Do Free Cash Flow to Firm and Relative Valuation Method Work in Valuing Building and Construction Companies?: A Test in IDX in 2018

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Keywords: DCF, Relative Valuation, Building Construction Companies.

Abstract: This research aimed to take a fair valuation in estimating the stock price at the building construction companies listed in IDX 2018 using DCF method within the FCFF approach and relative valuation methods including PER and PBV. Three scenarios involved; pessimistic scenario (average industry condition), moderate scenario (the most potential condition) and optimistic scenario (the condition above industry growth). The research data were derived from historical data 2013 - 2017 which considered as the reference for the projection years; 2018-2022. Results of this research presented that using DCF method, in the optimistic, moderate, and pessimistic scenario, the intrinsic value of ADHI is overvalued; WSKT is overvalued; WIKA is undervalued, and PTPP is undervalued. Furthermore, in Relative Valuation method within PER approach, the PER value of ADHI in the optimistic, moderate and pessimistic scenario is 4.19, 3.73, and 3.32; WSKT 3.51, 3.13, and 2.38; WIKA 33.8, 33.4, and 26; PTPP 13.7, 13.7, and 13.6. In PBV approach, the PBV value of ADHI in optimistic, moderate and pessimistic scenario is 0.76, 0.64, and 0.54; WSKT 0.64, 0.56, and 0.42; WIKA 4.03, 3.95, and 3.04; PTPP 2.49, 2.49, and 2.47. The conclusion of this research recommends buying ADHI, WSKT, WIKA and PTPP shares.

1 BACKGROUND

The Ministry of Finance of the Republic of Indonesia posited that there had been an increment in the infrastructure budget from 2014-2018 which is accounted for 154.7 trillion to 410.7 trillion. This significant increase illustrates the infrastructure sector to be the main focus of the government of the 2014-2019 period. Following, the IDX gives company update on December 31, 2017, as table 1.1.

Out of the 16 construction companies listed on the IDX, there are four construction companies which are state-owned enterprises (BUMN), namely PT Waskita Karya (Persero) Tbk (WSKT), PT Adhi Karya (Persero) Tbk (ADHI), PT Wijaya Karya (Persero) Tbk (WIKA), and PT PP (Persero) Tbk (PTPP). In 2017, the four companies managed to record positive performance and control most of the market.

Based on Figure 1.1, it can be concluded that there are fluctuations in the value of stock prices and yields, both negative and positive. ADHI has the highest share price value on May 31, 2013, with a value of 3,309 and meets its lowest price on January 7, 2014, with a value of 1,213. Whereas the condition of risk and return from this company also experienced an increase and a decrease which was equal to 16.25% positive yield on March 19, 2013, and experienced negative returns on July 30, 2015, with a value of -15.81%.

From Figure 1.2, it is shown that from January 2013 to June 2018 there was an increase in the share price of WIKA on February 3, 2015, amounted to 3,815 and was at its lowest point on May 8, 2018, and was at 1,250. For the highest yield occurred on September 19, 2013, which is getting a yield of 14.31%, while the most significant risk occurred on April 10, 2014, which was equal to -13.59%.

The same thing happened at WSKT, this company has the highest share value on February 19, 2018, with a value of 3.110, and has the lowest share value on January 7, 2014, with a value of 395. Then for risk and return, the most significant return occurs on January 13, 2014, with an increase of 15.18% and the most significant risk occurred on August 19, 2013, with a percentage of -13.98%.
This fluctuation also occurs in PTPP, this company has the highest share value on August 9, 2016, with

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a value of 4.650, and has the lowest share value on January 7, 2013, with a value of 760. Then for risk and return, a return occurs the largest on July 10, 2013, with an increase of 15.96% and the most significant risk occurred on June 28, 2018, with a percentage of -16.96%.

Table 1.1: List of IDX construction companies.

No	Stock code	Issuer	Date of IPO
1	ACST	Acset Indonusa Tbk	24-Jun-13
2	ADHI	Adhi Karya (Persero) Tbk	18-Mar-04
3	CSIS	Cahayasakti Investindo Sukses Tbk	10-May-17
4	DGIK	Nusa Konstruksi Enjiniring Tbk d.h Duta Graha Indah Tbk	19-Dec-07
5	IDPR	Indonesia Pondasi Raya Tbk.	10-Dec-15
6	MTRA	Mitra Pemuda Tbk.	10-Feb-16
7	NRCA	Nusa Raya Cipta Tbk	27-Jun-13
8	PBSA	Paramita Bangun Saran Tbk	28-Sep-16
9	PSSI	Pelita Samudera Shipping Tbk	5-Dec-17
10	PTPP	Pembangunan Perumahan (Persero) Tbk	9-Feb-10
11	SSIA	Surya Semesta Internusa Tbk	27-Mar-97
12	TOPS	Totalindo Eka Persada Tbk	16-Jun-17
13	TOTL	Total Bangun Persada Tbk	25-Jul-06
14	WEGE	Wijaya Karya Bangunan Gedung Tbk	30-Nov-17
15	WIKA	Wijaya Karya (Persero) Tbk	29-Oct-07
16	WSKT	Waskita Karya (Persero) Tbk	19-Dec-12

Sources: IDX

Figure 1.1: Stock Price Trends vs. ADHI Risk / Return January 2013 - June 2018.

However, a data trend of 2013-2017 revealed the stock price of those companies to be quite volatile. This condition has become uncertain and somewhat risky for investors since the price reflects the valuation of an asset, which might affect the *returns* eventually generated. Without a fair price of shares, it would be alarming for investors to regard a position in investing: to buy or sell. As for owners, valuation reflects company performance.

Figure 1.2: Stock Price Trends vs. WIKA Risk / Return January 2013 - June 2018.

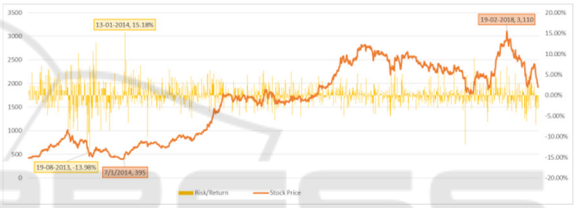

Figure 1.3: Stock Price Trends vs. WSKT Risk / Return January 2013 - June 2018.

Figure 1.4: Stock Price Trends vs. PTPP Risk / Return January 2013 - June 2018.

Price of a company's stock in the market might come falsely in two directions: *undervalued or overvalued. Undervalued* share indicates that the company's stock price in the market is lower than the intrinsic price/fair price. Otherwise, the *overvalued* share implies that a company's market price is higher than its intrinsic value.

Among many, there are two types of valuation methods, namely (1) *Discounted Cash Flow (DCF)* method with *Free Cash Flow to Firm (FCFF)* approach, and (2) *Relative Valuation* method with the *Price Earning Ratio (PER)* and *Price to Book Value (PBV)* approach. *FCFF* method allows cash flow to be evident to all fund providers (debt holders, preferred shareholders, ordinary

shareholders, convertible bond investors, etc.). This method can also be referred to as free cash flow without flow, and this shows the surplus cash flow available to the business if it is debt free. The general starting point for calculating it is Net After Tax Operating Income (NOPAT) which can be obtained by multiplying Pre-Interest Profit and Tax (EBIT) by (1-Tax Rate). This method is used to avoid *overstated* valuation when a company has a relatively sizeable *other income*.

Relative Valuation compares companies to other company or industry nearby. PBV has a similar formula with PER, which is equally useful to see the fair price of a stock. Unlike PER which focuses on net income, PBV focuses on company equity. PBV is a comparison between stock prices and *book value.* Book Value is a comparison between the amount of equity and the number of shares outstanding**.** If the PBV value is more than 1 (one), the stock has been traded at a price higher than its fair value.

There are three scenarios of projection:

1) Pessimistic Scenario--uses industrial growth projection values.
2) Moderate Scenarios--where the projected value of industrial growth is added to the interval/delta between the growth of the industry and the growth of the company.
3) The Optimistic Scenario--moderate scenario coupled with a half times the delta between the growth of the industry and the growth of the company.

Based on the background aforementioned, the objectives of this study are as follows:

1. To examine the fair price of ADHI, WIKA, WSKT, and PTPP shares using the *FCFF* method; compared to the *Relative Valuation* method in an optimistic scenario.
2. To examine the fair price of ADHI, WIKA, WSKT, and PTPP shares using the *FCFF* method; compared to the *Relative Valuation* method in a moderate scenario
3. To examine the fair price of ADHI, WIKA, WSKT, and PTPP shares using the *FCFF* method; compared to the *Relative Valuation* method in the pessimistic scenario.
4. To provide recommendations for the calculation of the fair price of ADHI, WIKA, WSKT, and PTPP shares calculated using the method (FCFF) and the *Relative Valuation* method in the pessimistic, moderate and optimistic scenario.

From the exposure of the phenomena that have been explained above, the purpose of this research is to look for the fair prices (intrinsic value) of the current building construction companies listed on the Indonesia Stock Exchange (2013-2018) using the Discounted Cash Flow (DCF) method with the Free Cash Flow to Firm (FCFF) approach and the Relative Valuation method with Price to Earning Ratio (PER) and Price Book Value (PBV) approaches.

2 LITERATURE REVIEW

2.1 Valuation Theory

Damodaran (2006) postulated that the prerequisite for investment decision making lays in getting well informed of the value of the asset to be invested and what gives value to the asset. To gain profit, an investor buys goods if the stock price is below its fair value.

From the managerial perspective, the purpose of valuation is getting the right consideration, incentives, and control processes. For a manager, valuation is a particular concern for change

"If I choose to take action, will it increase the company's business or it will destroy it. After making my choice, how do I evaluate whether the financial results produce the results that I expect for investors?".

Valuation may cover relative value and direction value. It is essential to distinguish which business units add value, which parts do not have influence, or which parts will damage the company's business, as well as how the relationship changes with time (Thomas & Gup, 2010).

Damodaran (2006) also asserted that the approach to valuing an asset is generally divided into three methods:

a. Discounted Cash Flow Valuation
   Using this valuation, the value of an asset is based on the expected cash flow
b. Relative Valuation
   This valuation method values an asset by comparing it with other similar assets.
c. Contingent Claim Valuation
   This method uses option pricing models to assess assets that have option characteristics.

2.1.1 Company Value

Company value is the investor's perception of the level of success of a company in managing resources

that are currently associated with the company's stock price. The price of its shares can express company value. The stock price is determined from the presence of requests and offers from investors. High stock prices make the value of the company high and can increase market confidence not only in the company's current performance but also in the prospects of the company. Stock prices on the market do not necessarily reflect the right price of the company.

2.1.2 Discounted Cash Flow

The discounted cash flow method is a stock valuation method that utilizes the concept of the time value of money. The postulate is that all money flowing in the future (discount value) equals to present value after being discounted. DCF is obtained from company income, so DCF valuation focuses on cash flows generated by one part of the business, namely operating activities. The principle is free cash flow departs from the assumption that the company's income minus all costs is extra cash (free cash flow). The extra cash is the right of all parties who provide funding to companies, viz creditors (lenders or bondholders) and shareholders.

The process of assessing a company with the DCF method consists of several stages. Firstly, the assumption of future free cash flow for the next five to ten years was set. Subsequently, an appropriate discount rate was anchored, for instance, using WACC (determining the average capital cost to discount all future FCFs to calculate present value). Thirdly terminal value was determined. Terminal value (TV) is the present value of all future cash flows obtained after a certain projection period. Lastly, the present value of the cash flow is summed with the terminal value.

The DCF valuation method has three variations of calculations that can be applied in conducting stock valuation analysis according to the needs of each analysis. The three variations are (1) dividend discounted model; (2) free cash flow to equity; and (3) free cash flow to the firm.

2.1.3 Free Cash Flow to Firm

FCFF is cash available to corporate funders, namely shareholders and bonds after the company conducts operations and investment activities. FCFF calculates the value of a company without debt, where operating costs have been excluded from taxes and discounted using capital costs (WACC). The calculation is as follows:

$$FCFF = EBIT\ (1\text{-}T) + D\ \&\ A - CAPEX - \Delta\ WC \quad (1)$$

Determining the discount rate entails an in-depth analysis of the company's financing structure and current market conditions. The discount rate applied for FCF discounts is called the weighted average cost of capital (WACC). The formula is employed to calculate the value of a company using FCFF whose growth has stabilized in a given year, and after that grows constant at the perpetual growth rate of g, which can be expressed in Equation 2 (Damodaran, 2006)

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+WACC)^t} + \frac{TV}{(1+WACC)^n} \quad (2)$$

Terminal value is the present value of all future cash flows obtained after a period determined by scenario analysis. The formula used is as follows:

$$TV = FCFF_{n+1}/(WACC - g_n) \quad (3)$$

It is particularly challenging to estimate the exact numbers that explicate how a company will continue to grow in the future in the long run. Terminal values are based on average growth expectations, which are easier to predict. The reasoning behind terminal values is to assume a constant growth rate for the time after the period analyzed, where the perpetual growth rate is symbolized by g then WACC is symbolized by r as the discount rate used. In most cases, the long-term and boarding growth rates are determined by presumptions and assuming that the economy always grows in the long run.

After determining the present value of the cash flows obtained from the specified period and scenario (FCFF) and also from the terminal value discounted for the present value, then the two present values are summed to provide the firm value or equity value.

2.2 Cost of Capital

The cost of capital or the overall capital cost of a company reflects the cost combination of all funding sources used by the company. Furthermore, the overall capital cost is called the Weighted Average Cost of Capital (WACC). WACC is the average cost after tax of each source of capital used by the company to finance a project, as expressed in Equation 4.

Weighted Average Cost of Capital = (Composition of equity × rate of equity) + ((Composition of debt × rate of debt) × (1 – tax)) (4)

Factors that influence the WACC:

- Cost of Equity: The rate of return expected by a shareholder (equity) in his investment in the company.
- Cost of Debt: The interest rate due, paid by the company for its debt or external capital.

2.3 Relative Valuation

This most commonly used valuation method applies a comparison study of similar companies or industry within. Relative valuation discovers the value of an asset by comparing it with other similar assets.

1) Price earning ratio (PER) Approach

$$Po = \text{Estimasi EPS} \times \text{PER} \quad (5)$$

2) Price to Book Value (PBV) Approach

$$PBV = \frac{Po}{BV} \quad (6)$$

3) Multiple EBITDA Approach

$$EBITDA\ Multiple = \frac{EV}{EBITDA} \quad (7)$$

2.4 Previous Studies

Previous studies supporting this research are as follows:

Zemba & Hendrawan (2018) use financial report data for 5 years between 2013 and 2017, and use it as a historical aspect to produce estimates for the next 5 years 2018-2022, states that in the health sector with SAME, SILO, SRAJ, and MIKA samples, which evaluate using DCF and Relative Valuation there are 3 companies whose shares are overvalued and only SILO whose shares are undervalued.

Neaxie & Hendrawan (2017) Stock Valuation Using Discounted Cash Flow and Relative Valuation Methods in Telecommunications Companies Listed on Indonesian Stock Exchanges for Projections in 2017. This study discusses the fair valuation analysis of shares using Discounted Cash Flow (DCF) and Relative Valuation Methods in telecommunications companies are listed on the Indonesia Stock Exchange (IDX). The results show that using DCF on an optimistic scenario, TLKM's fair value is undervalued, ISAT's fair value is overvalued, and EXCL's fair value is undervalued. Then using DCF in the moderate scenario the TLKM's fair value is undervalued, ISAT's fair value is overvalued, and the EXCL's fair value is overvalued. Furthermore, using DCF in the pessimistic scenario, TLKM's fair value is overvalued, the fair value of ISAT is overvalued and the fair value of EXCL is overvalued. Using the Relative Valuation method with the Price Earning Ratio (PER) approach, TLKM's fair value is undervalued, ISAT's fair value is overvalued, and EXCL's fair value is undervalued. Then with the Price Book Value (PBV) approach, TLKM's fair value is in an overvalued condition, ISAT's fair value is in an overvalued condition, and the EXCL's fair value is in an undervalued condition. Furthermore, with the approach of EBITDA, TLKM's fair value is overvalued, the fair value of ISAT is in an undervalued condition, and EXCL's fair value is in an undervalued condition.

On their paper, Hauser & Thornton (2017) joins measures of substantial development in a logit relapse to characterize an exhaustive life-cycle model of the probability of dividend payment. The valuation of firms that conform to the model is compared with the valuation of firms that do not fit the model. Valuation is estimated by the market to book (M/B) ratio. The investigation demonstrates that dividend policy is related to firm value. Dividend-paying firms that fit the life-cycle display have a higher middle valuation than dividend-paying firms that do not fit the life-cycle demonstrate. Additionally, non-paying firms that fit the life-cycle show have a higher middle valuation than non-paying firms that do not fit the life-cycle model. The outcomes likewise give proof that the vanishing dividend phenomenon is identified with movements in valuation.

Nissim (2013) Firm esteem is equivalent to the present estimation of future money streams, so great contender for value numerous valuation are basics that are emphatically identified with future money streams. Research in bookkeeping and account shows that profit perform better than income in anticipating future money streams, and, in like manner, profit products create more accurate valuations than income multiples. Consistent with this proof, investigators use profit products more frequently than income products. This is particularly valid for safety net providers and other budgetary administrations organizations because the money related nature of most resources and liabilities of these organizations makes money streams fairly self-assertive.

Myers (2012) expressed that valuers need to continually address the numerous issues that may influence their risk and obligation to their customers. Specifically, further research, vital learning

improvement and market-explicit examination are altogether required to build up valuers' heuristics. As the market changes and creates, valuers need to build up their sentiments and seeing simultaneously with the market.

Liu, et al. (2007) analysis suggests that cash flow is not king on equity valuation. They found that reported earnings dominate reported cash flows as summary measures of value in the United States. They extended the analysis to other markets and used forecasts of operating cash flows, dividends, and earnings. They found that, although moving from reported numbers to forecasts improves the performance of operating cash flows, it improves the performance of earnings to an even greater extent. EPS forecasts represented substantially better summary measures of value than did OCF forecasts in all five countries examined, and this relative superiority was observed in most industries. When they compared dividends rather than operating cash flows with earnings for a sample derived from seven countries where dividend forecasts are frequent, they found, again, that earnings forecasts were a better summary measure of value than dividend forecasts in all countries and most industries. So they found that moving from reported numbers to forecasts improved performance more for earnings than for dividends.

DeFond & Hung (2003) stated that cash flows are incrementally useful because they provide information that complements the value-relevant information contained in earnings. Market participants can use cash flows to interpret the information in earnings, for example, by comparing cash flows to net income, because cash flows are potentially less subjective than accruals. Such comparisons are commonly suggested in financial statement analysis textbooks to evaluate earnings quality. Cash flows help market participants assess firm viability by providing information about solvency and liquidity. Such information is potentially useful because even firms with strong earnings ultimately rely on cash to repay debt and purchase assets.

On his research, Ruback (2002) presents the Capital Cash Flow (CCF) method of valuing risky cash flows. This method is intuitive and straightforward. The after-tax capital cash flows are just the before-tax cash flows to both debt and equity, reduced by taxes including interest tax shields. The discount rate is the same expected return on assets that are used in the before-tax valuation. Because the benefit of tax-deductible is included in the cash flows, the discount rate does not change when leverage changes. The CCF method is algebraically equivalent to the favored method of discounting Free Cash Flows by the after-tax weighted average cost of capital. However, in many instances, the Capital Cash Flow method is substantially easier to apply and, as a result, is less prone to error. The ease of use occurs because the Capital Cash Flow method puts the interest tax shields in the cash flows and discounts by a before-tax cost of assets. The cash flow calculations can generally rely on the projected taxes, and the cost of assets does not generally change through time even when the number of debt changes. When applying the Free Cash Flow method, taxes need to be inferred, and the cost of capital changes as the number of debt changes. The Capital Cash Flow method is closely related to the Adjusted Present Value method. Adjusted Present Value is generally calculated as the sum of operating cash flows discounted by the cost of assets plus interest tax shields discounted at the cost of debt. The cost of assets discounts the interest tax shields that are discounted by the cost of debt in the APV method in the Capital Cash Flow method. The Adjusted Present Value method results in a higher value than the Capital Cash Flow method because it treats the interest tax shields as being less risky than the firm as a whole because the level of debt is implicitly assumed to be a fixed dollar amount. As a result, a tax adjustment is made when unlevering an equity beta to calculate an asset beta. In contrast, the Capital Cash Flow method, like the FCF method, makes the more economically plausible assumption that debt is proportional to value. The risk of the interest tax shields, therefore, matches the risk of the assets.

2.5 Theoretical Framework

The thinking framework of this study can be presented as shown in Figure 2.1.

A stock price is an essential consideration when investing in stocks. However, there are numerous factors which cause fluctuations in stock prices--and the trend is not robust to predict correctly. Furthermore, there are also mispriced stocks (wrongly priced stock: too high-priced or too cheap). One of the best techniques to anticipate the risk of the stock price fluctuation is to carry out a fundamental analysis. The fundamental analysis suggests evaluating the intrinsic value of shares. This method proffers investors a long-term picture of the actual value of shares which also means the company's fundamental value.

The valuation of shares that produce information on intrinsic value will then be compared with the stock market price to determine the selling or buying

position of a company's stock. The valuation of intrinsic value is based on assumptions and the determination of the projected fundamental value of the company. Valuation of intrinsic value will be calculated using the DCF method with the FCFF approach and will be compared with the relative valuation method with the PER and PBV approaches. The basis of valuation is based on assumptions and projections of company conditions. This research is limited to using historical data from 2013-2017 as a basis for projections.

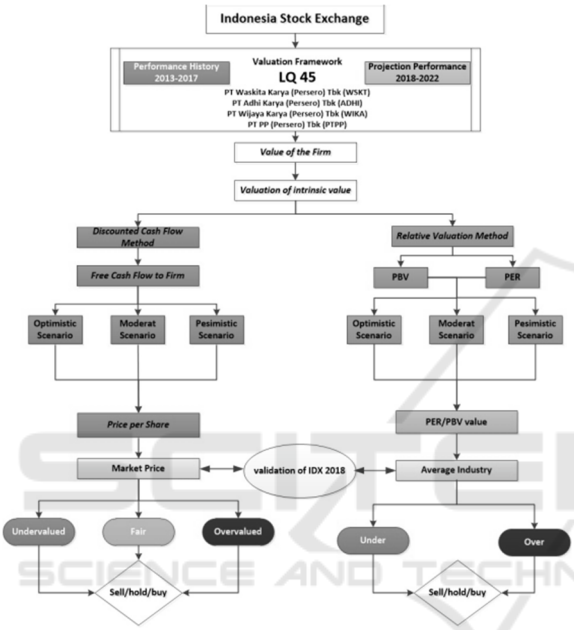

Figure 2.1: The Thinking Framework.

Succeeding the projection, the future cash flow, and its present value is calculated. In the calculation, three scenarios were used: optimistic, moderate and pessimistic. The optimistic scenario runs under the assumption that the company gains the highest growth (as in industrial growth and the target of company management). The moderate scenario runs under the assumption which is most likely to occur. Lastly, the pessimistic scenario was assumed to have the worst conditions or circumstances under industrial growth.

The final valuation process is obtaining equity value or the intrinsic value of the company, succeeded by getting intrinsic value for each share in each condition scenario.

2.6 Discussion

2.6.1 Results of *FCFF Calculation*

By utilizing the FCFF method, the intrinsic value of a company is obtained, and shown in Table 2.1.

Table 2.1: Intrinsic Value of the Company.

	Scenario	Intrinsic Value	Stock Price Jan 2nd 2018	Condition
ADHI	Pessimistic	885	1,865	Overvalued
	Moderate	1,051	1,865	Overvalued
	Optimistic	1,249	1,865	Overvalued
WSKT	Pessimistic	699	2,190	Overvalued
	Moderate	946	2,190	Overvalued
	Optimistic	1,078	2,190	Overvalued
WIKA	Pessimistic	4,965	1,565	Undervalued
	Moderate	6,448	1,565	Undervalued
	Optimistic	6,565	1,565	Undervalued
PTPP	Pessimistic	5,667	2,620	Undervalued
	Moderate	5,708	2,620	Undervalued
	Optimistic	5,729	2,620	Undervalued

Sources: Author's computations

For WIKA and PTPP, in the pessimistic, moderate and optimistic scenario, the intrinsic value is higher than the value of shares in the market today. On that date, the share value for WIKA was 1,565, while for PTPP it was 2,620. Using a pessimistic scenario, WIKA's intrinsic value is 4,965 and PTPP is 5,667; thus the stock price in the market is undervalued.

2.6.2 Calculation Results with PER and PBV Methods

The calculation results using the Relative Evaluation method with the PER and PBV approaches are as table 2.2.

Under the pessimistic scenario, the ADHI PER value is 3.32 times, WSKT 2.38 times, WIKA is 25.95 times, while PTPP is 13.60 times. In IDX quarterly data (Q1 2018), the average PER value of construction companies is 25.50 times, with the lowest PER value at Surya Semesta Internusa Tbk. (SSIA) of 2.20 times and the highest PER value in Cahayasakti Investindo Sukses Tbk. (CSIS) of 1,612.94 times. These points explicate that the results of research calculations are in the range of PER in the market.

Table 2.2: PER Value and PBV Calculation.

Relative Valua-tion	Pesimistic		Moderate		Optimistic	
	PER	PBV	PER	PBV	PER	PBV
ADHI	3.32	0.54	3.73	0.64	4.19	0.76
WSKT	2.38	0.42	3.13	0.56	3.51	0.64
WIKA	26	3.04	33.4	3.95	33.8	4.03
PTPP	13.6	2.47	13.7	2.49	13.7	2.49

Sources: Author's computations

The focus of this calculation is the net profit that has been generated by the company. Kenning the PER of an issuer, investors may find out whether the price of a stock is reasonable or not. PER is obtained by dividing the share price with the company's earnings per share (EPS) displayed on the company's financial statements. The higher the PER value of a stock, the more expensive the stock is.

Table 2.2 explicates that WIKA has the highest PER, accounted for 25.95 times, indicating the intrinsic price of WIKA's shares is worth 25.95 times compared to the company's net profit per share. Concurrently, the smallest PER is in WSKT company which is equal to 2.38 times, which means that the share price is worth 2.38 times per share (EPS). For investors, a small PER value can be one of the references in investing, because one of them with a more massive EPS, will also increase the possibility of being able to get higher returns.

The results of the study under pessimistic scenario designate that the ADHI PBV value is 0.54 times, the WSKT PBV value is 2.38 times, the WIKA PBV value is 3.04 times, and the PTPP PBV value is 2.47 times. In quarterly IDX data (Q1 2018) the average PBV value of construction companies is 3.35 times, with the lowest PBV value on Nusa Konstruksi Engineering Tbk. (DGIK) of 0.47 times and the highest PBV value in Totalindo Eka Persada Tbk. (TOPS) of 21.00 times. This result shows that the results of research calculations are in the PBV range in the market.

PBV can be defined as a 'stock price compared to the value of equity per share.' The number was obtained by dividing the stock price by Book Value (BV), where BV is generated from equity divided by the average number of shares outstanding. The concept of its application is corresponding with PER: the higher the value of PBV, the higher the price of the stock.

The lowest PBV value of the four companies studied is WSKT which is 0.42 times, this signifies that the value of the shares is smaller than 0.42 times contrasted to the value of the book. The most considerable PBV value of WIKA is 3.04 times; this indicates that the intrinsic value of its shares is 3.04 times compared to its valuation book value.

Table 3.1: Summary of ADHI Analysis.

Method	Scenario	Intrinsic value	Evaluation	Recom-men-dation
DCF-FCFF	Pessimistic	885	Overvalued	Sell
	Moderate	1051	Overvalued	Sell
	Optimistic	1249	Overvalued	Sell
RV-PER	Pessimistic	3.32	AVG PER Industry 25.50	Buy
	Moderate	3.73		Buy
	Optimistic	4.19		Buy
RV-PBV	Pessimistic	0.54	Undervalued	Buy
	Moderate	0.64	Undervalued	Buy
	Optimistic	0.76	Undervalued	Buy

Sources: Author's computation

3 ANALYSIS

3.1 Analysis of PT Adhi Karya (Persero) Tbk.

Using FCFF in three scenarios, "selling" recommendations are obtained because the results of ADHI's theoretical calculations allow overvalued intrinsic values of stocks.

With the PER approach, the three scenarios produce a PER value that is underneath the industry PER average value. Industry-wise, ADHI's PER is still a good investment. Therefore it is recommended to "buy" those mentioned above.

The stock calculation approach with PBV produces a value below one in all three scenarios, which means that the value of shares in the market is smaller than the value of the book value; accordingly, the stock is worth buying.

It can be concluded that ADHI's shares are worth buying or maintaining. Also, the trend of revenue growth for this company is perfect, during the last three years a positive trend has been obtained, for example, in 2016-2017, the growth of the revenue was 36.99%

3.2 Analysis of PT Waskita Karya (Persero) Tbk.

By employing the FCFF method, it is recommended to "sell" because the results of original calculations exhibit the intrinsic value of stocks to be overvalued.

By employing PER method, the PER value is beneath the average value of the Industrial PER.

Table 3.2: Summary of WSKT Analysis.

Method	Scenario	Intrinsic value	Evaluation	Recom-mendation
DCF-FCFF	Pessi-mistic	699	Over-valued	Sell
	Mo-derate	946	Over-valued	Sell
	Opti-mistic	1078	Over-valued	Sell
RV-PER	Pessi-mistic	2.38	AVG PER Industry 25.50	Buy
	Mo-derate	3.13		Buy
	Opti-mistic	3.51		Buy
RV-PBV	Pessi-mistic	0.42	Under-valued	Buy
	Mo-derate	0.56	Under-valued	Buy
	Opti-mistic	0.64	Under-valued	Buy

Sources: Author's computations

Industry-wise, the PER for WSKT is still a reliable investment, so it is recommended to "buy" it.

By employing PER method, the PER value is beneath the average value of the Industrial PER. Industry-wise, the PER for WSKT is still a reliable investment, so it is recommended to "buy" it.

By employing PBV method, PBV is produced below one in all three scenarios, implying that the value of shares in the market is smaller than the value of the book value; therefore, it is recommended to "buy" shares of WSKT.

3.3 Analysis of PT Wijaya Karya (Persero) Tbk.

According to FCFF method, in three calculation scenarios, it is suggested to "buy" as the calculation exposes that the intrinsic value of the "undervalued" stock.

The PER value for WIKA is above the industry average, so it is recommended to "sell".

The stock calculation approach using Price Book Value (PBV) produces a value above one in all three scenarios, which implies that the value of shares in the market is higher than the book value; therefore WIKA's shares are recommended for sale.

However, WIKA's shares are worth considering because revenue growth over the past five years has always been positive. Based on the 2017 financial report, WIKA's revenue in 2017 was IDR 26,176,403,026,000.00 improved from 2016 at level

Table 3.3: Summary of WIKA Analysis.

Method	Scenario	Intrinsic Value	Evaluation	Recommen-dation
DCF-FCFF	Pessimistic	4965	Under-valued	Buy
	Moderate	6448	Under-valued	Buy
	Optimistic	6565	Under-valued	Buy
RV-PER	Pessimistic	25.95	AVG PER Industry 25.50	Sell
	Moderate	33.39		Sell
	Optimistic	33.84		Sell
RV-PBV	Pessimistic	3.04	Over-valued	Sell
	Moderate	3.95	Over-valued	Sell
	Optimistic	2.49	Over-valued	Sell

Sources: Author's computations

of IDR 15,668,832,513,000.00--accounted for 67.06% of increase.

Analysis of PT PP (Persero) Tbk.

By employing the FCFF method, it is recommended to "buy" because the results of PTPP's necessary calculations exhibit an undervalued intrinsic value.

Table 3.4: Summary of PTPP Analysis.

Method	Scenario	Intrinsic value	Evaluation	Recommen-dation
DCF-FCFF	Pessimistic	5667	Under-valued	Buy
	Moderate	5708	Under-valued	Buy
	Optimistic	5729	Under-valued	Buy
RV-PER	Pessimistic	13.60	AVG PER Industry 25.50	Buy
	Moderate	13.66		Buy
	Optimistic	13.70		Buy
RV-PBV	Pessimistic	2.47	Over-valued	Sell
	Moderate	2.49	Over-valued	Sell
	Optimistic	2.49	Over-valued	Sell

Source: Author's computations

By applying the PER approach, PER value is identified to be below the average industry value. The PER for PTPP is worthy of being an investment target; consequently, it is recommended to "buy".

According to Price Book Value (PBV), the value is above one in all three scenarios, indicating that the value of shares in the market is higher than the value of the book value; accordingly, the shares of PTPP are recommended for sale.

Although the results of PBV analysis for PTPP shares assert that the value of the shares is higher than the book value, in the point of view of the industry, the average PBV value for the construction industry is 3.35. This number suggests PBV value for PTPP to be still good and still quite far from the industry average. The condition might be taken into

consideration as to retain shares previously possessed by investors, or as one might plan to purchase PTPP shares.

4 CONCLUSION

It can be concluded that under the optimistic scenario and with the Discounted Cash Flow method, ADHI and WSKT are overvalued because the market price on January 2, 2018, is higher than the intrinsic value. WIKA and PTPP are in an undervalued condition because the market prices are lower than their intrinsic value.

By using the Relative Valuation method in the PER (Price Earning Ratio) approach, ADHI has a value of 4.19 times, WSKT 3.51 times, WIKA 33.8 times, and PTPP 13.7 times. With the PBV (Price Book Value) approach, ADHI has a value of 0.76 times, WSKT 0.64 times, WIKA 4.03 times and PTPP 2.49 times. The PER and PBV values are in the PER and PBV values in the market based on IDX "Financial Data & Ratio" data for the 2018 quarter one period.

In the meantime, under the moderate scenario, with the Discounted Cash Flow method, ADHI and WSKT are overvalued. WIKA and PTPP are in an undervalued condition. By employing Relative Valuation method and the PER (Price Earning Ratio) approach, ADHI has a value of 3.73 times, WSKT 3.13 times, WIKA 33.4 times and PTPP 13.7 times. With the PBV (Price Book Value) approach, ADHI has a value of 0.64 times, WSKT 0.56 times, WIKA 3.95 times and PTPP 2.49 times. The PER and PBV values are in the PER and PBV values in the market based on IDX "Financial Data & Ratio" data for the 2018 quarter one period.

As under the pessimistic scenario with the Discounted Cash Flow method, ADHI and WSKT are overvalued. WIKA and PTPP are in an undervalued condition. By applying Relative Valuation method with the PER (Price Earning Ratio) approach, ADHI has a value of 3.32 times, WSKT 2.38 times, WIKA 26 times and PTPP 13.6 times. With the PBV (Price Book Value) approach, ADHI has a value of 0.54 times, WSKT 0.42 times, WIKA 3.04 times and PTPP 2.47 times. The PER and PBV values are in the PER and PBV values in the market based on IDX "Financial Data & Ratio" data for the 2018 quarter one period.

Eventually, the recommendations given under the condition of pessimism, moderation and optimism are shares of PT Waskita Karya (Persero) Tbk (WSKT), PT Adhi Karya (Persero) Tbk (ADHI), PT Wijaya Karya (Persero) Tbk. (WIKA) also, PT PP (Persero) Tbk. (PTPP).

5 RECOMMENDATION

It is suggested that the succeeding researcher may enhance the level of accuracy and validity of the data by utilizing more extensive historical data, such as history for at least ten years.

For further research, this research can be used for reference in the use of theory and research methods because it has been proven to get results that are in accordance with real conditions, compared to data from IDX.

For investors in investing, in addition to using the results of valuation assessments as a basis for reference in decision making, they should observe the business, economic and social-political conditions of the country concerned.

For companies, to maintain and increase the value of shares in the market, in addition to improving the performance of companies with revenue and EAT, companies must examine the cost & expense of the company both OPEX and CAPEX. In this case, the company must carry out cost & expense records that burden the company. Companies must be able to maintain the PER and PBV values below the industry average, individually 25.50 for PER and 3.35 for PBV.

REFERENCES

Damodaran, A., 2006. *Damodaran on Valuation.* United States of America: John Wiley and Sons Inc.

DeFond, M. L. & Hung, M., 2003. An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics,* Volume 35, p. 73–100.

Hauser, R. & Thornton, J. H., 2017. Dividend policy and corporate valuation. *Managerial Finance,* 43(6), pp. 663-678.

Hausman, J., 2012. Contingent Valuation: From Dubious to Hopeless. *Journal of Economic Perspectives,* 26(4), p. 43–56.

Liu, J., Nissim, D. & Thomas, J., 2007. Is Cash Flow King in Valuations?. *Financial Analysts Journal,* 63(2), pp. 56-65.

Myers, G. W., 2012. The value of sustainability in real estate: a review from a valuation perspective. *Journal of Property Investment & Finance,* 30(2), pp. 115-144.

Neaxie, L. V. & Hendrawan, R., 2017. Stock Valuations in Telecommunication Firms: Evidence from Indonesia Stock Exchange. *Journal of Economic and Management Perspectives,* 11(3).

Nissim, D., 2013. Relative Valuation of U.S. Insurance Companies. *Review of Accounting Studies,* Volume 18, p. 324–359.

Penman, S., 2016. Valuation: Accounting for Risk and the Expected Return. *Abacus,* 52(1), pp. 106-130.

Ruback, R. S., 2002. Capital Cash Flows: A Simple Approach to Valuing Risky Cash Flows. *Journal Financial Managemet,* 31(2), pp. 85-103.

Thomas & Gup, 2010. *The Valuation Handbook, Valuation Techniques from Today's Top Practitioners.* United States of America: John Wiley and Sons Inc.

Zemba, S. & Hendrawan, R., 2018. Does Rapidly Growing Revenues Always Produce An Excellent Company's Value? DCF & P/E Valuation Assessment on Hospital Industry. *e-Proceeding of Management,* 5(2), pp. 2045-2060.

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