.3 Panel Data Regression Analysis

Panel data is often referred to as group data (pooling time series and crosssection), micro panel data, longitudinal data, event history analysis, and cohort analysis (Ghozali & Ratmono, 2017, p. 195). Gujarati (2010) states that the panel data technique, which combines cross-sectional and time-series data types, provides several advantages over the standard cross-section and time-series approaches, as follows:

- 1) by combining time-series and cross-section data, panel data provides more informative, more varied data, low level of inter-variable collinearity, a greater degree of freedom, and more efficient,
- 2) by analyzing cross-sectional data in several periods, panel data is appropriate to use in dynamic change research (dynamic changes),
- 3) panel data capable of detecting and measuring unobservable influence through pure time series data or pure crosssections,
- 4) panel data allows us to study the model more complex behaviour, and
- 5) because the panel data relates to individuals, companies, cities, countries, and so on all the time (overtime), then it will be heterogeneous in units the.

4. Research methodology

| | Nilai Tukar | Bunga | Inflasi | ROE | PBV |
|--------------|-------------|-----------|-----------|----------|----------|
| Mean | 13280.93 | 126317.3 | 3295.833 | 12750.00 | 1648.967 |
| Median | 13334.55 | 126283.5 | 2500.000 | 12629.00 | 1637.500 |
| Maximum | 14650.00 | 136660.0 | 24600.00 | 18025.00 | 1883.000 |
| Minimum | 11404.00 | 111513.0 | -4500.000 | 7958.000 | 1400.000 |
| Std. Dev. | 754.5829 | 8667.316 | 4321.334 | 3668.285 | 205.7544 |
| Skewness | -0.833793 | -0.227314 | 1.922982 | 0.067910 | 0.002574 |
| Kurtosis | 3.224117 | 1.440068 | 10.07969 | 1.344847 | 1.112633 |
| Jarque-Bera | 8.493211 | 7.920319 | 194.7403 | 8.273940 | 10.88654 |
| Probability | 0.014313 | 0.019060 | 0.000000 | 0.015971 | 0.004780 |
| Sum | 956227.0 | 9094045 | 237300.0 | 918000.0 | 118704.0 |
| Sum Sq. Dev. | 40427073 | 5.33E+09 | 1.33E+09 | 1.06E+09 | 3095776 |

From the 5-year data table, it can be seen the descriptive statistical analysis with the following description:

1. Profitability (ROE)

Minimum ROE for the seven banks selected throughout the observation period is 2.99% which is the profit ratio CIMB Niaga achieved in 2015. The maximum ROE value is 29.89% which is the profit ratio of Bank Mandiri achieved in 2015. While the average ROE value is 15.70% during the observation period, two banks have an ROE below the average value, and the other four banks have an ROE above the average value.

2. Inflation

The lowest inflation is -0.45 percent (February 2016), and the highest is 2.46 percent (December 2014).

3. Interest Rate

The lowest interest rate is 11.1513 (December 2019), while the highest interest was at 13,6660 (November 2015).

4. Exchange Rate

The lowest exchange rate is 11.404 (March 2014), while the highest exchange. The rate was 14,650 (September 2015).

5. Firm Value (PBV)

The minimum PBV value for all seven banks, which has been the object of research throughout the observation period, is 0.52 times that is the value of CIMB Niaga bank, which was achieved in 2015. The maximum value PBV is 4.79 times which is The value of BCA bank achieved in 2019. The average value of PBV statistics is 11.87 times, which indicates that the range of values of mean to the maximum value is much wider than the range of mean values for the minimum value where throughout the period observations as much as one bank has PBV is always below the average value, and the other six banks have a PBV that tends to fluctuate concerning the average value.

4.1. Panel Data Regression Analysis Results

Based on the conceptual framework, two regression equation models are used in this study. The first regression equation is the regression equation used to analyze the effect of Exchange Rate (X1), Interest Rate (X2), and Inflation (X3) on Profitability (Y1). While the second regression equation is a regression equation used to analyze the effect of Profitability (Y1) on Firm Value (Y2). Techniques for estimating panel data can include explicit heterogeneity for each specific individual variable. The panel data regression model that uses cross-section and time series data is as follows:

1) Model with cross-section:

$$Y_i = \alpha + \beta X_i + \varepsilon_i; i = 1, 2, \dots, N$$

2) Model with time series

$$Y_t = \alpha + \beta X_t + \varepsilon_t; t = 1, 2, \dots, T$$

Given that panel data is a combination of cross-sectional data and time series data, the model becomes:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}; i = 1, 2, \dots, N; t = 1, 2, \dots, T$$

Where:

Y_{it} = variabel dependen (terikat)

α = constanta

β = coefisien regresion from variabel X

X = variabel independen (bebas)

ε = error term

l = data cross-section

t = data time series

In this study, two models of regression analysis were used. The first model is to analyze the impact of Inflation, Interest Rates, and Exchange Rates on (Profit) ROE. And to analyze the effect of ROE on PBV, then in the next regression analysis, profitability becomes the dependent variable (variable Y1) on firm value which is the dependent variable (variable Y2).

Selection of the First Regression Model

As previously explained, the estimation of the panel data regression model in this study was carried out using the Chow Test, Hausman Test, and Lagrange Multiplier (LM) test using Eviews 9 software. Selection of panel data regression model to analyze the effect of Inflation, Interest Rates, and Exchange Rates (1st linear regression equation model) is as follows:

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

| Effects Test | Statistic | d.f. | Prob. |
|--------------------------|-----------------------|---------|--------|
| Cross-section F | 1443803518900026200.. | (11,57) | 0.0000 |
| Cross-section Chi-square | 4384.218419 | 11 | 0.0000 |

From the outcome of the Chow study above, it can be realized that the chi-square possibility shows a value of 0.0000, where this number is smaller than 0.05. Thus, when faced with a hypothesis, H0 is rejected, and H1 is accepted, which means the results of this test suggest the use of the Fixed Effect Model (FEM) as the best regression model. Furthermore, the Hausman test was conducted to determine the best regression model approach.

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-section random | 0.000000 | 3 | 1.0000 |

From the Hausman test results above, it can be seen that the chi-square probability shows a value of 3 where this number is greater than 0.05. Thus, when faced with a hypothesis, H0 is accepted, and H1 is rejected, which means the results of this test suggest the use of the Random Effect Model (REM) as the best regression model. Because the Hausman test results produce a different regression model approach, it is necessary to test again using the Lagrange Multiplier Test.

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

| | Test Hypothesis | | |
|---------------|----------------------|----------------------|----------------------|
| | Cross-section | Time | Both |
| Breusch-Pagan | 174.8826 (0.0000) | 2.807399 (0.0938) | 177.6900 (0.0000) |

From the Lagrange Multiplier test results above, it can be seen that h at the Breusplplus-minusbabilit number shows a value of 0.00 where this number is less than 0.5. Thus, when faced with a hypothesis, H0 is rejected, and H1 is accepted, which means the results of his test suggest using the Random Effect Model (REM) as the best regression model for the first regression equation.

Periods included: 6
 Cross-sections included: 12
 Total panel (balance) observations: 72
 Swamy and Arora estimator of component variances

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 12762.90 | 1.305.459 | 9.776.558 | 0.0707 |
| X1 | 2.79E-27 | 1.29E-13 | 2.17E-14 | 0.1505 |
| X2 | 2.03E-28 | 2.99E-14 | 6.80E-15 | 0.1100 |
| X3 | 1.49E-28 | 8.65E-15 | 1.72E-14 | 0.0890 |

| Effects Specification | | SD | Rho |
|-----------------------|--|-----------|--------|
| Cross-section random | | 4.516.747 | 1.0000 |
| Idiosyncratic random | | 2.55E-10 | 0.9000 |

| Weighted Statistics | | | |
|---------------------|----------|--------------------|----------|
| R-squared | 0.00000 | Mean dependent var | 2.93E-10 |
| Adjusted R-squared | 0.044118 | S.D. dependent var | 9.90E-11 |
| S.E. of Regression | 9.08E-11 | Sum squared resid | 5.88E-19 |
| F-statistic | 0.008909 | Durbin-Watson stat | 0.008600 |
| Prob(F-statistic) | 0.095008 | | |

| Unweighted Statistics | | | |
|-----------------------|----------|--------------------|----------|
| R-squared | 0.000011 | Mean dependent var | 12750.00 |
| Sum square resid | 1.06E+09 | Durbin-Watson stat | 0.000000 |

$$ROE_{it} = 12762,90 + -2,79X1_t + 2,03X2_t + 1,49X3_t + \varepsilon_{it}$$

The failure comparison can be interpreted as follows:

- 1) Constant C is obtained at 12,762.90 with a positive mathematical sign. This states that if the variables X1, X2, and X3 are "0", then the ROE variable is 12,762.90. The regression coefficient for X1 is 2.79 with a positive mathematical sign which means that X1 has a positive effect on Y where every 1% increase in X1 will have an impact on an increase in ROE of 0.034212% with the assumption that the other variables are fixed.
- 2) The X2 regression coefficient is 2.03 with a positive mathematical sign, which means that interest rates positively influence ROE where every 1% increase in X2 will have an impact on increasing ROE (Y) by 2.03% with the assumption of other variables permanent.
- 3) The X3 regression coefficient is obtained at 1.49 with a positive mathematical sign which means that Inflation (X3) has a positive effect on ROE where every 1% increase in X3 will have an impact on an increase of 1.49% ROE with the assumption that other variables remain.

2. Selection of Second Regression Model

Similar to the method above, to find out which regression model is the best regression model in analyzing the effect of Profitability (Y1) on Firm Value (Y2), the Chow Test, Hausman Test, and Lagrange Multiplier Test approaches are used using the Eviews 9 software. The panel data regression model gives the following results:

Hasil Uji Chow Model Regresi ke-2

| Effect Test | Statistic | d.f. | Prob. |
|--------------------------|-----------|--------|--------|
| Cross-section F | 2.313795 | (6,27) | 0.0623 |
| Cross-section Chi-square | 14.520514 | 6 | 0.0243 |

Sumber: Output Eviews 9

The results of the Chow test above show that the chi-square probability shows a value of 0.0243, where this number is smaller than 0.05. Thus, when faced with a hypothesis, H0 is rejected, and H1 is accepted, which means the results of this test suggest the use of the Fixed Effect Model (FEM) as the best regression model.

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-section random | 0.000000 | 3 | 1.0000 |

The Hausman test results above show that the chi-square probability shows a value of 3 where this number is greater than 0.05. Thus, when faced with a hypothesis, H0 is accepted, and H1 is rejected, which means the results of this test suggest the use of the Random Effect Model (REM) as a regression model. Then the best test result is the Random Effect Model (REM).

Furthermore, the Lagrange Range Test was carried out with the following results:

Hasil Uji *Lagrange Multiplier Model Regresi ke-2*

Lagrange Multiplier Tests for Random Effects
 Null hypotheses: No effects
 Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

| | Test Hypothesis | | |
|---------------|----------------------|----------------------|----------------------|
| | Cross-section | Time | Both |
| Breusch-Pagan | 157.9060 (0.0000) | 1.897239 (0.1684) | 159.8032 (0.0000) |

The results of the Lagrange Multiplier Test above show that the chi-square probability shows a value of 0.0000, where this number is smaller than 0.05. Thus, when faced with a hypothesis, H0 is rejected, and H1 is accepted, which means the results of this test suggest the use of the Random Effect Model (REM) as the best regression model. Because the Hausman and Lagrange Test results determine the same regression model approach, namely the Random Effect Model (REM), the best regression model approach to analyze the effect of ROE on PBV is the Random Effect Model (REM).

Output Model Regresi Persamaan ke-2

Dependent Variable: Y
 Method: Panel Least Squares
 Date: 07/28/21 Time: 21:02
 Sample: 2014 2019
 Periods included: 6
 Cross-sections included: 12
 Total panel (balanced) observations: 72

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 10468.44 | 3722.916 | 2.811894 | 0.0064 |
| Y2 | 1.383880 | 2.240993 | 0.617530 | 0.5389 |
| R-squared | 0.005418 | Mean dependent var | | 12750.00 |
| Adjusted R-squared | 0.008790 | S.D. dependent var | | 3898.285 |
| S.E. of regression | 3885.249 | Akaike info criterion | | 19.39515 |
| Sum squared resid | 1.06E+09 | Schwarz criterion | | 19.45839 |
| Log likelihood | 696.2253 | Hannan-Quinn criter. | | 19.42032 |
| F-statistic | 0.381343 | Durbin-Watson stat | | 0.000000 |
| Prob(F-statistic) | 0.538889 | | | |

Based on the output in the table above, the second regression equation can be written as follows:

$$PBV_{it} = 10.468,44 + 1,383880. ROE_t + \varepsilon_{it}$$

The equation can be interpreted as follows:

- 1) Constant C is worth 10,468.44 with a positive mathematical sign. This states that if the ROE variable is "0", then the PBV variable is 10,468.44.
- 2) The PBV regression coefficient is 1.383880 with a positive mathematical sign which means that PBV has a positive influence on ROE where every 1% increase in ROE will have an impact on an increase in PBV of 1.383880% with the assumption that the other variables are fixed.

From the table, the adjusted R-square value is obtained at 0.44118, which shows that the exchange rate (X1), interest rate (X2), and exchange rate (X3) are simultaneously able to explain 29.3% ROE. The remaining 70.07% is explained by other variables outside of this study. The adjusted R-square is getting closer to 1, then the independent variable will be better at explaining the dependent variable (Ajija, Sari, Setianto, and Primanti, 2011: 34). Refer to the table of S.E. values. of regression (standard error of regression) in this regression model is obtained at 9.08 where this value is smaller than the value of S.D. dependent var (standard deviation of

the independent variable) is 9.90, which means that this regression model is valid as a predictor model. Furthermore, to find out the extent to which profitability (Y1) can explain firm value (Y2), it can be seen through the Adjusted R-square value in the regression results of the second equation panel data as shown in the following table:

Tabel Nilai Adjusted R-square Persamaan ke-1

| | Var. Independen | Var. Lainnya | Jumlah |
|----------------------|-----------------|--------------|--------|
| <i>Adj. R-square</i> | 0,044118 | 2,93 | 1 |

Sumber: data diolah

From the table, the adjusted R-square value is obtained at 0.44118, which shows that the exchange rate (X1), interest rate (X2), and exchange rate (X3) simultaneously can only explain as much as 29.3% ROE. The remaining 70.07% is explained by other variables outside of this study. The adjusted R-square is getting closer to 1, then the independent variable will be better at explaining the dependent variable (Ajija, Sari, Setianto, and Primanti, 2011: 34). Refer to the table of S.E. values. of regression (standard error of regression) in this regression model is obtained at 9.08 where this value is smaller than the value of S.D. dependent var (standard deviation of the independent variable) is 9.90, which means that this regression model is valid as a predictor model.

Furthermore, to find out the extent to which profitability (Y1) can explain firm value (Y2), it can be seen through the Adjusted R-square value in the regression results of the second equation panel data as shown in the following table:

Tabel Nilai Adjusted R-square Persamaan ke-2

| | Var. Independen | Var. Lainnya | Jumlah |
|----------------------|-----------------|--------------|--------|
| <i>Adj. R-square</i> | 0,008790 | 12,750 | 1 |

Sumber: data diolah

From the table, the Adjusted R-square value is obtained at 0.8790, which indicates that ROE is only able to explain as much as 12.75% PBV, and as much as 87.25% is explained by other variables outside of this study. S.E. of regression (standard error of regression) in this regression model is obtained at 3,885.25 where this value is greater than the value of S.D. dependent var (standard deviation of the independent variable) is 3.898.29, which means that this regression model is valid as a predictor model.

Model Feasibility Test Results

And the feasibility test of the model in this study was carried out by the F test. To see the effect of Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) simultaneously on ROE, the table shows that the calculated F test value is 0.381343 with a statistical probability of 0.5389. The value of the F table for the number of independent and dependent variables is (k) 5, and the number of observations (n) is 6, with a probability of (a) 5% is 9.28.

Thus, F arithmetic [F table and probability significance] is 0.05 so that H0 is accepted and H1 is rejected, so this study concludes that Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) have no simultaneous effect on ROE.

Significance Test Results of Independent Variables from this study, the independent variable significance test was carried out by performing a partial t-test. This test was conducted to determine the significance of the effect of Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) partially on ROE and the effect of ROE on PBV with a description of the test results as follows:

- a) The Effect of Inflation on Profitability
The t value of the inflation variable in the table is 0.0198, with a probability significance of 0.844. From the t distribution table for df (n - k) = 3 and the probability (a) is determined at 0.05, the t table is 2.353. Thus, t count [t table and probability significance] 0.05 so that H0 is accepted and H1 is rejected, it can be concluded that inflation (X1) has no significant effect on ROE.
- b) The Effect of Interest Rates on Profitability
The t value of the table's interest rate variable (X2) is 1.978, with a probability significance of 0.057. From the t distribution table for df (n - k) = 3 and the probability (a) is determined at 0.05, the t table is 2.353. Thus, t count [t table and probability significance] 0.05 so that H0 is accepted and H1 is rejected, it can be concluded that interest rates have no significant effect on ROE.
- c) Effect of exchange rate on profitability
The t value of the Exchange Rate (X3) in the table is 1.409 with a probability significance of 0.169. From the t distribution table for df (n - k) = 3 and the probability (a) is determined at 0.05, the t table is 2.353. Thus, t arithmetic [t table and

probability significance] 0.05 so that H0 is accepted and H1 is rejected, it can be concluded that the Exchange Rate has no significant effect on ROE.

d) Effect of profitability on value company

The t value of the ROE variable in table 4.9 is 0.192 with a probability significance of 0.849. From the t distribution table for $df (n - k) = 5$ and the probability (α) is determined at 0.05, the t table is 2.015. Thus, t count [t table and probability significance] 0.05 so that H0 is accepted and H1 is rejected, it can be concluded that ROE has no significant effect on PBV.

4.2. Discussion of Research Results

From data processing with statistical methods that have been carried out above, it can be obtained the results of testing the research hypotheses as follows:

1. Effect of Inflation on Book Value Company (PBV)

In this study, inflation proxied by Company Book Value (PBV) has a positive and insignificant effect on PBV proxied by inflation. After being confronted with the hypothesis, it shows that Hypothesis 1 is rejected. The results of this study indicate that rising inflation has an impact on firm value; the higher inflation will have a positive impact on firm value.

The results of this study are in line with research conducted by Yoshinta Permata Samudra and Nurul Widyawati (2018), Hamid, Abdullah and Kamaruzzaman (2015), Alarussi and Alhaderi (2018), and On the other hand, the results of this study contradict the results of research conducted by Eka Maharto Putra, Putu Kepramerani, Ni Luh Gde Novitasari (2016).

2. The Effect of Interest Rates on Value Company Book (PBV)

Faced with the hypothesis, the results of this study stated that Hypothesis 2 was accepted. The results of this study support the signalling theory where an increase in interest will increase the company's chances of making a profit. This is also by the opinion of Sawir (Sawir, 2004, p. 101), which states that there is an influence of company scale in costs and returns where larger companies can earn more profits even though Exchange Rate is not the main factor affecting ROE.

The results of this study are in line with the results of research conducted by Teddy, Achmad, Evelyn, Suharti, and Martha. (2019) stated that there is a positive but not significant effect of Exchange Rate (X3) on Company Book Value (PBV). Thus, it can be concluded that the higher the interest rate, the higher the profitability, which will increase the opportunity to get a better return, which will certainly increase the company's book value.

3. Effect of Exchange Rate on Value Company Book (PBV)

The results showed that there was a positive but not significant effect of the Exchange Rate on PBV. This illustrates that the company's growth rate, as seen from the movement of the exchange rate, has a positive influence on profitability, although the exchange rate is not one of the main factors that affect the company's profit ratio. Faced with the hypothesis, then H3 is accepted. Thus, it can be concluded that the exchange rate can add to the profits of the bank, although it does not guarantee that it will generate high profits.

The results of this study are in line with previous research by Agustina Cahyati and Ardiansari, Anindya (2015) and Dwipartha, Ni Made With a (2013), which states that the Exchange Rate has a positive but not significant effect on PBV.

4. Effect of ROE on Book Value Company (PBV)

The results of the study indicate that ROE (Profitability) has a positive and insignificant effect on PBV (Company Book Value). The results of this study are in line with previous research conducted by Isabella Permata Dhani, AA Gde Satia Utama (2017), Adita and Mawardi (2018), which stated that profitability had a positive effect on firm value. In general, the level of profit generated by the company describes the level of success of managers in maximizing returns to shareholders. Faced with the hypothesis, the results showed that H4 was accepted, which stated that there was a positive effect of ROE on PBV, although it was not significant.

The results of this study reinforce the view that the higher the level of profit generated by the company, the higher the rate of returning to shareholders, which will ultimately increase the value of the company, although the profit ratio is not the main determining factor affecting the value of the company.

After conducting research and discussion in Chapters I to d. Chapter IV, the results of this study can be concluded as follows:

- 1) Inflation has no significant negative effect, which is proxied by Return on Equity (ROE).
- 2) Interest rates have no significant effect on Profitability (ROE).
- 3) Exchange rate has no significant effect on Profitability (ROE)

4) Profitability (ROE) has no effect significant, which is proxied by Price to Book Value (PBV).

5. Suggestion

Based on the analysis and discussion as well as several conclusions that have been generated regarding the effect of Inflation (X1), Interest Rates (X2), and Exchange Rate (X3) on and their effect on Firm Value (PBV) in banking Book 4 for the period 2014 to 2019, the authors trying to convey some suggestions for consideration for investors, companies, and further research as follows:

1) For Investors

Although the influence of Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) is not significant on profitability and profitability has an insignificant effect on firm value, potential investors should still pay attention to these variables as the basis for making investment decisions in companies to be able to generate a better rate of return.

2) For Companies

From the analysis of Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) on the profitability obtained from this research, the following are some suggestions that might be considered.

a. Inflation (Inflation)

A high inflation rate will negatively affect profitability, so Banks need to consider providing credit to customers and their guarantees so that their profitability is not too burdened if there are non-performing loans.

b. Interest Rate (Interest)

Interest rates also greatly affect profitability; with high-interest rates, of course, it will be difficult to channel credit, but there is a positive side if a bank has a surplus of funds with a small authorized capital of course, it will be very profitable for the bank if the interest rate rises. If interest rates fall, it will also become a polemic if the bank has already borrowed funds in the money market with high-interest rates for a long period, if possible, repay the loan and replace it with a lower loan interest so that the bank's interest expense can be reduced.

c. Exchange Rate (Exchange Rate)

The exchange rate can affect the bank's profits where, when the Rupiah exchange rate strengthens, it means that the bank should take a Short/Sell USD position, with the hope that it can reduce the risk of loss due to holding USD, and vice versa if the Rupiah exchange rate weakens against the USD, then the bank should go Long/ Buy USD so that the loss of holding the Rupiah can be reduced so that the bank's profits are not eroded, or there is even the possibility of profiting from the exchange rate.

d. Profitability (Return on Equity)

For positive profit growth, banks are expected to improve investment analysis on investments that can be managed well as it is today by buying government bonds which will provide better interest when interest rates fall so that banks can increase their profit and encourage higher profits on the value of the company.

3) For further research

Inflation (X1), Interest Rates (X2), and Exchange Rates (X3) together can only affect ROE by xx %, where the remaining xx % is influenced by other variables outside the study. Likewise, the ROE variable only affects PBV of xx %, where the remaining xx % is influenced by other variables outside of this study. Thus, further research is expected to add other variables such as Current Ratio (CR), Return on Assets (ROA), Debt to Asset Ratio (DAR), Dividend Payout Ratio (DPR), EPS (Earning Per Share), and other variables that may affect Profitability and Firm Value.

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