

CHAPTER 2

BACKGROUND OF THEORY

2.1 Financial Markets

The financial manager in a corporation makes decisions for the shareholders of the firm and also acts in the shareholders' best interests by making decisions that increase the value of the stock. Hence the goal for the financial manager is to maximize the current value per share of the existing stock. Because the goal is to maximize the value of the stock, they need to learn on how to identify investments and financing arrangements that favorably impact the value of the stock.

Firms offer two basic types of securities to investors. Debt securities are contractual obligations to repay corporate borrowing. Equity securities are shares of common stock and preferred stock that represent non-contractual claims to the residual cash flow of the firm. Issues of debt and stock that are publicly sold by the firm are then traded in the financial markets.

The financial markets are composed of the money market and capital markets. Money markets are the markets for debt securities that will pay off in the short-term (usually less than one year). Capital market are the markets for long-term debt (with maturity of over one year) and for equity shares.

The term money market applies to a group of loosely connected markets. They are dealer markets. Dealers are firms that make continuous quotations of prices for which they stand ready to buy and sell money market instruments for their own inventory and at their own risk. Thus, the dealer is a principal in most transactions. This is different from a stock-broker acting as an agent for a customer in buying or selling common stock on most stock exchanges; an agent does not actually acquire the securities.

At the core of the money markets are the money market banks (these are large banks mostly in New York), government securities dealers (some of which are the large banks) and many money brokers. Money brokers specialize in finding short-term money for borrowers and placing money for lenders.

Capital Market is the market in which long term financial instruments, such as bonds, equities, mutual funds and derivative instruments are traded. Capital

Market serves as an alternative for a company's capital resources and public investment. It also facilitates the infrastructures needed for the selling and buying process and other related activities.

Capital Market Law number 8 year 1995 defines Capital Market as the activity of trading and offering securities to the public, the activity of a public company with respect to securities it has issued, and the activities of securities-related institutions and professions.

Capital Market plays an important role in the economy of a country because it serves two functions all at once. First, Capital Market serves as an alternative for a company's capital resources. The capital gained from the public offering can be used for the company's business development, expansion, and so on. Second, Capital Market serves as an alternative for public investment. People could invest their money according to their preferred returns and risk characteristics of each instrument.

2.2 Business Valuation

Business valuation is a process and a set of procedures used to estimate the economic value of an owner's interest in a business. Valuation is used by financial market participants to determine the price they are willing to pay or receive to consummate a sale of a business. In addition to estimating the selling price of a business, the same valuation tools are often used by business appraisers to resolve disputes related to estate and gift taxation, divorce litigation, allocate business purchase price among business assets, establish a formula for estimating the value of partners' ownership interest for buy-sell agreements, and many other business and legal purposes.

Before the value of a business can be measured, the valuation assignment must specify the reason for and circumstances surrounding the business valuation. These are formally known as the business value standard and premise of value. The standard of value is the hypothetical conditions under which the business will be valued. The premise of value relates to the assumptions, such as assuming that the business will continue forever in its current form (going concern), or that the

value of the business lies in the proceeds from the sale of all of its assets minus the related debt or sum of the parts/assemblage of business assets.

Three different approaches are commonly used in business valuation: the income approach, the asset-based approach, and the market approach. Within each of these approaches, there are various techniques for determining the value of a business using the definition of value appropriate for the appraisal assignment. Generally, the income approaches determine value by calculating the net present value of the benefit stream generated by the business through Discounted Cash Flow (DCF); the asset-based approaches determine value by adding the sum of the parts of the business or net asset value; and the market approaches determine value by comparing the subject company to other companies in the same industry, of the same size, and/or within the same region (Pratt, Reilly and Schweih, *Valuing A Business*, page 149).

2.2.1 Income Approaches

The income approaches determine fair market value by multiplying the benefit stream generated by the subject company times a discount or capitalization rate. The discount or capitalization rate converts the stream of benefits into present value. There are several different income approaches, including capitalization of earnings or cash flows, discounted future cash flows (DCF), and the excess earnings method, which is a hybrid of asset and income approaches. Most of the income approaches look to the company's adjusted historical financial data for a single period; only DCF requires data for multiple future periods. The discount or capitalization rate must be matched to the type of benefit stream to which it is applied. The result of a value calculation under the income approach is generally the fair market value of a controlling, marketable interest in the subject company, since the entire benefit stream of the subject company is most often valued, and the capitalization and discount rates are derived from statistics concerning public companies.

A discount rate or capitalization rate is used to determine the present value of the expected returns of a business. The discount rate and capitalization rate are closely related to each other, but distinguishable. Generally speaking, the discount

rate or capitalization rate may be defined as the yield necessary to attract investors to a particular investment, given the risks associated with that investment.

In DCF valuations, the discount rate, often an estimate of the cost of capital for the business are used to calculate the net present value of a series of projected cash flows. On the other hand, a capitalization rate is applied in methods of business valuation that are based on business data for a single period of time. For example, in real estate valuations for properties that generate cash flows, a capitalization rate may be applied to the Net Operating Income (NOI) (i.e., income before depreciation and interest expenses) of the property for the trailing twelve months.

There are several different methods of determining the appropriate discount rates. The discount rate is composed of two elements: (1) the risk-free rate, which is the return that an investor would expect from a secure, practically risk-free investment, such as a high quality government bond; plus (2) a risk premium that compensates an investor for the relative level of risk associated with a particular investment in excess of the risk-free rate. Most importantly, the selected discount or capitalization rate must be consistent with stream of benefits to which it is to be applied.

The Capital Asset Pricing Model (CAPM) is another method of determining the appropriate discount rate in business valuations. The CAPM method originated from the Nobel Prize winning studies of Harry Markowitz, James Tobin and William Sharpe. The CAPM method derives the discount rate by adding a risk premium to the risk-free rate. In this instance, however, the risk premium is derived by multiplying the equity risk premium times Beta, which is a measure of stock price volatility. Beta is published by various sources for particular industries and companies. Beta is associated with the systematic risks of an investment.

The Weighted Average Cost of Capital (WACC) is an approach to determining a discount rate. The WACC method determines the subject company's actual cost of capital by calculating the weighted average of the company's cost of debt and cost of equity. The WACC must be applied to the subject company's net cash flow to total invested capital.

2.2.2 Asset-Based Approaches

The value of asset-based analysis of a business is equal to the sum of its parts. That is the theory underlying the asset-based approaches to business valuation. The asset approach to business valuation is based on the principle of substitution: no rational investor will pay more for the business assets than the cost of procuring assets of similar economic utility. In contrast to the income-based approaches, which require the valuation professional to make subjective judgments about capitalization or discount rates, the adjusted net book value method is relatively objective.

Pursuant to accounting convention, most assets are reported on the books of the subject company at their acquisition value, net of depreciation where applicable. These values must be adjusted to fair market value wherever possible. The value of a company's intangible assets, such as goodwill, is generally impossible to determine apart from the company's overall enterprise value. For this reason, the asset-based approach is not the most probative method of determining the value of going business concerns. In these cases, the asset-based approach yields a result that is probably lesser than the fair market value of the business.

In considering an asset-based approach, the valuation professional must consider whether the shareholder whose interest is being valued would have any authority to access the value of the assets directly. Shareholders own shares in a corporation, but not its assets, which are owned by the corporation. A controlling shareholder may have the authority to direct the corporation to sell all or part of the assets it owns and to distribute the proceeds to the shareholder(s). The non-controlling shareholder, however, lacks this authority and cannot access the value of the assets. As a result, the value of a corporation's assets is rarely the most relevant indicator of value to a shareholder who cannot avail himself of that value.

Adjusted net book value may be the most relevant standard of value where liquidation is imminent or ongoing; where a company earnings or cash flow are nominal, negative or worth less than its assets; or where net book value is standard in the industry in which the company operates. None of these situations applies to the Company which is the subject of this valuation report. However, the

adjusted net book value may be used as a sanity check when compared to other methods of valuation, such as the income and market approaches.

2.2.3 Market Approaches

The market approach to business valuation is rooted in the economic principle of competition: that in a free market the supply and demand forces will drive the price of business assets to certain equilibrium. Buyers would not pay more for the business, and the sellers will not accept less, than the price of a comparable business enterprise. It is similar in many respects to the comparable sales method that is commonly used in real estate appraisal. The market price of the stocks of publicly traded companies engaged in the same or a similar line of business, whose shares are actively traded in a free and open market, can be a valid indicator of value when the transactions in which stocks are traded are sufficiently similar to permit meaningful comparison.

The difficulty lies in identifying public companies that are sufficiently comparable to the subject company for this purpose. Also, as for a private company, the equity is less liquid (in other words its stocks are less easy to buy or sell) than for a public company, its value is considered to be slightly lower than such a market-based valuation would give.

There is a tendency for the market for businesses to change more rapidly than the market for real estate. After all, a business can be thought of as a collection of tangible and intangible assets, each with its own price volatility and risks of ownership. Effect of these risks can be observed in volatility of stock prices every day, where in this thesis, the volatility of stock prices will be based on Price Earnings Multiple Model or Price Earnings Ratio (PER).

2.3 Cost of Going Public

Issuing securities to the public is not free and the costs of different methods are important determinants of which is used. These costs associated with floating a new issue are generically called flotation costs.

The costs of selling stock are classified as follows:

a) Gross spread

The gross spread consists of direct fees paid by the issuer to the underwriting syndicate – the difference between the price the issuer receives and the offer price. The gross spread for an Initial Public Offering (IPO) can be as high as 7 percent while the gross spread on a debt offering can be as low as 0.05 percent. These fees will be divided among the underwriters arranging the offering, if any.

b) Other direct expenses

These are direct costs, incurred by the issuer, that are not part of the compensation to underwriters. These costs include filing fees, legal fees and taxes – all reported on the prospectus.

c) Indirect expenses

These costs are not reported on the prospectus and include the costs of management time spent working on the new issue.

d) Abnormal returns

In a seasoned issue of stock, the price of the existing stock drops on average by 3 percent upon the announcement of the issue. This drop is called the abnormal return. Usually a broad index, such as the S&P 500 or a national index like the Nikkei 225, is used as a reference for the average market performance.

e) Underpricing

Underpricing comes from losses arise from selling the stock below the true value during Initial Public Offerings.

f) Green Shoe option

The Green Shoe option, also known by its legal title as an overallotment option, the only way it can be referred to in a prospectus, gives the underwriters the right to buy additional shares at the offer price to cover overallotments. Overallotments are selling more securities than are available during Initial Public Offering period in anticipation that some orders may not be confirmed. Green shoe option usually last for 30 days and involve 15 percent of the newly issued shares.

The direct costs alone can be very large, particularly for smaller issues (less than USD10 million). On a smaller Initial Public Offering, for example, the total direct costs amount to 15.36 percent of the amount raised. This means that if a company sells USD10 million in stock, it will only net about USD8.5 million. The other USD1.5 million goes to cover the underwriter spread and other direct expenses. Typical underwriter spreads on an Initial Public Offering range from about 5 percent up to 10 percent.

On the other hand, the underwriter spreads are smaller on larger issues and the other direct costs fall sharply as a percentage of the amount raised. On larger Initial Public Offering (more than USD500 million), the total direct costs can be reduced to only 5.15 percent of the amount raised. This means that the company will get USD9.5 million out of USD10 million stock issues.

2.4 Discount Rate Theory

In order to value the bonds or common stocks, we need to determine the present value of its future cash flows. A stock provides two kinds of cash flows. First, most stocks pay dividends on a regular basis. Second, the stockholders receive the sale price when they sell the stock.

Thus, the value common stock is equal to:

- a) The discounted present value of the sum of the next period's dividend plus next period's stock price, or
- b) The discounted present value of all future dividends

A common objection to applying present value analysis to stocks is that investors are too shortsighted to care about the long-run stream of dividends. These critics argue that an investor will generally not look past their time horizon. Thus, prices in a market dominated by short-term investor will reflect only near-term dividends.

One of the key elements of valuing the common stock is that the discount rate applied to the future cash flows should be appropriate to the risk presented by the security. This thesis will use Weighted Average Cost of Capital (WACC)

theory to calculate the discount rate in valuing the company where it can accommodate the risks and also the capital structure made by the company from its debt or stocks.

2.4.1 Weighted Average Cost of Capital

Weighted Average Cost of Capital (WACC) is the rate that a company is expected to pay to finance its assets. Weighted Average Cost of Capital (WACC) is the minimum return that a company must earn on existing asset base to satisfy its creditors, owners, and other providers of capital. It should be used to discount any project where one believes that the project risk is equal to the risk of the firm as a whole and the project has the same leverage as the firm as a whole. Please keep in mind that calculation of Weighted Average Cost of Capital (WACC) for a company with a complex capital structure is a laborious exercise.

Companies raise money from a number of sources: common equity, preferred equity, straight debt, convertible debt, exchangeable debt, warrants, options, pension liabilities, executive stock options, governmental subsidies, and so on. Different securities are expected to generate different returns. Weighted Average Cost of Capital (WACC) is calculated taking into account the relative weights of each component of the capital structure.

$$WACC = \left(\frac{E}{K}\right)y + \left(\frac{D}{K}\right)b(1 - tc) \quad (2.1)$$

Where

- y = required or expected rate of return on equity or cost of equity.
- b = required or expected rate of return on borrowings or cost of debt.
- tc = corporate tax rate.
- D = total debt and leases (including current portion of long-term debt and notes payable).
- E = total market value of equity and equity equivalents.
- K = total capital invested in the going concern.

2.4.2 Cost of Equity

Cost of equity is the rate of return investors require on an equity investment in a firm or the minimum rate of return a firm must offer shareholders to compensate for waiting for their returns, and for bearing some risk.

The cost of equity capital for a particular company is the rate of return on investment that is required by the company's ordinary shareholders. The return consists both of dividend and capital gains, e.g. increases in the share price. The returns are expected future returns, not historical returns, and so the returns on equity can be expressed as the anticipated dividends on the shares every year in perpetuity. The cost of equity is then the cost of capital which will equate the current market price of the share with the discounted value of all future dividends in perpetuity.

The cost of equity reflects the opportunity cost of investment for individual shareholders. It will vary from company to company because of the differences in the business risk and financial or gearing risk of different companies.

These inputs are used to arrive at an expected return on an equity investment:

$$\begin{aligned} \text{Expected return} &= \text{Riskless rate} + \text{Beta} (\text{Risk premium}) \\ \text{or} \\ R_i &= R_f + \beta_i (R_m - R_f) \end{aligned} \quad (2.2)$$

Where

Riskless rate = interest rate that it is assumed can be obtained by investing in financial instruments with no default risk.

Beta = expected return of a stock or portfolio is correlated to the return of the financial market as a whole.

Risk premium = expected rate of return on market above the risk-free interest rate.

2.4.3 Cost of Debt

Cost of debt measures the current cost to the firm of borrowing funds to finance projects. The cost of debt is computed by taking the rate on a non-

defaulting bond whose duration matches the term structure of the corporate debt, then adding a default premium. This default premium will rise as the amount of debt increases (since the risk rises as the amount of debt rises).

Since in most cases debt expense is a deductible expense, the cost of debt is computed as an after tax cost to make it comparable with the cost of equity (earnings are after-tax as well). Thus, for profitable firms, debt is discounted by the tax rate. Therefore, we have to keep in mind that interest creates a tax benefit only if a firm has enough income to cover the interest expenses. In other words, firms that have operating losses will not get a tax benefit from interest expenses, at least in the year of the loss.

In general terms, cost of debt is determined by the following variables:

- The riskless rate
As the riskless rate increases, the cost of debt for firms will also increase
- The default risk (and associated default spread) of the company
As the default risk of a firm increases, the cost of borrowing money will also increase.
- The tax advantage associated with debt
Since interest is tax deductible, the after-tax cost of debt is a function of the tax rate. The tax benefit that accrues from paying interest makes the after-tax cost of debt lower than the pretax cost. Furthermore, this benefit increases as the tax rate decreases.

2.5 Estimating Growth

The value of a firm is the present value of expected future cash flows generated by the firm. The most critical input in valuation, especially for high-growth firms, is the growth rate to use to forecast future revenues and earnings.

A firm can be valuable because it owns assets that generate cash flows now or because it is expected to acquire such assets in the future. For high-growth firms, accounting balance sheet do a poor job summarizing the values of the assets of the firm because they completely ignore the largest component of value, which

is future growth. The problems are exacerbated for firms that invest in research because the book value will not include the most important asset at these firms which is the research asset.

There are three basic ways of estimating growth for any firm (Damodaran, Investment Valuation, page 268) as follow:

a) Historical growth

When estimating the expected growth for a firm, we generally begin by looking at the firm's history. While growth is not always as good indicator of future growth, it does convey information that can be valuable while making estimates for the future.

b) Analyst estimates of growth

While many firms are widely followed by analysts, the quality of growth estimates, especially over longer periods, is poor. Relying on these growth estimates in a valuation can lead to erroneous and inconsistent estimates of value.

c) Fundamental determinants of growth

A firm's growth ultimately is determined by how much is reinvested into new assets and the quality of these investments, with investments widely defined to include acquisitions, building distribution channels, or even expanding marketing capabilities. By estimating these inputs, in a sense, we are estimating a firm's fundamental growth rate.

2.6 Stock Valuation Method

Every asset, financial as well as real, has a value. The key to successfully investing in and managing these assets lies in understanding not only what the value is, but the source of the value. Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from one case to another case.

A share of common stock is more difficult to value in practice than a bond, for at least three reasons. First, with common stock, not even the promised cash flows are known in advance. Second, the life of the investment is essentially

forever, since common stock has no maturity. Third, there is no way to easily observe the rate of return that the market requires.

Determining the correct offering price is the most difficult thing the lead investment bank or the underwriter must do for an Initial Public Offering (IPO). The issuing firm faces a potential cost if the offering price is set too high or too low. If the issue is priced too high, it may be unsuccessful and be withdrawn. If the issue is priced below the true market price, the issuer's existing shareholders will experience an opportunity loss.

The investment bank or underwriter has the responsibility of pricing fairly. When a firm goes public, particularly for the first time, the buyers know relatively little about the firm's operation. After all, it is not rational for a buyer of, say only 1,000 shares of stock to study the company at length. Therefore, the buyers must rely on the judgment of the investment bank, who has presumably examined the firm in detail. While the underwriter has a short-run incentive to price high, it has a long-run incentive to make sure that its customers do not pay too much. Fail to do so, the customers might desert the underwriter in future deals. Thus as long as investment banks plan to stay in business over time, it is in their self-interest to price fairly.

Some feel that if the stock is listed in a well organized stock market, with a large volume of transactions, the listed price will be close to the estimated fair value. This is called the efficient market hypothesis. On the other hand, studies made in the field of behavioral finance tend to show that deviations from the fair price are rather common, and sometimes quite large.

Thus, in addition to fundamental economic criteria, market criteria also have to be taken into account market-based valuation. Valuing a stock is not only to estimate its fair value, but also to determine its potential price range, taking into account market behavior aspects. One of the behavioral valuation tools is the stock image, a coefficient that bridges the theoretical fair value and the market price.

The methods which will be applied in the thesis are the Discounted Cash Flow, which value the stock from fundamental aspect or income approaches as discussed in subchapter 2.2.1, and Price Earnings Multiple Model, which value

the stock from technical aspect or market approaches as discussed in subchapter 2.2.3, by making the analysis and doing the surveys in the Indonesia Stock Exchange (IDX) and other sources found on the internet.

The reason why this thesis uses Discounted Cash Flow (DCF) for valuation is because it analyses company's fundamentals. Aswath Damodaran explains in his website that we have to remind ourselves why we do DCF calculation: It is because the markets sometimes make mistakes. (March 6, 2009. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/project/prques.htm).

On the other hand, this thesis uses Price Earnings Ratio (PER) for valuation is because it is considered as the most important thing in valuing a company by underwriters. Therefore, the reason this thesis uses DCF and PER is to have a check-and-balance-tool or to have something for sanity check. Considering if stock prices rise or fall disproportionately relative to the underlying earnings and cash flows, Discounted Cash Flows models are likely to find stocks to be over or under valued.

2.6.1 Discounted Cash Flow

In general there are three approaches to valuation of an asset. The first, Discounted Cash Flow (DCF) valuation relates the value of an asset to the Present Value (PV) of expected future cash flows on that asset. The second, relative valuation estimates the value of an asset by looking at the pricing of comparable assets relative to a common variable such as earnings, cash flows, book value or sales. The third, contingent claim valuation uses option pricing models to measure the value of assets that share option characteristics. There can be significant differences in outcomes, depending on which approach is used.

The discounted cash flow is the foundation on which all other valuation approaches are built. To do relative valuation correctly, we need to understand the fundamentals of discounted cash flow valuation. While to apply option pricing models to value assets, we often have to begin with a discounted cash flow valuation. Therefore anyone who understands its fundamentals will be able to analyze and use the other approaches.

The basic for discounted cash flow is the present value rule, where the value of any asset is the present value of expected future cash flows on it.

$$Value = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} \quad (2.3)$$

Where

- n = Life of the asset.
 CF = Cash flow in period t.
 r = Discount rate reflecting the riskiness of the estimated cash flows.

The cash flows will vary from asset to asset, such as dividends for stocks, coupon interests and the face value for bonds and after-tax cash flow for a real project. The discount rate will be a function of riskiness of the estimated cash flows, with higher rates for riskier assets and lower rates for safer projects.

In discounted cash flow valuation, we try to estimate the intrinsic value of an asset based on its fundamentals. An intrinsic value of a firm is the value that would be attached to the firm by an all-knowing analyst, who not only estimates the expected cash flows for the firm correctly but also attaches the right discount rate to these cash flows and values them with absolute precision. Although the task of estimating intrinsic value may seem to be hopeless, especially in valuing young companies with substantial uncertainty about the future, these estimates can be different from the market prices attached to these companies. While market value can deviate from intrinsic value, it is expected that the two will converge sooner than later.

The value of the firm is obtained by discounting expected cash flows to the firm at the Weighted Average Cost of Capital (WACC), which is the cost of the different components of financing used by the firm, weighted by their market value proportions (Damodaran, Investment Valuation, page 13).

$$\text{Value of firm} = \sum_{t=1}^n \frac{\text{CF to firm}_t}{(1+WACC)^t} \quad (2.4)$$

Where

- n = Life of the asset.
 CF to firm = Expected cash flow to firm in period t.
 WACC = Weighted Average Cost of Capital.

On more expansive approach of the discounted cash flow valuation is the Free Cash Flow to the Firm (FCFF). The Free Cash Flow to the Firm (FCFF) is the sum of the cash flows to all claim holders in the firm, including stockholders, bondholders, and preferred stockholders. This model is used when the only cash flows received by stockholders are not dividends. Even if we use the modified version of the Dividend Discount Model (DDM) and treat stock buybacks as dividends, we may misvalue firms that consistently fail to return what they can afford to their stockholders.

A simpler way of getting to Free Cash Flow to the Firm (FCFF) is to begin with the earnings before interest and taxes, net out taxes and reinvestment needs, and arrive at an estimate of the Free Cash Flow to the Firm (Damodaran, Investment Valuation, page 383).

$$\text{Free Cash Flow to the Firm} = \text{EBIT} (1 - \text{Tax Rate}) - \text{Depreciation} - \text{Capital expenditure} - \Delta \text{Working Capital}$$

(2.5)

The value of the firm is obtained by discounting the Free Cash Flow to the Firm at the Weighted Average Cost of Capital. Embedded in this value are the tax benefits of debt (in the use of the after-tax cost of debt in the cost of capital) and expected additional risk associated with the debt (in the form of higher costs of equity and debt at higher debt ratio).

The value of the firm that is growing at a rate that it can sustain in perpetuity – a stable growth rate – can be valued using a stable growth model (Damodaran, Investment Valuation, page 385).

$$\text{Value of firm} = \frac{FCFF_1}{(WACC - g_n)} \quad (2.6)$$

Where

- $FCFF_1$ = Expected FCFF next year.
 WACC = Weighted Average Cost of Capital.
 g_n = Growth rate in the FCFF forever.

There are two conditions that need to be met in using this model. First, the growth rate used in the model has to be less than or equal to the growth rate in the economy – nominal growth, if the cost of capital is in nominal terms, or real growth, if the cost of capital is a real cost of capital. Second, the characteristics of the firm have to be consistent with assumptions of stable growth.

There are limitations for stable growth model. Like all stable growth models, this one is sensitive to assumptions about the expected growth rate. This is accentuated, however, by the fact that the discount rate used in valuation is the WACC, which is significantly lower than the cost of equity for most firms. Furthermore, the model is sensitive to assumptions made about capital expenditures relative to depreciation. If the inputs for reinvestment are not a function of expected growth of the Free Cash Flow to the Firm can be inflated (deflated) by reducing (increasing) capital expenditures relative to depreciation. If the reinvestment rate is estimated from the return of capital, changes in the return on capital can have significant effects on firm value.

To true believers, Discounted Cash Flow (DCF) valuation is the only way to approach valuation. Moreover, Discounted Cash Flow (DCF) valuation remains the focus in classrooms and academic discussions (March 6, 2009. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/background/valintro.htm). Therefore, DCF valuation is the best practice for valuing a company for both academics and practitioners.

2.6.2 Price Earnings Multiple Model

Many yardsticks have been used to evaluate whether stock prices are overvalued or undervalued. Most of these measure the market value of the share

outstanding relative to economic fundamentals, such as earnings, dividends or book value, or to some economic aggregate, such as the Gross Domestic Product (GDP) or total replacement cost of the capital stock.

The most basic and fundamental yardstick for valuing stocks is the Price Earnings Multiple Model. Price Earnings Multiple Model is the ratio of price per share to earnings per share. It is commonly known as the P/E ratio or Price Earnings Ratio (PER). This is the most commonly used model in stock market valuation because it serves as a useful indicator of expectation of growth opportunities. Price Earnings Ratio (PER) made popular by the late Benjamin Graham, who was dubbed the Father of Value Investing as well as Warren Buffett's mentor.

P/E ratio measures how much investors are willing to pay per dollar of current earnings, higher P/E ratio are often take to mean the firm has significant prospects for future growth. Of course, if a firm had no or almost no earnings, its P/E ratio would probably be quite large, so, as always, care is needed in interpreting this ratio.

The average U.S. equity P/E ratio from 1900 to 2005 is 14 or 16. An oversimplified interpretation would conclude that it takes about 14 years to recoup the price paid for a stock, not including any income from the reinvestment of dividends.

There are two kinds of Price Earnings Ratio:

a) Absolute Price Earnings Ratio

Absolute P/E ratio is the most quoted of the two ratios where it measures the price of a stock divided by the company's Earnings Per Share (EPS). This measure indicates how much investors are willing to pay per dollar of earnings. The nominator of this ratio is usually the current stock price, while the denominator may be divided into 3 categories. First, the denominator is the trailing EPS from the previous 12 months resulting the trailing PER. Second, the denominator is the estimated/forward EPS for the next 12 months resulting the forward PER. Third, the denominator is a mix of the trailing EPS of the last two

quarters and the forward P/E for the next two quarters resulting the annualized PER which was used by Indonesia Stock Exchange (IDX). When distinguishing absolute P/E from relative P/E, it is important to remember that absolute P/E represents the P/E of the current time period.

b) Relative Price Earnings Ratio

Relative P/E ratio compares the current absolute P/E to a benchmark or a range of past P/Es over a relevant time period, such as the last 10 years. Relative P/E shows what portion or percentage of the past P/Es the current P/E has reached. Relative P/E usually compares the current P/E value to the highest value of the range, but investors might also compare the current P/E to the bottom side of the range, measuring how close the current P/E is to the historic low.

(February 5, 2008. <http://www.investopedia.com/ask/answers/05/051005.asp>).

Variations on the standard trailing and forward P/E ratios are common. Generally, alternative P/E measures substitute different measures of earnings, such as rolling averages over longer periods of time to smoothen volatile earnings, for example, or corrected earnings figures that exclude certain extraordinary events or one-off gains or losses. The definitions may not be standardized.

The P/E ratio implicitly incorporates the perceived riskiness of a given company's future earnings. For a stock buyer, this risk includes the possibility of bankruptcy. For companies with high leverage, that is high levels of debt, the risk of bankruptcy will be higher than for other companies. Assuming the effect of leverage is positive, the earnings for a highly-leveraged company will also be higher. In principle, the P/E ratio incorporates this information, and different P/E ratios may reflect the structure of the balance sheet.

Below are common guidelines for interpreting the P/E ratios, however, there are various possible interpretations of a particular P/E ratio. Therefore, the table below, derived from historical data, is just indicative as current P/E ratios should be compared to current economic conditions:

- N/A : A company with no earnings has an undefined P/E ratio. By convention, companies with losses (negative earnings) are usually treated as having an undefined P/E ratio, although a negative P/E ratio can be mathematically determined.
- 0–10 : Either the stock is undervalued or the company's earnings are thought to be in decline. Alternatively, current earnings may be substantially above historic trends or the company may have profited from selling assets.
- 10–17 : For many companies a P/E ratio in this range may be considered fair value.
- 17–25 : Either the stock is overvalued or the company's earnings have increased since the last earnings figure was published. The stock may also be a growth stock with earnings expected to increase substantially in future.
- 25+ : A company whose shares have a very high P/E ratio may have high expected future growth in earnings or the stock may be the subject of a speculative bubble.

P/E ratios commonly are taken as proxies for the expected growth in dividends or earnings. In fact, a common Wall Street rule of thumb is that the growth rate ought to be roughly equal to the P/E ratio. Peter Lynch, the famous portfolio manager, puts it this way in his book *One Up on Wall Street*:

The P/E ratio of any company that's fairly priced will equal its growth rate. I am talking here about growth rate of earnings here..... If the P/E ratio of Coca Cola is 15, you'd expect the company to be growing at about 15% per year, etc. But if the P/E ratio is less than the growth rate, you may have found yourself a bargain (Bodie, Kane & Marcus, 2008, page 623).

2.7 Explanation on Damodaran's Model

Based on company valuation guidance provided by Aswath Damodaran in his website (November 7, 2008. <http://pages.stern.nyu.edu/~adamodar/>), there are

two things that needed to be done in Discounted Cash Flow calculation. First, we must choose the right valuation model. Second, we calculate the value of a firm.

In choosing the valuation model, we must understand the logic behind finding the valuation model itself first. After that, we only need to put the numbers into the excel spreadsheet, in this case the FCFF spreadsheet in subchapter 4.3, to get the results. Below is the logic behind choosing the valuation model.

Table 2.1. Logic behind Damodaran's valuation model

Type of Model (DCF Model, Option Pricing Model):	
Probability of bankrupt	Option Pricing Model
No Probability of bankrupt	DCF Model
Level of Earnings to use in model (Current, Normalized):	
Positive earnings	Current earnings
Negative earnings	Normalize earnings
Cashflows that should be discounted (Dividends, FCFE, FCFF) :	
No Significant Debt ratio change	FCFF
Significant Debt ratio change + capex & WC can be estimate	FCFF
Significant Debt ratio change + capex & WC cannot be estimate	Dividend (value equity)
Dividend > 1.25 x FCFE	FCFE
Length of Growth Period (10 or more, 5 to 10, less than 5)	
future growth < inflation + real growth	no high growth period
future growth > inflation + real growth	5 to 10 years
future growth > inflation + real growth + 5%	10 or more years
Appropriate Growth Pattern (Stable, 2 stage, 3 stage):	
future growth < inflation + real growth	Stable growth
future growth > inflation + real growth	2 stage growth
future growth > inflation + real growth + 5%	3 stage growth

Sources: November 7, 2008. <http://www.stern.nyu.edu/~adamodar/pc/model.xls>