

# Determining the Effect of Return on Equity (ROE) on Price Earnings Ratio (PER) and Price to Book Value (PBV) in LQ45 companies, Indonesia

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*Abstract:* - This research was conducted to determine the effect of Return on Equity (ROE) on Price Earnings Ratio (PER) and Price to Book Value (PBV) in LQ45 companies listed on the Indonesia Stock Exchange (BEI). The data studied were financial reports published by 37 companies for four periods, namely 2015 to 2018. The data processing program uses the Eviews 9 program. The contribution of this article is to support investment decisions. The processing results show that ROE has a positive and significant effect on PER. and ROE has a positive and significant effect on PBV. Both are shown by the results of data processing in a positive correlation coefficient and beta coefficient. This correlation shows that in investors making investment decisions, ROE is used to make investment decisions. Then ROE will have an impact on company value. The higher the ROE, the higher the firm value will be. Furthermore, other factors influence PER and PBV, namely dividend payout ratio, return on assets, profit margin, inflation, interest rates, economic conditions, and company competition, both similar and different.

*Keywords:* Return on Equity, Price Earnings Ratio (PER), Price to Book Value

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## 1 Introduction

Return on Equity (ROE) is one of the measuring tools commonly used by investors to maintain the sustainability of their investment in a company (corporation) [1]. The study of Return on Equity (ROE) analysis is a theme that is currently the object of discussion by many researchers [2]. The increasing ROE value will increase the dividend value for shareholders [3]. Therefore, many corporations develop business relationship strategies and policies to increase ROE [4]. The ROE value that tends to increase impacts the confidence of potential investors [5]. This trust will then change the market value of the corporation to be significantly positive. While investors who have joined will add value to their investment over a more extended period, some also sell their shares at a good value.

PER is used to assess the company and determine whether the company's value is

overvalued or undervalued [6]. PER is the favoured approach used by practitioner stock analysis. The higher the PER value, the more overvalued a stock is, and vice versa if the PER is low, it means the stock is undervalued [7]. The size of a company's stock value can be assessed based on price to book value [8], a Price to Book Value above one will have an impact on the high stock price in the market [9].

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As far as literacy that we found, we have not found an analytical study of how the impact of ROE on PER and PBV on similar research objects in this article. Nonetheless, several relevant studies have brought up the fact that profitability increases return to a greater extent. Several studies have proven that ROE has a positive effect on PER [1], [10], [11]. However, several previous studies found that ROE does not affect the stock price [12]. Research conducted by [13] introduced the static-growth expected return (SGER) in a similar study. Blazenko and Fu, (2013) use a portfolio approach and focus only on capital gains, thus only assessing investments, not dividends [14]. Meanwhile, our research looks for the impact of firm performance on the ROE variable on the firm value on the PER and PBV variables. Therefore, ROE studies must influence PER and PBV.

Sha [15] investigate the effects of price earning ratio, earning per share, book to market ratio, and gross domestic product on stock price of the property and real estate sector listed in Indonesia Stock Exchange in 2012 to 2014. Also, this research used t-test and F-test for testing the hypotheses. They showed that the partially earnings per share, book to market ratio, and gross domestic products have significant influence on stock prices. Arslan and Zaman [16] analyzed the impact of dividend yield and price earnings ratio on stock returns. Also, the impact of dividend yield and price earnings ratio on stock returns was determined by using fixed effect model. The findings of study reveals that price earnings ratio and size of firm have significant positive impact on stock prices.

This article details how ROE affects PER and how ROE affects PBV based on quantitative analysis, and how the external factors of PER and PBV variables are in the test model. The approach used in this article is a descriptive analysis using data on the financial statements of companies listed on the Indonesia Stock Exchange (IDX). The research object is the financial statements issued by 37 companies listed on the stock exchange by meeting three criteria in this study, namely 1). Listed on the Indonesia Stock Exchange (IDX) LQ member profile index report August 45, 2019; 2). Listed on the Indonesia Stock Exchange (IDX) at least ten years back from 2019; 3). Have financial reports for the last four years from 2015 to 2018. Data processing is carried out using the program SPSS version 25.

## 2 Literature Review

### 2.1 Return on Equity (ROE) and Stock Returns

The firm's rate of return for each currency unit that becomes the company's capital is known as return on equity (ROE). The term "ROE" refers to the net ratio of ordinary equity, which evaluates the rate of return on ordinary shareholder investment, according to [17]. This Return on Equity Ratio demonstrates how well own capital is used. Assume that the larger the ratio, the better and then implies that the firm's position will be strengthened, and vice versa. Divide net income by shareholder equity to calculate return on equity. In this case, the corporation offers a yearly yield for one currency in which clients invest [18]. The return on investment (ROI) is a measure of the profit made by investors on their investment in a company. The better the results, the better the stock returns. According to [19], profitability impacts stock returns, so the ability of a corporation to create profits utilizing its capital is measured by its return on equity (ROE). The growing ROE figure implies that the company's performance is improving. Old investors will be enticed to invest their shares, and potential investors will be enticed to invest in the company if conditions like this exist [17]. This situation will drive stock prices to rise; resulting in higher stock returns [20] concluded that ROE has a favourable and significant effect on stock returns based on past research.

### 2.2 Return On Equity (ROE)

The most important ratio is the ROE, or return on equity, which is net Income to common stockholders is divided by total stockholders' equity [17]. Return On Equity (ROE) is a ratio to measure net profit after tax with own capital [21], [22]. This ratio shows the power to generate returns on investment based on shareholder book value. The higher this ratio, the better, means that the position of the company owner is getting stronger. The most important ratio is the return on equity, which is the net income for shareholders divided by total shareholder equity.

$$ROE = \left( \frac{\text{Net profit after tax}}{\text{Equity capital}} \right) \times 100\% \quad (1)$$

### 2.3 Price Earnings Ratio (PER)

Price Earnings Ratio (PER), is the ratio of the company's stock price to Earnings per share (EPS) [6]. Some references use to define PER as P/E or P/E ratio [3]. PER is used to assess the company and to find out whether the value of the company is too

high or too low. Price/earnings (P/E) ratio shows how much investors are willing to pay per dollar of reported earnings. The PER ratio is higher for companies with solid growth prospects and relatively low risk. The allied PER ratio is below average for other food processors, indicating that the company is perceived to be somewhat riskier than most, has poor growth prospects, or both [17]. The PER approach is the more popular approach used among practitioners of stock analysis wizards in the mathematical form shown as (2).

$$\text{Price earning ratio} = \frac{\text{Current Market Price Per share}}{\text{Earning Per Share}} \quad (1)$$

$$\text{Earning per share} = \frac{\text{net income}}{\text{common shares outstanding}} \quad (2)$$

PER is the ratio or comparison between stock prices and company earnings. Investors will calculate the number of times the value of earnings is reflected in the share price [21]. On the other hand, the company calculates and analyzes how long it takes to return funds at the share price level and the profit received by the company [3]. Investors buy stocks to get a return on their investment needs indicator for deciding on return. This return consists of two parts: 1). gain (or loss) from the sale of shares at a price above (or below) the purchase price, and 2). dividends. The ratios we examine in this section help analysts evaluate stock investments [23].

The Industry decided the standard of PER is 5.21%. So the PER that is above the industry standard is a company that is classified as good or healthy. In contrast, the PER, below the industry average, is classified as bad or unhealthy [11]. Previous research shows that the PER variable has a positive and significant effect on the share price. However, some other studies, such as [23], claim that the PER variable does not affect share price, while [25] and claim that PER positive affects share price [26].

## 2.4 Price to Book Value

The share price depends on the company's ability to generate cash flow [27]. The ratio of the stock market price to its book value provides another indication of how investors view the company [17]. The PBV is formulated as follows:

$$\text{Market/Book ratio} = \frac{\text{Market Price Per share}}{\text{Book Value Per Share}} \quad (3)$$

The ratio of the stock market price to its book value provides another indication of how investors

view the company [17]. The book value is considered not crucial in determining the company's value because it only reflects the historical investment made by the company, that is, investments that are less relevant to the company's price or current value. Although the historical value of the previous management of the company does not produce a satisfactory level of profit, with healthier management developed in the company, there is a possibility that the company will achieve an expected return on profit, thus increasing the company's market.

Thus, PBV is the division of the company's stock price by book value per share. PBV can be defined as the objective of corporate financial management to maximize shareholder wealth, which means increasing company value which is an objective measure of value by the public and is oriented towards the survival of the company. Our focus hypothesis is that return on equity affects PER at LQ45 companies listed on the Indonesia Stock Exchange for 2015 to 2018. Return on equity affects Price to Book Value at LQ45 Companies listed on the Indonesia Stock Exchange 2015 to 2018.

## 3 Methodology

### 3.1 Population and Sample

The population that we use are companies that have been listed on the Indonesia Stock Exchange (IDX) from 2009 to 2019. We found 45 company names based on reports from IDX.id, 2021, and then from those 45 companies, there are only 37 companies that routinely provide financial statements for four years from 2015-2018. For this reason, we selected 37 companies as research objects which are presented in Table I. The details of the three criteria of our research object are; 1). Companies listed on the Indonesia Stock Exchange (IDX) LQ 45 index member profile report issued by the Indonesia Stock Exchange (IDX) in August 2019. 2). Companies that have been listed on the Indonesia Stock Exchange (IDX) have been at least ten years back since 2019. 3). Available research data for the period 2015 to 2018.

Based on these three criteria, a sample of 37 companies was obtained, as shown in Table I. Each company has 4 data that publish financial reports each year from 2015 to 2018. The total number of observational data from 37 companies multiplied over four years is 148 data for each. -respectively ROE, PER, PBV.

### 3.2 Research Model

The variables used in this study were to analyze the effect of ROE on PER and PBV. For understanding purposes, we propose the framework of this research can be described as Fig. 1, where the X is the variable for ROE, and the Y1 is the variable for PER. And Y2 is the variable for the PBV. The external factor that is representative for the effects on the PER is ( $\epsilon_1$ ) the other hand, for the external factor for the PBV as ( $\epsilon_2$ ).

Based on the research framework as shown in Fig. 1, we use a descriptive analysis approach and the Eviews 9 program for data processing and analysis. The results of data processing using a mathematical approach with simple linear regression equations (7) and residual factors, we using equation (5), where  $\epsilon_i$  is the non-determining coefficient (6),  $Y_i$  is the regression equation (7), a is the regression constant, is The value of the direction as a determinant of the forecast,  $i=1, 2, 3, \dots, n$  is representation to the number of cross-section and time series data, and  $t=1, 2, 3, \dots, n$ . t is a representation of the amount of time series data.

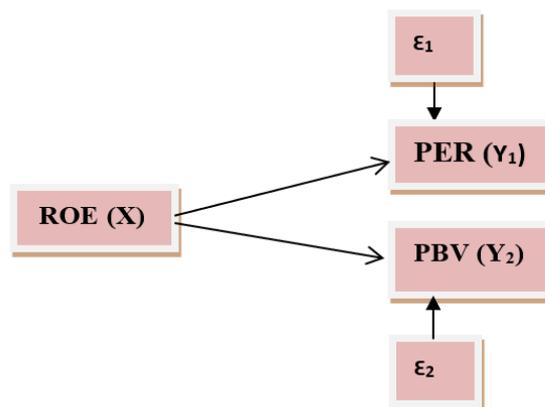


Fig. 1: Research framework.

For a thorough and detailed analysis, the correlation coefficient information, the coefficient of determination, the significance value were analysed using the Eviews 9 program and displayed in tabular form. Simple Linear Regression shows the functional relationship between independent and dependent variables.

Table 1. Research samples

NO	Code	Company Name	NO	Code	Company Name
1	ADRO	Adaro Energy Tbk	20	KLBF	Kalbe Farma Tbk.
2	AKRA	AKR Corporindo Tbk	21	LPPF	Matahari Department Store Tbk.
3	ASII	Astra International Tbk	22	MNCN	Media Nusantara Citra Tbk.
4	BBCA	Bank Central Asia Tbk	23	PGAS	Perusahaan Gas Negara Tbk.
5	BBNI	Bank Negara Indonesia (Persero) Tbk.	24	PTBA	Bukit Asam Tbk
6	BBRI	Bank Rakyat Indonesia (Persero) Tbk	25	PTPP	PP (Persero) Tbk.
7	BBTN	Bank Tabungan Negara (Persero) Tbk	26	PWON	Pakuwon Jati Tbk.
8	BMRI	Bank Mandiri (Persero) Tbk	27	SCMA	Surya Citra Media Tbk
9	BSDE	Bumi Serpong Damai Tbk. [S]	28	SMGR	Semen Indonesia (Persero) Tbk
10	CPIN	Charoen Pokphand Indonesia Tbk	29	SRIL	Sri Rejeki Isman Tbk.
11	ERAA	Erajaya Swasembada Tbk	30	TKIM	Telekomunikasi Indonesia (Persero) Tbk.
12	GGRM	Gudang Garam Tbk	31	TLKM	Pabrik Kertas Tjiwi Kimia Tbk
13	HMSP	H.M. Sampoerna Tbk	32	UNTR	United Tractors Tbk.
14	ICBP	Indofood CBP Sukses Makmur Tbk	33	UNVR	Unilever Indonesia Tbk.
15	INDF	Indofood Sukses Makmur Tbk.	34	WIKA	Wijaya Karya (Persero) Tbk.
16	INKP	Indah Kiat Pulp & Paper Tbk.	35	WSKT	Waskita Karya (Persero) Tbk
17	INTP	Indocement Tunggul Prakarsa Tbk.	36	CTRA	Ciputra Development Tbk.
18	ITMG	Indo Tambangraya Megah Tbk.	37	JPFA	Japfa Comfeed Indonesia Tbk
19	JSMR	Jasa Marga (Persero) Tbk.			

The functional relationship between a variable related to the independent variable is done by simple linear regression. Many researchers have used this approach for the same purpose, one of which is by [28], while multi-regression analysis on the same method is by [29]

$$r = \frac{n \sum_{i=1}^n X_i Y_i - (\sum_{i=1}^n X_i)(\sum_{i=1}^n Y_i)}{\sqrt{[n \sum_{i=1}^n X_i^2 - (\sum_{i=1}^n X_i)^2][n \sum_{i=1}^n Y_i^2 - (\sum_{i=1}^n Y_i)^2]}} \quad (5)$$

$$\varepsilon_i = (1 - r^2) \quad (4)$$

$$Y_i = a + \beta_i X + \varepsilon \quad (5)$$

### 3.3 Hypothesis Testing

Hypothesis Testing consists of two perspectives. First, focus on the effect of ROE on PER, and second, focus on the effect of ROE on PBV. The description of the hypothesis is as follows:

ROE effect to PER

- Ho:  $\beta Y1X = 0$  Return on Equity (ROE) does not affect Price Earnings Ratio (PER) at LQ45 companies listed on the Indonesia Stock Exchange 2015 to 2018.
- H1:  $\beta Y1X \neq 0$  Return on Equity (ROE) affects Price Earnings Ratio (PER) at LQ45 companies listed on the Indonesia Stock Exchange 2015 to 2018.

ROE effect on PBV

- Ho:  $\beta Y2 X = 0$  Return on Equity (ROE) does not affect Price to Book Value at LQ45 Companies listed on the Indonesia Stock Exchange from 2015 to 2018.
- H1:  $\beta Y2 X \neq 0$  Return on Equity (ROE) affects Price to Book Value at LQ45 Companies listed on the Indonesia Stock Exchange from 2015 to 2018.

The simple form of the statistic hypothesis is described as  $H_0 = -t(\frac{1}{2})\alpha \leq t_{count} \leq t(\frac{1}{2})\alpha$ . The critical limit value is negative, and the critical limit value is positive at is 0.025)  $H_a = H1 = -t(\frac{1}{2})\alpha > t_{count}$  or  $t_{count} > t(\frac{1}{2})\alpha$  (that the critical limit value is negative and the positive critical limit value at is 0.025). This analysis uses the rejection criteria Ho if  $t_{count} > t_{tabel}$ .

## 4. Results

The annual report from IDX LQ45 in August 2019 for the ROE, PER, and PBV values of 37 companies is shown in Table 2, Table 3, and Table 4. The ROE graph of each variable is presented in

Fig. 2. The PER graph is shown in Fig. 3, and the PBV graph is shown in 4. Fig. 2 shows the 4-year average ROE of 37 companies. Based on Table 2. Based on Fig. 2, 37 companies have varying ROE values. As shown in Table 2, the total analysis data is 148 data with a total average ROE of 20.92%, a maximum ROE of 160.99, and a minimum ROE of 0.15. Suppose the applicable interest rate from Bank Indonesia in 2021 is 6%. In that case, the ROE value (Table 2) can be concluded as profitable for investors, meaning that if investors invest using capital from bank loans with a bank interest rate of 6%, the investment possibilities can be profits for investors. The distribution of ROE fluctuation data with a span of 4 years indicates the performance of each company. Based on the average value of ROE as shown in Fig. 2, it appears that companies with codes LPPF and UNVR are companies that have high ROE values. A more profound observation from Table 2 and Fig. 2 shows the fact that there are six companies whose performance is above the average for four years or  $ROE > Average$ . Likewise, we found 31 companies whose performance was below average or  $ROE < Average$  for four years.

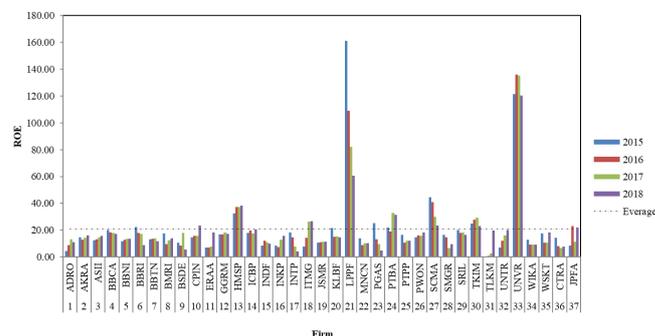


Fig. 2: ROE Recapitulation for 2015-2018

Table 3 shows the recapitulation of the annual report for PER. As explained in the introductory session, PER is an indicator of the value of a company. The 37 companies that report PER for four years show the dynamics of their firm value. Our observations to find out the average PER value and general description of PER fluctuations for each company based on Table 3 are presented in the chart as shown in Fig. 4. The total average PER is 18.81. In-depth observations regarding the PER results of companies with values above the average indicate that as growth stocks from companies with positive performance or are overvalued in the future, this condition becomes the primary consideration for investors to increase the value of their shares.

Table 2. Annual report of ROE

No	Code	2015	2016	2017	2018	No	Code	2015	2016	2017	2018
1	ADRO	4.50	9.00	13.11	11.10	20	KLBF	21.74	15.02	15.44	14.76
2	AKRA	14.53	12.97	14.45	16.08	21	LPPF	799.10	160.99	108.86	81.92
3	ASII	12.34	13.08	14.82	15.70	22	MNCN	13.83	8.82	10.41	10.41
4	BBCA	20.12	18.30	17.75	17.04	23	PGAS	25.23	13.32	9.73	4.64
5	BBNI	11.65	12.78	13.65	13.67	24	PTBA	21.93	19.18	32.95	31.49
6	BBRI	22.46	17.86	17.36	8.96	25	PTPP	16.52	10.67	12.10	12.01
7	BBTN	13.35	13.69	13.98	11.78	26	PWON	14.81	16.16	15.83	18.46
8	BMRI	17.70	9.55	12.61	13.98	27	SCMA	44.57	40.78	29.91	23.42
9	BSDE	10.64	8.37	17.77	5.62	28	SMGR	16.49	14.83	6.71	9.43
10	CPIN	14.59	15.72	15.90	23.47	29	SRIL	20.11	17.93	18.22	16.38
11	ERAA	7.11	7.17	7.68	18.43	30	TKIM	24.96	27.64	29.16	23.00
12	GGRM	16.98	16.87	18.38	17.27	31	TLKM	0.15	0.82	2.74	19.89
13	HMSP	32.37	37.34	37.14	38.29	32	UNTR	7.11	11.98	16.14	20.15
14	ICBP	17.84	19.63	17.43	20.52	33	UNVR	121.22	135.85	135.40	120.21
15	INDF	8.60	11.99	11.00	9.94	34	WIKA	12.93	9.18	9.27	9.27
16	INKP	8.49	7.19	12.84	15.60	35	WSKT	17.59	10.8	10.81	18.46
17	INTP	18.25	14.81	7.57	4.12	36	CTRA	14.44	8.19	6.59	7.83
18	ITMG	7.56	14.40	26.37	26.68	37	JPFA	8.58	23.17	11.31	22.06
19	JSMR	10.67	11.04	11.40	11.39						

We also recapitulate from Table 3 with the following details; 1). UNVR code is the company with the highest PER, which is 47.76. then 2). There are three largest PBV obtained in companies with code HMSP=38.95, INTP=39.57, UNVR=47.76. Then 3) there are three companies with the lowest PER value, namely ERAA=7.33, INKP=4.17, SRIL=7.14. Companies with a PER value below the average indicate that the company is undervalued because their share price is traded relatively lower than the standard set by investors; investors consider this condition for further action.

Fig. 4 shows a dynamic PER bar chart of 37 companies based on data from Table 3. It appears that three companies have a PER value range in the top three groups (38.95 to 47.76), namely HMSP, INTP, UNVR.

Our observations of PBV for 37 companies with four reporting years are shown in Table 4. As described in the introduction, PBV is one indication of company value that impacts the company's stock price, and we can make a rating classification.

The average PBV value is 4.79 or 5 times the book value. Six or 16% of the 37 companies have a PBV above the average, or it can be concluded that there are six indicating that the company is overvalued. The companies with a PER value below the average indicate that the company is undervalued because their share price is traded relatively lower than the standard set by investors. According to this condition, the investor has more confidence to further action.

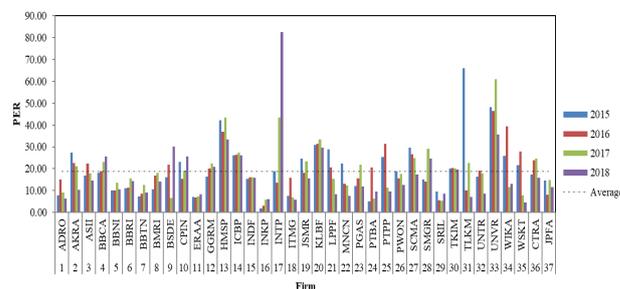


Fig. 3: PER recapitulation for 2015-2018

Table 3. Annual report of PER

No	Code	2015	2016	2017	2018	No	Code	2015	2016	2017	2018
1	ADRO	7.83	14.96	9.09	6.24	20	KLBF*	30.87	31.28	33.39	29.61
2	AKRA*	27.41	22.65	21.17	10.21	21	LPPF	28.84	20.56	15.30	8.19
3	ASII	16.79	22.28	17.80	14.63	22	MNCN	22.34	13.02	12.27	7.47
4	BBCA*	18.02	18.95	23.16	25.72	23	PGAS	12.02	15.61	21.87	11.84
5	BBNI	10.16	10.01	13.56	10.65	24	PTBA	5.12	20.54	6.33	9.45
6	BBRI	10.99	11.40	15.48	14.28	25	PTPP*	25.35	31.26	11.26	9.60
7	BBTN	7.33	8.52	12.49	8.93	26	PWON	18.93	15.55	17.62	12.58
8	BMRI	10.51	16.86	18.09	14.12	27	SCMA*	29.75	26.57	24.87	17.25
9	BSDE	16.19	21.87	6.65	30.24	28	SMGR*	14.96	13.94	29.16	24.51
10	CPIN*	23.21	15.23	19.07	25.59	29	SRIL	9.42	5.50	8.43	5.22
11	ERAA	6.99	6.86	7.18	8.27	30	TKIM*	20.21	20.42	20.21	19.58
12	GGRM*	16.44	20.04	22.32	20.95	31	TLKM*	66.02	10.11	22.49	7.00
13	HMSP*	42.20	36.79	43.42	33.40	32	UNTR	16.41	19.01	17.84	8.43
14	ICBP*	26.18	26.48	27.34	26.23	33	UNVR*	48.24	46.32	60.89	35.57
15	INDF*	15.31	16.11	16.06	16.04	34	WIKA*	25.97	39.54	11.57	12.94
16	INKP	1.70	3.11	5.71	6.15	35	WSKT	21.63	27.78	7.73	4.59
17	INTP*	18.86	13.51	43.45	82.47	36	CTRA*	17.44	23.90	24.59	15.81
18	ITMG	7.43	15.81	6.83	5.76	37	JPFA	14.46	8.04	14.87	11.63
19	JSMR*	24.51	18.04	23.37	15.48						

Notes: \*) is a company with a PER value above 18.81

We also recapitulate from Table 4 with the following details; 1). UNVR code is the company with the highest PBV, which is 56.66. 2). There are three largest PBV obtained in companies with code HMSP=14.51, LPPF=23.89, UNVR=56.55, then 3). there are three companies with the lowest PER value, namely ERAA = 0.79, INKP = 0.54, TLKM = 0.70. Companies with PBV values below the average indicate that the company is undervalued because their share prices are traded relatively lower than the standard set by investors; investors consider this condition for further action.

The results of in-depth observations based on the data in Table 2, Table 3, and Table 4, we can draw preliminary conclusions to provide a broader perspective regarding ROE, PER, and PBV. We find the three companies that have above-average scores of ROE, PER, and PBV consistently. As shown in Table 5, There are three companies are companies that have extended experience and have high financial capabilities. HMSP is H.M. Sampoerna Tbk. HMSP is a tobacco company that has been operating since 1913. HMSP has assets of 45,919 trillion, and in 2021 it will achieve a net profit of 2.58 trillion in 2021[30]. SCMA is solar image media tbk. SCMA is a company engaged in the content-based media industry and has been operating since 1999. Based on the 2021 financial report, SCMA's revenue reached 4,524 trillion with a net profit of 2,003 trillion [31]. UNVR is PT. Unilever Indonesia Tbk. UNVR is engaged in manufacturing materials and household aids and has operated since 1933. Income reached 10,282 trillion, with profits reaching 1,698 trillion in 2021[32].

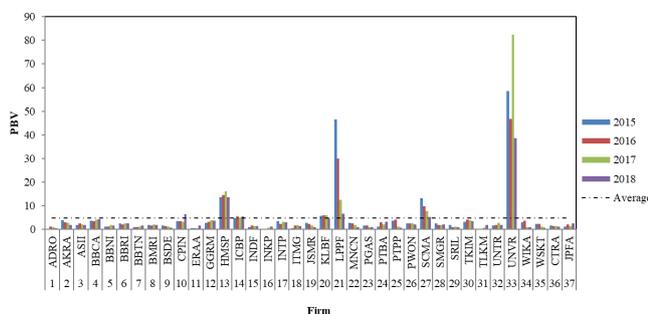


Fig. 4: PBV recapitulation for 2015-2018

Table 4. Annual report of PBV

No	Code	2015	2016	2017	2018	No	Code	2015	2016	2017	2018
1	ADRO	0.36	1.18	1.07	0.6	20	KLBF*	5.66	6.01	5.97	4.89
2	AKRA	3.89	3.06	2.82	1.8	21	LPPF	46.43	30.03	12.53	6.57
3	ASII	1.92	2.54	2.15	1.98	22	MNCN*	2.77	2.57	1.9	0.94
4	BBCA	3.66	3.49	4.11	4.46	23	PGAS	1.6	1.62	0.98	1.04
5	BBNI	1.19	1.19	1.83	1.58	24	PTBA	1.12	3	2.05	3.32
6	BBRI	2.49	2.04	2.68	2.57	25	PTPP	3.67	4.12	1.15	0.73
7	BBTN	0.99	1.02	1.75	1.16	26	PWON	2.53	2.56	2.58	2.06
8	BMRI	1.81	1.77	2.2	1.95	27	SCMA*	13.28	9.8	7.76	5.38
9	BSDE	1.57	1.44	1.12	0.81	28	SMGR	2.46	1.91	1.93	2.15
10	CPIN	3.39	3.47	3.24	6.5	29	SRIL	1.89	1.07	1.3	0.98
11	ERAA	0.49	0.52	0.6	1.55	30	TKIM	3.35	4.23	3.99	3.5
12	GGRM	2.78	3.27	4.04	3.75	31	TLKM	0.1	0.16	0.68	1.87
13	HMSP*	13.66	14.51	16.13	13.74	32	UNTR	1.61	1.97	2.78	1.87
14	ICBP*	4.79	5.61	5.11	5.56	33	UNVR*	58.48	46.67	82.44	38.62
15	INDF	1.05	1.55	1.43	1.35	34	WIKA	2.99	3.71	0.95	0.96
16	INKP	0.14	0.15	0.71	1.15	35	WSKT	2.34	2.34	1.32	0.84
17	INTP	3.44	2.23	3.29	3.01	36	CTRA	1.72	1.52	1.47	1.17
18	ITMG	0.56	1.67	1.8	1.53	37	JPFA	1.11	2.21	1.51	2.61
19	JSMR	2.87	2.26	1.65	1.04						

Notes: \*) is a company with a PER value above 4.79

Table 5. Companies with above average ROE, PER, PBV

No	Code	ROE	PER	PBV
1	HMSP	36.29	38.95	14.51
2	SCMA	34.67	24.61	9.06
3	UNVR	128.17	47.76	56.55

## 5 Discussion

### 5.1 Analysis of ROE effect on PER

Analysis of the impact of ROE(X) and PER(Y) is presented in Table 6. The processing results are calculated using the Eviews 9 program with row material data as in Table 2 and Table 3, thus showing the effect of ROE on PER. The results of the analysis are presented in the Model Summary table (Table 6).

Table 6 shows a summary model of data processing. It appears that the value of the coefficient of determination is 0.044, and the level value of Sig. 0.010. This value indicates that ROE has a significant positive effect on PER, and the higher the ROE obtained, the PER value will increase so that the impact on the company value will increase. This fact is following the stated in [17] [32] and research results [25],[33].

Tabel 6. Analysis of ROE effect on PER

Dependent Variable: Y1  
Method: Panel EGLS (Cross-section random effects)  
Date: 09/02/21 Time: 11:21  
Sample: 2015 2018  
Periods included: 4  
Cross-sections included: 37  
Total panel (balanced) observations: 148  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.09856	1.714081	9.391945	0.0000
X	0.129568	0.049637	2.610314	0.0100

Effects Specification		S.D.	Rho
Cross-section random		7.009868	0.3842
Idiosyncratic random		8.873744	0.6158

Weighted Statistics			
Root MSE	8.870856	R-squared	0.044040
Mean dependent var	10.05926	Adjusted R-squared	0.037492
S.D. dependent var	9.103698	S.E. of regression	8.931408
Sum squared resid	11646.43	F-statistic	6.726042
Durbin-Watson stat	1.415412	Prob(F-statistic)	0.010469

Unweighted Statistics			
R-squared	0.109486	Mean dependent var	18.80872
Sum squared resid	18672.39	Durbin-Watson stat	0.882827

The mathematical approach in the form of a linear regression equation of the effect of ROE on PER is formulated as in equation :

$$Y1 = 16.098 + 0.129X \quad (6)$$

Y1 is PER and X is ROE. The positive beta coefficient of the regression equation is shown in equation (8). Shareholders or investors have an upbeat assessment of the company. Thus, the investors can conclude that they have hope in the future to make a better contribution.

The influence of other factors outside the effect of ROE which we express as 1. The value of 1 is calculated using equation (6) where  $r^2 = 0.044$ . The external factor ( $\epsilon_1$ ) shows a fairly high value, namely 0.982. Many things can contribute to external factors, including dividend payout ratios, community economic conditions, inflation and competition from similar companies, the rupiah's exchange rate against the dollar, bank interest rates, and time deposits.

Table 6 These results provide information that ROE has a positive effect on PER, and this means that an increase in the ROE value will impact increasing the PER value in this case. Furthermore, that PER, which is formulated by the closing price of shares per share compared to net income per share following the opinion of [34], earnings per share can be formulated by net income compared to the number of shares outstanding. Thus, shareholders as investors assess the company's performance through the return on investment based on the value of ROE.

## 5.2 Analysis of ROE effect on PBV

Analysis of the impact of ROE and PBV is presented in the Model Summary (Table 7). The impact analysis results are presented in Table 2 and Table 4, thus showing the effect of ROE(X) on PBV(Y2). Based on Table 7, data processing results show that Return On Equity (ROE) on Price to Book Value (PBV) in LQ 45 category companies listed on the IDX 2015–2018, the coefficient of determination is 0.727. So we can conclude that the ROE has a significant positive effect on PBV; this shows that the higher the ROE obtained, the higher the Price to Book Value (PBV) so that the company's value will increase. This result is following what was stated [17], [31] and research results [25] [32]. This result is indicated by the beta coefficient value of the regression equation model ( $\beta=0.091$ ). In mathematical form, it can be formulated as in equation (9).

$$Y2 = -2.993 + 0,372X \quad (7)$$

Table 7. Analysis the impact of ROE and PBV

Dependent Variable: Y2  
Method: Panel EGLS (Cross-section random effects)  
Date: 09/02/21 Time: 11:26  
Sample: 2015 2018  
Periods included: 4  
Cross-sections included: 37  
Total panel (balanced) observations: 148  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.993398	0.652730	-4.585964	0.0000
X	0.372214	0.018852	19.74413	0.0000

Effects Specification		S.D.	Rho
Cross-section random		2.690402	0.3949
Idiosyncratic random		3.330288	0.6051

Weighted Statistics			
Root MSE	3.310423	R-squared	0.727201
Mean dependent var	2.522001	Adjusted R-squared	0.725332
S.D. dependent var	6.359662	S.E. of regression	3.333020
Sum squared resid	1621.917	F-statistic	389.1920
Durbin-Watson stat	2.842126	Prob(F-statistic)	0.000000

Unweighted Statistics			
R-squared	0.833101	Mean dependent var	4.792162
Sum squared resid	2644.716	Durbin-Watson stat	1.742982

The influence of other factors outside the correlation between ROE on PBV or we express as 2. The value of 2 is calculated using equation (6) where  $r^2 = 0.727$ . External factor ( $\epsilon_2$ ) shows a fairly low value namely 0.522, and this means that there are a few factors that contribute as factors outside the influence of ROE, these factors are thought to be in the form of return on assets, dividend payout, earnings per share, stock split and treasury stock.

Table 7 These results provide information that ROE has a positive effect on PBV. In this case, an increase in the ROE value will impact increasing the PBV value. Furthermore, that the PBV, which is formulated by the closing price of shares per share compared to the book value per share, is following the opinion of [35], net income per share can be formulated by net income compared to the number of shares. Outstanding. Thus, shareholders as investors assess the company's performance through the return on investment based on the value of ROE [36].

## 6 Conclusion

The analysis of the effect of ROE on PER and PBV has been carried out thoroughly. Financial reports were spanning 2015-2018 from 37 companies listed on the Indonesia Stock Exchange on the LQ45 list. In the annual report recapitulation,

three companies consistently have above-average ROE, PER, PBV values.

The analysis results show that ROE has a positive and significant effect on PER; besides that, ROE also has a positive and significant effect on PBV. External factors outside the influence of ROE on PER are pretty high; the value of 0.982 indicates this, which means that many external factors contribute to the influence of ROE on PER. The influence can be in the form of dividend payout ratio, community economic conditions, inflation and competition from similar companies, and the rupiah's exchange rate against the dollar and interest rates of banks and deposits. In comparison, the analysis of external factors outside the influence of ROE on PBV is not expected to be much. We find that 0.522. This result is indicated the factor that contributes to the influence of ROE on PBV, and the majority is from the PBV variable itself.

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