Evaluating Banking Sector Stock Values: Relative and Absolute Valuation Approach in LQ 45, 2015-2020

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Abstract— **Investment in Indonesia during the COVID-19 pandemic increased. One of the significant and good indices in describing the condition of stocks in Indonesia is LQ45. Dlaam LQ45 The largest market capitalists are held by the financial sector Specifically the bank subsector therefore it needs to be further researched regarding these stocks. One of the interesting things is whether these stocks deserve to be considered a good investment instrument. One of the efforts to assess investment instruments is through the valuation stage. The valuation method used there are two, namely relative valuation with price to book value benchmarks and price earnings ratio and absolute valuation with dividend growth model method and some modifications of the model. From the results obtained, the recommendation of the position of the four financial stocks in LQ45 varies depending on the valuation technique used. Given this, it is imperative to understand and ensure that the valuation techniques employed are appropriate, sound, and ethically grounded.**

Index Terms—**DDM, PER, PBV, Stock, Time Series**

I. INTRODUCTION

The COVID-19 pandemic is a bad thing and disrupts economic performance almost all over the world, not least in Indonesia. As for the phenomenon of "Force Corona" stock players increasing, this can be seen from the number of investors in the Indonesian Capital Market throughout 2020 consisting of stock, bond, and mutual fund investors, increasing by 56 percent to reach 3.87 million Single Investor Identification (SID) until December 29, 2020. This increase in investors is 4 times higher since the last 4 years than 894 thousand investors in 2016. In addition, stock investors also rose by 53 percent to a total of 1.68 million SID. Then, when viewed from the number of daily active investors, until December 29, 2020 there were 94 thousand investors or up 73 percent compared to the end of last year. The increase in the number of investors and daily investor transaction activities is certainly the result of the efforts of the Financial Services Authority (OJK) together with the Self-Regulatory Organization (SRO) in prioritizing socialization and education related to

investment in the capital market to the community. Along with the increasing participation of domestic retail investors, a record new trade transaction was achieved in 2020, which is the highest daily transaction frequency of shares on December 22, 2020 as many as 1,697,537 transactions.[1]

For reference, the Indonesia Stock Exchange has several benchmark indices such as the composite stock price (JCI) which measures the price performance of all stocks listed on the Main Board and Development Board of the Indonesia Stock Exchange and LQ45, an index that measures the price performance of 45 stocks that have high liquidity and large market capitalization and are supported by good company fundamentals. Shares in LQ45 consist of several sectors and sub-sectors, one of which is financial. As illustrated in Fig. 1, 42.5% of LQ45's weight comes from the financial sector while 4 of the 6 largest stocks with the largest capitalization in LQ 45 come from the financial sector, namely the banking sub-sectors respectively, namely BBRI, BBCA, BMRI, and BBNI [1].
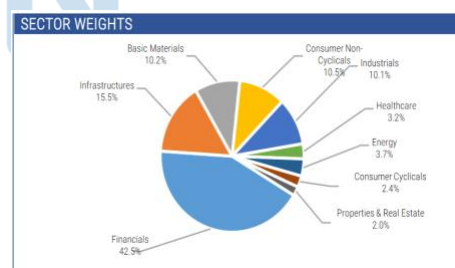

Fig. 1. LQ45's Sector Weights

With a large capitalization and reaching 596.7 trillion Rupiah, the financial sector specifically the banking subsector is very interesting to review. This sector should be a very attractive sector for investors to be interested in. To determine whether the stock is worth buying, there are many ways that are done such as technical analysis and fundamental analysis.

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[1] https://www.idx.co.id/berita/press-release-detail/?emitenCode=1444

The COVID-19 pandemic's impact on global financial markets has necessitated a reevaluation of stock valuation methodologies. Studies such as Berkman and Malloch [2] highlight the importance of adapting valuation models in response to market changes during the pandemic. The ramifications of COVID-19 were felt across various sectors, significantly impacting economies and stock markets as detailed by the OECD [3] and Jabeen et al. [4].

He et al. [5] and Ramelli and Wagner [6] further illustrate the pandemic's profound impact on global financial markets, underscoring the challenges faced by investors and analysts in market valuation during this period. This global context sets the stage for a focused examination of the Indonesian financial sector, particularly the banking stocks within the LQ45 index, during these tumultuous times.

For fundamental analysis, one of the things to note is the financial ratio that can be reflected in the financial statements. Of the many financial ratios and data in the financial statements, all data can be processed in such a way that it can judge a stock is worth buying or not. The process of being able to assess an investment instrument is worth or not purchased is called valuation. In this case it is called the valuation of the stock because the financial instrument to be reviewed is the stock.

For the stock valuation process, it can be divided into 2 large parts, namely absolute valuation and relative valuation. Relative valuation is the valuation of shares based on other stocks that are one sector so that the position of the competitor can be seen, who is the best. As for the absolute valuation, the intrinsic value of the stock will be seen so whether it is worth it or not.

Prior research, such as Leong et al. [7], has explored stock valuation theories in banking, showing models like P/E multiples closely correlate with actual stock prices. However, there's limited research on these valuation methods in the Indonesian banking sector during economic challenges like the COVID-19 pandemic. This study addresses this gap, focusing on the valuation of banking stocks in Indonesia's LQ45 index.

In this study, the four banking stocks with the largest market capitalization will be evaluated using both relative valuation and absolute valuation. The hope is that with the results obtained, investors can make the right decisions based on data. Thus, research will be conducted on the stock valuation of BBCA, BBRI, BBNI, and BMRI based on absolute and relative valuation.

II. LITERATURE REVIEW

A. Stock Valuation

Stock valuation can be defined as a method of being able to calculate the fair value of a stock. Fair value of a stock is often referred to as intrinsic value, which is the value of stock which is considered to represent the performance of a company in real terms. Stock valuation is more needed by active investors than passive investors because passive investors only need a minimal process. For long-term active investors, you need a smaller business to sell stocks than market timers. In the field of portfolio management stock valuation is an important role in fundamental analysis and little in technical analysis [8].

Three key values are commonly used when assessing a company: market value, book value, and intrinsic value. Market value is the current stock price influenced by supply and demand. Book value reflects a company's financial position based on accounting records. Intrinsic value, determined through comprehensive analysis, serves as a benchmark for making investment decisions [9].

Decision-making based on stock valuation can result in 3 types of conclusions, namely undervalued, overvalued, and par valued. If the intrinsic value is more than the market value, then it can be concluded that the stock is undervalued whereas if the intrinsic value is less than the market value then the stock is overvalued. The last thing that may happen is that the intrinsic value is equal to the market value called fair valued [10].

In the banking sector, stock valuation is crucial for investors seeking stability and long-term performance. Pastor and Pietro [11] emphasize its importance in identifying potential gains while managing overvaluation and undervaluation risks. Their study highlights the role of profitability in stock valuation.

B. Dividend Discount Model

Dividend Discount Model (DDM) is a method of devaluing a stock's price based on the theory of whether the stock is worth buying based on the sum of the entire dividend payment withdrawn to its current value. In other words, the valuation of this stock uses the Net Present Value of future dividends. The most commonly used method is the Gordon Growth Model [12].

$$V = \frac{D}{k_e - g} \tag{1}$$

where

D: dividends paid at the 1st time

g: stock growth rate

k_e: interest rates that investors expect

In addition, the version of the method modified based on the period and value of the stock in a given period is called the Adjusted Dividend Growth Model. This method takes the present value of the stock price in the nth year and the amount of the entire dividend paid up to the n-th year [12]. Mathematically it can be written with

$$V = \frac{Div_1}{(1+k_e)} + \frac{Div_2}{(1+k_e)^2} + \cdots + \frac{Div_n + Price_n}{(1+k_e)^n} \qquad (2)$$

where

Div_q: dividends paid at the q st time

$Price_n$: stock price in the nth period

k_e: interest rates that investors expect

Specifically, k_e or more commonly known as the Cost of Capital. Cost of capital is the niaya needed by a company to get capital from the company itself. One way to calculate the Cost of Capital can be calculated through, namely the weighted average cost of capital which comes from the proportional amount between the Cost of Debt and the Cost of Equity. Cost of Equity obtained from CAPM (Capital Asset Pricing Model) with mathematical model WACC [13].

$$\sum R_i = R_{f} + \beta_i \, (R_m - R_f) \qquad (3)$$

where

R_i = cost of equity i-th emitent

R_f = Risk free rate

β_i (beta) = Non- diversifiable risk from the i-th emitent

R_m = Market Return

C. Time Series

A time series $\{Y_t\}$ can be said with the ARIMA model (p, d, q) if the difference to d can be expressed in $\nabla^d \, Y_t = W_{it}$ which is the autoregressive moving average (ARMA (p, q)) which is stationary for the i-th subject with:

p: states order of autoregressive

d: states how many times it is necessary to decrease (differentiation) on the time it takes from $W_{i,t}$ to be stationary

q: indicates an error of the delayed prediction in the predicted equation obtained

Thus, the general equation of this prediction would be:

$$W_{i,t} = \phi_{i,1}W_{i,t-1} + \phi_{i,2}W_{i,t-2} + \ldots + \phi_{i,p}W_{i,t-p} + e_{i,t} - \theta_{i,1}e_{i,t-1} - \theta_{i,2}e_{i,t-2} - \ldots - \theta_{i,q}e_{i,t-q}$$

To be able to determine a suitable ARIMA model, d must be selected first to be able to get an average time series and stable variance [14].

This process of differencing, as discussed by Box and Jenkins [15], is instrumental in achieving stationarity, making it easier to identify and model underlying patterns and trends within financial time series data.

III. DATA AND METHODOLOGY

In this study, financial data from 2015 to 2020 for four leading banks in the LQ45 index of the Indonesia Stock Exchange were analyzed. This data, including financial statements and ratios, was sourced from the Indonesia Stock Exchange's official website, Yahoo Finance, and S&P Platform. These banks were selected based on their notable market capitalization and liquidity within the LQ45, highlighting their importance in the Indonesian banking sector. Additionally, their significant role in the index and the financial sector makes them key subjects for understanding investment dynamics in Indonesia, especially during challenging economic periods such as the COVID-19 pandemic.

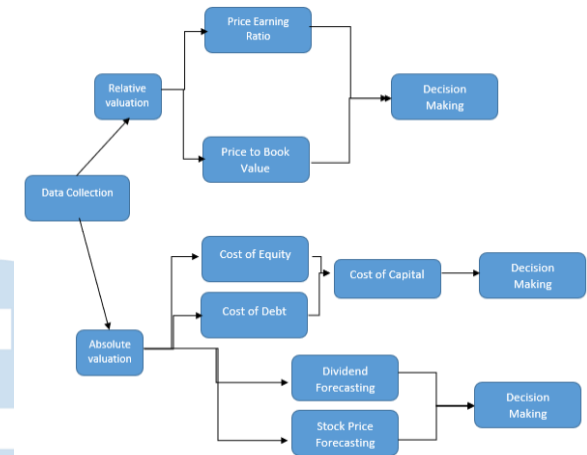In a flowchart, this study can be described as follows:

Fig. 2. Flowchart

IV. RESULTS AND DISCUSSION

A. Absolute Valuation

Based on the data obtained, the financial data of these 4 banking companies will be processed based on the results available in 2004-2020. For Absolute Valuation itself will be used 1 model, namely Dividend Discounted Model (DDM) with 3 model modifications namely Dividend Discounted Model: Gordon Growth Model (DDM GGM), Adjusted Dividend Discounted Model with Exponential Smoothing approach and Adjusted Dividend Discounted Model with time series approach.

In accordance with the definition, DDM will basically calculate the valuation of the stock based on the dividend price given in the first year and see the comparison with the difference in the rate desired by the investor (k_e) as well as the growth rate of the stock (g). The dividend growth rate is taken from historical dividend growth data. k_e is a Cost of Capital which is the sum of the Cost of Equity and the Cost of Debt. Cost of Debt taken from Interest expenses and Cost of Equity (COE) is assumed to be calculated by CAPM (Capital Asset Pricing Model). Interest Expenses can be directly accessed through recapitulation of data on financial statements but for COE it takes some other data, namely R_f (Risk free rate) is assumed to come from State Bonds, Non-diversifiable risk (β) taken from secondary data, and R_m (Market Return) taken from the rate of return on JCI throughout 2015-2020.

1) Dividend Discounted Model: Gordon Growth Model (DDM GGM)

From the results obtained, it was found that:

TABLE I.   DDM GGM Recapitaltion

	BBNI	BMRI	BBRI	BBCA
Average k_e	0,03996	0,039105	0,043073	0,031296
Average g	0,10	0,22	0,22	0,29
Valuasi	-3537,229	-1939,297	-938,215	-2152,814

From this table it is obtained that all valuation results are negative and less than the existing market price (market value). It can therefore be said that based on the gordon growth type dividend discounted model, these four stocks are **overvalued** and not worth buying.

2) Adjusted Dividend Discounted Model: pendekatan Exponential Smoothing

Based on the definition of adjusted dividend discounted model, the stock price in the 19th year along with the amount of all dividends paid up to the n-th year will be seen in value in the current period. The value of the stock in the nth year is predicted using exponential smoothing with data from July 2004 to December 2020.

There will be 2 things that are predicted, namely dividend growth and stock price. Each price will have a forecast, lower confidence, and upper confidence.
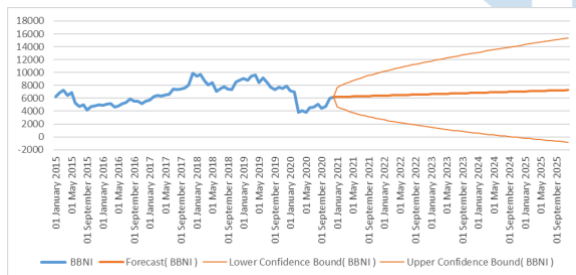

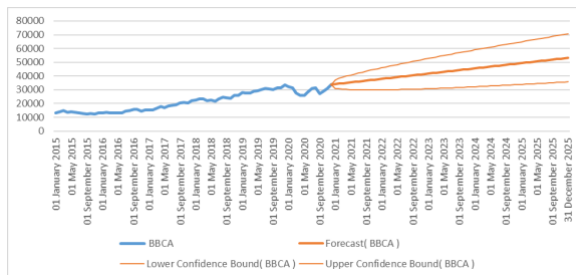Fig. 3.   BBNI Stock Price Prediction
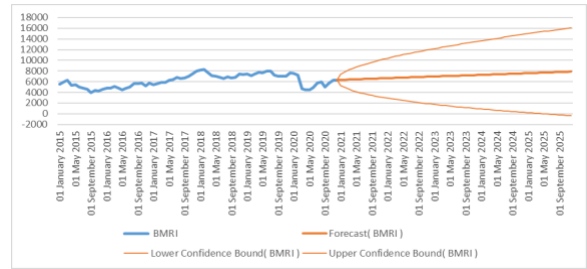

Fig. 4.   BBCA Stock Price Prediction
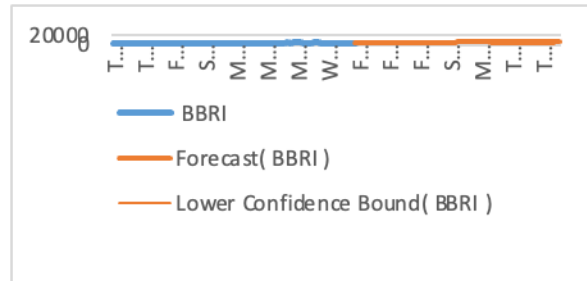

Fig. 5.   BMRI Stock Price Prediction

Fig. 6.   BBRI Stock Price Prediction

For dividend growth will also be predicted, because using the same technique (exponential smoothing) then the output obtained includes prediction / forecast, lower limit, and upper limit.
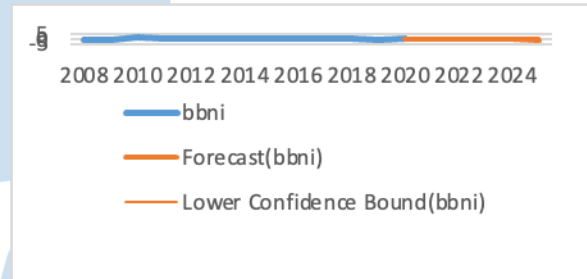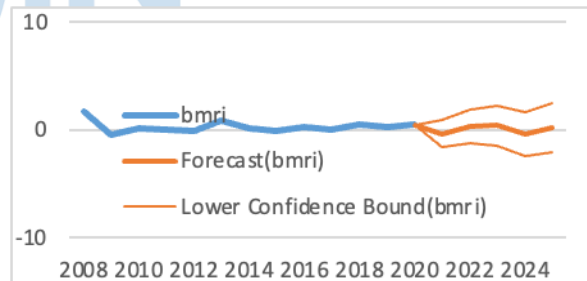

Fig. 7.   BBNI Dividend Growth Prediction

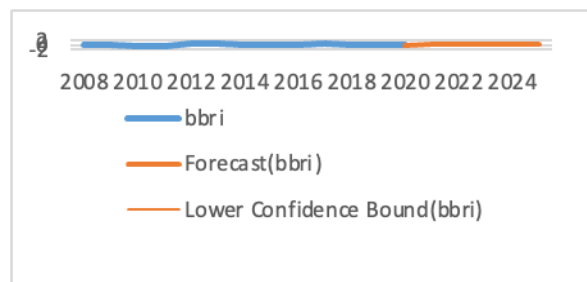Fig. 8.   BMRI Dividend Growth Prediction
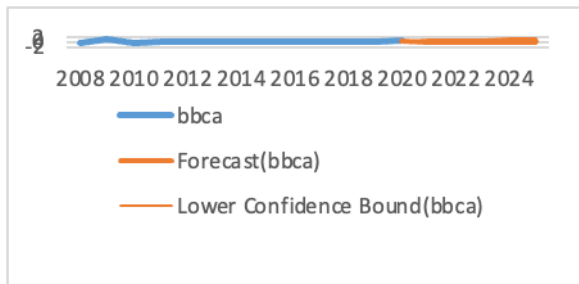
Fig. 9. BBRI Dividend Growth Prediction

Fig. 10. BBCA Dividend Growth Prediction

From the results of predictions that have been obtained will be processed with the following results:

TABLE II. ADJUSTED DIVIDEND GROWTH MODEL RECAP WITH EXPONENTIAL SMOOTHING

	BBNI	BMRI	BBRI	BBCA
Stock Price in 2020	6175	6325	4170	33850
Dividend in 2021	358,18284	528,21690	231,31644	861,43380
Dividend in 2022	510,12460	703,09210	294,43070	1169,86761
Dividend in 2023	662,06637	877,96729	357,54495	1478,30141
Dividend in 2024	814,00813	1052,84249	420,65921	1786,73521
Dividend in 2025	965,94989	1227,71768	483,77346	2095,16901
Expected stock price (best case): Exponential smoothing on 2025	15344,68662	16096,7758	10462,62933	70601,61681
Expected stock price (worst case): Exponential Smoothing on 2025	-823,2511629	-350,3210435	3096,805429	35760,64209
Best Valuation price with adjusted multistage discounted divident model with divident growth increasing	17445,35944	19955,33858	12017,23167	77260,11359
Worst Valuation price with adjusted multistage discounted divident model with divident growth increasing	2071,522032	3508,241733	4651,407768	42419,13887

From Table II, it is inferred that BBRI and BBCA are undervalued, suggesting they may represent attractive investment opportunities at both the best and worst-case scenarios. Conversely, BMRI and BBNI appear overvalued in the worst-case scenario,

implying potential investment risks. In the best-case scenario, however, they too are undervalued, highlighting a possible market mispricing. The implications of these findings are crucial for investors seeking to optimize their portfolio in the Indonesian banking sector, as they suggest a strategic approach to buying or selling these stocks based on the different valuation outcomes presented.

3) Adjusted Dividend Discounted Model: pendekatan Time Series

In accordance with its definition, adjusted dividend discounted model with a real time series approach In financial science is the same as adjusted dividend discounted model with exponential smoothing approach. The difference is the approach of predicting the stock price based on the time series. This approach can be said to be one of the best approaches because the nature of the stock price time series data is a random walk, which means that the stock price in the t-th year is influenced by the stock year t-1. From the results obtained below is the time series model obtained.

TABLE III. RESULTS OF VALUATION RECAPITULATION WITH ADJUSTED DIVIDEND GROWTH MODEL BASED ON PENDEKATAN TIME SERIES

	BBNI	BMRI	BBRI	BBCA
Obtained models	*ARIMA (0,1,0)*	*ARIMA (0,1,1)*	*ARIMA (0,1,0)*	*ARIMA (0,1,0)*
Stock price prediction in 2025 (best case)	9525,779832	8770,259724	5425,98682	38739,18596
Stock price prediction in 2025 (worst case)	1624,220168	3162,902178	2674,01318	25460,81404
Best Case Valuation scenario: time series	9975,708737	11632,77862	7304,06467	45815,0451
Worst Case Valuation scenario: time series	2074,149073	6025,421073	4552,091031	32536,67318

The valuation analysis in Table III suggests BBRI remains undervalued across both best and worst-case scenarios, indicating a consistent investment opportunity. In contrast, BBCA, BMRI, and BBNI are projected to be overvalued in the worst-case scenario, which may deter investment during uncertain market conditions. However, in the best-case scenario, these stocks are undervalued, presenting potential for growth. This dichotomy in valuation highlights the importance of market conditions on stock assessment and suggests a more nuanced investment strategy that takes into account economic forecasts and market sentiment.

B. Relative Valuation

Of the existing financial ratios, there is a lot that can be taken and used as a benchmark for valuation. Relative valuation is done by selecting sectors / sub sectors and compared. Stocks that have a better ratio (small) than the average can be said to be undervalued as well as a worse ratio relative to other stocks reflected in the average ratio in the same sector can be said to be an overvalued stock.

TABLE IV. PBV 2015-2020 RECAPITULATIONS

	BBNI	BMRI	BBRI	BBCA	Average
PBV 2020	104,28	156,05	259,01	452,11	242,86
PBV 2019	119,49	175,06	260,99	473,50	257,26
PBV 2018	151,84	189,93	244,52	422,68	252,24
PBV 2017	187,26	223,93	266,13	411,22	272,14
PBV 2016	118,22	179,51	194,29	339,89	207,98
PBV 2015	121,78	184,36	247,66	366,92	230,18

TABLE V. PER 2015-2020 RECAPITULATIONS

	BBNI	BMRI	BBRI	BBCA	Average
PER 2020	NM	27,45	28,16	29,40	28,34
PER 2019	10,73	12,38	14,06	26,95	16,03
PER 2018	11,47	12,43	12,65	21,81	14,59
PER 2017	13,56	16,76	13,14	20,87	16,08
PER 2016	9,06	37,65	10,53	17,44	18,67
PER 2015	10,25	9,38	10,09	17,63	11,84

Based on existing data, no PER was found for BBNI in 2020. But from the results obtained from existing data, at relative valuations, BBNI is an undervalued stock therefore worth investing in while BMRI based on PBV is an undervalued stock but based on PER the results vary. For BBRI, based on PBV varies however for PER, it is said to be an undervalued stock. For BBCA if based on PER, it is alternated from overvalued and undervalued but if based on PBV, BBCA is an overvalued stock.

V. CONCLUSION

The valuation of shares in the largest sector on the LQ45 of the Indonesian stock exchange has been implemented with 2 approaches, namely relative valuation and absolute valuation. The results of stock recommendations from relative valuation are different from the absolute valuation method. Based on absolute valuation, BBRI is a stock that tends to be undervalued but not so for relative valuation because it varies between overvalued and undervalued depending on the ratio used. As for BBCA just like BBRI with the absolute valuation approach, it is a stock that tends to be undervalued but if with a relative valuation approach is a stock that is almost always overvalued. For BBNI through a relative valuation approach is a stock that is always undervalued but with an absolute valuation approach, it is not so and varies. And lastly, BMRI both through a relative approach and absolute valuation has varying results.

On the basis of a wide variety of methods and some of the largest stocks used as examples it can be said that the stock valuation process has a wide variety of ways and can produce different conclusions. The final decision in the investment is still held by the investor regardless of the outcome of the valuation because the valuation is only a tool to measure the intrinsic value of the stock and the position / condition of the stock compared to competitors in the same sector.

REFERENCES

[1] IDX. (2021). IDX. Retrieved from IDX: https://www.idx.co.id/media/9784/factsheet_210129_03_lq45.pdf.

[2] Berkman, H., & Malloch, H. (2023). *Stock valuation during the COVID-19 pandemic: An explanation using option-based discount rates*. Journal of Banking & Finance, 147, 106386.

[3] OECD Economic Outlook. (2020). OECD. Retrieved from https://www.oecd-ilibrary.org/economics/oecd-economic-outlook/volume-2020/issue-1_0d1d1e2e-en.

[4] Jabeen, S., Farhan, M., Zaka, M. A., Fiaz, M., & Farasat, M. (2022). *COVID and world stock markets: A comprehensive discussion*. Frontiers in Psychology, 12, 763346.

[5] He, Q., Liu, J., Wang, S., & Yu, J. (2020). *The impact of COVID-19 on stock markets*. Economic and Political Studies, 8(3), 275-288.

[6] Ramelli, S., & Wagner, A. F. (2020). *Feverish stock price reactions to COVID-19*. The Review of Corporate Finance Studies, 9(3), 622-655.

[7] Leong, K. Y., Ariff, M., Alireza, Z., & Bhatti, M. I. (2023). *Bank stock valuation theories: do they explain prices based on theories?*. International Journal of Managerial Finance, 19(2), 331-350.

[8] Wira, D. (2011). *Analisis Fundamental Saham*. Exceed.

[9] Graham, B., Dodd, D. L. F., Cottle, S., & Tatham, C. (1962). *Security analysis: Principles and technique (Vol. 5)*. New York: McGraw-Hill.

[10] Azis, M., Mintart, S., & Nadir, M. (2015). *Manajemen investasi Fundamental, Teknikal, Perilaku Investor dan Return Saham*. Yogyakarta: Deepublish.

[11] Pastor, Ľ., & Pietro, V. (2003). *Stock Valuation and Learning About Profitability*. The Journal of Finance, 58(5), 1749-1789.

[12] Rose, Westerfield, & Jordan. (2012). *Fundamentals of Corporate Finance*. New York: McGraw-Hill.

[13] Karhapää, J. (2020). *Trend impact analysis in stock valuation:An applicationwith a dividenddiscount mode*. Turku, FInlandia: University of Turku.

[14] Cryer, J., & Chan, K.-S. (2008). *Time series analysis with applications in R*. New York: Springer.

[15] Box, G. E., Jenkins, G. M., Reinsel, G. C., & Ljung, G. M. (2015). Time series analysis: forecasting and control. John Wiley & Sons.