FUNDAMENTAL ANALYSIS FOR FAIR PRICES USING THE DCF METHOD OF BUMN BANKING SHARES ON THE INDONESIA STOCK EXCHANGE

1st Jihan Nur Azizah, 2nd Imron HR. SE., MM

Management

Indonesian College of Economics,
Jakarta,Indonesia

Jihannap2502@gmail.com; Imron_hr@@stei.ac.id

Abstract– *The research conducted aims to find out the fair price of shares of state-owned banking companies listed on the Indonesian Stock Exchange and to prevent investors from the risk of large losses and get the maximum possible profit. The type of research carried out is a descriptive research with quantitative approaches. The population used in this study were all companies in the banking sector listed on the Indonesia Stock Exchange. The data collection method used for this research is the literature study method. The data analysis carried out in this research used the discounted cash flow (DCF) fundamental analysis.The results of this study indicate that the shares of PT. Bank Rakyat Indonesia (Persero) Tbk and PT. Bank Negara Indonesia (Persero) Tbk at the end of 2015, 2016, 2017 and 2018 was in an overvalued condition. Meanwhile, at the end of 2019, how much will it be in undervalued conditions For PT. Bank Mandiri (Persero) Tbk at the end of the year during 2015 - 2019 was in an overvalued condition. For shares of PT. Bank Tabungan Negara (Persero) Tbk at the end of 2015, 2016, 2018 and 2019 was in an undervalued condition and at the end of 2017 was in an overvalued condition. Based on the research results, the stocks that are in an undervalued or cheap condition, investors should make the decision to buy these shares. As for stocks that are overvalued or expensive, investors should either sell or not buy the company's shares because they are too expensive to buy.*

Keywords : Investment, Valuation, Market Price, Dividend, Fundamental Analysis, Capital

Asset Pricing Model, Discounted Cash Flows, Undervalued, Overvalued.

I. INTRODUCTION

The banking sector is one of the sectors that plays an important role in building a country because banks function as financial intermediary institutions that channel funds from parties that have excess funds to those who need funds. With this role, banks channel funds to the real sector to encourage economic growth so that banks have become institutions that influence the development of the country's economy. Apart from acting as intermediaries, banks also play a role as a provider and service provider for financial services and payment traffic.

Currently, the banking world in Indonesia continues to experience improvement and progress. This can be seen from the proliferation of foreigners who own banks in Indonesia and who intend to invest. Investment is one way that can be done in order to get a better life. As future needs that are difficult to predict. There are parties who need funds and parties who are excess funds behind the emergence of the capital market. The banking sector is a highly regulated industry because the Indonesian economy still relies on banking institutions through credit extended to the public. Banks carry out various government policies that can affect company policies related to the company's share price. In 2018 the OJK made regulation No. 32 / POJK.03 / 2018 concerning Minimum Limits for Lending and Provision of Large Funds for Commercial Banks. The Financial Services Authority stipulates that the Maximum Lending Limit for bank capital credit should not be more than 30% for BUMN companies.

Fundamental analysis used to analyze the fair price of shares in this study uses Discounted Cash Flow. The discounted cash flow method, which underlies this calculation method, is that all cash flows that flow in the company in the future (future value) when discounted are the fair value of the shares (present value) "(Hidayat, 2017: 20). The discounted cash flow method is a method that uses the concept of Time Value of Money. The calculation of this method uses cash flows such as net income, free cash flow, and operating cash flow which are calculated future value and then discounted to get the fair price value of shares (Filbert, 2017: 175). The method of calculating the intrinsic price can then be done using the Dividend Discounted Model (DDM). Dividend Discounted Models are included in the present value approach to determine the intrinsic price. The present value approach is determined by the cash flow component. Cash flow that can be used in stock research is company earnings. Based on the perspective of investors who buy shares, the cash flow that investors will receive is the company's earnings distributed in the form of dividends (Tandelilin, 2017: 305). Dividend Discounted Model Approach, is an approach contained in fundamental analysis or company analysis carried out by linking the expected cash flow from dividends paid by the company for the shares it owns. In addition, this approach assumes that stock prices can be influenced by three main factors, namely annual dividends, dividend growth, and the required rate of return.

Based on the description that has been stated above, the main problem of this study is to analyze the fundamentals to assess the fair price of BUMN banking stocks on the Indonesia Stock Exchange. The purpose of this study is to determine whether the fair value of state-owned banking stocks is in an undervalued or overvalued condition.

II. LITERATURE REVIEW

2.1. Previous Reviews

The first research from Indonesia by Sheane (2018) regarding the valuation of the fair value of PT. Ciputra Development Tbk with the Discounted Free Cash Flow to Firm (FCFF) and Price

Earning Ratio (PER) methods as a comparison to the fair value of PT. Ciputra Development Tbk with the stock market price (market price), so it can be seen whether the share price of PT. Ciputra Development Tbk is undervalued or overvalued. The results showed that the fair value of PT Ciputra Development Tbk shares based on the Discounted Free Cash Flow to Firm (FCFF) and Price Earning Ratio (PER) methods ranged from Rp. 1,092 to 1,262.4 per sheet. The current share price value of PT Ciputra Development Tbk using the FCFF method is overvalued, while the current share price value of PT Ciputra Development Tbk using the PER method is undervalued.

The second research was conducted by Rifky Khoirudin (2017) regarding the valuation of PT. Property Housing Development (PPP) in the context of an Initial Public Offering (IPO). This share price appraisal aims to estimate the fair value per share of PT. Property Housing Development as a comparison value for the offering price that has been determined at the time of the Initial Public Offering (IPO). The research is intended to determine whether the bid price set at the time of the IPO is in an undervalued or overvalued condition. The analysis method used to determine the fair value per share is Discounted Cash Flow (DCF) and Relative Valuation. The results of the assessment using the DCF method provide value per share of PT. PP Properti is IDR 176.00, while the results of the valuation using the Relative Valuation method produce a value of IDR 185.00.

The third research from Indonesia was conducted by Brigitta Janice Natassya Christiana and Abdullah Rakhman (2014) regarding the valuation of company shares at PT. Astra Agro Lestari Tbk. with the Free Cash Flow to Equity (FCFE) method, the objective of this is to find the intrinsic value or fair price of shares so that the company's shares can be valued as undervalued or overvalued. The results of this study are as follows: in January 2013, the fair price of PT. Astra Agro Lestari Tbk. using the FCFE method is Rp. 38,618, - ,. Meanwhile, the closing price for the shares was IDR 18,850. Then the share price of PT. Astra Agro Lestari Tbk. by using the FCFE method is undervalued.

The fourth study was conducted in India by B. Charumathiand Suraj. E. S. (2014) regarding a comparison of the valuation model for Bank India shares. The method used is based on the implications of financial market theory and fundamental analysis. This study aims to determine the comparison of the value of bank shares using various stock valuation models. The results of this study indicate that the adjustment of the R-squares of Ohlson model and P / B Model is higher than the adjustment of R-squares from other valuation models such as the CAPM Model, DDM Model, P / E model and Excess return Model. The conclusion from this research is that the CAPM model and the DDM model cannot be used for valuation of bank shares in India.

The fifth research conducted by Suryanto (2016) on stock valuation using the Price Earning Ratio (PER) method on LQ45 Index stocks. This study aims to determine the fair price of shares and to select appropriate stocks to be used as choices in investing in LQ45 Index stocks. The results of this study show that 10 out of 13 companies, namely AKRA, ASII, BBCA, BBNI, BBRI, JSMR, LKPR, MPPA, UNTR and UNVR are in undervalued condition. Meanwhile, shares of ADRO, BMRI, and SCMA are in overvalued condition.

The sixth research conducted by Nordin. Et al. (2019) in Malaysia on the fundamental valuation of construction stocks: content analysis of property development. This study aims to compare the intrinsic values of Malaysian construction companies using several fundamental valuation analysis methods. Intrinsic valuation of construction stocks uses three methods, namely Price Earning Multiple, Relative Price Earning, and Dividend Growth Model. The results of this study indicate that there is an inconsistency in intrinsic value in the first two methods where most of the stocks are in an undervalued condition while with DDM it is known that stocks are in an overvalued condition.

The seventh research was conducted in Indonesia by Suyana and Dwi Kartikasari (2018) regarding the valuation of PT. Sat Nusapersada Tbk (PTSN) in order to provide recommendations to general investors. In this study, the Ben Graham method modified by Time the Burkenroad

Report was used. The results of this study indicate that the two methods differ in that the results of the undervalue and buy comparison method and the Ben Graham method belong to the sell / hold category (Ben would consider the posibility). From the consideration of the research process, the researcher recommends not to buy (hold) because the results of Ben Graham's research on PTSN stocks are in the middle of 8 hurdles key.

The eighth research was conducted in Tehran by Amiri et al. (2016) regarding the comparison of the stock valuation model with intrinsic value on the Tehran Stock Exchange. This study uses the Ordinary Least Square Regression method. The purpose of this study is to determine the model applied in the formation of stock prices in the stock market in accordance with based valuation models. The results showed that the price to book value (P / B ratio) has the highest adjustment factor and has been determined as the best stock valuation model.

2.2. Theoretical basis

2.2.1. Product quality

Azis, et al. (2015: 4) states that: "The capital market is a market for various long-term tradable financial instruments, including debt securities (bonds), equity (stocks), mutual funds, derivative instruments and instruments. other ". The capital market also has an important role in the wheels of the economy and business activities in a nation, because the capital market is used as a place to sell stocks and bonds where parties who have excess funds meet and those who need funds by trading long-term securities, either in the form of debt or equity issued by private companies. The investment products offered to investors in the capital market are mutual funds, stocks, bonds, warrants, and rights issues.

According to Hadi (2016: 16) the capital market has a big function for parties who want to gain profits in investment and the capital market also has an important role for investors and companies in Indonesia.

According to Faiza Muklis (2016: 1) the capital market has benefits for issuers and for investors, including:

A. For Issuers

1. The amount of funds raised was large.
2. The funds can be received at once when the primary market is over.
3. There is no convenant so that management can be freer in managing company funds.
4. High company solvency thus improving the company's image.
5. Issuers' dependence on banks is becoming smaller.

B. For Investors

1. The investment value grows according to economic growth. This increase can be reflected in an increase in share prices
2. Obtain dividends for those who own or hold shares and floating interest for bondholders.
3. Can simultaneously invest in several instruments that reduce risk.

2.2.2. Market Efficiency Theory

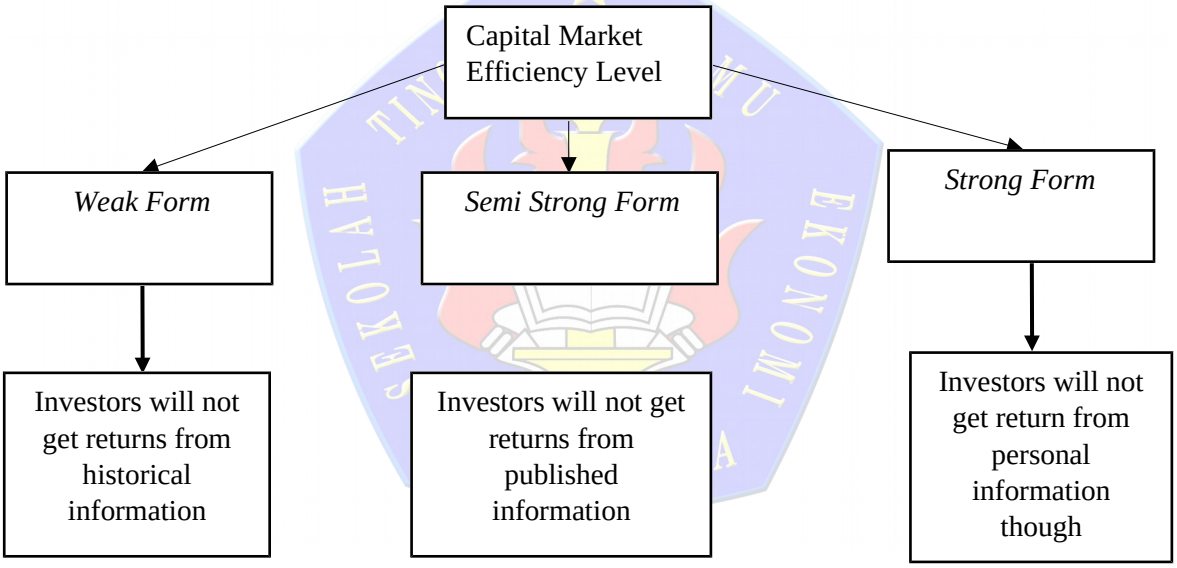
The concept of efficient market was first proposed and popularized by Fama (1970). According to him, a market is said to be efficient if both individual investors and institutional investors will be able to obtain abnormal returns, after adjusting for risk, by using existing trading strategies.

According to Tandelilin (2017: 224), an efficient market is a market where the prices of all traded securities reflect all available information. In this case, the relevant information available may

include all available information, both past information (for example, the company's last year's profit) and current information (for example, the planned dividend increase this year), as well as information that is a rational opinion or opinion. circulating in the market that can affect price changes (for example, if many investors in the market think that the stock price is rising, this information will later be reflected in the company's rising share price).
The capital market is said to be "efficient", if prices can adjust quickly and precisely to new available information. In an efficient capital market, current market prices will fully reflect available information. Based on the information available, there is no reason to believe that the current price is too low or too high (Stephen A. Ross, 2015: 491).

If the market reacts quickly and accurately to reach a new equilibrium price that fully reflects the available information, then such market conditions are called an efficient market. The form of market efficiency is not only viewed in terms of information availability, but also seen from the sophistication of market players in making decisions based on analysis of available information (Jogiyanto, 2016).

Figure 2.1 Efficient Market Hypothesis (Fama, 1970)



Each form of efficient market is closely related to the extent to which information absorption occurs in the market. Fama (! 970) in Tandelilin (2017: 227), classifies the efficient market form into three efficient market hypotheses (EMH) as follows.

1. An efficient market in a weak form means that all past (historical) information has been reflected in current prices. Therefore, this historical information (past events, including historical past price developments and trading volumes) can no longer be used to predict future price changes, because it is already reflected in current prices. The implication is that investors will not be able to predict the future market value of stocks using historical data.Pasar efisien bentuk setengah kuat (semi-strong form)
2. A semi-strong efficient market means that the current stock market price reflects historical information plus all published information (such as earnings, dividends, stock split

announcements, issuance of new shares, financial difficulties experienced by the company, and other published events. which has an impact on the company's future cash flow). In a semi-strong efficient market, abnormal returns only occur around the announcement (publication) of an event as a representation of the market's response to the announcement. In a semi-strong form market, investors cannot expect to get an abnormal return if the strategy carried out is only based on published information.

3. Efficient market in strong form means that the current stock market price reflects historical information plus published information plus unpublished information. Investors in this form cannot get an abnormal return even though they have private information.

2.2.3 Macro economic Conditions and Stock Prices

Market share prices are strongly influenced by macroeconomic conditions, both national and global. In conducting a stock valuation analysis, investors must first conduct an analysis of macroeconomic factors that affect the performance of the entire company. Investors must be able to analyze and predict economic conditions, especially stock price movements in the future. Economic analysis is conducted because of the tendency for a strong relationship between what happens in the macroeconomic environment and the performance of a capital market. According to Siegel (1991) in Tandelilin (2017: 344) concluded that there is a strong relationship between macroeconomic performance and stock prices. First, the stock price that is formed is a reflection of investors' expectations of future earnings, dividends and interest rates. The results of investors' estimates of these three variables will determine the appropriate share price. Second, the performance of the capital market will react to macroeconomic changes such as changes in interest rates, inflation, or the money supply. The following are some macroeconomic variables that investors need to pay attention to (Tandelilin, 2017: 344):

1. Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is a measure of a country's total production of goods and services. Rapid GDP growth is an indication of economic growth. If economic growth improves, people's purchasing power will also increase, and this is an opportunity for companies to increase their sales.

2. Inflation

Inflation is a condition in which the amount of goods in circulation is less than the amount of demand so that it will cause widespread price increases in the economic system. Inflation is an indicator of economic stability. If the inflation rate is low and stable, it will be a simulatory of economic growth. Whenever there is social, political and economic turmoil at home or abroad, the public always associates it with the problem of inflation. The main cause of inflation is the excess supply of money compared to what is demanded by the public.

3. Interest Rate

The interest rate on the loan reflects the costs the company incurs in return for the lender for its investment. Interest rates can affect the company's profit, namely, first, if interest is a cost, the higher the interest rate, the less the company's profit (if other factors are considered constant). Second, interest rates affect economic activity and thus affect profits. A very high increase in interest rates, on the one hand, will be effective in reducing the money supply, but on the other hand, it will increase lending rates for the real sector. The BI 7-day (Reverse) Repo Rate instrument

is used as the new policy rate because it can quickly influence the money market, banking and real sectors. The BI 7-Day Repo Rate instrument serves as a reference that has a stronger relationship to money market interest rates, is transactional or traded on the market, and encourages financial market deepening, particularly the use of repo instruments. With the use of the BI 7-day (Reverse) Repo Rate instrument as the new policy rate, three main impacts are expected, namely:

a. First, strengthening monetary policy signals with the 7-day (Reverse) Repo Rate as the main reference on the financial market.
b. Second, the increased effectiveness of monetary policy transmission through its influence on movements in money market interest rates and bank interest rates.
c. Third, the formation of a deeper financial market, particularly transactions and the formation of an interest rate structure on the interbank money market (PUAB) for a tenor of 3-12 months.

4. Exchange rates

An exchange rate is the exchange rate of the country's currency against the currencies of other countries. The exchange of these currencies results in a comparison of the value of the two which is called the exchange rate. Foreign exchange rates, namely the amount of domestic money needed to obtain a foreign currency. The exchange rate created by the free market differs from government regulations, either higher or lower than the free market. Wahyuni (2016: 112) The goal of a company is to maximize company profits. Investors who invest their funds, such as in the form of shares, aim to maximize the wealth obtained from stock returns in the form of dividends and capital gains. According to Mariani (2016), stock returns are the results obtained from investors which can be in the form of realizations that have occurred and expected returns that are expected to occur in the future. Investors must first evaluate the share price in order to obtain the expected rate of return and profit. The valuation of stock prices that can be done is through fundamental analysis using financial ratios such as profitability and leverage. The stock return indicators are:

1. Expected Dividend

Hwee (2019: 2) Dividends are one of the advantages expected by investors in the capital market, so that companies that pay regular and relatively high dividends tend to be more attractive to investors. Dividend policy is a policy relating to dividend payments by companies in the form of determining the amount of dividend distribution and the amount of retained earnings for the benefit of the company. For shareholders, dividends are a form of return on their investment. Companies that are able to pay high dividends will attract investors to invest their shares so that the company value increases (Damayanti, 2017: 184).

For investors, the amount of rupiah received from dividend payments is less risky than the capital gain (profit selling capital) and dividends can be estimated in advance. Meanwhile, capital gains are more difficult to estimate, so that high dividend payments are considered as a company that has good profit prospects. On the other hand, a decrease in dividend payments is considered a poor prospect of profit levels so that stock prices tend to follow the ups and downs of the amount of dividends paid (Abdul Halim, 2015: 4).

2. Capital Gain

Wahyuni (2016: 113) Capital gain / loss is the gain / loss for investors obtained from the excess selling / buying price above the buying / selling price that occurs in the secondary market. Yield is the income or cash flow received by investors periodically in the form of dividends. According to Anhar (2015: 108), capital gain is a form of return received by investors from the difference between the purchase price and the selling price of shares. Capital gain is formed by the existence of stock trading activities on the secondary market. Capital gain is obtained by investors when the price of the invested shares has increased in price and the investor decides to release the share ownership by selling it on the stock exchange (Santy, 2017: 15).

2.2.3 Fundamental Analysis

Fundamental analysis is one of the basics that investors can do to optimize profit and minimize risk. According to Annisa et al. (2019: 114) fundamental analysis states that every investment instrument has a strong foundation, namely intrinsic value which can be determined through a careful analysis of current conditions and prospects for the future. The purpose of this analysis is to determine whether the condition of the stock price is being overvalued (expensive) or undervalued (cheap). The second analysis is technical analysis. Technical analysis is a method of estimating stock price movements, indexes or other financial instruments using charts based on historical data with company financial data that can reflect the fundamental conditions of the issuer. The purpose of this analysis is to determine whether a stock is in an overbought or oversold condition.

One analysis that is often used is fundamental analysis. "In determining the true value of shares (intrinsic value), fundamental analysis uses fundamental data, namely data derived from company finances (eg profits, dividends paid, sales and so on). In fundamental analysis, there are two approaches to calculating the intrinsic value of stocks, namely the present value approach and the PER (P / E ratio approach) ”(Hartono, 2019: 208-209). In fundamental analysis, there are two factors that are used, namely internal factors and company external factors. Internal factors are used to analyze fundamentals, namely using the company's financial statements by comparing financial ratio figures. According to Kasmir (2015: 104) argues that financial ratios are an activity of comparing numbers in financial statements by dividing one number with another. Comparisons can be made between one component with components in one financial report or between components that exist between financial statements. The following are some of the ratios used to analyze companies:

1. Earning Per Share (EPS)

   According to Gunari (2015: 1638) Earning Price Ratio is the division of total profit after tax by the number of shares outstanding. The higher the EPS value, the greater the profit that the shareholders receive for each share they own. A high EPS value will increase the stock price, and vice versa, a low EPS value will decrease the stock price (Astuti, 2018: 172).

2. Price Earning Ratio (PER)

   Price Earning Ratio (PER) is a comparison between share price per sheet and company earnings. The increase in price earning ratio is in line with the increase in share prices. An increasing PER will also increase the risk of investing (Syailendra, 2018: 18).

3. Fixed Asset Turnover (FAT)

   Fixed Asset Turnover (FAT) is a ratio used to measure the number of times funds invested in fixed assets rotate in one period. The higher the turnover of fixed assets, the faster the return of funds invested in these fixed assets (Vincent, 2018: 72).

4. Return On Asset (ROA)

   Return On Asset (ROA) is the comparison of profit after tax and total assets. The higher the ROA of a company, the greater the level of profit achieved by the company. ROA acts as an indicator of the efficiency of the company in using assets to earn profits (Nuryuwono, 2017: 5).

5. Return On Equity (ROE)

   Return On Equity (ROE) is the profitability ratio used to determine the profit generated by the company and the equity owned by the company. The greater the net profit the company generates, the ROE will also increase. The high ROE value reflects the company's good performance in managing owner's equity. Conversely, low ROE indicates unsatisfactory company performance in managing company owner equity (Mustofa, 2016: 3).

6. Net Profit Margin (NPM)

Net Profit Margin (NPM) is a comparison between net income and sales. The greater the NPM, the more productive the company's performance will be, so that it will increase investors' confidence to invest in the company (Bastian and Suharjono 2006: 299 in Muhammad, 2017: 3).

7. Dividend Per Share (DPS)

Dividend Per Share (DPS) is a distribution of profit that is distributed to all shareholders proportionally according to the number of shares owned. Information regarding dividend per share is needed to find out how much profit each share will receive by shareholders. If the DPS received increases, it will affect the stock price in the capital market. Because the increase in DPS is likely to attract investors to buy shares of the company (Lilianti, 2018: 13-14).Dividend

8. Payout Ratio (DPR)

Dividend Payout Ratio (DPR) is the ratio between dividend per share and earnings per share. The dividend payot ratio determines the amount of profit divided in the form of cash dividends and retained earnings as a source of funding (Karlinda, 2017: 336).

2.2.4 Model of Stock Price Determination

Stock valuation is useful to determine the fair value of shares to compare with the current stock market price, whether the value is fair (pair-valued), is being cheap (undervalued), or is being expensive (overvalued). Stock valuation is carried out to anticipate potential losses that investors will receive in the future. According to Tandelilin (2017: 305) in stock valuation, there are three types of value, namely book value, market value and fair value of shares. Book value is the value calculated based on the books of the company that issued the shares. Market value is the value of the shares in the market, which is indicated by the price of the shares in the market. Meanwhile, intrinsic value is the actual or supposed share value. In determining the true value of shares, fundamental analysis uses fundamental data, namely data derived from company finances (for example, profits, dividends paid, sales, etc.) (Hartono, 2017: 208-209).

1. Capital Asset Pricing Model (CAPM)

The Capital Assets Pricing Model (CAPM) was first developed in 1960 by William F. Sharpe, Lintner, and Mossin. With the CAPM method, investors can measure stock performance in determining the expected return of a security and minimize investment risk. CAPM aims to estimate the expected return relationship with risk and determine the price of assets (Susanti, 2018: 2). CAPM as a balance model that can help investors simplify the picture of the reality of the relationship between return and risk in the real world which is sometimes very complex (Tandelilin, 2017: 191).

Beta (β) is an indicator for measuring stock risk with the Capital Asset Pricing Model (CAPM). Market risk (Rm), Risk free (Rf), and beta (β) are indicators to determine [E (Ri)]. Beta value greatly affects the expected rate of return on a security. The higher the beta value and market return, the higher the level of return required by investors. The required return is the minimum amount of return an investor wants to invest in a particular security. The following is the CAPM formula (Tandelilin 2017: 201):

$$E(R_i) = R_f + \beta_i . (E(R_m) - R_f) \quad \text{.....(1)}$$

Information :

E(Ri)	= the expected rate of return on assets i
Rf	= risk free rate of return
E(Rm)	= the expected rate of return of the market portfolio
ßi	= beta of asset i

2. Dividend Discounted Model (DDM)

According to Hutapea et al. (2014: 248) Dividend Discounted Model is to assess the intrinsic value of a company's shares based on the estimated income distributed to shareholders, namely in the form of dividends and discounting the value to present value. The DDM approach is

an approach contained in fundamental analysis or company analysis carried out by linking the expected cash flow from dividends paid by the company for the shares it owns. This approach assumes that stock prices can be influenced by three main factors, namely the annual dividend, dividend growth, and the required rate of return. With this analysis, investors can predict how much return they will receive in the future (future income). The use of DDM with a constant growth model approach can be seen through the following steps (Tandelilin, 2017):

Dividend Growth Rate

$$g=\frac{D_n-D_0}{D_0}$$ ……..(2)

Information :
g : dividend growth rate
D_n : current dividends
D_0 : dividends for the previous year

1. Dividend Estimation

$D_t=D_0¿)$ ……...(3)

Information :
D_t : Estimated dividends
D_0 : dividends for the previous year
$\tilde{g}$: average dividend growth

1. Required Rate of Return

$$k=\frac{D}{\tilde{P}}+\tilde{g}$$ ……...(4)

Information:
k : expected rate of return
D : actual dividends
$\tilde{P}$: the actual market price of the stock
$\tilde{g}$: average dividend growth

2. Appraisal of the Fair Price of Shares using the Dividend Discounted Constant Growth Model

$$P_0=\frac{D_t}{k-\tilde{g}}$$ …….....…….. (5)

Information :
P_0 : the intrinsic value of the stock
D_t : Estimated dividends
k : expected rate of return
$\tilde{g}$: average dividend growth

3. Discounted Cash Flow (DCF)

Discounted cash flow (DCF) is a method used to estimate the intrinsic value of an asset by discounting the value of future cash flows. Modern Discounted Cash Flow (DCF) is a stock valuation method that uses the concept of Time Value of Money, which is converting future cash

flows that are projected to their present value (Dina et al., 2018: 1). Calculate the Fair Price by finding the present value of the total future share price using a formula (Wira, 2015: 142-147)

By looking for the present value of the total future share price using the following formula:

$$P_0 = \frac{Total\ Future\ Value}{(1+r)^n} \text{.....(6)}$$

Information :
r = required rate of return
n = the number of years used is the Future Value

In general, the shortcomings of the DCF method are almost the same as the Dividend Discounted Model (DDM) method, which is very dependent on assumptions. By discounting projected future revenues and expenses, investors can estimate the present value of an opportunity. If the calculated value is higher than the current investment cost then the prospects are good.

By evaluating the fair price of shares, it is hoped that it can assist investors in making investment decisions as follows:

1. 1. If the current market price is <estimated "undervalued" price.
2. 2. If current market price> fair price forecast is “overvalued”.
3. 3. If current market price = “pairvalued” fair price forecast.

III. RESEARCH METHODS

This study uses a descriptive method with a quantitative approach. The population used in this study were all companies in the banking sector listed on the Indonesia Stock Exchange. As of December 2019, there are 45 banking companies listed on the Indonesia Stock Exchange. The samples taken in this study were state-owned banking companies, namely: PT. Bank Mandiri (Persero) Tbk, PT. Bank Negara Indonesia (Persero) Tbk, PT. Bank Rakyat Indonesia (Persero) Tbk, and PT. Bank Tabungan Indonesia (Persero) Tbk. The type of data used in this study is secondary data. The method used in collecting data in this study during the 2015 - 2019 period was documentation. The research analysis method used in this research is CAPM and DCFM using Microsoft Excel.

IV. RESULTS AND DISCUSSION

4.1 Company Profile

4.1.1 PT. Bank Rakyat Indonesia (Persero) Tbk

History of PT. Bank Rakyat Indonesia (Persero) Tbk (“BRI”, “Bank”, or “Company”) was started on December 26, 1895 in Purwokerto, Central Java under the name “Hulp en Spaarbank der Inlandsche Bestuurs Ambtenaren” which after several times changed its name then officially designated as Bank Rakyat Indonesia since 18 December 1968 based on Law No. 21 of 1968. Since 1992, BRI's status changed to a limited liability company with 100% ownership of BRI in the hands of the government of the Republic of Indonesia. On November 10, 2003, BRI conducted an Initial Public Offering (IPO) so that the current composition of government shares in BRI is 56.75%, while the remaining 43.25% is owned by public shareholders.

4.1.2 PT. Bank Negara Indonesia (Persero) Tbk

PT. Bank Negara Indonesia (Persero) Tbk (hereinafter referred to as "BNI" or "Bank") was established as the central bank in Indonesia under the name "Bank Negara Indonesia" based on Government Regulation in Lieu of Law No. 2 of 1946 dated 5 July 1946. Then, based on Law no. 17 of 1968, BNI was designated as "Bank Negara Indonesia 1946", and its status became a State-Owned Commercial Bank. Furthermore, BNI acts as a bank that is mandated to improve the people's economy and participate in national development as confirmed by Law no. 17 of 1968 concerning Bank Negara Indonesia 1946.

4.1.3 PT. Bank Mandiri (Persero) Tbk

PT. Bank Mandiri (Persero) Tbk. (hereinafter referred to as "Bank Mandiri" or "the Company") was established on October 2, 1998 in the Republic of Indonesia with notarial deed Sutjipto, S.H., No. 10, based on Government Regulation no. 75 of 1998 dated 1 October 1998. The deed of establishment has been legalized by the Minister of Justice of the Republic of Indonesia based on Decree No. C2-16561.HT.01.01.TH.98 dated 2 October 1998, and announced in Supplement No. 6859 in the State Gazette of the Republic of Indonesia No. 97 dated December 4, 1998.

4.1.4 PT. Bank Tabungan Negara (Persero) Tbk

The long history of PT Bank Tabungan Negara (Persero) Tbk, referred to as "Bank" or "Company" or "BTN", began with the establishment of Postspaarbank in 1897. In 1942, Postspaarbank was taken over by the Japanese Government and changed its name to Tyokin Kyoku or Savings Office. Then this continued in 1945 the Government of the Republic of Indonesia took over Tyokin Kyoku and established the Taboengan Pos Office. In the post-independence era, to be precise in 1950 the Government of the Republic of Indonesia changed the name Tyokin Kyoku to Bank Tabungan Pos, and then again changed its name to Bank Tabungan Negara in 1963 until now.

4.2 Stocks Valuation

4.2.1 Stocks Valuation of PT. Bank Rakyat Indonesia (Persero) Tbk

1. Dividen, EPS, dan PER

Table 4.1 Average Dividens, EPS and PER of PT. Bank Rakyat Indonesia (Persero) Tbk

Year	Dividend A share (Rp)	Earning Per Share (Rp)	Price Earning Ratio
2014	257,33	607,03	4,23
2015	294,80	1.030,43	4,88
2016	311,66	214,30	4,45
2017	428,61	237,22	7,89
2018	106,75	264,66	29,09
2019	132,17	280,40	45,05

2. Average DPR%, EPS Growth%, PER

Then the data is processed to obtain (DPR), (EPS), (PER).

3. Future Value EPS

Next is to project the EPS for the next 5 years.

4. Future Value share price

To calculate the future value of stock prices in the period 2020 to 2024.

5. Accumulated Dividends

Calculate the accumulated dividends that will be received over the next 5 years.

6. Total Future Value

Calculate the total future value by adding up the results from steps 4 and 5.

Total Future Value = Future Value of share price + Total Accumulated Dividends

7. Calculation of the Fair Price of Shares

The final step is to calculate the fair share price (P_0) using the Discounted Cash Flow Model method and compare the results of the calculation of $P_0$with the market price as follows:

$$P_0 = \frac{Total\ Future\ Value}{(1+r)^n}$$

Table 4.2 Comparison of fair share price (P_0) with the market price of PT. Bank Rakyat Indonesia (Persero) Tbk

Year	Total FV (Rp)	r (%)	P_0 (Rp)	Market Prices BBRI 30 Desember (Rp)
2015	2.458,94	20,35%	2.043,16	2.285
2016	584,47	17,85%	495,94	2.335
2017	1.062,54	18,69%	895,23	3.640
2018	3.605,62	19,28%	3.022,82	3.660
2019	5.896,05	17,55%	5.015,78	4.400

4.2.2 Stock Valuation PT. Bank Negara Indonesia (Persero) Tbk

1. **Data Dividen, EPS, dan PER**

Table 4.3 Average Dividens, EPS, and PER PT. Bank Negara Indonesia (Persero) Tbk

Tahun	Dividend A share (Rp)	Earning Per Share (Rp)	Price Earning Ratio (kali)
2014	291,42	344,75	11,45
2015	144,55	272,50	10,16
2016	122,53	354,75	10,01
2017	425,61	448,00	13,56
2018	255,56	503,00	10,65
2019	201,29	523,75	12,25

2. **Average DPR%, EPS Growth%, PER**
   Then the data is processed to obtain (DPR), (EPS), (PER).
3. **Future Value EPS**
   Next is to project the EPS for the next 5 years.
4. **Future Value share price**
   To calculate the future value of stock prices in the period 2020 to 2024.
5. **Accumulated Dividends**
   Calculate the accumulated dividends that will be received over the next 5 years.
6. **Total Future Value**
   Calculate the total future value by adding up the results from steps 4 and 5.
   Total Future Value = Future Value of share price + Total Accumulated Dividends
7. **Calculation of the Fair Price of Shares**
   The final step is to calculate the fair share price (P_0) using the Discounted Cash Flow Model method and compare the results of the calculation of $P_0$with the market price as follows:

$$P_0 = \frac{Total\ Future\ Value}{(1+r)^n}$$

Table 4.4 Comparison of fair share price (P_0) with the market price of PT. Bank Negara Indonesia (Persero) Tbk

Year	Total FV	r	P0	Stock Prices (BBNI)

	(Rp)	(%)	(Rp)	30 Desember (Rp)
2015	4.425,71	18,37%	3.738,88	4.990
2016	5.580,97	16,06%	4.808,69	5.525
2017	9.875,66	19,44%	8.268,30	9.900
2018	8.526,61	20,29%	7.088,38	8.800
2019	10.053,00	19,88%	8.385,89	7.850

4.2.3 Stock Valuation PT. Bank Mandiri (Persero) Tbk

1. Data Rata-Rata Dividen, EPS, dan PER

Table 4.5 Average Dividens, EPS, and PER PT. Bank Mandiri (Persero) Tbk

Tahun	Dividend A share (Rp)	Earning Per Share (Rp)	Price Earning Ratio (kali)
2014	234,05	523,24	11,98
2015	212,91	535,51	12,87
2016	261,45	393,40	16,87
2017	266,27	263,85	32,96
2018	398,05	327,56	30,73
2019	241,22	366,94	25,70

2. Average DPR%, EPS Growth%, PER

Then the data is processed to obtain (DPR), (EPS), (PER).

3. Future Value EPS

Next is to project the EPS for the next 5 years.

4. Future Value share price

To calculate the future value of stock prices in the period 2020 to 2024.

5. Accumulated Dividends

Calculate the accumulated dividends that will be received over the next 5 years.

6. Total Future Value

Calculate the total future value by adding up the results from steps 4 and 5.

Total Future Value = Future Value of share price + Total Accumulated Dividends

7. Calculation of the Fair Price of Shares

The final step is to calculate the fair share price (P_0) using the Discounted Cash Flow Model method and compare the results of the calculation of $P_0$with the market price as follows:

$$P_0 = \frac{Total\ Future\ Value}{(1+r)^n}$$

Table 4.6 Comparison of fair share price (P_0) with the market price of PT. Bank Mandiri (Persero) Tbk

Tahun	Total FV (Rp)	r (Rp)	P_0 (Rp)	Stock Price (BMRI) 30 Desember (Rp)
2015	4.982,57	18,45%	4.206,48	4.625
2016	4.837,53	15,89%	4.174,25	5.788
2017	6.285,45	18,69%	5.295,68	8.000
2018	7338,22	18,66%	6.184,24	7.375
2019	6.782,52	17,08%	5.793,07	7.675

4.2.4 Stock Valuation PT. Bank Tabungan Negara (Persero) Tbk

1. Data Dividen, EPS, dan PER

Table 4.7 Average Dividens, EPS, PER PT. Bank Tabungan Negara (Persero) Tbk

Tahun	Dividend A share (Rp)	Earning Per Share (Rp)	Price Earning Ratio (kali)
2014	44,36	65,25	20,50
2015	21,11	102,00	22,24
2016	34,96	136,00	17,46
2017	49,46	162,75	20,79
2018	57,18	168,75	25,26
2019	53,03	71,75	47,00

2. Average DPR%, EPS Growth%, PER

Then the data is processed to obtain (DPR), (EPS), (PER).

3. Future Value EPS

Next is to project the EPS for the next 5 years.

4. Fuure Value share price

To calculate the future value of stock prices in the period 2020 to 2024.

5. Acumulated Dividends

Calculate the accumulated dividends that will be received over the next 5 years.

6. Total Future Value

Calculate the total future value by adding up the results from steps 4 and 5.

Total Future Value = Future Value of share price + Total Accumulated Dividends

7. Calculation of the Fair Price of Shares

The final step is to calculate the fair share price (P_0) using the Discounted Cash Flow Model method and compare the results of the calculation of $P_0$with the market price as follows:

$$P_0 = \frac{Total\ Future\ Value}{(1+r)^n}$$

Table 4.8 Comparison of fair share price (P_0) with the market price of PT. Bank Tabungan Negara (Persero) Tbk

Tahun	Total FV	r	P_0	Stock Price BBTN 30

	(Rp)	(%)	(Rp)	Desember (Rp)
2015	2.517,68	15,59%	2.178,11	1.295
2016	2.649,54	16,06%	2.282,91	1.740
2017	3.775,02	10,32%	3.421,88	3.570
2018	4.750,13	24,73%	3.808,33	2.540
2019	3.766,50	16,54%	3.231,93	2.120

4.3 Research result

Table 4.9 Research Results of Fair Value of Stock Price of BUMN Banking Companies

Company name	Information			
	Year	P0	Stock Prices 30 Desember	Result
BBRI	2015	2.043,16	2.285	Overvalued
	2016	495,94	2.335	Overvalued
	2017	895,23	3.640	Overvalued
	2018	3.022,82	3.660	Overvalued
	2019	5.015,78	4.400	Undervalued
BBNI	2015	3.738,88	4.990	Overvalued
	2016	4.808,69	5.525	Overvalued
	2017	8.268,30	9.900	Overvalued
	2018	7.088,38	8.800	Overvalued
	2019	8.385,89	7.850	Undervalued
BMRI	2015	4.206,48	4.625	Overvalued
	2016	4.174,25	5.788	Overvalued
	2017	5.295,68	8.000	Overvalued
	2018	6.184,24	7.375	Overvalued
	2019	5.793,07	7.675	Overvalued
BBTN	2015	2.178,11	1.295	Undervalued
	2016	2.282,91	1.740	Undervalued
	2017	3.421,88	3.570	Overvalued
	2018	3.808,33	2.540	Undervalued
	2019	3.231,93	2.120	Undervalued

Source: Processed data (2020)

V. CONCLUSIONS AND SUGGESTIONS

5.1. CONCLUSION

Based on data analysis and discussion descriptions, the following conclusions can be drawn:

a. a. From the calculation of the fair value of share prices using the DCFM method in 2015 - 2019, BBRI and BBNI's shares at the end of 2015, 2016, 2017 and 2018 were in an overvalued condition. Meanwhile, at the end of 2019 it is in an undervalued condition. For BMRI shares at the end of 2015, 2016, 2017, 2018 and 2019 were in an overvalued condition. For BBTN shares at the end of 2015, 2016, 2018 and 2019 were in an undervalued condition and at the end of 2017 were in an overvalued condition.

b. b. Based on the calculation of the fair share price using the DCFM method, the right investment decision is to buy stocks that are in an undervalued condition, namely BBTN. This is because the company's shares are considered cheap and feasible for long-term potential investors to buy. Investors who already own stocks that are in an undervalued condition should not sell them because the stock price has the potential to rise.
c. c. Stocks that show an overvalued condition where the market price is higher than the fair price of their shares, are advised to investors not to make these stocks a long-term investment.
d. d. The drawback of research using the DCF method is that it is rather difficult to make estimates for small firms because they have not had significant exposure to the economic cycle. In addition, small initial forecast errors add up exponentially over time. So, investors usually take DCF projections for more than 10 years.

5.2 SUGGESTION

Based on data analysis, the results of the discussion, and the conclusions that the author has done, the suggestions that can be given are as follows:

1. Prospective investors who want to invest for the long term should buy BBTN shares because most of the results of the calculation of the fair value of shares for 5 years show undervalued conditions and have good fundamental performance.
2. Investors and potential investors who want to invest for the long term should not make BMRI shares an investment because the results of the calculation of the fair value of the share price are overvalued and not suitable for long-term investment.

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