

Stock Valuation Using Discounted Cash Flow and Relative Valuation Methods

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Abstract. This research aims to determine the intrinsic value of stocks in the property and real estate sector listed on the Indonesia Stock Exchange using Discounted Cash Flow (DCF) method with Free Cash Flow to Firm (FCFF) approach and Relative Valuation (RV) method with PBV and PER approaches. The samples of this research were MTLA, JRPT, DMAS, CTRA, MKPI, and PPRO. Data used were historical financial data from 2015-2019 to calculate the historical financial performance of each company and projected from 2020-2024. The result found that by using the DCF-FCFF method, MTLA, JRPT, DMAS, and CTRA shares were undervalued in all scenarios. MKPI and PPRO shares were overvalued in all scenarios. Meanwhile, by using the Relative Valuation method, MTLA were undervalued by 7.82%, JRPT were undervalued by 32.97%, DMAS were undervalued by 67.85%, CTRA were undervalued by 32.45%, MKPI were overvalued by -47.69%, and PPRO were undervalued by 33.78%.

Keywords: Discounted cash flow, property and real estate, relative valuation, valuation

1 Introduction

Covid-19 pandemic has affected a significant changes in public's lifestyles, including income-earning and investment activities. Currently, the benefits of investing in the stock market are one of the of public's attention. Enthusiasm to invest in the capital market during the Pandemic is illustrated in [1]. Based on the report, there was an increase of 56% in the number of investors, reaching 3.88 million Single Investor Identification (SID) as of December 30, 2020. An increase also occurred in the number of companies conducting Initial Public Offering (IPO) in 2020 as many as 51 companies. In addition, the number of daily active investors increased by 73%, amounting to 94,000, thus affecting the frequency of trading activity on the Indonesia Stock Exchange (IDX) which grew 32% in November 2020, which was 619,000 times per day.

In the midst of the increasing number of companies conducting Initial Public Offerings (IPOs), it is important for investors to be wise in making investment decisions and understand the risks of stock investing. In making investment decisions, analysis is needed to determine

the intrinsic value of the stock, the analysis used is technical analysis and fundamental analysis [2]. In fundamental analysis, valuation is carried out so that investors have a basis for their investment decisions and are not easily influenced by information from external parties that cannot be verified.

According to [2], valuation is divided into 2 categories, namely the comparative method and the absolute method. The tool used to perform the comparative method is multiples or relatives. This type of stock valuation is concerned with comparing a potential investment with companies in the same sectors. The relative valuation method involves the calculation of key financial ratios of companies in the same industries as well as the derivation of the same ratios for target companies. While the absolute method is stock valuation by considering the fundamental factors of the company concerned in which details such as its financial condition and statements are analysed. Various absolute stock valuation techniques mainly investigate aspects like the company's cash flows, growth rates, dividends, etc without comparing with other companies. According to [3] the absolute methods is the Dividend Discount Model (DDM) and Discounted Cash Flows (DCF).

This research is a replication of the research of [4], in this research there were differences object, time, and population from previous studies. The object of this research is the property and real estate sector listed on the Indonesian Stock Exchange. Shares of property and real estate companies are currently weak like other sectors due to the pandemic. However, business prospects in the future are quite promising. Considering that property prices continue to increase every year. Property stocks have better prospects when compared to investment in property products themselves, so that novice investors can choose shares of property and real estate companies listed on the IDX to invest. Based on the phenomena and previous research, the purpose of this research is to examine the intrinsic value of stocks in property and real estate sector listed on the Indonesia Stock Exchange using historical data from 2015-2019 for the projections for 2020-2024. The object of this research are PT Metropolitan Land Tbk (MTLA), PT Jaya Real Property Tbk (JRPT), PT Puradelta Lestari Tbk (DMAS), PT Ciputra Development Tbk (CTRA), PT Metropolitan Kentjana Tbk (MKPI), and PT PP Properti Tbk (PPRO) using the Discounted Cash Flow (DCF) method with Free Cash Flow to Firm (FCFF) approach and Relative Valuation (RV) with Price Earnings Ratio (PER) and Price to Book Value (PBV) approaches.

2 Literature Review

2.1 Stock Valuation Concept

According to [5], in stock valuation there are three types of value, namely book value, market value, and intrinsic value. Intrinsic value is more influenced by the prospects and performance of the company itself. The higher the company's growth prospects in the future, the fair value or intrinsic value will also be higher. There are times when stocks rise too quickly due to market optimism, when there is a bull market that makes the stock market price exceed the intrinsic value of the company (overvalued). However, when the stock price fell sharply due to investor fear, it created a large-scale buying and selling action that made the stock market price fall below its intrinsic value (undervalued).

2.2 Fundamental Analysis

According to [5] the method in calculating the intrinsic value of shares with fundamental analysis is divided into 2 categories, there were the comparative method and the absolute method. The comparative method uses PER or PBV. Basically PER provides an indication of the time period required to return funds at the level of stock prices and company profits in a certain period. PBV is the ratio used to measure the performance of the stock market price against its book [6].

Absolute Method divides into 2 models, the Dividend Discount Model (DDM) and the Discounted Cash Flow (DCF). Discounted Cash Flows (DCF) method is a stock valuation method that uses the concept of time value of money. In contrast to DDM, which only calculating all cash flows in the company, dividends and company profits. The theory based on all money flowing in the company in the future (future value) if discounted is the fair value of the shares (present value). In the concept of Discounted Cash Flow (DCF) if you invest a certain amount of funds, then the funds will grow after a certain amount of time.

2.3 Investment Decision-Making Method

Generally, the decision to buy or sell shares is determined by the comparison between the estimated intrinsic value and its market price with 3 criteria [7]. First, if the stock market price is less than the intrinsic value, it is called undervalued. Investors should buy these shares and hold them temporarily with the aim of obtaining capital gains if the stock price rises. Second, if the stock market price is equal to the intrinsic value, it is called fair value. Investors do not make transactions because the shares are in a balanced state, there is no profit is obtained from the transaction of buying or selling these shares. Third, if the stock market price is greater than the intrinsic value, it is called overvalued. Investors should sell these shares to avoid losses. Assuming the price will fall according to its value.

2.4 Efficient Market Hypothesis

The Efficient Market Hypothesis concept (EMH) was put forward by [8]. Adaptation are made to the EMH concept supported by empirical evidence and grouping market efficiency into three forms. First, the weak efficient market hypothesis. Market efficiency is weak because in the decision-making process of buying and selling shares, investors using historical price and volume data. Second, the semistrong efficient market hypothesis. Market efficiency is semi-strong because in the decision-making process of buying and selling shares, investors using historical price data, historical volumes, and all published information. Third, the strong efficient market hypothesis. Efficiency is strong because investors use more complete data, data used are historical prices, historical volumes, published information, and private information that is not publicly published. The condition of stock prices does not only reflect published information, but also reflects unpublished information known as insider information because the information is sourced from parties within the company.

3 Research Method

This research is a descriptive research using quantitative approach. The independent variable of this research is the intrinsic value of the stock which calculated using 2 methods, namely

Discounted Cash Flow (DCF) and Relative Valuation. The Discounted Cash Flow (DCF) method uses the Free Cash Flow to Firm (FCFF) approach, while the Relative Valuation uses the Price to Book Value (PBV) and Price to Earnings Ratio (PER) approaches. The dependent variable of this research is the annual market price obtained in the financial statement companies on the Indonesia Stock Exchange website.

The population of this research is the property and real estate sector companies, which are listed on the Indonesia Stock Exchange in 2015-2019. The sample of this research is a company that has the following characteristics:

- The property and real estate sector companies, which are listed on the IDX Composite in 2015-2019 and not delisted on the IDX in 2021.
- Companies with complete financial statements from 2015-2019.
- Companies with complete historical market price data from 2015-2019.
- Companies that pay dividends during the 2015-2019 period.

Sampling used a non-probability sampling, namely purposive sampling. The samples of this study were PT Metropolitan Land Tbk (MTLA), PT Jaya Real Property Tbk (JRPT), PT Puradelta Lestari Tbk (DMAS), PT Ciputra Development Tbk (CTRA), PT Metropolitan Kentjana Tbk (MKPI), and PT PP Properti Tbk (PPRO). Data was obtained by downloading from the company's website, the official website of the Indonesia Stock Exchange, www.stockbit.com, www.yahoofinance.com, and www.googlefinance.com.

The data obtained were processed using the Discounted Cash Flow (DCF) method and Relative Valuation. In the DCF method, the future Free Cash Flow to Firm (FCFF) will be determined for the next five years. FCFF is obtained from the calculation of EBIT (1-Tax) added by depreciation & amortization, subtracted by CAPEX, and finally subtracted by delta working capital. Determining the discount rate using the Weighted Average Cost of Capital (WACC) which begins by determining the Capital Asset Pricing Model (CAPM) and the cost of debt. Further step is to determine the Terminal Value (TV). Terminal value is the present value of all future cash flows obtained after a certain project period. Then added the present value of the cash flows with the terminal value. The last step is calculate Enterprise Value (EV) with added Discounted value of FCF (V_0) and Debt, and subtracted by Cash and Cash Equivalent. Stock valuation uses the Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, and Mean PBV 5 Year obtained on the Indonesia Stock Exchange website.

4 Results and Discussion

Companies that have sample characteristics in this study are PT Metropolitan Land Tbk (MTLA), PT Jaya Real Property Tbk (JRPT), PT Puradelta Lestari Tbk (DMAS), PT Ciputra Development Tbk (CTRA), PT Metropolitan Kentjana Tbk (MKPI), and PT PP Properti Tbk (PPRO). The following are the results of stock valuation using the Discounted Cash Flow (DCF) and Relative Valuation methods:

4.1 Share Valuation of PT Metropolitan Land Tbk (MTLA)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 6.48%. The summary of the FCFF projections is presented in Table 1.

Table 1. FCFF Projection of PT Metropolitan Land Tbk (MTLA) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value	Enterprise Value
	2020	2021	2022	2023	2024		
Pessimistic (Growth 0,89%)	145.330	146.622	147.925	149.240	150.567	3.428.856	4.958.736
Moderate (Growth 4,77%)	150.924	158.127	165.674	173.581	181.866	4.141.623	5.671.502
Optimistic (Growth 12,54%)	162.113	182.442	205.320	231.067	260.043	5.921.963	7.451.842

From the projection above, the intrinsic value is obtained which will be compared with the MTLA market price as of December 31, 2019. The results of the valuation of MTLA shares using the DCF-FCFF method are presented in Table 2.

Table 2. The Valuation Results of PT Metropolitan Land Tbk (MTLA) using DCF-FCFF

Scenario	Intrinsic Value	Market Price 31 Desember 2019	Condition
Pessimistic	647,77	580	Undervalued
Moderate	740,88	580	Undervalued
Optimistic	973,44	580	Undervalued

According to Table 2, the intrinsic value of MTLA shares is Rp647,77 in the pessimistic scenario, Rp740,88 in the moderate scenario, Rp973,44 in the optimistic scenario. In all scenarios, MTLA shares were undervalued because the intrinsic value in the 3 scenarios is below the market price of Rp580.

Stock valuation MTLA uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of MTLA shares is Rp629,18 with market price per 31 Desember 2019 Rp580. Therefore, MTLA shares were undervalued with Margin of Safety (MoS) 7,82%.

Table 3. Relative Valuation PT Metropolitan Land Tbk (MTLA) 2015-2019

Descripton	Price
Buy MoS (20%)	503,34
Buy MoS (30%)	440,42
Buy MoS (45%)	346,05
Sell MoS (0%)	629,18
Sell MoS (7%)	673,22
Sell MoS (12%)	704,68

According to Table 3, MTLA shares can be buy when the market price is 20% below the intrinsic value, which is Rp503,34, 30% below the intrinsic value, which is Rp440,42, and 45% below the intrinsic value, which is Rp346,05. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp629,18, 7% above the intrinsic value, which is Rp673,22, and 12% above the intrinsic value, which is Rp704,68.

4.2 Share Valuation of PT Jaya Real Property Tbk (JRPT)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 6.16%. The summary of the FCFF projections is presented in Table 4.

Table 4. FCFF Projection of PT Jaya Real Property Tbk (JRPT) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value	Enterprise Value
	2020	2021	2022	2023	2024		
Pessimistic (Growth 0,83%)	383.899	387.089	390.306	393.549	396.819	9.724.129	12.672.525
Moderate (Growth 4,73%)	398.760	417.637	437.407	458.114	479.801	11.757.622	14.706.018
Optimistic (Growth 12,54%)	428.480	482.212	542.681	610.733	687.319	16.842.897	19.791.294

From the projection above, the intrinsic value is obtained which will be compared with the market price of JRPT as of December 31, 2019. The results of the valuation of JRPT shares using the DCF-FCFF method are presented in Table 5.

Table 5. The Valuation Results of PT Jaya Real Property Tbk (JRPT) using DCF-FCFF

Scenario	Intrinsic Value	Market Price 31 Desember 2019	Condition
Pessimistic	921,64	600	Undervalued
Moderate	1.069,53	600	Undervalued
Optimistic	1.439,37	600	Undervalued

According to Table 5, the intrinsic value of JRPT shares is Rp921,64 in the pessimistic scenario, Rp1.069,53 in the moderate scenario, Rp1.439,37 in the optimistic scenario. In all scenarios, JRPT shares were undervalued because the intrinsic value in the 3 scenarios is below the market price of Rp600.

Stock valuation JRPT uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of JRPT shares is Rp895,18 with market price per 31 Desember 2019 Rp600. Therefore, JRPT shares were undervalued with Margin of Safety (MoS) 32,97%.

Table 6. Relative Valuation PT Jaya Real Property Tbk (JRPT) 2015-2019

Descripton	Price
Buy MoS (20%)	716,14
Buy MoS (30%)	626,62
Buy MoS (45%)	492,35
Sell MoS (0%)	895,18
Sell MoS (7%)	957,84
Sell MoS (12%)	1.002,60

According to Table 6, JRPT shares can be buy when the market price is 20% below the intrinsic value, which is Rp716,14, 30% below the intrinsic value, which is Rp626,62, and 45% below the intrinsic value, which is Rp492,35. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp895,18, 7% above the intrinsic value, which is Rp957,84, and 12% above the intrinsic value, which is Rp1.002,60.

4.3 Share Valuation of PT Puradelta Lestari Tbk (DMAS)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 8.02%. The summary of the FCFF projections is presented in Table 7.

Table 7. FCFF Projection of PT Puradelta Lestari Tbk (DMAS) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value	Enterprise Value
	2020	2021	2022	2023	2024		
Pessimistic (Growth 12,54%)	1.466.119	1.649.970	1.856.877	2.089.729	2.351.781	39.856.176	40.310.542
Moderate (Growth 27,09%)	1.655.731	2.104.345	2.674.511	3.399.160	4.320.152	73.214.609	73.668.975
Optimistic (Growth 34,37%)	1.750.536	2.352.231	3.160.740	4.247.149	5.706.979	96.717.495	97.171.861

From the projection above, the intrinsic value is obtained which will be compared with the market price of DMAS as of December 31, 2019. The results of the valuation of DMAS shares using the DCF-FCFF method are presented in Table 8.

Table 8. The Valuation Results of PT Puradelta Lestari Tbk (DMAS) using DCF-FCFF

Scenario	Intrinsic Value	Market Price 31 Desember 2019	Condition
Pessimistic	836,35	296	Undervalued
Moderate	1.528,46	296	Undervalued

Optimistic	2.016,06	296	Undervalued
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According to Table 8, the intrinsic value of DMAS shares is Rp836,35 in the pessimistic scenario, Rp1.528,46 in the moderate scenario, Rp2.016,09 in the optimistic scenario. In all scenarios, DMAS shares were undervalued because the intrinsic value in the 3 scenarios is below the market price of Rp296.

Stock valuation DMAS uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of DMAS shares is Rp920,66 with market price per 31 Desember 2019 Rp296. Therefore, DMAS shares were undervalued with Margin of Safety (MoS) 67,85%.

Table 9. Relative Valuation PT Puradelta Lestari Tbk (DMAS) 2015-2019

Descripton	Price
Buy MoS (20%)	736,53
Buy MoS (30%)	644,46
Buy MoS (45%)	506,36
Sell MoS (0%)	920,66
Sell MoS (7%)	985,11
Sell MoS (12%)	1.031,14

According to Table 9, DMAS shares can be buy when the market price is 20% below the intrinsic value, which is Rp736,53, 30% below the intrinsic value, which is Rp644,46, and 45% below the intrinsic value, which is Rp506,36. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp920,66, 7% above the intrinsic value, which is Rp985,11, and 12% above the intrinsic value, which is Rp1.031,14.

4.4 Share Valuation of PT Ciputra Development Tbk (CTRA)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 6.96%. The summary of the FCFF projections is presented in Table 10.

Table 10. FCFF Projection of PT Ciputra Development Tbk (CTRA) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value	Enterprise Value
	2020	2021	2022	2023	2024		
Pessimistic (Growth 0,34%)	886.920	889.974	893.038	896.113	899.198	18.478.639	32.675.171
Moderate (Growth 4,41%)	922.852	963.546	1.006.034	1.050.395	1.096.713	22.537.575	36.734.107
Optimistic (Growth 12,54%)	994.715	1.119.453	1.259.832	1.417.815	1.595.609	32.789.960	46.986.492

From the projection above, the intrinsic value is obtained which will be compared with the market price of CTRA as of December 31, 2019. The results of the valuation of CTRA shares using the DCF-FCFF method are presented in Table 11.

Table 11. The Valuation Results of PT Ciputra Development Tbk (CTRA) using DCF-FCFF

Scenario	Intrinsic Value	Market Price 31 Desember 2019	Condition
Pessimistic	1.760,49	1.040	Undervalued
Moderate	1.979,18	1.040	Undervalued
Optimistic	2.531,56	1.040	Undervalued

According to Table 11, the intrinsic value of CTRA shares is Rp1.760,49 in the pessimistic scenario, Rp1.979,18 in the moderate scenario, Rp2.513,56 in the optimistic scenario. In all scenarios, CTRA shares were undervalued because the intrinsic value in the 3 scenarios is below the market price of Rp1.040.

Stock valuation CTRA uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of CTRA shares is Rp1.539,66 with market price per 31 Desember 2019 Rp1.040. Therefore, CTRA shares were undervalued with Margin of Safety (MoS) 32,45%.

Table 12. Relative Valuation PT Ciputra Development Tbk (CTRA) 2015-2019

Descripton	Price
Buy MoS (20%)	1.231,72
Buy MoS (30%)	1.077,76
Buy MoS (45%)	846,81
Sell MoS (0%)	1.539,66
Sell MoS (7%)	1.647,43
Sell MoS (12%)	1.724,41

According to Table 12, CTRA shares can be buy when the market price is 20% below the intrinsic value, which is Rp1.231,72, 30% below the intrinsic value, which is Rp1.077,76, and 45% below the intrinsic value, which is Rp846,81. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp1.539,66, 7% above the intrinsic value, which is Rp1.647,43, and 12% above the intrinsic value, which is Rp1.724,41.

4.5 Share Valuation of PT Metropolitan Kentjana Tbk (MKPI)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 8.00%. The summary of the FCFF projections is presented in Table 13.

Table 13. FCFF Projection of PT Metropolitan Kentjana Tbk (MKPI) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value
	2020	2021	2022	2023	2024	
Pessimistic (Growth 12,54%)	(34.546)	(38.878)	(43.753)	(49.240)	(55.415)	(941.968)
Moderate (Growth 14,92%)	(35.278)	(40.542)	(46.593)	(53.546)	(61.537)	(1.046.031)
Optimistic (Growth 16,12%)	(35.643)	(41.388)	(48.057)	(55.802)	(64.794)	(1.101.402)

According to Table 13, the FCFF MKPI is negative, this indicates the company does not generate sufficient revenue to cover costs and investments. FCFF MKPI consecutively during 2019, 2018, and 2017 were negative due to high Capital Expenditures with the largest expenditure on acquisition of fixed assets.

Stock valuation MKPI uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of MKPI shares is Rp10.968,93 with market price per 31 Desember 2019 Rp16.200. Therefore, MKPI shares were overvalued with Margin of Safety (MoS) -47,69%.

Table 14. Relative Valuation PT Metropolitan Kentjana Tbk (MKPI) 2015-2019

Descripton	Price
Buy MoS (20%)	8.775,15
Buy MoS (30%)	7.678,25
Buy MoS (45%)	6.032,91
Sell MoS (0%)	10.968,93
Sell MoS (7%)	11.736,76
Sell MoS (12%)	12.285,21

According to Table 14, MKPI shares can be buy when the market price is 20% below the intrinsic value, which is Rp8.775,15, 30% below the intrinsic value, which is Rp7.678,25, and 45% below the intrinsic value, which is Rp6.032,91. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp10.968,93, 7% above the intrinsic value, which is Rp11.736,76, and 12% above the intrinsic value, which is Rp12.285,21.

4.6 Share Valuation of PT PP Properti Tbk (PPRO)

The FCFF projections in the future was carried out by calculating FCFF from 2020 to 2024, which the results were used as Terminal Value (TV). The FCFF projection is divided into three scenario, namely pessimistic scenario, moderate scenario, and optimistic scenario. Meanwhile, the WACC obtained from the CAPM and cost of debt calculations is 3,61%. The summary of the FCFF projections is presented in Table 15.

Table 15. FCFF Projection of PT PP Properti Tbk (PPRO) 2020-2024 (In Million Rupiah)

Scenario	FCFF Projection					Terminal Value
	2020	2021	2022	2023	2024	
Pessimistic (Growth 12,54%)	(2.163.533)	(2.434.840)	(2.740.169)	(3.083.786)	(3.470.492)	(220.920.414)
Moderate (Growth 15,35%)	(2.217.594)	(2.558.041)	(2.950.754)	(3.403.757)	(3.926.305)	(248.999.263)
Optimistic (Growth 16,76%)	(2.244.625)	(2.620.782)	(3.059.977)	(3.572.773)	(4.171.503)	(264.549.270)

According to Table 15, FCFF PPRO is negative, this indicates the company is not generating sufficient revenue to cover costs and investments. FCFF PPRO during 2015 to 2019 was

negative due to high Capital Expenditures with the largest expenditure on additional land to be developed and acquisition of fixed assets.

Stock valuation PPRO uses Relative Valuation method with the PBV and PER approach uses Mean PER 1 Year, Mean PER 3 Year, Mean PER 5 Year, Mean PBV 1 Year, Mean PBV 3 Year, dan Mean PBV 5 Year. The intrinsic value of PPRO shares is Rp102,69 with market price per 31 Desember 2019 Rp68. Therefore, PPRO shares were overvalued with Margin of Safety (MoS) 33,78%.

Table 16. Relative Valuation PT PP Properti Tbk (PPRO) 2015-2019

Descripton	Price
Buy MoS (20%)	82,15
Buy MoS (30%)	71,89
Buy MoS (45%)	56,48
Sell MoS (0%)	102,69
Sell MoS (7%)	109,88
Sell MoS (12%)	115,02

According to Table 16, PPRO shares can be buy when the market price is 20% below the intrinsic value, which is Rp82,15, 30% below the intrinsic value, which is Rp71,89, and 45% below the intrinsic value, which is Rp56,48. Investor can sell shares when the market price is equal to the intrinsic value, which is Rp102,69, 7% above the intrinsic value, which is Rp109,88, and 12% above the intrinsic value, which is Rp115,02.

5 Conclusion

MTLA, JRPT, DMAS, and CTRA shares overall were rated undervalued in all scenarios using the DCF–FCFF method. MTLA shares were undervalued because it was above the market price of Rp580 as of December 31, 2019. MKPI and PPRO shares were overvalued in all scenarios. Meanwhile, by using the Relative Valuation method, MTLA were undervalued by 7.82%, JRPT were undervalued by 32.97%, DMAS were undervalued by 67.85%, CTRA were undervalued by 32.45%, MKPI were overvalued by -47.69%, and PPRO were undervalued by 33.78%.

As an investment decision, it is theoretically recommended to buy shares undervalued and sell shares overvalued. In this case, for the DCF-FCFF method, it is recommended to choose a moderate scenario because of the most likely conditions for company growth. In the DCF-FCFF method, it is recommended to buy MTLA, JRPT, DMAS, and CTRA shares because the market price is below the intrinsic value and sell MKPI and PPRO shares because the market price is above the intrinsic value. The Relative Valuation method with PER and PBV approaches, it is recommended to buy MTLA, JRPT, DMAS, CTRA, and PPRO shares and sell MKPI shares.

Limitations

This study has several limitations due to time, limited data, and other factors. These limitations include in this study using only 6 samples of property and real estate sector

companies that meet the sample criteria and the authors have not considered micro-macroeconomic conditions, as well as factors that affect stock movements.

Suggestion

For investors, investors should not only use one type of analysis when making an investment and also look at and consider other factors outside the financial aspect that affect stock prices and company development. Such as internal and external company issues, seeing from economic situation, company development, politics etc.

For further researchers, hopefully can include various perspectives and variables to the research in order to produce better and more accurate research, further researchers can also increase the number of samples and select the research population not only devoted to property and real estate sector.

References

- [1] I. S. E. IDX, "Digital Capabilities To Advance Further," *Lap. Tah. 2020 Annu. Rep.*, vol. 434, 2020.
- [2] D. Wira, *Analisis Fundamental Saham*. Jakarta: Salemba Empat, 2014.
- [3] D. Wira, *Analisis Fundamental Saham*, Edisi Pert. Bandung: Exceed, 2011.
- [4] N. P. P. K. Dewi and R. Hendrawan, "Stock Valuation Using Discounted Cash Flow and Relative Valuation Methods on Cosmetics and Household Goods Sub-Sector Listed on the Indonesia Stock Exchange for 2021-2025 Projections," *Int. J. Bus. Manag.*, vol. 9, no. 7, 2021, doi: 10.24940/thejbm/2021/v9/i7/bm2107-060.
- [5] E. Tandelilin, *Pasar Modal Manajemen Portofolio & Investasi*. Yogyakarta: Kanisius, 2017.
- [6] R. Budiman, *Rahasia Analisis Fundamental Saham*. Jakarta: PT Gramedia, 2018.
- [7] F. K. Ayuningsih, U. Brawijaya, F. I. Administrasi, J. A. Bisnis, and K. M. Keuangan, "Memulai dengan penuh keyakinan Menjalankan dengan penuh keikhlasan Menyelesaikan dengan penuh kebahagiaan Kemenangan yang seindah-indahnya dan sesukar-sukarnya yang boleh direbut oleh manusia ialah menundukkan diri sendiri," 2018.
- [8] E. F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," *J. Finance*, pp. 383–417, 1970, doi: <https://doi.org/10.2307/2325486>.