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# Determining Firm Value in the Indonesian Banking Sub Sector

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## Abstract

This study aims to find the most appropriate model for analysing the effect of financial performance, dividend policy, interest rates and the rupiah exchange rate on firm value. The research sample includes the banking sub-sector companies listed on the IDX in 2013-2019. The research method used is purposive sampling to analyse the panel data. The variables used in this study are the company value as measured by Price to Book Value (PBV), financial performance is measured by Return on Assets (ROA), dividend policy is measured by Dividend Pay-out Ratio (DPR), interest rate is measured by BI interest rate, and the rupiah exchange rate is measured by the middle rate. The results show that ROA and exchange rate affect firm value. The appropriate model used in this study is the random effect model.

**Keywords:** Dividend Policy, Panel Data, PBV, ROA

## Introduction

One of the sectors that has contributed to helping Indonesia's economic growth is the financial sector. The contribution of the financial sector was 3.86% in 2014, 4.03% in 2015, 4.2% in 2016, in 2018 it was 4.17%, and in 2019 it was 4.34% (Katadata, 2019). This banking development has encouraged Indonesian banks to improve their performance. Companies should try harder to maximize profit as a long-term goal of the company. By looking at the company's profit and company value, it will show the prosperity of shareholders. High company value indicates that the prosperity of shareholders is also high.

Firm value is the investor's perception of the company, whether the company provides maximum benefits for investors or results in losses to investors. Various management policies aim towards increasing the value of the company, which in turn by increases the prosperity of the shareholders, which are reflected in the stock price (Bringham & Houston, 2009). According to Arifin and Hadi (2012), the exchange rate is the price of one currency against another. The exchange rate is one of the most important factors in an open economy, given its enormous influence on the current account balance and other macroeconomic variables. It can be the exchange rate in various transactions or can be the buying and selling of foreign currency.

Dividend policy is concerned with the decision to share profits or hold it to be reinvested in the company. The optimal dividend policy in a company is a policy that creates a balance between current dividends and future growth so as to maximize share prices (Astuti, 2004). The factors that influence dividend policy are: (1) government regulations; (2) constraints in the agreement / contract. The bank will limit the payment of cash dividends from the profit that can be achieved, up to a certain limit or the bank arranges the payment of a fine up to a certain amount; (3) internal obstacles and the amount of cash dividend payments also depends on the availability of company cash; (4) future growth forecasts; (5) considerations of company owners and (6) market considerations.

The measurement of company value according to Weston and Copelan (2008) consists of (1) Price Earning Ratio (PER) namely the comparison between the company's stock price and earning per share; (2) Price to Book Value, namely the ratio of share price to book value of company equity and (3) Tobin's Q, namely the sum of the stock market value and debt market value compared to value of all capital placed in production assets. In this study, firm value is measured by Price to Book Value (PBV). The following Table 1. is an overview of PBV growth from 2013 to 2019.

Table 1: The Growth of Price to Book Value in the period 2013-2019

Banks	2013	2014	2015	2016	2017	2018	2019
BCA	3,70	4,16	3,64	3,39	4,23	4,20	4,70
BTN	0,80	1,04	0,99	1,02	1,75	1,16	1,24
BNI	1,54	2,00	1,23	1,21	1,82	1,58	1,52
BRI	2,23	2,91	2,41	1,94	2,83	2,57	2,54
BDMN	1,08	1,32	0,90	0,98	1,73	1,79	2,12
BJBR	1,28	1,00	0,94	3,41	1,98	1,74	1,96
BJTM	0,97	1,13	1,03	1,18	1,40	1,26	1,30
BMRI	2,09	2,29	1,84	1,79	2,27	1,95	1,86
BNBA	0,64	0,60	0,35	0,35	0,46	0,46	0,50

During the study period, bank with the BCCA code, had the highest PBV value of 4,70. The lowest PBV, is obtained by bank with the code BNBA with a value of 0,35 in 2015 and 2016. Price to Book Value is a measure that functions to see whether shares in a company can be expensive or cheap. Stocks that have large PBV ratios can be said to have high valuations (overvalued) while stocks that have PBV below 1 have low values (undervalued). It can also be said that Price to Book Value (PBV) describes how much the market appreciates the book value of a company's shares. When the PBV ratio is high, it means that the market trusts the company's prospects. PBV also shows how far a company is able to create firm value relative to the amount of invested capital.

Study on firm value had been conducted by several researchers. Yunitasari and Priyadi (2014), found that investment decisions have an effect on firm value and show a unidirectional relationship. Dividend policy has an effect on firm value, but the negative coefficient show that the relationship is not unidirectional. The interest rate in this study has no effect on firm value. Besides that, Azizah and Priyadi (2016) show that company size, dividend policy and profitability have an effect on firm value. In this study, funding decisions, managerial ownership, and exchange rates have no effect on firm value. Kurniati (2019) states that financial performance has a significant positive influence on the company value in a positive direction. Rafika and Santoso (2017) found that investment decisions and funding decisions have an effect on firm value, while dividend policy has a negative (opposite direction) effect on firm value. Another research related to financial performance and firm value is done by Egbunike and Okerekeoti (2018). They analyze the interrelationship between macroeconomics factors, firm characteristics and financial performance of quoted manufacturing firms in Nigeria. Macroeconomics factors such as inflation rate and GDP Growth show a significant effect on ROA. Yusriati, Habsari and Prukumpai (2016) found that financial variables such as return of equity, earning per share and market value have an added effect on firm performance. Iona, Benedetto, Asefa and Limosani (2020), investigated about the financial policy and corporate value. In this study, the financial policy is measured by

cash-holdings and leverage. The result shows that the relationship between cash-holdings and firm value is “U-shaped,” which means that the probability of observing firms, is affected by agency problems.

Various previous research results prompted us to carry out this study. Also, research related to firm value in the banking sector is relatively small when compared to other sectors, for example the manufacturing sector. The purpose of this study is to analyse the effect of dividend policy as measured by the DPR, financial performance (ROA), exchange rates, and interest rates on firm value. In this study, firm value is measured using Price to Book Value (PBV) (Weston & Copelan, 2018). The analysis was carried out using the panel data estimation method with the assumption that panel data analysis provides advantages, considering that the panel data is a combination of two-time series data and that the cross-section is able to provide more data thus producing a greater degree of freedom (Widarjono, 2007). The contribution of this research is the development of an economic model which can analyse the factors that influence firm value, especially in the financial sector, i.e. the banking sector.

### Related Articles

The function of the BI-Rate is to control inflation. If the bank interest rates are high, people tend to save, reduce spending and this will avoid an increase in prices of goods. In addition, the BI-rate function can control economic growth. If the BI-rate is low, the loan interest rate will also be low and this has implications for the business world. Price to Book Value (PBV) is the ratio of the share price to book the value of a company's equity. This concerns the value that the market gives to the management and organization of a company that continues to grow (Weston & Copeland, 2008). PBV is often used as a reference in determining the value of a stock relative to its market price.

Dividend policy concerns the decision to distribute profits or hold it for reinvesting in the company. The optimal dividend policy in a company is a policy that creates a balance between current dividends and future growth so as to maximize share prices (Astuti, 2004). According to Kasmir (2011) high-interest rates on the one hand will increase people's desire to save so that the amount of bank funds will increase. On the other hand, high interest rates will increase costs incurred by the business world, resulting in a decline in domestic production activities. Mahendra Dj, Artini, & Suarjaya, (2012) examined the effect of financial performance on firm value with dividend policy as a moderating variable. The population in this research is all the manufacturing companies listed on the IDX that consecutively distribute dividends during the 2006-2009 period. The results showed that liquidity has a positive but insignificant effect on firm value, dividend policy does not able to significantly moderate the effect of liquidity on firm value. Leveraging has a negative and insignificant effect on firm value, dividend policy cannot significantly moderate the effect of leverage on firm value, however profitability has a significantly positive effect on firm value; dividend policy is not able to significantly moderate the effect of profitability on firm value.

Pamungkas & Puspaningsih (2013) analyse the relationship between investment decisions, funding decisions, dividend policies and firm size on firm value in manufacturing companies listed on the IDX. In this study, firm value is measured by Price to Book Value (PBV). The results showed that investment decisions have a positive effect on firm value. Funding decisions, dividend policy and firm size have no effect on firm value. According to Achmad and Amanah's (2014) in their research on investment decisions, funding, dividend policy and financial performance have an effect on firm value in manufacturing companies listed on the IDX. They find that investment decisions have no effect on firm value, while funding decisions, dividend policy and financial performance have an effect on firm value. Their sampling technique used purposive sampling and obtained 8 samples of property and real estate companies that distributed dividends consecutively in 2009-2012. Yunitasari and Priyadi (2014) analysed the influence of investment decisions, funding decisions, dividend policies and interest rates on firm value in real estate companies listed on the IDX. The results showed that investment decisions, funding decisions and dividend policies have an effect on firm value, with funding decisions and dividend policies having opposite effect to that of firm value. Interest rate has no effect on firm value. Eliezer (2016) found that financial performance did not affect the company's value. It was also shown that dividend policy did not moderate the effect of financial performance on company's value. Hamidah & Mardiyanti (2015)

analyse the effect of inflation, BI interest rates, profitability and financial risk on firm value. The results of the analysis show that inflation and BI interest rates have no effect on firm value and other variables, whereas ROA and DER have an effect on firm value. Pascareno (2016) showed that liquidity, leverage and profitability partially but not simultaneously affect the company's value. Also, after being moderated by dividend policy, liquidity, leverage and profitability still do not simultaneously but partially affect company's value. The results of Nisa, (2017) show that investment decisions have an effect on firm value, funding decisions have an (negative) effect on firm value, while dividend policy has no effect on firm value. In this study, the ability of the independent variables to explain the dependent variable was about 67.3%. Rafika & Santoso, (2017) found that investment decisions and funding decisions have an effect on firm value, while dividend policy has a negative effect on firm value.

Bukit, Nasution, Ginting, Nurzaimah and Sambath (2017) analyze firm performance, firm size and debt monitoring. The results show that earning managements practices moderates the positive association between firm size and firm value. Gharaibeh and Qader (2017), measured firm value by Tobins Q. They analyze the endogeneous determinants of firms. The results show that market capitalization, growth opportunities, profitability, and solvency of the firm have a significant relationship with firm value. Al-Najjar & Al-Najjar (2017) find a positive relationship between external financing needs and firm value. In addition, the research shows that size and profitability are positively associated with firm value in the sample. Concerning the corporate governance index (CGI), the research found that big SMEs and those with low-debt levels have better corporate governance structures. Rochmah & Fitria (2017) found that leverage has a negative effect on firm value. Dividend policy is able to moderate the effect of liquidity on firm value, profitability has an effect on firm value and dividend policy is able to moderate the effect of profitability on firm value. Murniati, Mus, Semmaila and Nur (2019) showed that investment decisions and financing decisions have a positive and significant effect on profitability and value of the firm, such that the main objective of the company is to maximize the welfare of company owners by increasing the value of the firm through increased profitability, while dividend policy has a negative and not significant effect on profitability and value of the firm directly and indirectly. Kurniati, Handayani and Rahayu (2019) found that the higher are the GCG, independent commissioners proportion, institutional managerial and public ownerships, the higher is the corporate value. Market to Book Equity Ratio (MBE) and PER stock return is a moderating variable influencing of GCG on corporate value. Financial performance is a moderating variable in the influencing GCG on corporate value. Vieira, Neves and Dias (2019) analyse the determinants of Portuguese firms' financial performance. The results are varied, depending on the variable used to measure the performance. The result showed that when the research uses a market variable performance, the macroeconomics factors including the investors' sentiment, and insider ownership explain more effectively, the firms' performance. Sitompul, Bukit, and Erwin (2020) examine the effect of firm size, firm age, profitability, the proportion of independent commissioners, institutional ownership, and leverage on firm value with corporate social responsibility (CSR) as a moderating variable. The results of this study indicate that the variables, firm size, profitability, the proportion of independent commissioners, institutional ownership and leverage, simultaneously have a significant effect on firm value. Partially, the proportion of the board of commissioners and institutional ownership have a positive but not significant effect on firm value. The variables, firm size and profitability partially have a positive and significant effect on firm value. Partially, proportion of the board commission have a negative and not significant effect on firm value. CSR moderates the influence of firm size, profitability, institutional ownership, the proportion of independent commissioners and leverage on firm value. Based on the previous research studies, the research hypothesis is that :

The financial performance, dividend policy, interest rate and exchange rate affect firm value.

## Method

The objective of this research to study the banking companies listed on the IDX. 45 of banking companies are listed on the IDX is 45 companies. The sampling technique used in this study is purposive sampling technique, namely sampling based on certain criteria. These criteria are (1) banking companies have complete company data including publishing financial reports on the IDX, OJK and company websites during the research period in 2013-2019; (2) banking companies distributing cash dividends consecutively starting from 2013-2019. The bank in this study is a conventional bank. The dependent variable in this study is the company value as measured by

Price to Book Value (PBV), the independent variable is financial performance as measured by ROA, dividend policy as measured by the DPR (dividend pay-out ratio), the interest rate is measured by the BI rate per quarterly in the form of a percentage, and the rupiah exchange rate measured by the middle rate, which is the value obtained from the average amount of the selling rate and the buying rate. The research uses the following equation:

$$PBV_{it} = \beta_0 + \beta_1 ROA + \beta_2 rate + \beta_3 exch + \beta_4 DPR$$

Panel data regression analysis was used to analyse data. Procedure of the analysis is described in the following Figure 1.

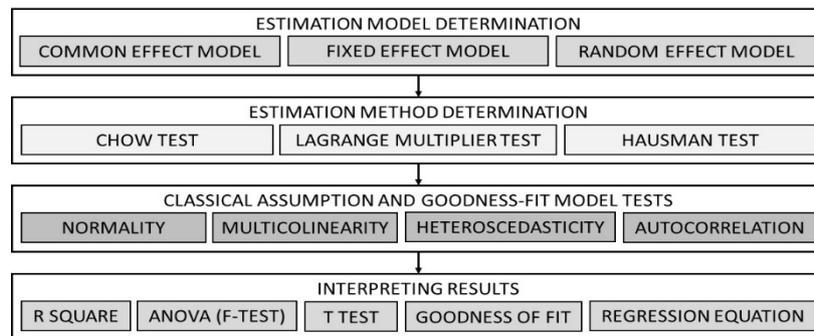


Figure 1: Panel Data Regression Analysis Procedures (Adapted from Zulfikar, 2018)

The first step of panel data regression analysis is to generate to three possible effect models such as common effect, fixed effect and random effect models. This is followed by the Chow Test to determine the most appropriated effect model between common effect model and fixed effect model. If fixed effect model is selected as the appropriate model, the Hausman test should then be performed to determine whether fixed effect model or random effect model is the most appropriate model. If the common effect model is selected, the Lagrange Multiplier Test must be performed to determine the most appropriate effect model i.e. between random effect model and common effect model. The next step is to perform the classical assumption test, which include normality, multicollinearity, heteroscedasticity and autocorrelation to verify the validity of the classical linear regression model or CLRM. The last step is to interpret the resulting effect model i.e. common effect model, fixed effect model or random effect model.

## Result and Discussion

The objective of this research is to study the effect of financial performance, dividend policy, interest rates and the rupiah exchange rate on firm value in the banking companies listed on the IDX in 2013-2019 (45 companies). The following banks (9 banks) in Table 1. meet the criteria specified under the objective of this study. They are:

Table 2: Research Object

No.	Company Code	Company Name
1	BBTN	Bank Tabungan Negara (Persero), Tbk
2	BNBA	Bank Bumi Arta, Tbk
3	BBCA	Bank Central Asia, Tbk
4	BDMN	Bank Danamon Indonesia, Tbk
5	BMRI	Bank Mandiri (Persero), Tbk
6	BBNI	Bank Negara Indonesia, Tbk
7	BJTM	Bank Pembangunan Daerah Jawa Timur, Tbk
8	BJBR	Bank Pembangunan Daerah Jawa Barat dan Banten, Tbk
9	BBRI	Bank Rakyat Indonesia (Persero), Tbk

## Descriptive Analysis

The following Table 2. provides the results of descriptive analysis of research variables (exchange rate, dividend payout ratio, BI-rate, and price to book value) which include minimum and maximum values, mean, and standard deviation.

Table 3: Descriptive Statistical Analysis

Variables	Min	Max	Mean	Standard deviation	Coefficient of Variation (%)
Price to book value	0.35	4,70	1.78	1.023	57.47
Return on Assets	0.1	4,00	2,14	0.891	41.63
Dividend Payout ratio	17.59	71.09	37.51	18.197	48.51
Exchange rate	11689	14380	13282.42	906.141	6.82
BI-rate	4,25	7,41	6.07	1.326	21.85

Referring to their related coefficient of variance (see Table 3), it shows that all variables under study are substantially varied. The values of the coefficients are relatively high which spreading from 6.82 percent (exchange rate) to 57.47 percent (price to book value). This indicates that price to book value, return on assets, dividend payout ratio, exchange rate and BI-rate of financial sectors are all considerably varied.

The following is a description of these variables during the study period, 2013 to 2019. This section presents the descriptive analysis of data for 9 banks, that are included in our study sample.

There is a sharp or extreme fluctuation in ROA in the banking sector. The highest ROA was obtained by banks with the BBCA code, namely in 2018 and 2019. The lowest ROA was obtained by banks with the BDMN code of 0.49 in 2016. Conditions in 2016 showed that the average banking condition as a whole was quite good. Banking profitability as indicated by the value of Return of Assets (ROA) for Commercial Banks shows a decline. The development of ROA for Commercial Banks in May 2016 reached 2.34 percent, lower than the previous month which reached 2.38 percent. Banking efficiency was reflected in the Operational Cost to Operating Income (BOPO), which increased by 82.36 percent compared to April 2016 which only reached 82.30 percent. A greater increase BOPO indicates that banking operations are increasingly inefficient, so, that the profits obtained are not that large. This will affect the ROA value which shows a decrease (Universitas Gajah Mada, 2016).

The following is an explanation regarding the fluctuations in BI interest rates during the study period. Bank Indonesia as the central bank has the duties listed in the final objective of monetary policy, namely maintenance in general and maintaining the stability of the rupiah value, one of which is reflected in the low inflation rate and stability. To achieve this goal, Bank Indonesia set the BI 7DRR policy rate as the main policy instrument to influence the economic activity, with the ultimate goal to achieve inflation. However, the path or transmission from the BI 7DRR decision to the achievement of the inflation target is very complex and requires time (time lag). In the interest rate channel, changes in the BI 7DRR affect deposit rates and bank lending rates. If the economy is experiencing a downturn, Bank Indonesia can use an expansionary monetary policy by lowering interest rates to stimulate economic activity. Lowering the 7DRR BI interest rate lowered the credit interest rate, such that, the demand for credit from companies and households will increase. A reduction in loan interest rates will also reduce the cost of capital for companies to invest. All of this will increase consumption and investment activities so that the economic activity will be more vibrant. Conversely, if inflationary pressure increases, Bank Indonesia responds by raising the 7DRR BI interest rate to put a brake on economic activity that is too fast so as to reduce inflationary pressure (Bank Indonesia, 2020).

The following is an explanation of the conditions of fluctuation in the rupiah exchange rate against the US dollar during the study period. The rupiah has recorded a weakening against the US dollar and has broken through to levels above Rp 14,000 since May 8, 2018. The strongest value of the rupiah since early 2018 occurred on

January 25, 2018, which reached Rp. 13,290. However, the rupiah's value against the dollar continued to weaken and was not far from the level of IDR 13,500-IDR 14,000 per US dollar. When the value of the rupiah is pulled backwards, in 2014 the US dollar was still at Rp 11,200. Then the US dollar continued to strengthen against the rupiah until it touched Rp. 14,700 in October 2015. Currently, the dollar has strengthened again and recorded its highest level at Rp. 14,400 (Purnomo, 2018).

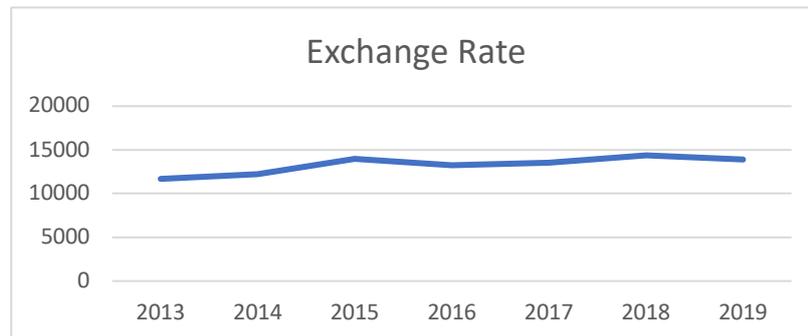


Figure 2: The Growth of Exchange Rate in the Period 2013-2019

There was sharp or extreme fluctuation in the DPR in 2016 and 2017 from the previous 29.94 (2015) to 90.00 (2016). During the study period, the bank receiving the highest DPR (71,09) had the code BJTM that occurred in 2013, while the lowest (17,59) had the code BNBA that occurred in 2016. Dividend pay-out ratio shows the financial ratio used to measure the percentage of net income that was distributed to shareholders in the form of dividends for a certain period of time (usually in 1 year). In other words, this ratio shows how high the portion of profits is, that is given to shareholders (investors) and the portion of profits that is used to fund the company's operational continuity. Dividend Pay-out Ratio or Dividend Pay-out Ratio is very important for investors. Investors who are interested in short-term profits will prefer to invest in companies with high Dividend Pay-out Ratio, while investors who choose to have capital growth will be more interested in investing in companies with low Dividend Pay-out Ratio (Kho, 2018).

### Panel Data Regression Analysis

Details of the resulted estimation models which include common effect, fixed effect and random effects model are displayed in the following Tables 4. and Table 5. below, followed by their related regression equations.

Table 4: Common Effect Model

Variables	Coefficient	Probability
Return on Assets	7.5559	0.0000
Rate (BI-rate)	-12.7602	0.9288
Exch	-324.5624	0.0001
DPR	8.6245	0.9443
R-squared	0.266	
Adjusted R-squared	0.228	

$$PBV = -4541.775ROA - 12.7602Rate - 324.5624Exch + 8.6245DPR \quad (1)$$

Table 5: Fixed Effect Model

Variables	Coefficient	Probability
Constant	-953383.9	0.0000
Return on Assets	479.2156	0.0000
Rate (BI-rate)	-70.42468	0.5415
Exch	181.2487	0.0117
DPR	-239.9802	0.1780

R-squared  
0.779  
Adjusted R-squared  
0.726

$$PBV = -953383.9 + 479.2156ROA - 70.42468Rate + 181.2487Exch - 239.9802DPR \quad (2)$$

After estimating with common effects and fixed effects, the next process is to do a Chow test to select the most suitable model in this study. The results of the Chow test are as follows:

Table 6: The Chow Test Results

Effects Test	Statistics	df <sup>1</sup>	Probability
Cross-section F	0.337284	(8,50)	0.9473
Cross-section Chi Square	3.311261	8	0.9133

<sup>1</sup>degree of freedom.

The Chow test results in Table 6. indicate that the common effect model is preferred, compare to with fixed effects models, namely the p value > 0.05, thus the appropriate regression equation is equation no 1.

Table 5. Random Effect Model

Variables	Coefficient	Probability
Constant	-935875.3	0.0000
Return on Assets	470.2646	0.0000
Rate (BI-rate)	-35.68930	0.6753
Exch	190.1466	0.0064
DPR	-6.220174	0.9327

R-squared  
0.767  
Adjusted R-squared  
0.751

The next step is to estimate the random effect model, and the results are shown in Table 5. The equation obtained by the random effect model estimation is as follows:

$$PBV = -935875.3 + 470.2646ROA - 35.68930Rate + 190.1466Exch - 6.220174DPR \quad (3)$$

After estimating with random effects, the next step is to determine a model that is more suitable, either the common effect model or the random effect model. To determine whether the random effect model is better than the common effect model, the Lagrange Multiplier (LM) test is used. This random effect significance test was developed by Breusch-Pagan. The Breusch-Pagan method is based on the residual value of the OLS method, where the LM statistical value is calculated according to the formula:

$$LM = \frac{nT}{2(T-1)} \left( \frac{\sum_{t=1}^n (T \bar{\epsilon}_t)^2}{\sum_{t=1}^n \sum_{i=1}^T \epsilon_{it}^2} - 1 \right)$$

If the calculated LM value is greater than the critical value of the chi squares distribution table with a degree of freedom of 5% which is 5.999, it can be concluded that the right model is a random effect. LM tests can also be done with the help of E-views software, which has a Breusch Pagan Random Effect LM Test feature / menu. In the 'both' column the probability value is 0.0205, smaller than 0.05. Based on these results it can be concluded that the most appropriate model is the random effect model.

Before estimating panel data regression, the research data was tested using the classic assumption test, namely normality, heteroscedasticity, multicollinearity, and autocorrelation. Normality test results obtained Jarque-Bera probability value of 0.55900. When the value is greater than a significant value of 0.05, it can be concluded that the data are normally distributed. White test is performed to ensure data is free from heteroscedasticity. The test results show that the data has been freed from the problem of heteroscedasticity, the probability value is 0.405 (greater than 0.05). It can thus be concluded that there is no heteroscedasticity. The test is also to find out whether or not there is multicollinearity. This is done by calculating the correlation coefficient between independent variables. The calculation results show that when the between variables have a large enough coefficient of 0.79, it is assumed that there is a linear relationship between the research variables. Although there is multi-collinearity, it still produces a BLUE estimator, because the BLUE estimator does not assume that there is no correlation between independent variables (Widarjono, 2007). The Durbin-Watson Test (D-W) is one of the most widely used tests to determine whether there is autocorrelation. The test results show a value of 1.843, which means that the value is between 1.54 and 2.46 so that no autocorrelation occurs.

### Impact of ROA, DPR, Exchange rate and BI-rate on PBV: Random Effect Model

The magnitude, direction and the significance of effects on return on assets, price to book value, BI-rate, exchange rate and dividend pay-out ratio are presented in Table 6. The relationships amongst these variables are in a random manner, which is determined by the results of the Lagrangian Multiplier Test where random effect model is selected as the appropriate model

Table 6: Random Effect Model

Variables	Coefficient	Probability
Constant	-935875.3	0.0000
Return on Assets	470.2646	0.0000
Rate (BI-rate)	-35.68930	0.6753
Exch	190.1466	0.0064
DPR	-6.220174	0.9327
R-squared	0.767173	Mean dependent var. 13253.48
Adjusted R-squared	0.751116	S.D dependent var 893.5883
Standard Error of regression	445.796	Sum squared residuals. 11526575
F-statistic	47,77796	Durbin-Watson statistics 11526575
Probability (F-statistic)	000.00	

The resulting equation of regression is as follows

$$PBV = -935875.3 + 470.26ROA - 35.68Rate + 190.14Exch - 6.22DPR \quad (3)$$

Where PBV is price to book value, ROA is return on assets, Exch is exchange rate and DPR is dividend pay-out ratio. The intercept is negative, according to Mendenhall (2011), intercept will not always have practical interpretation. So the negative intercept can be ignored. Based on the results of data processing as shown in Table 6, it was found that the factors affecting firm value (PBV) are ROA and exchange rate. The R-squared value obtained is 76.7%. This shows that the company value as measured by PBV can be explained by the company's financial performance, i.e. the profitability ratio (ROA) and exchange rate. Based on the equation in the random effect model, it can be concluded that the variable with the biggest influence is profitability as measured by ROA. These results are in line with Sitompul, Bukit and Erwin (2020), Kurniati (2019), Rochmah and Fitria (2017), Al Najjar & Al-Najjar (2017) and, Hamidah and Mardiyanti (2015) that profitability or financial performance affects firm value.

In this study, the DPR and BI interest rate do not affect firm value. This can be explained from the description of Indonesia's macroeconomic conditions below. The performance of the Indonesian economy in 2013 was inseparable from the effect of changing cyclical patterns that coloured global economic dynamics. Changes in

the pattern of the global cycle affected the performance of the domestic economy not only through the trade channel, but also through the financial market channel. Apart from global influences, structural domestic factors are also one of the root causes of economic problems. The global economy in 2013 was also marked by uncertainty on global financial markets regarding the issue of reducing the monetary stimulus (tapering off) in the United States. The turmoil on the financial market that occurred triggered the flow of foreign capital (Bank Indonesia, 2013). Inflation in 2014 remained under control amid high pressure from administered prices (AP) and volatile food (VF). Inflation, which until October 2014 was still within the target range of 4.19% (ytd), was recorded at the end of 2014 at 8.36% (yoy). The increase in inflation was mainly due to the impact of the increase in the price of subsidized fuel oil (BBM) and the impact of the turmoil in domestic food prices at the end of 2014. The increase in subsidized fuel prices has driven up prices, both as a direct impact as well as a second round effect (Bank Indonesia, 2014).

## Conclusion

Based on the previous discussion, the conclusion of this study is that the most suitable model for analysing the effect of ROA, exchange rate, BI-rate and DPR is the random effect model. The results show that ROA and exchange rate have an effect on firm value. Interest rates and DPR do not affect firm value. Based on the equation in the random effect model, ROA of profitability is the biggest influence on firm value. Companies that generate profits will certainly attract the attention of investors. The fluctuating exchange rate conditions during the study period affected the firm value. This can be explained as, Indonesia's economic conditions during the study period, namely 2013 to 2019, were strongly influenced by global economic conditions. Banks as one of the financial sectors that provide a sizeable contribution to the Indonesian economy are showing stability. Banks are still able to generate profits and distribute dividends to shareholders. Fluctuating interest rates in this study did not affect bank performance.

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