Stock Valuation of Cement Industry in 2019 and 2021 due to COVID-19 using Free Cash Flow to Firm (FCFF) and Relative Valuation (RV)

Sri rahayu Fitriani [1*] and Brady Rikumahu [2]

[1,2] School of Economy and Business, Bandung, Indonesia
ayoe.zahrotussifa@gmail.com
*Correponding author

Abstract. This research aims to predict the intrinsic value and provide investment decision recommendations for company stocks in the cement industry. COVID-19 has slowed down the economy and caused higher volatility compared to the risk and return of IHSG. This research was carried out in 2019, which was the beginning of COVID-19, and in 2021, when there was an improvement in economic growth. It uses data from 2014–2020 to calculate historical performance and estimates of the company's financial behavior. the analysis using FCFF and Relative Valuation methods with PER and PBV based on optimistic, moderate, and pessimistic scenarios. The results of the FCFF method showed that in 2019, INTP was overvalued in all scenarios, SMCB was undervalued in all scenarios, and SMGR was overvalued in pessimistic scenarios, while the rest were undervalued. In 2021, INTP was overvalued on all scenarios, SMGR and SMCB were overvalued on pessimistic scenarios, and the rest were undervalued. SMGR PER was undervalued in all scenarios. SMGR PBV was overvalued for all scenarios; INTP and SMCB are undervalued for pessimistic scenarios and overvalued for moderate and optimistic scenarios. In 2021, PERs for SMGR and SMCB were undervalued in pessimistic scenarios and overvalued in moderate and optimistic scenarios. INTP was undervalued for pessimistic scenarios, fair-valued for moderate scenarios, and overvalued in optimistic scenarios. Furthermore, the author recommends investing in SMCB and SMGR, as well as selling INTP.

Keywords: Stock Valuation, Intrinsic Value, FCFF, Relative Valuation (RV), Cement Industry.

1   INTRODUCTION

The cement industry is one of the strategic industries that has an important role in the economy, especially in infrastructure growth in Indonesia. Despite the challenges of COVID-19, the government plans to accelerate infrastructure development and economic recovery. As stated in Presidential Regulation No. 38 of 2015, through the framework of government cooperation with business entities, it is expected to help achieve the country's infrastructure investment target of

$429 billion in the period 2020–2024. In addition, the business entity sector is also expected to contribute more than 50% of the total investment target (www.bkpm.go.id).

Along with the improvements made by the Government, economic growth in Indonesia began to show improvement in quarter 2 of 2021 after previously falling to -5.32% in quarter 2 of 2020. Companies in the cement industry also recorded good financial performance, as seen in the achievement of positive profit performance in five out of six companies in 2021, this is attractive to investors, as seen in the contribution of the Basic Material sector, including cement, which contributed 11.9% of the total JCI Composite Index in 2021. Following is a comparison of financial ratio growth data for the cement business between 2019 the year the COVID-19 epidemic started, and 2021 the year the economy started to improve.

Table 1. Financial Ratio Growth of Cement Industry in 2019 and 2021

Description	SMCB	INTP	SMGR	SMBR	WTON	WSBP
Year: 2019						
Profit Margin	4,5%	11,5%	5,9%	1,5%	7,2%	10,8%
Asset Turn Over	0,57	0,58	0,51	0,36	0,69	0,46
Fin Leverage	2,80	1,20	2,47	1,60	3,01	1,99
ROE 2019	**7,15%**	**7,95%**	**7,41%**	**0,86%**	**14,90%**	**9,91%**
Year : 2021						
Profit Margin	6,4%	12,1%	5,8%	3,0%	1,9%	-140,8%
Asset Turn Over	0,52	0,57	0,46	0,30	0,48	0,20
Fin Leverage	1,92	1,27	1,92	1,68	2,64	-2,48
ROE 2021	**6,45%**	**8,67%**	**5,08%**	**1,49%**	**2,45%**	**69,94%**
Growth :						
Gr. Profit Margin	42,4%	5,2%	-2,4%	96,7%	-73,4%	-140,0%
Gr. Asset Turn Over	-7,6%	-1,8%	-9,7%	-16,1%	-29,5%	-56,6%
Gr. Fin Leverage	-31,4%	5,6%	-22,2%	4,9%	-12,3%	-224,8%
Growth ROE	**-9,8%**	**9,1%**	**-31,4%**	**73,1%**	**-83,6%**	**605,8%**

Source: data processed from Stockbit

From table 1, the general condition of the cement industry in 2019 experienced a positive profit margin. The highest profit margin is owned by INTP at 11.5%, while the lowest profit margin is owned by SMBR at 1.5%. Furthermore, in 2021, the average cement company experienced an increase in profit margins, except for SMGR, WTON, and WSKT. Under these conditions, there are several companies that will continue to experience growth in 2021, namely INTP and SMBR, while other companies will experience losses.

In stock trading, the Composite Stock Price Index (JCI) was recorded at its lowest point on March 24, 2020, with a value of Rp. 3,937.63 and a return of -36.5% compared to the JCI value on December 30, 2019. A decrease occurred within a period of 3 months; this was due to panic from the COVID-19 pandemic. JCI value strengthened again and reached the highest return on November 22, 2019, of Rp. 6,723.39 with a return of 70.7% within 8 months. This is inseparable from the government's efforts to improve the economy during the pandemic. Against the movement of JCI, shares in other cement industry companies also fluctuated. The following is a picture of the JCI movement as well as an overview of the share price of INTP, one of the companies in the cement industry with growth in 2021.
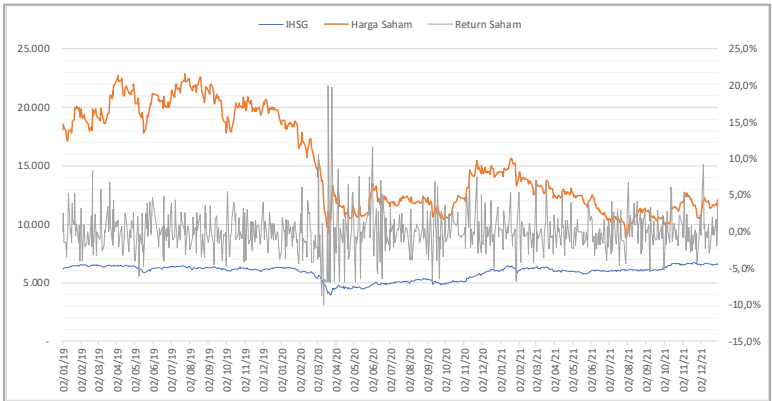
Fig. 1. Stock Price Movement, JCI and INTP Stock Return

Source: data processed from Stockbit

From Figure 1, on March 19, 2020, INTP experienced a significant stock price decline of IDR 9,275 with a return of -51.2% from sales on December 30, 2019, which was IDR 19,025. Fluctuations in stock returns can benefit investors on the one hand, but on the other hand, they can also cause considerable losses. This is in line with the principle of stock market instruments, namely "high risk, high return" (Bodie et al., 2021).

The valuation method using the Free Cash Flow to Firm (FCFF) approach because these valuations tend to result in valuations that are close to the average market share price (Ivanovski et al., 2014). The FCFF results will show the amount of cash flow available to all stakeholders. then the valuation of the company is determined. The market price is compared to the intrinsic value of the stock after being computed.

If the intrinsic value of the stock is higher than the market price, then the market price in that period is undervalued or the market price is low so it is worth buying. If the intrinsic value of the stock is lower than the market price, then the market price in that period is overvalued or the market price is high so it should be sold. Then if the intrinsic value of the stock is equal to the market price, then the market price in that period is in a fairvalued position or the market price is equal to the valuation value, so it is recommended to be held.

The PER and PBV relative valuation techniques will be utilized to validate this study. In opposition to PBV, which compares market value and book value of the company, PER is a ratio that illustrates a comparison between market price and earnings per share of the company that determines its PER value. PBV will indicate how much investors are willing to pay for every rupiah of profit generated by the company (Halim, 2018:36).

If the PER and PBV values of a stock are lower than the industry average, it will be undervalued. Conversely, if the PER and PBV values of a stock are equal to the industry average, it will be overvalued. Therefore, the decision taken will be the same as the assessment of the intrinsic value of the stock using FCFF.

Based on the phenomena, including changes in the movement and growth of corporate performance and changes in company stock prices over time in the cement industry, as well as the findings of other research that demonstrate that stock prices have not accurately reflected

their underlying value, this study aims to evaluate companies in cement industry using historical data from 2015–2021 and projecting values for 2022–2026. The objects of this research are INTP, SMGR, SMCB. The price-earnings ratio (PER), price to book value (PBV), and free cash flow to firm (FCFF) approaches are used with three scenarios (pessimistic, moderate, and optimistic), taking into account company growth in relation to industry growth (Hendrawan and Rijikan, 2019).

2   LITERATURE REVIEW

2.1   Value of The Firm

Damodaran (2012) observed that there are two important controls in determining shares, namely investor perception and the fulfillment of supply and demand, given that the market price of a company's stock does not always correspond to its true value. Damodaran (2012) asserts that the future free cash flow discounted at a rate based on the weighted average cost of capital is what determines a company's worth. The firm's value can be calculated using the formula below:

$$\boldsymbol{Value\ of\ a\ firm} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+k_c)^t} + \frac{Terminal\ value_n}{(1+k_c)^n} \qquad (1)$$

2.2   Free Cash Flow to Firm (FCFF)

According to Damodaran (2012), FCFF is the total cash flow that is accessible to all equity and debt investors in a firm, including common stockholders, bondholders, and preferred stockholders. Earnings Before Interest and Taxes (EBIT) of the corporation is subtracted from taxes to determine FCFF. Depreciation and amortization, which are not considered cash expenditures in accounting, are then added. Because capital expenditures only affect assets, they will lower the available cash flow if they occur. Because it does not represent actual cash flow, the addition to the change in non-cash working capital will likewise lower the available cash flow. The FCFF calculation formula can be described as follows (Damodaran, 2012):

$$\textbf{FCFF} = \text{EBIT x (1-rate tax)} \qquad (2)$$

– (CAPEX – Depreciation – Amortization)
– (Change in non-cash Working Capital)

The value of the company can then be calculated by discounting FCFF using the Weighted Average Cost of Capital (WACC) factor (Damodaran, 2014).

$$\boldsymbol{WACC} = \frac{Equity}{Debt+Equity} \times Cost\ of\ Equity + \frac{Debt}{Debt+Equity} \times Cost\ of\ Debt \qquad (3)$$

After n years, if the company has stabilized and starts to experience stable growth of g_n, the value of the company can be calculated as follows (Damodaran, 2012):

$$\boldsymbol{Value\ of\ a\ firm} = t{=}1t{=}nFCFFt(1{+}WACC)t{+}FCFFn{+}1/(WACCst{-}gn)(1{+}WACChg)n \qquad (4)$$

Where:
g_n : growth after the n year

WACC : weighted average cost of capital
hg   : High growth period
st   : Stable Growth Period

Following the determination of a company's worth, the next step is to calculate the equity value by deducting the EV from the debt and adding the cash on hand. Here's an example of how to determine equity value:

$$\textbf{Equity value} = EV - Total\ Debt + Cash \tag{5}$$

2.3   Relative Valuation

A valuation method known as relative valuation compares the cost of an item to the cost of other, comparable assets on the market. The asset price must be converted to several different variables, such as earnings, book value, cash flow, and revenue, to standardize it for assessment. Price-to-earnings ratio (PER), price-to-book value (PBV), and EV/EBITDA ratio are the methods used for comparisons. Because no two businesses are exactly alike, it can be challenging to value comparable assets for comparison (Damodaran, 2012). There will always be variations in risk, growth, and cash flow.

Price to Earnings Ratio (PER) formula is as follows:

$$PER = \frac{Market\ Price\ per\ share}{Earning\ per\ Share} \tag{6}$$

Book value multiples (PBV) formula is as follows:

$$PBV = \frac{Market\ Price\ per\ share}{Book\ value\ of\ equity\ per\ share} \tag{7}$$

2.4   Previous Research

M. Drabek (2022). Comparative Private Held Company Valuation: Valuation Multiples in the Czech Brewing Sector. Business Valuation and Economic Loss Analysis Journal. The results showed that, on average, private companies' RV calculations were less accurate than those of public corporations.

Nareswari (2021) conducted research entitled Stock Valuation with the Discounted Cash Flow Method, which is a Literature Review, in the results of the study it is stated that Investors must compare methods in calculating stock valuation, because there is no suitable method for every situation.

Pengestika and Christianti (2021) conducted research Comparing the intrinsic value of stocks with stock market prices using absolute and relative methods using absolute methods used in this study consists of Dividend Discounted Model (DDM), Discounted Cash Flow (DCF), and Free Cash Flow to Equity (FCFE), while the relative method consists of Price Earning Ratio (PER), Price to Book Value (PBV), and Price to Sales (P/S). The results obtained are recommending investors to sell shares coded with overvalued conditions, and buy stocks classified as undervalued.

During COVID-19, Alhazami (2020) published a research paper with the title Stock Valuation that is Still Worthy of Collection on the Indonesia Stock Exchange (IDX) in the

Scientific Journal of Accounting and Finance. To determine if shares are overvalued, undervalued, or at fair value, the study approach calculates the intrinsic value of each share using the metrics PER, DPS, and EPS. 15 companies on LQ45 shares participated in the study and met the requirements for valuation; therefore, BBCA and BBRI shares revealed their intrinsic value at market price or were overpriced.

Almira and Wiagustini (2020) used a saturated sampling approach (Census) with a sample of 13 firms to perform research on the ratio of Return on Assets, Return On Equity, and Earnings Per Share, which may affect Stock returns. Data analysis in research is done using multiple linear regression. demonstrates that earnings per share, return on equity, and return on assets all have a large positive impact on stock returns.

A study by Hendrawan and Rijikan (2019) used the FCFF, PER, and PBV methodologies to forecast the fair price of shares in 2018 based on financial data from 2013 to 2017. In all scenarios, the intrinsic value of INTP is overpriced, according to the findings of the DCF analysis. In the pessimistic scenario, SMCB and SMBR are overvalued; while, in the moderate and optimistic scenarios, they are undervalued. Calculations are deemed genuine because the outcomes of RV analysis with PER and PBV produce values that are within the acceptable range for the industry.

Natalia and Yulita (2019) carried out study with the goal of appraising fair stock values. Previous research items solely employed secondary data mechanisms to focus on the same data; the research was validated utilizing RV with PBV and PER procedures and collection approaches. In summary, the results of DDM, PER, and PBV analyses for the share prices of seven companies in the consumer goods sector—GGRM, HMSP, ICBP, INDF, KLBF, MERK, and UNVR—show that these shares are trading below their intrinsic value.

In a study published in 2018, Rikumahu and Marenda used the PER and PBV methodologies to forecast the fair value of companies listed in LQ45, particularly those in the banking industry (BMRI, BBNI, and BBRI). It is advised to use PER when making investment decisions for the banking sector in the LQ45 index because the results of the PBV analysis show a substantial variation in stock prices of the bank and the PBV variable, but the results of the PER analysis show no discernible difference.

Montoliang and Tjun (2018) used SPSS Version 20 for Windows to conduct a study to ascertain the impact of free cash flow and economic value added on stock return and valuation utilizing FCFF, EVA, and stock return. The findings show that free cash flow and economic value added have a considerable impact on stock returns.

To forecast the fair price of stocks from 2017 to 2020, Hendrawan and Neaxie (2017) conducted research. The outcomes of the DCF analysis under the optimistic scenario demonstrate the undervaluation of TLKM and EXCL's intrinsic value. The results of the DCF analysis in the moderate scenario show that ISAT and EXCL are overvalued, but that the underlying value of TLKM is undervalued. In the worst-case scenario, the results of the DCF analysis show the intrinsic worth of every overvalued stock. The findings of RV analysis utilizing PER show that while TLKM and EXCL's intrinsic values are low, ISAT is overvalued. According to the results of RV analysis utilizing PBV, TLKM's intrinsic value is overpriced while ISAT and EXCL are undervalued.

3   RESEARCH METHODOLOGY

The method of valuation used in this study is the Free Cash Flow to Firm (FCFF) research method. The reason for using FCFF is that it typically yields a valuation value that is near to the market average stock price, making FCFF a reasonably trustworthy valuation measurement tool for evaluating companies over the long term (Ivanovski et al., 2014).

The valuation results are validated by comparing the RV analysis with the PER and PBV approaches. PER is a ratio that shows a comparison between market price and earnings per share of the company. Calculated PER value will show how willing investors are to pay for every rupiah of profit generated by the company, while PBV is an assessment of market value and book value of the company. PBV can show whether the tendency of stock prices in the market is cheaper or more expensive (Halim, 2018:36). Intrinsic value obtained from these fundamental estimates is then compared to the market price of a stock. Based on the condition of the stock price, the researcher can provide recommendations on whether the stock should be bought, held, or sold to maximize profits.

Purposive sampling is the sampling strategy to be employed, and it entails the purposeful selection of samples by researchers since only these samples may reflect or provide data to address research questions (Indrawati, 2015). Following are the requirements for this study's purposive sampling criteria:

Cement industry companies listed on the IDX in 2016-2022

The company's profit margin increased in December 2021.

The purpose of the study is to determine whether the purposive sampling method meets the following criteria:

Table 2. List of Research Samples

NO	Emiten	Ticker
1	PT.Indocement Tunggal Prakasa Tbk	INTP
2	PT.Solusi Bangun Indonesia Tbk	SMCB
3	PT.Semen Indonesia (Persero) Tbk	SMGR

This study uses secondary data derived from historical company data taken within the last 5 years for each valuation calculation, namely 2015 to 2019, and 2017 to 2021. The secondary data consists of published financial statements taken from the www.idnfinancials.com website, daily stock price data of sample companies, the Composite Stock Price Index (JCI), and the latest stock beta obtained from Yahoo Finance. As well as data on Indonesia's macroeconomic variables, including Bank Indonesia (BI) interest rates that can be obtained from www.bi.go.id and gross domestic growth rate (GDP) that can be obtained from www.bps.go.id, PER and PBV data that can be obtained from www.idx.co.id.

4   RESULT / FINDING

4.1   Historical Performance

One measure of a company's effectiveness in operating its business is its financial performance, which is also the information needed to compute FCFF, namely the company's profit and loss performance.

Table 3. The Company's Profit and Loss Performance

Description	SMGR		INTP		SMCB	
	2019	2021	2019	2021	2019	2021
Historical average growth	9,0%	7,0%	5,1%	4,8%	6,5%	3,8%
% of Revenue:						
Cost of Good Sold	61,7%	62,0%	56,9%	57,5%	68,7%	69,1%
Marketing expences	9,0%	8,5%	17,9%	21,1%	8,5%	10,6%
General expences	7,5%	7,3%	0,4%	0,7%	5,4%	4,8%
EBITDA	21,8%	22,1%	24,8%	20,6%	17,3%	15,6%
Depresiasi	3,7%	6,9%	5,3%	8,2%	9,0%	8,1%
EBIT	18,1%	15,2%	19,4%	12,5%	8,3%	7,5%
CAPEX	12,2%	8,2%	7,2%	3,4%	6,6%	4,2%
Change in working capital	-5,4%	-3,6%	0,4%	0,9%	-1,4%	-2,6%

Source: data processed

4.2   Financial Projections

The revenue growth projection is obtained by simulating financial performance growth for the next 5 years from historical data in 2019 and 2021, which is made using three scenarios: optimistic, moderate, and pessimistic.

Furthermore, the company's growth projections for 2019 and 2021 are calculated in advance so that the average growth industry projection data is made first. From the calculation of the data, information is obtained that the average achievement of industry growth in 2019 is 8.1% and in 2021 is 5.6%, then the spread value is calculated. The spread value is the absolute difference from the average growth of companies and industries, so the following data is obtained:

Table 4. Forecasting Scenario

Description	SMGR		INTP		SMCB	
	2019	2021	2019	2021	2019	2021
Historical average growth	9,0%	7,0%	5,1%	4,8%	6,5%	3,8%
Industry average growth	8,1%	5,6%	8,1%	5,6%	8,1%	5,6%
Spread	0,9%	1,4%	3,0%	0,8%	1,6%	1,9%
Forcasting Scenario :						
Optimis	9,9%	8,3%	11,2%	6,4%	9,8%	7,5%
Moderate	9,0%	7,0%	8,1%	5,6%	8,1%	5,6%
Pesimis	8,1%	5,6%	5,1%	4,8%	6,5%	3,8%

Source: data processed

4.3   Weighted Average Cost of Capital (WACC)

One of the most crucial components of the DCF model is WACC since even modest changes in WACC might have a significant effect on the company's value. The importance of funding sources is determined by the financing structure of the business multiplied by the costs for every source. This is how WACC can be expressed (Damodaran, 2012):

Table 5. WACC Component

WACC Component	SMGR		INTP		SMCB	
	2019	2021	2019	2021	2019	2021
Market Return	1,6%	9,7%	1,6%	9,7%	1,6%	9,7%
Risk Free (RF)	5,6%	3,5%	5,6%	3,5%	5,6%	3,5%
Risk Premium (RP)	4,0%	6,2%	4,0%	6,2%	4,0%	6,2%
Beta	1,606	1,274	1,477	1,146	0,951	1,087
Cost of Equity	12,0%	11,4%	11,5%	10,6%	9,4%	10,3%
Cost of Debt	9,9%	8,0%	9,9%	8,0%	9,9%	8,0%
Equity Composition	53,9%	60,8%	88,5%	93,8%	59,3%	41,8%
Debt Composition	46,1%	39,2%	11,5%	6,2%	40,7%	58,2%
Tax	22,0%	22,0%	22,0%	22,0%	22,0%	22,0%
WACC	**8,7%**	**7,7%**	**8,9%**	**8,1%**	**7,6%**	**7,3%**

Source: data processed

4.4   Free Cash Flow to Firm

FCFF projections are calculated from all historical financial data with achievement growth in accordance with the forecasting scenario plan. The results of FCFF calculations obtained the valuation value of each company's shares for 2019 and 2021.

Table 6. Resume Value Valuation in 2019

Emiten	Scenario	Instrinsic Value (Rp)	Stock Price as of January 2, 2019 (Rp)	Analysis
SMGR	Pesimis	11.009	12.000	Overvalued
	Moderat	13.299		Undervalued
	Optimis	16.139		Undervalued
INTP	Pesimis	9.756	18.525	Overvalued
	Moderat	11.499		Overvalued
	Optimis	12.799		Overvalued
SMCB	Pesimis	1.198	1.195	Undervalued
	Moderat	1.483		Undervalued
	Optimis	1.413		Undervalued

Source: data processed

According to the results of the stock valuation calculations for 2019, SMGR is overvalued in the optimistic scenario, SMCB is undervalued in all scenarios, and INTP has overvalued valuation results in every scenario. The remainder are all undervalued.

Table 7. Resume Value Valuation in 2021

Emiten	Scenario	Instrinsic Value (Rp)	Stock Price as of January 2, 2021 (Rp)	Analysis
SMGR	Pesimis	7.019		Overvalued
	Moderat	7.689	7.275	Undervalued
	Optimis	8.389		Undervalued
INTP	Pesimis	11.086		Overvalued
	Moderat	11.571	11.700	Overvalued
	Optimis	12.379		Undervalued
SMCB	Pesimis	1.505		Overvalued
	Moderat	1.828	1.725	Undervalued
	Optimis	2.047		Undervalued

Source: data processed

In 2021, stock valuation computations showed that INTP had inflated valuation results in every scenario, SMGR and SMCB showed overvalued valuation results in pessimistic scenarios, while the remaining stocks had undervalued valuation outcomes.

4.5 Relative Valuation

The accuracy of valuation calculations with stocks will be improved by using this data, which is obtained by doing a relative valuation (RV) calculation to see the value of PER and PBV that have been compared with industry data. PBV compares a company's market value and book value, whereas PER measures a company's market price and earnings per share to get its PER value.

Table 8. Resume of PER and PBV Valuation Value in 2019

Emiten	Scenario	PER	Analysis	PBV	Analysis
SMGR	Pesimis	27,5	Undervalued	1,9	Overvalued
	Moderat	33,3	Undervalued	2,3	Overvalued
	Optimis	40,4	Undervalued	2,8	Overvalued
INTP	Pesimis	19,6	Undervalued	1,6	Undervalued
	Moderat	23,1	Undervalued	1,8	Overvalued
	Optimis	25,7	Undervalued	2,0	Overvalued
SMCB	Pesimis	27,9	Undervalued	1,5	Undervalued
	Moderat	34,6	Undervalued	1,9	Overvalued
	Optimis	32,9	Undervalued	1,8	Overvalued

Source: data processed

From the results of the valuation calculation in 2019, it is known that the results of the PER calculation for all undervalued ratios SMGR's PBV is overvalued for all scenarios; INTP and SMCB are undervalued for pessimistic scenarios and overvalued for moderate and optimistic scenarios.

Table 9. Resume of PER and PBV Valuation Value in 2021

Emiten	Scenario	PER	Analysis	PBV	Analysis
SMGR	Pesimis	20,0	Undervalued	1,0	Undervalued
	Moderat	21,9	Overvalued	1,1	Undervalued
	Optimis	23,9	Overvalued	1,3	Undervalued
INTP	Pesimis	22,8	Overvalued	2,0	Undervalued
	Moderat	23,8	Overvalued	2,1	Fairvalued
	Optimis	25,5	Overvalued	2,2	Overvalued
SMCB	Pesimis	18,8	Undervalued	1,2	Undervalued
	Moderat	22,9	Overvalued	1,5	Undervalued
	Optimis	25,6	Overvalued	1,7	Undervalued

Source: data processed

The 2021 valuation calculation's findings reveal that the PER, SMGR, and SMCB are overvalued in optimistic and moderate simulations and undervalued in pessimistic simulations. For INTP, the results were undervalued for pessimistic simulations, fair valued on moderate simulations, and overvalued on optimistic simulations.

5   DISCUSSION

From a series of studies conducted, many researchers agree that the FCFF method tends to produce valuation values that are close to the average market price of stocks, which is reliable enough for the valuation of companies in the long run (Ivanovski et al., 2014).

Stock valuation using the FCFF method will require assumptions and projections to determine the company's condition to generate the future free cash flow and then calculate current value based on historical data for the business, which is the basis for intrinsic stock valuation with this method (Neaxie & Hendrawan, 2018). From the analysis conducted, it is known that the valuation value of shares in each issuer has a different value from the market price, and besides that, this method has limitations on the discount rate and cash flow growth caused by various business-related factors such as debt and equity composition, investment costs, and others (Nareswari, 2021).

The results of the FCFF method showed that in 2019, INTP was overvalued in all scenarios, SMCB was undervalued in all scenarios, and SMGR was overvalued in pessimistic scenarios, while the rest were undervalued. In 2021, INTP was overvalued on all scenarios, SMGR and SMCB were overvalued on pessimistic scenarios, and the rest were undervalued.

The PER and PBV relative valuation techniques will be applied to the validation of this study. PER is a ratio that shows a comparison between market price and earnings per share of the company that calculates its PER value. PBV is a comparison of the firm's market value and book value, whereas PER will demonstrate how much investors are prepared to pay for each rupiah of profit the company generates. PBV can show whether the tendency of stock prices in the market is cheaper or more expensive (Halim, 2018:36).

SMGR PER was undervalued in all scenarios. SMGR PBV was overvalued for all scenarios; INTP and SMCB are undervalued for pessimistic scenarios and overvalued for moderate and optimistic scenarios. In 2021, PERs for SMGR and SMCB were undervalued in pessimistic

scenarios and overvalued in moderate and optimistic scenarios. INTP was undervalued for pessimistic scenarios, fair-valued for moderate scenarios, and overvalued in optimistic scenarios. According to Hendrawan and Rijikan (2019) relative valuation compares a company's value to that of its rivals or industry peers. Therefore, in addition to using industry PER and PBV, it is also necessary to consider the historical average PER and PBV of each stock as a comparison.

6   CONCLUSION AND RECOMMENDATION

Based on the results of research conducted using FCFF methodology in 2019 and 2021 with validation of the valuation values of PER and PBV, the author recommends investing in SMCB, which has undervalued results. Besides that, SMCB is the only issuer that has seen an increase in stock price and valuation value under the conditions of COVID 19. Furthermore, the author recommends investing in SMGR with undervalued results in a moderate and optimistic scenario. SMGR has a good company margin ratio condition and a high average EBIT compared to other entities. Furthermore, the author recommends selling INTP with overvalued valuation results; INTP also has the lowest margin ratio compared to SMGR and SMCB.

REFERENCES

1. Alhazami (2020). Valuation of Shares That Are Still Worth Collecting on Indonesia stock exchange (IDX) During the Covid-19 Pandemic. Scientific Journal of Accounting and Finance Vol. 9, No. 2.
2. http://journal.stieputrabangsa.ac.id/index.php/jiak
3. Almira &; Wiagustini (2020). Return on assets (ROA), return on equity *(ROE)*, and *earnings per share* affect stock returns. E-Journal of Management, Vol. 9, No. 3, 1069-1088. ISSN: 2302-8912 DOI.
4. https://doi.org/10.24843/EJMUNUD.2020.v09.i03.p13
5. Bodie, Kane, Marcus (2021). *Investment* (12th ed.). New York: McGraw-Hill Education.
6. Damodaran, A., (2012). *Damodaran on Valuation* (2nd ed.). United States of America: John Wiley & SonsInc.
7. Drábek, M. (2022). Relative Valuation of Private Held Companies: Valuation Multiples in the Czech Brewing Industry. Journal of Business Valuation and Economic Loss Analysis.
8. Hartono, J. (2017). *Portfolio Theory and Investment Analysis* (11th ed.). BPFE: Yogyakarta
9. Halim, Abdul (2018). *Investment Analysis and Its Applications* (2nd ed). Jakarta: Salemba Empat.
10. Hendrawan dan Neaxie (2018). *Telecommunication Company Share Valuation Using Discounted Cash Flow* and *Relative Valuation Method Listed in Indonesia Stock Exchange for Forecast*. International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064.
11. https://www.ijsr.net/archive/v7i4/ART20181927.pdf
12. Hendrawan dan Rijika (2018). *Stock Valuations in Cement Companies: Evidence from Indonesia Stock Exchange*.
13. Hendrawan, Sitorus, dan Siagian (2018). *Equity Valuation on Property and Real Estate Listed Companies in 2018*: Evidence from Indonesia Stock Exchange. Scitepress.
14. https://www.scitepress.org/Papers/2019/84276/84276.pdf

15. Hendrawan dan Zemba (2018). *Does Rapidly Growing Revenues Always Produce an Excellent Company's Value*? DCF & P/E *Valuation Assessment on Hospital Industri*. ISCLO 6th, 2018.
16. https://openlibrarypublications.telkomuniversity.ac.id
17. Indonesian Stock Exchange. IDX Statistic 2019 and 2021. Jakarta: Indonesian Stock Exchange Data Service Division.
18. Indrawati (2015). *Research Methods Management and Business Convergence of Communication and Information Technology*, Bandung: Aditama.
19. Ivanovska, N., Ivanovski, Z& Narasanov, Z (2014). *Fundamental Analysis Discounted Free CashflowValuation of Stock at Macedonian Stock*. UTMS Journalof Economic 5(1), 11-24.
20. Koller, Goedhart & Wessels (2015). *Valuation: Measuring and Managing the Value of Companies*. New Jersey: Jhon Wiley & Sons, Inc.
21. Mielcarz dan Mlinarič (2014). *The superiority of FCFF over EVA and FCFE in capital budgeting*; Jurnal Economic Research- Ekonomska Istraživanja ISSN: 1331-677X (Print) 1848-9664 (Online).
22. https://www.tandfonline.com/doi/full/10.1080/1331677X.2014.974916
23. Montoliang and Tjun (2018) The Effect of Free Cash Flow and Economic Value Added on Stock Return (Study on Shares of Companies Listed Active in LQ 45 on IDX for the 2015-2017 Period). Maranatha Journal of Accounting Volume 10 Number 2.
24. https://doi.org/10.28932/jam.v10i2.1088
25. Natalia dan Yulita (2019). *Stock Valuation Analysis using The Dividend Discount Model (DDM), Price to Earnings Ratio and Price to Book Value for Investment Decisions*. Procuratio 7 (3). pp. 276-285. ISSN e-ISSN 2580-3743
26. http://repository.usd.ac.id/id/eprint/36050
27. Nareswari (2021). Stock Valuation Using *the Discounted Cash Flow Method: Literature Review*. Journal Reasechgate publication 356509047.
28. https://www.researchgate.net/publication/356509047
29. Esticians and Christianti (2021). Stock Valuation and Investment Decision Making: A Comparison of the *Absolute* Method and the *Relative Method*. Journal of Business and Management, Volume 8, No 2, pp. 291 – 299.
30. http://jurnal.unmer.ac.id/index.php/jbm
31. Porman, T.A. (2008). *Assess the fair price of shares*. PT Elex Media Komputindo: Jakarta
32. Rikumahu dan Marenda (2018). *Valuation of Banking Stocks* (BUMN) *Included in* LQ45 in 2013- 2017 *using Relative Valuation Methods*: *Price to Earnings Ratio and Price- Book Value*. International Journal of Science and Research (IJSR)ISSN (Online): 2319-7064.
33. https://www.ijsr.net/archive/v7i6/ART20182812.pdf
34. Rikumahu and Anggraeni (2017). Stock Price Valuation Analysis with *Free Cash Flow to Equity* (FCFE) and *Price to Earning Ratio* (PER) Study on the Infrastructure, Utilities and Transportation Sectors Listed on the Stock Exchange. e-Proceedings of Management: Vol.4, No.1 April 2017 | Page 252
35. https://core.ac.uk/download/pdf/299914316.pdf
36. Silalahi and Manullang (2021). The effect of economic value-added and market value added on stock returns in manufacturing companies listed on the Indonesia Stock Exchange. doi: 10.54367/jrak.v7i1.1171
37. http://ejournal.ust.ac.id/index.php/JRAK/article/view/1171
38. Tandelilin, Eduard (2010). *Portfolios and Investments: Theory and Applications* (1st ed.). Yogyakarta: Canisius
39. Joseph, A Muri (2017). *Research methods: quantitative, qualitative, and combined research*. Jakarta: Kencana

40. https://www.bps.go.id, accessed December 2022
41. https://finance.yahoo.com, accessed December 2022
42. https://www.idx.co.id, accessed December 2022
43. https://stockbit.com, accessed December 2022