



**ANALYSIS OF STOCK VALUATION USING PRICE EARNING RATIO,
PRICE TO BOOK VALUE, AND DISCOUNT CASH FLOW METHODS IN
LQ45 COMPANIES FOR THE PERIOD 2022-2024**

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Abstract

Capital markets play a crucial role in the economy, making it essential for investors to apply accurate valuation methods in investment decision-making. This study aimed to determine the fair value of stocks of companies listed in the LQ45 index using the Price Earnings Ratio (PER), Price to Book Value (PBV), and Discounted Cash Flow (DCF) methods during the 2022–2024 period, and to examine the differences among the three valuation results. A quantitative approach was employed using secondary data obtained from the Indonesia Stock Exchange (www.idx.co.id) and the annual reports of each respective company. The analytical procedures included calculating stock fair values using the PER, PBV, and DCF methods, followed by a comparative analysis. The Kruskal-Wallis test was subsequently applied to assess statistically significant differences across methods. The results indicated that the Asymptotic Significance (Asymp. Sig.) value was $0.000 < 0.05$, confirming statistically significant differences among the fair values generated by the PER, PBV, and DCF methods. These differences were attributed to the distinct analytical approaches and underlying assumptions associated with each valuation method.

Keywords: Stock Valuation, Price Earnings Ratio, Price to Book Value, Discounted Cash Flow, LQ45

Analysis of Stock Valuation Using Price Earning Ratio....



INTRODUCTION

Capital markets play an important role in supporting economic growth in Indonesia, serving as a platform for companies to raise funds and for the public to invest. Through capital markets, companies can expand their operations, while investors gain opportunities to earn returns on their investments. In Indonesia, the capital market has grown significantly since the establishment of the Indonesia Stock Exchange (IDX). According to the Financial Services Authority (OJK), the number of investors in the capital market has continued to increase, rising by more than 11% in 2024. However, this growth has not been fully accompanied by adequate understanding of stock valuation and the determination of fair company value. Capital market development also tends to reflect economic conditions, as increased market activity generally signals optimism toward economic growth, while weakening activity often indicates an economic slowdown (Dini Selasi et al., 2025). Furthermore, stock price movements are frequently influenced by various factors, including national economic conditions, government policies, interest rate changes, and economic uncertainty (Purnamasari, 2025).

Stock valuation is used to compare the market price of a stock with the intrinsic value of the company. By conducting stock valuation, investors can determine whether a stock is undervalued, fairly valued, or overvalued, enabling them to make informed decisions, such as buying when the price is below fair value, holding when the price is adequate, and selling when the price is excessively high. Understanding valuation is highly beneficial in helping investors make sound decisions rather than simply following market trends. Public interest in stock investment has also grown steadily, as reflected in the increasing number of investors each year (KSEI, 2024). Various studies have demonstrated that valuation analysis using both absolute and relative methods can assist investors in making prudent decisions and reducing investment risks (Sitohang & Hutabarat, 2023).

Phenomena in the Indonesian capital market indicate that stock prices do not always align with their fair values. This has been observed in several companies listed in the LQ45 index during the 2022–2024 period. Bank Central Asia (BBCA) experienced a stock price decline of approximately 12% at the end of 2022 amid rising interest rates, despite maintaining strong financial performance (CNBC Indonesia, 2022). Telkom Indonesia (TLKM) also declined by approximately 12.3% in 2023 due to structural changes in the Indihome business, which caused investor caution (The Investor, 2023). Meanwhile, Astra



International (ASII) experienced considerable fluctuation in 2024, rising from approximately IDR 4,400 to IDR 6,600 before declining again due to falling automobile sales. These conditions illustrate that stock prices are frequently driven by economic factors and investor sentiment rather than fundamental value.

The movement of the LQ45 index from 2022 to 2024 also reflected instability caused by inflation, interest rate changes, and global economic conditions. Several LQ45 companies recorded stock prices that were inconsistent with their book value or earnings (Neldi et al., 2023). Therefore, research on stock valuation is necessary to determine whether LQ45 stock prices are aligned with their fair values. Methods such as Price Earnings Ratio (PER), Price to Book Value (PBV), and Discounted Cash Flow (DCF) can be applied to evaluate stock fair value systematically (Pengestika & Christianti, 2021).

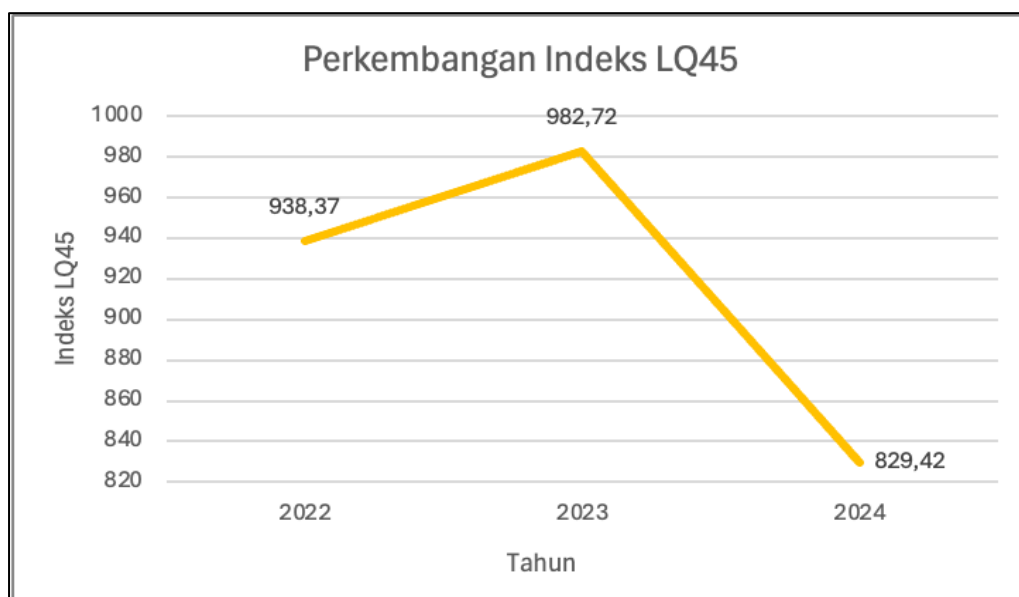


Figure 1.1 LQ45 Index Chart

Sumber: finance.yahoo.com

Based on Figure 1.1, the LQ45 index movement during 2022–2024 showed notable fluctuations. In 2022, the index was at approximately 938.37. In 2023, it rose to 982.72, reflecting improved market conditions compared to the previous year. However, in 2024, the index declined to approximately 829.42, falling below levels recorded in both prior years. This pattern demonstrates that the LQ45 index does not move unidirectionally but fluctuates in response to economic conditions and investor sentiment.

Analysis of Stock Valuation Using Price Earning Ratio....



When evaluating stock prices, different valuation methods often yield different results. A stock may appear undervalued when assessed using PER, yet overvalued when assessed using PBV or DCF. This inconsistency creates challenges for investors in identifying the most accurate method for determining the fair value of stocks, particularly for companies listed in the LQ45 index. Sitohang and Hutabarat (2023) explained that such discrepancies arise because each method employs distinct techniques and calculations in analyzing a company's performance and prospects. In other words, no single method has been consistently capable of reflecting stock fair value under all market conditions.

Several prior studies have examined stock valuation using various methods. Pengestika and Christianti (2021) found that the absolute method (DCF) and relative methods (PER and PBV) frequently produce different valuation results due to their differing perspectives on fair value assessment. Nurwinda (2023) applied a combination of DCF, PER, and PBV methods to food and beverage subsector companies listed on the IDX, finding that valuation results varied across methods depending on each company's financial condition and growth potential. Premananda and Dewi (2023) studied stock valuation in the tourism subsector and found that the DCF method produced results closer to market value compared to PBV. Prasetyo (2025) further noted that PBV influences LQ45 stock prices but does not consistently reflect fair value due to the effects of profitability and industry conditions. Radius and Sriwati (2025) similarly found that DCF and PER valuation results in the telecommunications subsector differed depending on cash flow and earnings performance.

These studies collectively suggest that each valuation method has its own strengths and limitations. Therefore, this study seeks to integrate three valuation methods, namely PER, PBV, and DCF, applied to companies in the LQ45 index during the 2022–2024 period, in order to identify which method most closely approximates market value and can serve as a reliable reference for investors in assessing stock fair value in the Indonesian capital market.

Three methods were selected in this study because each offers a distinct analytical perspective. First, Price Earnings Ratio (PER) compares stock price to earnings per share (EPS), reflecting market expectations of company earnings growth. Second, Price to Book Value (PBV) compares stock price to book value, indicating the degree to which the market values the company's assets. Third, Discounted Cash Flow (DCF) estimates stock value based on projected future cash flows discounted to present value. These three methods complement one



another: PER and PBV are relatively straightforward, while DCF provides a deeper assessment of intrinsic value. Employing all three methods is expected to produce a more comprehensive and accurate stock valuation (Maulana et al., 2025).

Given these considerations, stock price movements in the LQ45 index do not consistently reflect fair value, and differing valuation results across PER, PBV, and DCF methods continue to challenge investor decision-making. External factors such as inflation, interest rates, and market sentiment further complicate the valuation process. This study is therefore conducted to compare these three valuation methods in order to produce more accurate fair value estimates for LQ45 companies during the 2022–2024 period.

LITERATURE REVIEW

Stock valuation is the process of determining the fair or intrinsic value of a stock based on fundamental analysis, which considers factors influencing a company's performance and prospects, including financial statements, industry conditions, and macroeconomic factors. The purpose of stock valuation is to determine whether a stock is undervalued, overvalued, or fairly valued, thereby supporting investors in making rational and profitable investment decisions (Nainggolan, 2023).

The capital market is a system that enables companies to obtain funding by issuing securities such as stocks and bonds, which can be traded in an open market. The capital market plays a crucial role in the economy by providing companies with alternative funding sources beyond bank loans (Supeno et al., 2025). According to Santoso et al. (2023), the capital market serves as a meeting point between parties with surplus funds and those in need of funds through the trading of securities, while the stock market is an important venue where stock prices used to assess managerial performance are established.

A stock is one of the instruments tradable on the stock exchange and represents an individual's participation or ownership in an organization (Purnamasari, 2024). According to Adnyana (2020), a stock serves as proof of ownership in a company, whereby its holder is referred to as a shareholder or stockholder. Stock value can be classified into market value, book value, and intrinsic value. Market value refers to the stock price on the exchange at a given time, determined by supply and demand. Book value per share represents the net assets owned by a shareholder per share. Intrinsic value refers to the justified value of a stock when its fundamental factors are taken into account, which may differ from its market price (Adnyana, 2020).



Two main approaches are employed in stock valuation. The first is the relative valuation approach, which assesses stocks by comparing a company's market ratios with those of similar companies in the same industry. The most commonly used ratios are Price Earnings Ratio (PER) and Price to Book Value (PBV). PER represents the comparison between stock price per share and net earnings per share, reflecting how much investors are willing to pay for each unit of earnings generated by the company. PBV compares the market price of a stock with its book value per share, enabling an assessment of whether the stock is priced above or below its book value (Astuti, 2022). The second is the intrinsic valuation approach, which calculates the fair value of a stock based on the company's future cash flows discounted to present value using an appropriate required rate of return. The Discounted Cash Flow (DCF) method assesses stocks by computing the present value of Free Cash Flow to Firm (FCFF) or Free Cash Flow to Equity (FCFE), discounted using the Weighted Average Cost of Capital (WACC) or cost of equity (Astuti, 2022).

Price Earnings Ratio (PER) is an indicator of a company's stock price relative to its earnings capacity (Rustiana et al., 2022). A high PER indicates that the market expects high earnings growth, while a low PER suggests lower growth expectations. The lower the PER value, the more affordable the stock is to purchase and the better the per-share performance in generating net earnings (Adnyana, 2020). As a valuation model, PER offers the advantage of simplicity and ease of use; however, it is limited by the susceptibility of accounting earnings to distortion through company policies and its failure to account for external factors such as economic conditions and industry differences (Rustiana, 2022).

Price to Book Value (PBV) is a ratio that compares the market price per share with the book value per share (Astuti et al., 2021). For well-performing companies, this ratio generally exceeds one, indicating that the market value of the stock is greater than its book value. A higher PBV reflects a higher market valuation of the company relative to invested capital, which in turn signals stronger market confidence in the company's future prospects (Ningrum, 2022). PBV is widely used by financial analysts because it clearly indicates how much the market values the company's equity book value. However, its limitation lies in the fact that accounting book values often fail to reflect the true economic value of assets, particularly for companies with high intangible assets or complex capital structures (Sari, 2024).

Discounted Cash Flow (DCF) is a method for calculating fair value based on the total cash flows generated over the lifetime of a business, discounted back



to present value (Sukamulja, 2021). The underlying theory holds that all future cash flows of a company, when discounted, represent the fair value of the stock at present. The DCF calculation procedure involves collecting historical data on Dividend Per Share (DPS), Earnings Per Share (EPS), and PER; computing the average Dividend Payout Ratio (DPR), EPS growth, and PER; projecting future EPS for three years ahead; estimating future stock prices; calculating accumulated dividends; summing the future value of stock price and accumulated dividends to obtain total future value; applying a discount rate of 9%; and finally discounting the total future value to obtain the present value as the fair stock price (Damodaran, 2024).

Several prior studies have examined stock valuation using these methods. Pengestika and Christianti (2021) found that absolute methods such as DCF and relative methods such as PER and PBV frequently produce different valuation results due to their differing perspectives on fair value assessment. Sitohang and Hutabarat (2023) compared DDM, PBV, and PER methods and found significant differences between DDM and PER valuations, while no significant difference was found with PBV; the RMSE test indicated that DDM produced more accurate results. Jumran and Hendrawan (2021) found that BUMN stocks assessed using the FCFE method were undervalued, and the same result was obtained using PBV and PER methods for BBNI shares. Maulana, Suherman, and Marta (2025) found that AMRT stock was slightly undervalued using the DCF-FCFF approach, representing a moderate investment opportunity in Indonesia's growing retail sector. Khanafi, Kautsar, and Paramita (2024) demonstrated that stock valuation of TRJA using DCF-FCFF resulted in an overvalued condition, as the intrinsic value was lower than the market price. Panambunan and Tumiwa (2022) found that PBV significantly influenced stock returns, while PER did not. Bustani, Kurniaty, and Widianti (2021) confirmed that EPS, PBV, and Dividend Payout Ratio significantly influenced stock prices, whereas Net Profit Margin did not. These studies collectively indicate that each valuation method has its own strengths and limitations, and that combining multiple methods can produce a more comprehensive and accurate stock valuation.

Based on the theoretical framework and prior research, this study constructs a conceptual framework in which PER and PBV represent relative valuation approaches that compare market stock prices with earnings performance and company book value, while DCF represents the intrinsic valuation approach that calculates fair value based on projected future cash flows discounted to present value (Astuti, 2022). The fair values derived from the three methods are subsequently compared with the actual market prices of LQ45 stocks



during the 2022–2024 period to determine whether stocks are undervalued, overvalued, or fairly valued, serving as a basis for investor decision-making (Maulana et al., 2025).

Based on this framework, the hypotheses of this study are formulated as follows. H_0 : There is no significant difference among the stock valuation results produced by the Price Earnings Ratio, Price to Book Value, and Discounted Cash Flow methods for LQ45 companies during the 2022–2024 period. H_1 : There is a significant difference among the stock valuation results produced by the Price Earnings Ratio, Price to Book Value, and Discounted Cash Flow methods for LQ45 companies during the 2022–2024 period.

RESEARCH METHOD

This study employs a quantitative research method using secondary data. Quantitative research involves the dominant use of numerical data, from data collection and interpretation to the results or conclusions drawn, predominantly presenting and interpreting numbers accompanied by tables, graphs, and other visual displays (Machali, 2021). Secondary data were obtained from the Indonesia Stock Exchange (IDX) via www.idx.co.id and the annual reports of each respective company listed in the LQ45 index.

The population in this study consists of all companies included in the LQ45 index during the 2022–2024 period. Sampling was conducted using purposive sampling, a method that selects samples based on criteria relevant to the research objectives. The data collection technique applied in this study was documentation, specifically through the collection of financial report data published by each company. The variables examined in this study consist of independent variables, namely the stock fair values calculated using the Price Earnings Ratio (X_1), Price to Book Value (X_2), and Discounted Cash Flow (X_3) methods, and the dependent variable, namely the difference in fair value among the three valuation methods (Y).

The analytical procedures include three stages. First, the fair value of each stock is calculated using the PER, PBV, and DCF methods based on historical financial data for the 2022–2024 period. Second, the fair values obtained from the three methods are compared with actual market prices to determine whether each stock is undervalued, overvalued, or fairly valued. Third, the Kruskal-Wallis test is conducted to determine whether statistically significant differences exist among the fair values generated by the three valuation methods. The Kruskal-Wallis test is applied as a non-parametric alternative to one-way ANOVA when



the assumption of normality is not met, making it appropriate for comparing three or more independent groups. The decision criterion is that if the Asymptotic Significance (Asymp. Sig.) value is less than 0.05, H_0 is rejected, indicating a statistically significant difference among the valuation results of the three methods.

RESULTS AND DISCUSSION

Research Sample

This study uses the LQ45 index as the population. Based on purposive sampling criteria consistently listed in the LQ45 index throughout 2022–2024, publishing complete annual financial reports, and paying dividends during the research period, a total of 13 companies were selected as the sample. These companies represent diverse sectors, including banking, energy, telecommunications, infrastructure, and the cement industry, as detailed in Table 1.

Table 1.
Descriptive Statistics of Key Variables (2022–2024)

Variable	Maximum	Minimum	Mean	Std. Dev.	Notes
EPS (Rp)	983.00	56.32	352.24	289.68	13 companies × 3 years = 39 obs.
PER (x)	67.09	4.59	15.27	11.89	
PBV (x)	4.43	0.45	1.84	0.96	
BVPS (Rp)	27,032	260.69	5,108.36	6,724.21	
DPR (%)	1.00	0.00	0.50	0.22	
Intrinsic Value (Rp)	9,387.85	1,095.17	4,858.22	2,631.45	

Source: Processed Data, 2026

Based on Table 1, the descriptive statistics reveal considerable variation across companies. EPS ranges from Rp 56.32 to Rp 983.00 per share, indicating that banking sector companies (BBNI, BBRI, BMRI) consistently generate higher per-share earnings relative to infrastructure and energy companies. The PER range of 4.59x to 67.09x and PBV range of 0.45x to 4.43x reflect the diversity in market pricing across sectors. DCF-derived intrinsic values range from Rp 1,095.17 to Rp 9,387.85, with a standard deviation of Rp 2,631.45, confirming significant cross-sectional variation in fundamental value.



Earnings Per Share (EPS) Analysis

EPS is calculated by dividing net profit by the number of shares outstanding. EPS is the foundational metric for both the PER and DCF valuation methods, as it reflects the profitability allocated to each share of common stock. Table 2 presents the EPS values and trends for all 13 sample companies across the 2022–2024 period.

Table 2.
EPS Summary by Company (2022–2024)

Code	2022	2023	2024	Average	Growth	Trend
AKRA	121.77	140.87	112.73	125.12	–7.47%	Fluctuating
BBNI	983.00	561.00	576.00	706.67	–23.39%	Declining
BBRI	338.00	398.00	399.00	378.33	8.73%	Growing
BMRI	882.52	589.93	597.67	690.04	–17.67%	Declining
EXCL	105.00	96.00	139.00	113.33	15.07%	Growing
INTP	529.44	568.41	591.49	563.11	5.72%	Growing
ISAT	146.85	139.73	152.27	146.28	1.82%	Stable
MEDC	146.21	151.84	239.03	179.03	27.83%	Growing
PGAS	176.96	176.96	227.70	193.87	13.38%	Growing
SMGR	397.00	321.00	107.00	275.00	–48.06%	Declining
TLKM	209.49	247.92	238.73	232.05	6.79%	Stable
TOWR	69.00	65.00	67.00	67.00	–1.47%	Stable
UNTR	5,679.00	2,756.00	1,609.00	3,348.00	–46.76%	Declining

Source: Processed Data, 2026

The EPS results reveal distinct performance patterns across sectors. Banking companies BBNI, BBRI, and BMRI record the highest absolute EPS values, though BBNI and BMRI exhibit declining trends over the period, attributable to earnings normalization following the post-pandemic credit recovery phase. MEDC posts the strongest growth rate at 27.83%, driven by rising energy commodity prices in 2024. Conversely, SMGR records the steepest EPS decline (–48.06%), consistent with significant profitability pressures in the domestic cement industry stemming from oversupply and weak demand. UNTR's exceptionally high 2022 EPS of Rp 5,679 reflects a peak earnings cycle in the heavy equipment and mining services sector, which subsequently corrected in 2023–2024 as commodity prices stabilized.

Stock Valuation Using the Price Earning Ratio (PER) Method



The PER method is a relative valuation approach that compares the market price of a stock to its Earnings per Share (EPS). The fair value under PER is estimated by multiplying the projected EPS by the historical average PER of each company. In this study, the classification criteria applied are: $PER < 10$ indicates undervalued, PER between 10 and 20 indicates fair value, and $PER > 20$ indicates overvalued. These thresholds reflect the general market consensus for emerging market equities, particularly for Indonesian blue-chip companies within the LQ45 index.

Table 3 summarizes the PER values and corresponding valuation conditions for each company across the 2022–2024 period.

Table 3.

Stock Valuation Results Using PER Method (2022–2024)

No.	Code	PER 2022	PER 2023	PER 2024	2022	2023	2024
		Condition					
1	AKRA	11.49	10.47	9.93	Fair Value	Fair Value	Undervalued
2	BBNI	9.38	9.58	7.55	Undervalued	Undervalued	Undervalued
3	BBRI	14.61	14.38	10.22	Fair Value	Fair Value	Fair Value
4	BMRI	11.24	10.25	9.53	Fair Value	Fair Value	Undervalued
5	EXCL	20.38	20.83	16.18	Overvalued	Overvalued	Fair Value
6	INTP	18.69	16.53	12.51	Fair Value	Fair Value	Fair Value
7	ISAT	42.04	67.09	16.28	Overvalued	Overvalued	Fair Value
8	MEDC	6.94	7.60	4.60	Undervalued	Undervalued	Undervalued
9	PGAS	9.94	6.38	6.98	Undervalued	Undervalued	Undervalued
10	SMGR	16.56	19.93	30.74	Fair Value	Fair Value	Overvalued
11	TLKM	17.90	15.93	11.35	Fair Value	Fair Value	Fair Value
12	TOWR	15.94	15.23	11.94	Fair Value	Fair Value	Fair Value
13	UNTR	4.59	8.20	16.64	Undervalued	Undervalued	Fair Value

Source: Processed Data, 2026

The PER analysis yields several important findings. MEDC and PGAS consistently fall in the undervalued category across all three years, with PER values ranging from 4.60x to 9.94x. This suggests that the market has persistently priced these energy sector stocks below the earnings-based fair value, potentially due to structural concerns over energy subsidy policies, regulatory risks, and capital expenditure intensity. BBNI also maintains undervalued status throughout the period, reflecting market discounting of state-owned bank earnings amid rising credit risk provisions.

In contrast, ISAT records the most extreme PER values in the dataset 42.04x in 2022 and an exceptional 67.09x in 2023 placing it in the overvalued



category. This extraordinary PER reflects a transformational period following the merger between Indosat and Hutchison 3 Indonesia (Tri) in early 2022, which temporarily compressed reported EPS while market expectations for long-term synergy gains remained elevated. By 2024, the PER normalized to 16.28x (fair value), consistent with post-merger earnings recovery. EXCL similarly transitioned from overvalued (2022–2023) to fair value (2024), tracking a similar industry consolidation trajectory in the telecommunications sector.

SMGR presents a contrasting dynamic: while classified as fair value in 2022 and 2023, the PER surged to 30.74x in 2024 (overvalued), driven by a precipitous EPS decline from Rp 397 in 2022 to Rp 107 in 2024. This significant EPS compression, amid relatively sticky market prices, inflated the PER ratio, signalling investor optimism regarding future recovery that may not be fully supported by near-term fundamentals.

Overall, of the 39 company-year observations, approximately 35.9% fall under fair value, 33.3% undervalued, and 30.8% overvalued. These proportions indicate a reasonably efficient market for LQ45 stocks under the PER framework, with pockets of mispricing concentrated in specific sectors and cyclical periods.

Stock Valuation Using the Price to Book Value (PBV) Method

The PBV method compares the market price of a stock to its Book Value per Share (BVPS), which is calculated by dividing total shareholders' equity by the number of shares outstanding. The classification criteria applied in this study are: $PBV < 1.0$ indicates undervalued, $PBV = 1.0$ indicates fair value, and $PBV > 1.0$ indicates overvalued. This criterion is consistent with standard value investing principles, wherein a stock trading below its book value is considered to be priced below the net asset value of the company.

Table 4 presents the PBV values and corresponding valuation conditions for each sample company during 2022–2024.



Table 4.
Stock Valuation Results Using PBV Method (2022–2024)

No.	Code	PBV 2022	PBV 2023	PBV 2024	2022	2023	2024
					Condition	Condition	Condition
1	AKRA	2.13	2.10	1.53	Overvalued	Overvalued	Overvalued
2	BBNI	1.22	1.29	0.97	Overvalued	Overvalued	Fair Value
3	BBRI	2.00	2.74	1.91	Overvalued	Overvalued	Overvalued
4	BMRI	1.83	1.96	1.69	Overvalued	Overvalued	Overvalued
5	EXCL	1.09	0.99	1.12	Overvalued	Fair Value	Overvalued
6	INTP	1.73	1.53	1.12	Overvalued	Overvalued	Overvalued
7	ISAT	1.57	2.24	2.18	Overvalued	Overvalued	Overvalued
8	MEDC	3.78	4.43	4.16	Overvalued	Overvalued	Overvalued
9	PGAS	0.79	0.49	0.67	Undervalued	Undervalued	Undervalued
10	SMGR	0.93	0.90	0.45	Undervalued	Undervalued	Undervalued
11	TLKM	2.48	2.49	1.65	Overvalued	Overvalued	Overvalued
12	TOWR	3.88	3.05	2.12	Overvalued	Overvalued	Overvalued
13	UNTR	1.05	0.97	0.99	Overvalued	Fair Value	Fair Value

Source: Processed Data, 2026

The PBV analysis reveals a dominant overvalued classification, with 30 out of 39 observations (76.9%) exceeding the PBV threshold of 1.0x. This broad overvaluation classification is characteristic of the PBV method's limitation when applied to knowledge-intensive, high-return-on-equity, or intangible-asset-rich companies, where market valuations naturally exceed accounting book values.

MEDC records the highest PBV values across all three years, peaking at 4.43x in 2023. Despite relatively modest BVPS of approximately Rp 264, the company's PBV reflects market recognition of its oil and gas reserve value and production growth trajectory, which are not fully captured by historical-cost accounting equity. Similarly, TOWR (Sarana Menara Nusantara) consistently trades at 2.12x–3.88x PBV, reflecting the premium placed on its infrastructure asset base, long-term tenancy contracts, and recurring revenue model in the telecommunications tower leasing business.

PGAS and SMGR are the only companies consistently classified as undervalued under PBV across the full research period. PGAS's sub-unity PBV (0.49x–0.79x) indicates that the market prices the company's equity at a discount to its book value, likely reflecting regulatory risks in the domestic gas distribution segment, government price interventions, and concerns about long-term demand as Indonesia pursues energy transition policies. SMGR's declining PBV from 0.93x in 2022 to a notable 0.45x in 2024 underscores deepening investor skepticism



about the company's book value sustainability amid significant operating losses and equity erosion.

The predominantly overvalued classification yielded by PBV should be interpreted with caution. For LQ45-listed companies — which represent the most liquid and often asset-light or high-growth companies in Indonesia — a PBV above 1.0x is typical and does not necessarily indicate an unattractive investment. This reinforces the need to complement PBV analysis with earnings-based and cash flow-based metrics.

Stock Valuation Using the Discounted Cash Flow (DCF) Method

The DCF method is an absolute valuation approach that estimates the intrinsic value of a stock by discounting projected future cash flows to their present value. This study adopts the framework proposed by Charles S. Mizrahi, incorporating EPS projections, historical average PER, Dividend Payout Ratio (DPR), and a risk-adjusted required rate of return as the discount rate. The discount rate is set at 8% for 2022, reflecting post-pandemic economic recovery conditions, and 9% for both 2023 and 2024, accounting for heightened global uncertainty, domestic interest rate normalization, and country risk premium dynamics sourced from Damodaran's database.

The intrinsic value is derived by computing the future value of projected EPS-based stock prices and accumulated dividend streams over a three-year horizon, then discounting the total future value to the present. The intrinsic value is subsequently compared with the actual year-end closing price to determine the valuation condition. Table 5 summarizes the intrinsic values and stock conditions under the DCF method.

Table 5.
Intrinsic Value and Stock Condition Using DCF Method (2022–2024)

No.	Code	IV 2022	IV 2023	IV 2024	Price 2022	Price 2023	Price 2024	Overall Condition
1	AKRA	1,598.41	1,832.16	1,466.17	1,400	1,475	1,120	Undervalued (all years)
2	BBNI	9,114.36	5,153.86	5,291.66	9,225	5,375	4,350	Mixed
3	BBRI	5,109.90	5,961.78	5,976.76	4,940	5,725	4,080	Undervalued (mostly)
4	BMRI	9,334.05	6,182.20	6,263.31	9,925	6,050	5,700	Mixed
5	EXCL	1,826.45	1,654.58	2,395.69	2,140	2,000	2,250	Mixed
6	INTP	8,480.82	9,021.53	9,387.85	9,900	9,400	7,400	Mixed
7	ISAT	2,092.44	1,972.72	2,559.24	6,175	9,375	2,480	Overvalued (mostly)



No.	Code	IV 2022	IV 2023	IV 2024	Price 2022	Price 2023	Price 2024	Overall Condition
8	MEDC	1,835.52	1,730.50	1,885.80	1,015	1,155	1,100	Undervalued (all years)
9	PGAS	1,534.27	1,520.19	1,956.08	1,760	1,130	1,590	Mixed
10	SMGR	4,949.43	3,965.22	1,321.74	6,575	6,400	3,290	Overvalued (all years)
11	TLKM	3,062.20	3,591.90	3,458.75	3,750	3,950	2,710	Mixed
12	TOWR	1,173.33	1,095.17	1,128.87	1,100	990	800	Undervalued (all years)
13	UNTR	5,851.33	6,863.50	6,609.08	26,075	22,625	26,775	Overvalued (all years)

Note: IV = Intrinsic Value (Rp); Price = Year-end Closing Price (Rp). Source: Processed Data, 2026

The DCF results demonstrate considerable cross-sectional dispersion in intrinsic value, ranging from Rp 1,095.17 (TOWR, 2023) to Rp 9,387.85 (INTP, 2024). The analysis identifies three persistent overvalued cases and four persistent undervalued cases over the full period, with the remaining companies exhibiting mixed conditions.

UNTR presents the most extreme overvaluation under DCF, with actual closing prices (Rp 22,625–Rp 26,775) exceeding intrinsic values (Rp 5,851–Rp 6,863) by a factor of approximately 4x across all years. This divergence can be attributed to UNTR's position as Indonesia's dominant heavy equipment distributor (Komatsu franchise) and integrated coal mining services provider, commanding a significant market premium for its franchise value, brand equity, and market leadership that cannot be fully captured by the EPS/PER-based DCF projection framework used in this study.

ISAT is also persistently overvalued under DCF, particularly in 2022 and 2023 where the closing price of Rp 6,175 and Rp 9,375 drastically exceeded intrinsic values of Rp 2,092 and Rp 1,973, respectively. As discussed in the PER analysis, this reflects the market pricing in substantial post-merger synergies and long-term growth expectations that have not yet materialized in reported EPS figures, illustrating a common limitation of backward-looking DCF models during corporate restructuring phases.

SMGR is classified as overvalued across all three years despite deteriorating fundamentals, with the closing price (Rp 3,290–Rp 6,575) consistently exceeding the intrinsic value (Rp 1,321–Rp 4,949). This suggests speculative premium or market inertia, where investors anticipate an eventual



earnings recovery that has not yet been reflected in the company's financial performance.

On the undervalued side, AKRA, MEDC, and TOWR are consistently classified as undervalued across all three years, presenting potential investment opportunities for value investors with long investment horizons. MEDC, in particular, shows an intrinsic value (Rp 1,731–Rp 1,886) substantially above its market price (Rp 1,015–Rp 1,155), suggesting significant market undervaluation of its growing oil and gas production base and improving cash flow generation.

Normality and Homogeneity Tests

Prior to conducting comparative statistical analysis, the normality and homogeneity assumptions underlying parametric ANOVA were evaluated. The Shapiro-Wilk test was selected due to the relatively small sample size per group ($n = 39$ per method). Table 6 presents the normality test results.

Table 6.

Normality Test Results (Shapiro-Wilk)

Method	Kolmogorov-Smirnov			Shapiro-Wilk			Conclusion
	Statistic	df	Sig.	Statistic	df	Sig.	
PER	0.236	39	0.000	0.728	39	0.000	Not Normal
PBV	0.107	39	0.200	0.932	39	0.020	Not Normal
DCF	0.231	39	0.000	0.852	39	0.000	Not Normal

Source: Processed Data, 2026

All three valuation methods PER, PBV, and DCF yield p-values below the 0.05 significance threshold in the Shapiro-Wilk test, confirming that the data does not conform to a normal distribution. The Levene's test for homogeneity of variance further reveals a significance value of 0.000, indicating that the variance across the three valuation groups is not homogeneous. Since both normality and homogeneity assumptions are violated, the parametric one-way ANOVA is inappropriate for this analysis. Consequently, the non-parametric Kruskal-Wallis H test is applied as the appropriate alternative for comparing the central tendencies of the three independent groups.

Kruskal-Wallis Test

The Kruskal-Wallis H test is the non-parametric equivalent of one-way ANOVA, comparing the rank-based distributions of three or more independent groups without requiring normality assumptions. The null hypothesis (H_0) states that there is no significant difference in the stock valuation values produced by



the PER, PBV, and DCF methods, while the alternative hypothesis (H1) posits a significant difference exists. Table 7 presents the test results.

Table 7.

Kruskal-Wallis Test Results

Test Parameter	Value
Total N	117
Test Statistic (H)	95.913
Degree of Freedom	2
Asymptotic Sig. (2-sided)	0.000
Decision	H0 Rejected (Significant Difference)

Source: Processed Data, 2026

The Kruskal-Wallis test yields a test statistic of $H = 95.913$ with 2 degrees of freedom and a p-value of 0.000. Since the p-value is substantially below the 0.05 significance level, the null hypothesis is rejected. This confirms that there is a statistically significant difference in the stock valuation values generated by the PER, PBV, and DCF methods. The mean rank analysis further indicates that DCF produces the highest valuation values, followed by PER, with PBV generating the lowest valuations a finding consistent with the fundamental differences in the theoretical basis of each method.

Post-Hoc Dunn Test with Bonferroni Correction

Following the significant Kruskal-Wallis result, pairwise post-hoc comparisons were conducted using Dunn's test with Bonferroni correction at a 5% significance level. This correction controls for the inflated Type I error probability associated with multiple comparisons. Table 8 presents the pairwise comparison results.

Table 8.

Post-Hoc Dunn Test Results (Bonferroni Correction)

Pair Comparison	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. (Bonferroni)
PBV – PER	33.103	7.681	4.310	0.000	0.000
PBV – DCF	-75.051	7.681	-9.771	0.000	0.000
PER – DCF	-41.949	7.681	-5.461	0.000	0.000

Source: Processed Data, 2026

The post-hoc Dunn test results confirm that all three pairwise comparisons PBV vs. PER, PBV vs. DCF, and PER vs. DCF yield adjusted p-values of 0.000, indicating statistically significant differences between each pair of valuation methods. This comprehensive result demonstrates that PER, PBV, and DCF are



not interchangeable as valuation tools; each produces meaningfully distinct stock value estimates.

The PBV–DCF pair shows the largest standardized test statistic ($|9.771|$), reflecting the widest gap between the two methods. This is theoretically consistent: DCF captures the present value of projected future earnings streams, while PBV is anchored to historical balance sheet values. For high-growth LQ45 companies with substantial intangible assets and strong future earning power, DCF intrinsic values naturally exceed PBV-implied values by a wide margin. The PER–DCF difference ($|5.461|$) is smaller but still highly significant, as both methods are partly earnings-driven, yet differ in their time horizon (current-year earnings for PER versus multi-year projections for DCF) and in their treatment of dividend returns.

Comparative Analysis of Valuation Methods

The three valuation methods produce systematically different stock valuations due to their distinct theoretical foundations, input data requirements, and assumptions. Table 9 provides a structured comparison of the three methods across key analytical dimensions.

Table 9.

Comparative Summary of PER, PBV, and DCF Valuation Methods

Aspect	PER	PBV	DCF
Approach	Relative Valuation	Relative Valuation	Absolute / Intrinsic Valuation
Basis	Earnings per Share	Book Value per Share	Projected Free Cash Flow
Mean Value (Rp)	~2,250	~1,840	~4,858
Sensitivity	Market sentiment driven	Asset-based; low sensitivity	High – sensitive to growth rate & discount rate
Dominant Result	Undervalued & Fair Value	Overvalued dominant	Mixed; fundamentally grounded
Best Used For	Earnings momentum	Asset-heavy sectors	Long-term intrinsic analysis

Source: Authors' Synthesis, 2026

The PER method, as a relative valuation tool, reflects short-term earnings performance and market sentiment. Its results are easily influenced by cyclical



earnings fluctuations as evidenced by SMGR's transition to overvalued status in 2024 due to earnings collapse and can produce misleading signals during earnings recovery or correction phases. Nevertheless, it provides a useful benchmark for assessing whether the market is pricing earnings at a reasonable multiple relative to historical norms.

The PBV method, while straightforward to compute, is most appropriate for asset-heavy companies (banks, property firms, utilities) where book value closely approximates liquidation value. For the LQ45 universe dominated by high-growth companies with significant intangible value the rigid $PBV \leq 1.0$ threshold consistently classifies the majority of stocks as overvalued, reducing its discriminatory power for investment decisions. Nonetheless, for companies such as PGAS and SMGR where PBV falls substantially below 1.0x, the signal is meaningful and may indicate genuine market undervaluation or impaired equity.

The DCF method, as an absolute valuation approach, is theoretically superior in capturing fundamental company value as it incorporates projected earnings growth, dividend policy, and the time value of money through discounting. However, its results are highly sensitive to assumptions regarding EPS growth rates and discount rates. The application of Mizrahi's growth rate caps (25% maximum) and historical PER averages as the exit multiple introduces a degree of conservatism that mitigates overestimation. The persistent overvaluation of UNTR under DCF, however, highlights a structural limitation: DCF models based on EPS projections cannot adequately capture the franchise value, brand premium, and market position of dominant market leaders.

These findings are consistent with the theoretical proposition that no single valuation method provides a universally optimal estimate of fair value. Consistent with Damodaran's (2012) principle of triangulation, combining multiple valuation methods yields a more robust and reliable assessment. The results support the recommendation that investors use DCF as the primary long-term valuation anchor, supplemented by PER for earnings momentum assessment and PBV for asset-based downside risk evaluation.

Relationship to Prior Research

The finding that PER, PBV, and DCF produce statistically significantly different valuations is consistent with the broader valuation literature. Syahputra (2024) documents that PBV has a positive and significant influence on stock prices, while PER's direct influence is more ambiguous — a finding that aligns with the current study's observation that PBV-derived valuations are systematically lower and structurally different from PER and DCF outputs. The



divergence between PBV and the other methods in the current study corroborates this distinction.

Panambunan and Tumiwa (2022) find that PER does not significantly affect market stock prices in a regression framework. This apparent contradiction with the current study's finding of a significant difference between PER and DCF valuations is reconcilable: the two studies address fundamentally different research questions. Panambunan and Tumiwa examine PER as a predictor of stock price movements (a causal inference question), whereas this study compares the absolute valuation outputs of three distinct methods (a measurement comparison question). The current study therefore complements rather than contradicts prior research.

Furthermore, the finding that DCF consistently produces the highest valuations among the three methods aligns with academic consensus that discounted cash flow models, by capturing long-term earning potential and incorporating dividend income, tend to yield higher intrinsic value estimates than market-relative multiples for fundamentally strong companies particularly in the context of an emerging market where stocks may be chronically underpriced relative to global comparable multiples (Fernandez, 2019).

CONCLUSION

This study analyzes the stock valuation of 13 LQ45-listed companies over the 2022–2024 period using three methods: Price Earning Ratio (PER), Price to Book Value (PBV), and Discounted Cash Flow (DCF). The principal conclusions are as follows:

1. The PER analysis classifies approximately 35.9% of observations as fair value, 33.3% as undervalued, and 30.8% as overvalued. Energy sector stocks (MEDC, PGAS) and BBNI are persistently undervalued, while telecommunications stocks (ISAT, EXCL) and SMGR exhibit periodic overvaluation driven by earnings volatility.
2. The PBV analysis predominantly classifies LQ45 stocks as overvalued (76.9% of observations), with only PGAS and SMGR consistently undervalued. This result reflects the inherent limitation of PBV for valuing knowledge-intensive and franchise-driven companies whose market values significantly exceed accounting book values.
3. The DCF analysis identifies UNTR, ISAT, and SMGR as persistently overvalued, while AKRA, MEDC, and TOWR are persistently undervalued across the full research period. UNTR's extreme overvaluation relative to



DCF intrinsic value reflects a significant franchise premium that the EPS-based projection model cannot capture.

4. The Kruskal-Wallis test ($H = 95.913$, $p = 0.000$) and subsequent Dunn post-hoc test with Bonferroni correction confirm statistically significant differences across all three pairwise method comparisons. DCF produces the highest mean valuation, followed by PER, and then PBV.
5. Practical implication: investors are advised to prioritize the DCF method as the primary valuation anchor for long-term investment decisions, supplemented by PER and PBV as complementary relative valuation tools. No single method provides a universally adequate measure of fair value; a multi-method triangulation approach is recommended.

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