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BAHÇEŞEHİR ÜNİVERSİTESİ

STOCK VALUATION BY DISCOUNTED CASH FLOW ANALYSIS AND AN APPLICATION

Yüksek Lisans Tezi

MUSTAFA KEÇELİ

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CAPITAL MARKETS AND FINANCE

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Tez Danışmanı: Prof. Dr. Niyazi BERK

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SERMAYE PİYASASI FİNANS PROGRAMI

Tezin Adı: Stock Valuation by Discounted Cash Flow Analysis and An Application

Öğrencinin Adı Soyadı: Mustafa Keçeli
Tez Savunma Tarihi: 04.02.2013

Bu tezin Yüksek Lisans tezi olarak gerekli şartları yerine getirmiş olduğu Enstitümüztarafından onaylanmıştır.

Yrd.Doç. Dr. Burak Küntay
Enstitü Müdürü

Bu tezin Yüksek Lisans tezi olarak gerekli şartları yerine getirmiş olduğu Enstitümüz tarafından onaylanmıştır.

Assist. Prof. Hakkı Öztürk
Program Koordinatörü

Bu Tez tarafımızca okunmuş, nitelik ve içerik açısından bir Yüksek Lisans tezi olarak yeterli görülmüş ve kabul edilmiştir.

Jüri Üyeleri	İmzalar
Prof. Dr. Niyazi BERK	---
Assist. Prof. Hakkı Öztürk	---
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ACKNOWLEDGEMENTS

I would like to thank Prof. Niyazi BERK who not only served as my supervisor but also challenged, encouraged and motivated me throughout my thesis period. I am grateful to him especially for his kind appreciation of the special situation of a student active in professional life without giving any compromise from the quality of academic study.

I also want to thank my wife and my friends for their continious support and understanding throughout my thesis studies.

ABSTRACT

STOCK VALUATION BY DISCOUNTED CASH FLOW ANALYSIS AND AN APPLICATION

Mustafa Keçeli

Capital Markets and Finance Program

Thesis Supervisor: Prof. Dr. Niyazi BERK

January 2013, 103 pages

Valuation topic is of crucial interest to the finance world. Therefore it is one of the most scrutinized fields of finance. Its theory has been vastly implemented in stock market transactions, merger and acquisitions, initial and secondary public offerings, company restructurings, capital budgeting as well as performance evaluation techniques.

In this work, the details of the Discounted Cash Flow Valuation methodology are discussed. Although different approaches include various discounted cash flow models, three valuation model are examined in this thesis; Dividend Discount Model, Free Cash Flow to Equity and Free Cash Flow to Firm. Author of this document attempted to see the problems and concepts related with the subject from the eyes of a valuation analyst.

Value and Valuation concept are explained in the first section of this work, Valuation Methodologies are discussed in the second section.

The main inputs of a Discounted Cash Flow Analysis, which are fundamental analysis and discount rate calculation, are demonstrated in the third section.

In the fourth part, Discounted Cash Flow Analysis is examined under three different models. The differences, limitations and advantages of each model are also interpreted in this section. Additionally, the important points in the construction of the models are argued in this part of the document.

The final part of the thesis includes implementation of a discounted cash flow analysis to a real company. The results of each methodology are contrasted and interpreted.

Keywords: Discounted Cash Flow Analysis, Valuation, Fundemental Analysis

ÖZET

HİSSE SENEDİ DEĞERLEMESİNDE NAKİT AKIMLARI ANALİZİ

Mustafa Keçeli

Sermaye Piyasası ve Finans Programı

Tez Danışmanı: Prof. Dr. Niyazi BERK

Ocak 2013, 103 sayfa

Değerleme konusu finans dünyasında önemli bir yere sahiptir. Bu nedenle konu finans dünyasında dikkatle incelenmekte ve takip edilmektedir.Konunun teorik içeriği hisse senedi piyasalarındaki işlemlerde, satın alma ve birleşme işlemlerinde, halka arzlarda, şirket kurulumlarında ve bütçeleme işlemlerinde hem hedeflerin hem de değerlerin belirlenmesinde sıklıkla uygulanmaktadır.

Bu çalışmada hisse senedi değerlemesinde nakit akımları analizi yöntemleri ve bu yöntemlerin ayrıntıları tartışılmıştır. Farklı çalışmalarda farklı değerleme modelleri nakit akımları analizi içinde değerlendirilse de, bu çalışmada nakit akımları analizi 3 model altında incelenmiştir; Temettü iskontolama modeli, sermayeye nakit akımları analizivefirmaya nakit akımları analizi.İlgili modeller açıklanırken kavramlara hisse senedi analisti gözüyle yaklaşılmaya ve pratik yaklaşımlardan bahsedilmeye çalışılmıştır.

Çalışmanın birinci bölümünde değer ve değerleme kavramları açıklanırken, ikinci bölümde değerleme yöntemlerinden kısaca bahsedilmiştir.

Çalışmanın üçüncü.bölümünde nakit akımları analizinin önemli girdileri olarak kabul edilebilecek temel analiz süreci ve iskonto oranın belirlenmesi süreci tartışılmıştır.

Daha sonra nakit akımları analizi 3 model altında ayrıntılı olarak incelenmiş, modeller arasındaki farklılıklar, birbirlerine karşı üstünlükleri ve eksiklikleri üzerinde durulmuştur. İlgili bölümün devamında ise bu modellerin kurulması sırasında önem verilmesi gereken girdiler hakkında bilgiler verilmiştir.

Çalışmanın son bölümünde ise nakit akımları analiz yöntemleri örnek şirket üzerinde uygulanmaya çalışılmıştır. Her bir yöntemin ayrı ayrı uygulamasının ardından ortaya çıkan sonuçlar karşılaştırılmış ve yorumlanmaya çalışılmıştır.

Anahtar Kelimeler:İndirgenmiş Nakit Akımları Analizi, Değerleme, Temel Analiz

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LIST OF ABBREVIATIONS

A&D	: Amortization and depreciation
APV	: Adjusted present value
APM	: Arbitrage pricing model
A/P	: Account payable
A/R	: Account receivable
BIM-BIMAS	: Bim Birleşik Mağazaları A.Ş.
CAPM	: Capital asset pricing model
CAPEX	: Capital expenditures
CBRT	: Central Bank of The Republic Of Turkey
COGS	: Cost of goods sold
DCF	: Discounted cashflow valuation
DDM	: Dividend discount model
EBIT	: Earnings before interest and tax
EBITDA	: Earnings before interest, tax, depreciation and amortization
EPS	: Earning per share
EXP.	: Expense
EV/BV	: Enterprise value to book
EV/EBIT	: Enterprise value to earnings before interest and tax
EV/EBITDA	: Enterprise value to earnings before interest,tax, depreciation and amortization
EV/S	: Enterprise value to sales
FCF	: Free cash flow
FCFE	: Free cash flow to equity
FCFF	: Free cash flow to firm
FMCG	: Fast-moving consumer goods
OPEX	: Operating expenses
NOPAT	: Net operating profit after tax
NPV	: Net present value
P/BV	: Price to book value ratio

P/E	: Price to earnings ratio
P/EBIT	: Price to earnings before interest and taxes ratio
P/EBITDA	: Price-to-earnings-before-interest-taxes-depreciation amortization ratio
TL	: Turkish Lira
UK	: United Kingdom
US	: United States
US$	: United States Dollar
WACC	: Weighted average cost of capital
WC	: Working capital

LIST OF SYMBOLS

Company cashflow in period t	: *CFt*
Value of debt	: *D*
Value of equity	: *E*
Expected return on an asset	: *E(R)*
Expected return on market portfolio	: *E(Rm)*
Expected return on a portfolio with a beta of one on such defined macroeconomic variable n and zero on all other factors	: *E(Rn)*
Growth rate of company cashflows after period t	: *gstable*
Discount rate	: *k*
Cost of debt	: *kd*
Cost of debt after tax	: *kd(after-tax)*
Borrowing cost of the firm for its longer term debt with t years	: *kd,t*
Cost of equity	: *ke*
The last period of forecast period	: *n*
Risk free rate	: *Rf*
Yield of a US Treasury bond with a term of t years	: *Rf,t*
Corporate tax rate	: *T*
Terminal value of the company	: *X*
Beta	: *β*
Beta relative to changes in inflation	: *βI*
Beta relative to changes in a defined macroeconomic variable defined as n	: *βn*
Unlevered beta	: *βu*
Spread for the debt of the company	: *Δd*
Volatility of the country bond market	: *бequit y*
Volatility of the equity market	:*бcountrybond*

1. VALUE AND VALUATION CONCEPT

1.1 VALUE

The definition of value today is the amount of money which something is worth (Black 2006, p.211). In economics, value is the exchange value of an asset, that is, value of a unit of an asset is measured by the units of the other asset or currency, which is traded in exchange for that asset. Therefore, the value of the asset depends on its desirability and its scarcity. If an asset is desired and also scarce at the mean time, then that asset will be of higher exchange value (Baumol and Blinder 1998, p.96). Several perspectives on value serve as the foundation for the variety of valuation models available.

1.2 VALUATION

Valuation can be defined as a process that links risk and return to determine the worth of an asset(Gitman 2009, p. 299). Companies or analysts value assets for various reasons or needs. Some of the most common purposes for valuation are; mergers and acquisitions (M&A), financial reporting, Initial Public Offering (IPO), litigation and ownership disputes, allocation of purchase price, goodwill impairment, buy/sell agreements, reorganization and bankruptcies, recapitalizations, privatization (Hitchner 2006, p. 2).

In finance literature, discounted cash flow-based valuation is the most widely used technique. In this respect, Gitman states that there are three key inputs to the valuation process (Gitman 2009, p. 299):

I. Cash flows,

II. Timing,

III. A measure of risk, which determines the required rate of return

In addition to key inputs which are mentioned above, there are some general factors affecting the valuation; these are general situation of the industry and economy in which the company operates, size and growing capability of the company, liquidity, capital structure, financial position, dividend distribution policy, technology, product pricing and marketing, planned capital investments and economic life of these investments. Besides these factors and fundamental valuation techniques, knowledge and professional judgment of the analyst will also have a considerable effect on valuation(Chambers 2005, p. 24).

1.2.1 Valuation Process

Pinto and Others (2010, pp. 7-8) determined the valuation process that consists of five steps in general that must be followed by the analysts:

i. Understanding the business
ii. Forecasting company performance
iii. Selecting the appropriate valuation model
iv. Converting forecasts to a valuation
v. Applying the valuation conclusion

2. STOCK VALUATION METHODS

Definition of valuation is that it is the estimation of an asset's value based on variables perceived to be related to future investment returns, on comparisons with similar assets, or, when relevant, on estimates of immediate liquidation proceeds.[1]

Analysts use a wide range of models to value assets in practice, ranging from the simple to the sophisticated, in general terms; we can separate the valuation to the three different approaches (Damodaran 2002, p.14):

The first, discounted cash flow valuation (Income based valuation model), relates the value of an asset to the present value 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, asset based valuation, the principle of which is that the value of ownership of an enterprise is equivalent to the fair value of its assets less the fair value of its liabilities.

2.1 ALTERNATIVE DISCOUNTED CASH FLOW VALUATION MODELS (INCOME BASED VALUATION MODELS)

A discounted cash flow valuation model is a model that specifies an asset's intrinsic value. Although discounted cash flow valuation is one of the three ways of approaching valuation and most valuations done in the real world are relative valuations, it is the foundation on which all other valuation approaches are built.

The structure and the names of the models might differ, but the underlying idea is always the same. They are all rooted in the present value framework for equity valuation pioneered by Merton Miller and Franco Modigliani (1961) in the early 1960s.

[1](Pearson Learning Solutions, Cfa, Level II Volume 4, 5th Edition, P.9)

A lot of "different" discounted cash flow approaches exists today, each with its own acronym: dividend discount models (DDM), free cash flow to the firm (FCFF), free cash flow to equity (FCFE), Residual Income Model, Adjusted Present Value Model and Economic Value Added (EVA), to name just the most popular models discussed in academic literature. DDM, FCFF and FCFE models which constitute the main subject of the study will not be explained in this section.

This approach has its foundation in the present value rule, where the value of any asset is the present value of expected future cash flows that the asset generates.

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

Where,
n = Life of the asset
CFt = 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 -- dividends for stocks, coupons (interest) and the face value for bonds and after-tax cash flows for a real project. The discount rate will be a function of the riskiness of the estimated cash flows, with higher rates for riskier assets and lower rates for safer projects (Damodaran 2002, p.15).

2.1.1 Economic Value Added (EVA)

EVA is trademarked by Stern Stewart & Company. Joel Stern (1998, xi) and G. Bennett Stewart (1991, p. 742) state that EVA is the residual income that remains after operating profits cover the cost of capital. Stern explains that for debt and equity investors to earn an adequate rate of return, the return must be large enough to compensate them for risk. If the residual income (i.e., EVA) is zero, a firm's operating return is just equal to the return that investors require for the risk they are taking. Thus, EVA is defined by Stewart (1991) and Ehrbar (1998) as:

EVA = NOPAT – C% (TC)

Where;

NOPAT = net operating profit after taxes

C% = cost of capital

TC = total capital

Based on the EVA model, the value of a firm is equal to the value of its total capital plus the sum of the present value of its projected EVA. Thus, there are three inputs into the EVA model: total capital, net operating profit after taxes, and cost of capital.[2]

2.1.2 Residual Income

As an economic concept, residual income has a long history, dating back to Alfred Marshall (1890) in the late 1800s.[3] As far back as the 1920s, General Motors used the concept in evaluating business segments.[4]

Residual income is defined as the accounting earnings above normal earnings. Normal earnings are the earnings that would be earned given the cost of capital and beginning of the period book value of equity; and the number is calculated by multiplying the book value of equity at the beginning of the period (B_t-1) by the firm's cost of equity capital (C_e). The residual income for the period t is ($FEPS_t$ – C_e B_t-1), where $FEPS_t$ is the forecasted earnings for the period t.

The mathematical relationship between the price of a share of stock, forecasted earnings and book (Rawley and Benton 2010, pp.174-175):[5]

$$V_o = Bo + \sum [(1+C_e)\text{-}t\ (FEPS_t - C_e\ B_t\text{-}1)]$$

Where;

V_o = current intrinsic value of a share of stock

[2]For more information about EVA look at; Joel Stern (1998), G. Bennett Stewart (1991, p. 742), Rawley and Benton (2010, p.173)

[3]Alfred Marshall, Book Two: Some Fundamental Notions, Chapter 4 , " Income, Capital, " İn *Principles Of Economics* (London; Macmillan And Co., Ltd., 1890).

[4]See, For Example, Young (1999) And Lo And Lys (2000).

[5]For more information about RI look at; Hirst and Hopkins (2000), Pinto and others (2010, pp.210-215)

B_o = book value of a share of stock

C_e = cost of equity capital

FEPS = forecasted earnings per share

2.2 RELATIVE VALUATION (MARKET BASED VALUATION APPROACH)

The idea behind the market approach is that the value of a business can be determined by reference to sales of reasonably comparable guideline companies (also referred to here as "comparables" or "comps") that have taken place in either the public or the private marketplace. The value may be known either because the companies are publicly traded or because they were recently sold and the terms of the transactions were disclosed(Hitchner 2010, p.259).

Despite the differences between two valuation methods, one of Arzac's studies which aimed to test the success of relative valuation method and DCF valuation method for finding the firm value, Arzac states that although these two methods provide very useful estimates in individually, the methods give better estimates while they were used together(Arzac 2008, p.66).

2.2.1Matching Price to Parameter

Conventionally, "price" is matched to the appropriate parameter based on which providers of capital in the numerator will be paid with the monies given in the denominator.

For example, in price/EBIT, price is Enterprise Value, since the earnings before interest payments and taxes will be paid to both the debt and equity holders. In price/net income, price is the market value of equity only, since net income is after interest payments to debt holders and represents amounts potentially available to shareholders. Any denominators that exclude interest (e.g., EBIT or EBITDA) should usually be matched with its corresponding numerator (e.g., Enterprise Value). Enterprise Value is usually the numerator for (Hitchner 2010, pp.296-297):

- Revenues
- EBITDA
- EBIT
- Debt-free net income
- Debt-free cash flows
- Assets
- Tangible book value of invested capital

Equity Value is usually paired with:

- Pretax income
- Net income
- Cash flow
- Book value of equity

2.2.2Commonly Used Market Multiples

Although a variety of market multiples appear in financial literature, only a few receive wide recognition and application. While there may be variation in the application of those listed next, these are the multiples that are most commonly used (Mellen and Evans 2010, p.183);

2.2.2.1 Price to earning (P/E)

In the scope of fundamental analysis, P/E ratio is one of the relative valuation techniques that are used for company valuation. For the first time, Malkiel claimed that the value of company can be found by P/E ratio. Markiel indicated that P/E ratios represent the normalized stock prices and he developed a valuation model with using P/E ratios. In company valuation based on P/E ratio the analyst firstly should determine the earning per share, and then find the actual stock value by multiplying pre-determined EPS value with realized P/E ratio in the market (Malkiel 1963, pp. 1004-1031). Price/earnings is certainly the best known, if not the most popular, multiple. The price of common stock is the numerator, and income after taxes is the denominator. This multiple is appropriate for most profitable companies with a stable capital structure

that is consistent with the capital structure of the selected guideline companies. This equity multiple will produce an equity value directly.

2.2.2.2 Enterprise value /Revenue

Enterprise value /revenues, another popular multiple, assumes a homogenous industry where the revenues can reasonably be expected to produce a consistent quantity of earnings or cash flow. It may also be useful in certain industries, such as the restaurant industry, to eliminate any discrepancies in the definition of earnings between the subject and among the guideline companies, which may arise in using earnings multiples. Although revenue multiples often reflect price in the numerator, it is more appropriate to reflect Enterprise Value in the numerator. Reflecting price in the numerator produces confusing results because price is a measure of equity and the denominator is a return to debt and equity. Revenue is a measure of operating results that comes before interest expense in the income statement.

2.2.2.3 Enterprise Value /EBIT or Enterprise Value /EBITDA

Coyle states that some analysts accept that cash profit is more important than traditional earnings or accounting profits and EBITDA (Earnings before Interest, Taxes, Depreciation, and Amortization) is a good measure for cash operating profit (Coyle 2002, p.47). In addition to this assertion, Damodaran indicates that some companies may have negative earnings per share or negative income, for this reason using P/E ratio becomes meaningless. In the case of net loss, P/E ratio cannot be calculated; therefore, using EBITDA rather than net income or loss figure is suitable. Enterprise Value /EBIT (earnings before interest and taxes) and EBITDA (earnings before interest, taxes, depreciation, and amortization) are widely used in the M&A community. These returns include the interest expense return to the debt holder, so the numerator must be the aggregate market price of the equity and debt. When developed correctly, these multiples can provide substantial insight into both investment value and fair market value. The key is to ensure that they are supported by proper calculations of transactions that are appropriate for comparison.

2.2.2.4 Price to Book Value and Tobin's Q

Multiples which are based on historical book value depending on accounting records and replacement cost of assets can be used as another technique in valuation. In this respect, the most widely used multiples are Market to Book Value (Price/BV) and Replacement (Tobin's Q) Ratios.

Price / BV ratio is calculated as follows:

Price / BV = Market Value of Equity / Book Value of Equity.

This multiple is often used to value banks. This ratio becomes meaningless for the companies having negative equities.Other industries that use P/BV or its derivatives are the paper and pulp industry, real estate and insurance (Fernandez 2001, p. 4).

Usage of the book value is not a good measure to determine the fair value of financial assets, replacement cost of assets (Tobin's Q) is used as an alternative method for valuation. When other things equal, Tobin's Q is expected to be high when the productivity of a company's assets is high. Tobin's Q ratio is calculated as follows (Gürbüz and Ergincan 2008, p.177):

Tobin's Q = Market Value of Assets / Replacement Cost of Total Assets

2.3 ASSET-BASED APPROACH TO COMPANY VALUATION

The principle underlying the asset-based approach is that the value of ownership of an enterprise is equivalent to the fair value of its assets less the fair value of its liabilities. Of the three approaches to valuation, the asset-based approach (also referred to as the cost approach by many in the valuation profession) is generally considered to be the weakest from a conceptual standpoint for valuing an ongoing business enterprise.

The asset-based approach may be appropriate for the valuation of holding (investment) companies, such as real estate investment trusts (REITs) and closed-end investment companies (CEICs). For these entities, the underlying assets typically consist of real estate or securities that were valued using the market and/or income approaches. An asset-based approach may also be appropriate for very small businesses with limited intangible value or early stage companies.[6]

[6](Pearson Learning Solutions, Cfa, Level II Volume 4, 5th Edition, P.668)

3. PRIMARY INPUTS OF CASH FLOW ANALYSIS

3.1 FUNDAMENTAL ANALYSIS

One of the most important components for stock evaluation is fundamental analysis. Fundamental analysis may be divided into 3 sections as economical analysis, industry analysis and company analysis.

In the method mentioned above, it is aimed to reach real value of stock by evaluating the company in consideration of basic indicators which determines the share price such as profitability, liquidity, capital structure, production, technological situation, market structure, management quality, competitive power and macro-economic developments (Berk 2010, p. 62).

It is possible to recognize all methods analyzed in the study within the concept of fundamental analysis. Global and national economical developments and expectations are the variables which have a direct effect on the future performance of a company. The other important issue which should to be examined after an economical analysis is the general condition of industry the company operates in. General operating structure of the industry, leading companies, the reaction of industry data to macro-economical data, industryal competition structure, profit margins are the subjects a stock analyst should have knowledge of. The last field of study in the fundamental analysis is company analysis. In this part, the analyst should strike into thesubjects such as general operating structure of the company, institutionalization level, position in the industry, market domination and market share, exportation competency and potential. In addition, the analyst should have detailed knowledge about past and current financial performance of a company through financial statements analysis.

In this section, every part will be examined separately. In addition, basic financial statements analysis shall be described during company analysis.

3.1.1 Economıc Analysıs

A top-down analysis of a firm's prospects must start with the global economy. The international economy might affect a firm's export prospects, the price competition it faces from competitors, or the profits it makes on investments abroad. Nevertheless, despite the fact that the economies of most countries are linked in a global macroeconomy, there is considerable variation in the economic performance across countries at any time(Bodie and others 2009, p. 554).

Even if there is great discrepancy between economical performances of countries, the effect of some countries' economy on global economy is stronger. Especially, the effects of these countries on global economy have increased upon globalization of money and capital markets. Movements affecting money and capital markets generally emerge from economical data of developed countries such as USA, China, Japan, and European Union. Data announced periodically by these countries and positive or negative developments in these countries are analyzed closely and reacted (Berk 2010, p. 64).While performing macro-economical analysis, an analyst can not ignore changes in these countries and their effects on global economy. These data are not only important for it may alter macro-economical condition, but also reacted by capital markets and investors consider risk/rate of return in light of these data. For example, the position of local currency of the country in which evaluated company operates over against other currencies may affect both country economy and company business.

One obvious factor that affects the international competitiveness of a country's industries is the exchange rate between that country's currency and other currencies. The Exchange rateis the rate at which domestic currency can be converted into foreign currency (Bodie and others 2009, p. 555).

Variations on exchange rate have an effect on competition environment through pricing and local currency depreciation may increase input cost which is provided from abroad such as petroleum and may create an inflationary environment. In the contrary case, the decrease exchange rate causes, in income of countries which generate income from petroleum may result in decreased national income. Sudden variations in exchange rates

may also result in sharp increase in country and company debts abruptly (in current rate).

Apart from global economical condition, the other most important matter which has effect on company operations is economical aspect. National economical aspect and expectations have potential to be more or less influenced by global economy. While the degree of exposure potential is changed by global economical mobility according to country's indebtness, natural sources, balance of trade, political condition, company's exposure potential is changed according to companies' specific structure. All macro-economical data have more or less potential to influence the company according to its field of activity and financial structure. Some of the basic macro-economical indicators may be followed as; Gross national product, unemployment, inflation, interest rates, budget deficits. Besides these data, consumer confidence, consumer spending, investment spending, government incentives, money supply may also be beneficial for obtaining an opinion about macro-economical aspect. While some of these data are important for indicating current condition, others are in the characteristic of initial indicators.

While macro-economical data influence industrys, industrys influence company activities.The industry's sales and profits typically reflec macroeconomic conditions. Obviously, the extent to which an industry's performance reflects macroeconomic conditions depends on the industry. Some industries, such as food, health care and other consumer staples are less affected by changes in economicconditions. Sales of other industries, such as airlanes or luxury consumption goods, critically depend on macroconditioons: They rise when the economic conditions improve and decline when economic conditions deteriorate (Benninga and Sarig 1997, p. 140).

Besides, as banking industry is highly influenced by interest decisions of central banks and market interests, automobile industry is influenced by gross national product data. Variations in interests have influence directly on banking industry profitability and also indirectly on automobile industry. While automobile selling rates is increased in low-interest environments due to increased credit opportunities and inexpensive credits, an adverse effect is observed on high-interest environments. While variations in exchange

rates directly affect the profitability of importing or exporting companies, it also has affect on industrys such as tourism. Alternations on raw material prices have a negative effect on companies which have high dependence on raw materials, but have a positive effect on raw material producers.

While performing predictions for a company, an analyst should take consideration in macro-economical data. An analyst may make analysis of this data and make future predictions on their own, or benefit from public and private institutions' studies, market expectations and various surveys of data providers. Together with macro-economical data, an analyst may make predictions by developing new models specific to industry or company. This subject is a totally different specialty and excluded in this study.

3.1.2 Industry Analysis

In general conversation, industries are described by the product they produce or the service they provide. Hospital chains or physician health groups are medical service industries. News papers firms, magazine publishers, and book companies fall in the publishing category. Sporting goods manufacturers, recorded music distributors, and toy producers are lumped into the recreation industry(Hooke 2010, p. 73).

By far the most popular segmentation tool is the industrial life cycle, which reflects the vitality of an industry over time. A staple of business school text books and management consulting firms, the life cycle theory outlines four phases;Start-up or Pioneer Stage, The Growth Phase, Maturity Stage, Decline Stage.

In addition to this classification, industrys may be classified according to their reaction to economical activities. In his book, James Hooke(2010) classified industries by dividing into three as follows;
*Growth;*Above-normal expansion in sales and profits occurs independently of the business cycle.*Defensive;*Stable performance continues during both ups and downs of business cycle.*Cyclical;*Profitability tracks the business cycle, often in an exaggerated manner.

Bodie, Kane, Marcus (2009) approached this as “Sensitivity to the Business Cycle” and classified industrys according to reactions of sell and profit rates to macro-economical alternations. In these foregoing books this classification is dividedin to three: sales sensitivity, operational leverage sensitivity and financial leverage sensitivity.

The maturation of an industry involves regular changes in the firm’s competitive environment. Michael Porter (1985) has highlighted these five determinants of competition: threat of entry from new competitors, rivalry between existing competitors, price pressure from substitute products, bargaining power of buyers, and bargaining power of suppliers.

There are external effects which would make industrys knowledge of their future and are required to be examined after examining industry structure. These effects are generally technological development, social structure, change, demographic situation, government policies and international effects. Industry analysis is a matter that should be taken into consideration on stock evaluation. Operational and financial assumptions about a company are directly related to its industry. Selling and profitability data, growth rates, reaction to macro-economical development of the industry together with analysis of previous data have an important role on expectations of the company, because companies act towards to industry averages. To know weaknesses and strengths of the industry, cost structure, profitability ratios and growth data are crutial to create company’s general structure. For sure, not all companies act towards to industryal averages. There may be companies with higher growth rate and profitability than its industry. Sometimes companies may have characteristics different from its industry. In such cases, industryal analysis should be performed well and weakness and strength of the company should be described in detail.

3.1.3 Company Analysis

After having examined global economical condition and national economical aspect in main analysis section, environment of a company becomes analyzed performing industryal analysis. Thus, limits of evaluation to be performed are determined. Finally, it is possible to have knowledge of a company's capacity for future by analyzing the company. This section is examined with two sub-topics. Firstly, weakness and strength of a company are determined with a general examination and limits of the field to be placed by determining market share and competition environment. Secondly, financial statements analysis is performed in which an analyst shall utilize in cash flows analysis. In this analysis, financial condition of a company is determined. Cash flows of a company may be predicted according to more objective and consistent criteria.

Performing SWOT analysis for a company shall be beneficial for checking cash flows predictions and objectivity of the analyst. Stacey (1993) describes SWOT analysis as a list of an organization's strengths and weaknesses as indicated by an analysis of its resources and capabilities, plus a list of the threats and opportunities that an analysis of its environment identifies.

> *A SWOT analysis should enable you to make strategic decisions by considering: "internal strengths and weaknesses" and "external opportunities and threats";*
>
> *First step analyst analysis firms organisation internally, writes down its strengths and weaknesses in terms of the following factors:*
>
> *Culture and structure - flexibility, customer driven, team oriented, etc.*
>
> *Products and services - brand, reputation.*
>
> *People and their skills - human resources, knowledge, learning.*
>
> *Finance - debt structure, budgets, cash flow, source of income.*

Resources - land, buildings, systems, processes.

Second step analist analyse firm externally, write down its opportunities and threats in terms of:

The industry and marketplace in which it operates.

Trends in the macro environment, analysis to highlight important political, economic, social, technological, legislative and environmental trends that are affecting your organisation now and will affect it in the future.[7]

3.1.4 Financial Statement Analysis

Financial statements analysis is examination of relationships between items in financial statement and their tendency to evaluate activity results and financial development, determined development aspects and make perspective predictions about the company Akgüç 2008, p.1)

Financial statements analysis has an important role with regards to have knowledge of the company's structure and to make financial expectations be on a steady ground. In this section of the study, financial statements analysis methods will be described. As this is main subject of the study important subjects were emphasized.

Financial statements may be described as balance sheet, income statement, profit distribution statement, statement of changes in equity, cash flow statement. Although mentioned statements are different, the most important statements are balance sheet and income statement. Besides cash flow statement is a indicator worth to be utilized by the analyst.

[7](Business Environment Revised Edition**,** Elearn, Elearn Training Company)

It is possible to classify financial statements analysis in many different ways. Suppose that financial statements are examined as to form and substance, it is possible to classify analysis according to the material or method.

Based on the material used, financial statement analysis may be classified into two major types such as External analysis and internal analysis.

When external analysis is very much useful to understand the financial and operational position of the business concernsuch as investors, creditors, government organizations and other credit agenciesand mainly depends on the published financial statement of the concern, TheCompany itself does disclose some of the valuable informations to the business concern in this internal analysis. This analysis is used to understand the operational performances of each and every department and unit of the business concern.

Based on the methods of operation, financial statement analysis may be classified into two major types such as horizontal analysis and vertical analysis.

Horizontal Analysis; Under the horizontal analysis, financial statements are compared with several years and based on that, a firm may take decisions. Normally, the current year's figures are compared with the base year (base year is consider as 100) and how the financial information are changed from one year to another. This analysis is also called as dynamic analysis.

Vertical Analysis; Under the vertical analysis, financial statements measure the quantities relationship of the various items in the financial statement on a particular period. It is also called as static analysis, because, this analysis helps to determine the relationship with various items appeared in the financial statement. For example, a sale is assumed as 100 and other items are converted into sales figures.

In general aspect, financial statements analysis methods can be divided to 4 classifications. These are Ratio Analysis, Comparative Statement Analysis, Trend Analysis and Common Size Analysis.

3.1.4.1 Comparative analysis of financial statements

Comparative statement analysis is an analysis of financial statement at different period of time. This statement helps to understand the comparative position of financial and operational performance at different period of time. Comparative financial statements again classified into two major parts such as comparative balance sheet analysis and comparative profit and loss account analysis.

3.1.4.2 Trend analysis

The financial statements may be analysed by computing trends of series of information. It may be upward or downward directions which involve the percentage relationship of each and every item of the statement with the common value of 100% (Paramasivan and Subramanian 2009, p. 17).

3.1.4.3 Common size analysis

Another important financial statement analysis techniqueis common size analysis in which figures reported are converted into percentage to some common base. In the balance sheet the total assets figures is assumed to be 100 and all figures are expressed as a percentage of this total (Paramasivan and Subramanian 2009, p. 17).

3.1.4.4 Ratio analysis

Ratios are classified in different aspects according to various criteria.Ratio analyses by themselves may not make a sense. These ratios can make sense by means of comparison with ratios efficaciously approved and obtained through experiences. Compared to other analyses financial statement and ratio analyses will be mentioned more. Classifications

of standard ratios, not a general classification form, were found acceptable as follows (Akgüç 2008, p. 406);

i. Ratios used in liquidity analysis

Liquidity reflects the ability of a company to meet its short-term obligations using those assets that are most readily converted into cash. We can describe a company's ability to meet its current obligations in several ways. We can form the current ratio, which is one of the most commonly used measures of liquidity:

Current ratio = Current assets / Current liabilities

Other mesaure is Quick Ratio;

Quick ratio = Current assets – Inventory / Current liabilities

A company's receivables are less liquid than its holdings of cash and marketable securities. Therefore, in addition to the quick ratio, analysts also compute a firm's cash ratio, defined as

Cash Ratio =Cash and Bank Balance + Current Investments (marketable securities) / Current Liabilities

ii. Ratios used to evaluate cash generating capacity

Today, measuring cash generating capacity of companies is important for them to fulfill their liabilities. The following ratios issue an opinion about sufficiency rather than the absolute amount of this source;

=Resources Created As a Result of Operations / Net Sales
= Resources Created As a Result of Operations / Total Average Asset
= Resources Created As a Result of Operations / Current Liabilities

= Resources Created As a Result of Activity / Interests Paid in The Period

Increase in these rates on examined period refers to increase in resource creating capacity of company.

iii. Ratios giving clues about financial structure

These ratios measure the ability of the firm to service contractual financial commitments like debt. Theymake use of balance sheet and/or income statement numbers to estimate the cushion available (in earnings) to the firm before it defaults on contractual payments (Vishwanath 2007, p. 116).

A ratio that indicates the proportion of assets financed with debt is the *debt to- assets ratio*, which compares total liabilities (Short-term debt + Longterm debt) with total assets:

Debt to assets = Debt / Total assets

Another way to look at the financial risk is in terms of the use of debt relative to the use of equity. The *debt-to-equity ratio*, or simply the *debtequity ratio,* is a measure how the company finances its operations with debt relative to the book value of its shareholders' equity:

Debt to equity =Debt / Shareholders' equity

Examining capital structure of a company, many ratios may be derived from balance sheet items. Understanding the source structure of a company through these ratios helps analyst during evaluation process. Upon analyzing current data together with previous data, it will be easier to predict capital structure of a company in future.

The ratios that compare debt to equity or debt to assets indicate the amount of financial leverage, which enables an investor to assess the financial condition of a company.

Another way of looking at the financial condition and the amount of financial leverage used by the company is to see how well it can handle the financial burdens associated with its debt or other fixed commitments. One measure of a company's ability to handle financial burdens is the *interest coverage ratio*, also referred to as the *times interest-covered ratio.* This ratio tells us how well the company can cover or meet the interest payments associated with debt. The ratio compares the funds available to pay interest (that is, earnings before interest and taxes) with the interest expense (Drake and Fabozzi 2010, p. 260):

Interest coverage ratio =EBIT / Interest expense

The greater the interest coverage ratio, the better able the company is to pay its interest expense.

iv. Ratios about assets/sources usage

It is also called as turnover ratio. This ratio measures the efficiency of the current assets and liabilities in the business concern during a particular period. This ratio is helpful to understand the performance of the business concern.

In analysis of this section, how a company utilizes working capital items is examined. Some of the activity ratios are given below:

The *inventory turnover ratio* is a measure of how quickly a company has used inventory to generate the goods and services that are sold. The inventory turnover is the ratio of the cost of goods sold to inventory:

Inventory turnover =Cost of goods sold / Inventory

The *accounts receivable turnover* ratio is a measure of how effectively a company is using credit extended to customers.

Accounts receivable turnover =Credit sales / Accounts receivable

The *accounts payable turnover* ratio is a measure of how effectively a company is using credit extended to supplier.

Accounts payable turnover = purchase on credit / Accounts payable

Or;

Accounts payable turnover =Cost of Good Sold / Accounts payable

v. Ratios used to evaluate profitability

For investors, one of the most important indicators in a company is profitability data. Investor who lends to company and inject equity prefers to consider company profitability from their aspect. While creditors desire to evaluate solvency of a company by examining its business profitability ratios, investors focus on their dividend share by examining items such as net profitability or return on equity.

Profit margin ratios show the relationship between profit and sales (Hiriyappa B. 2008, p.159). On general, they give profitability ratios reached from an unit sale.

Gross Profit Margin = Gross Profit / Net Sales

Operating Profit Margin = Operating Profit / Net Sales

Net Income Margin = Net Income / Net Sales

These ratios may be derived or calculated depending on which specificityof the companydesired be seen. Besides, asset profitability ratio or return on equity which are used observe how a company efficiently uses its investments and assets, and important for investors may be mentioned.

Asset profitability; Net Income / Averabe Total Asset

Equity profitability;Net Income / Average Equity

3.2 DETERMINATION THE DISCOUNT RATE FOR CASH FLOWS

This part of the chapter is dwelling on the discount rate which is used to discounting cash flow. Cost of capital, used in discounting cash flow, takes an important place in terms of firm and project/investment assessment. As focused on common stocks assessment in this study, discounting rate will be handed just for this aspect.

When company's capital structure generally consists of liability (Loan) and equity capital, these sources indicates the ways of gaining firm's assets. Company may gain the fortune by equity capital or loaning. Optimum dividing between this two source structures play a critic role for company's future. The important point which is faced by decision maker in source structure is the cost of sources. The cost of this source is the minimum rate of return which firms are planned to gain by these sources.

The essence of the cost of capital is that it is the percentage return that equates expected economic income with present value. The expected rate of return in this context is called a discount rate(Shannon 2002, p. 6).

Discount rate is the important part of valuing firm/Equity with cash flow model. Errors in estimating the discount rate or mismatching cashflows and discount rates can lead to serious errors in valuation. At an intuitive level, the discount rate used should be consistent with both the riskiness and the type of cashflow being discounted;

a. Equity versus Firm: If the cash flows being discounted are cash flows to equity, the appropriate discount rate is a cost of equity. If the cash flows are cash flows to the firm, the appropriate discount rate is the cost of capital.

b. Currency: The currency in which the cash flows are estimated should also be the currency in which the discount rate is estimated.

c. Nominal versus Real: If the cash flows being discounted are nominal cash flows (i.e., reflect expected inflation), the discount rate should be nominal (Damodaran 1994)[8].

3.2.1Cost of equity

Equity is a stock representing an ownership interest. Equity includes both the paid in capital and the profits accumulated through the company's operations. The equity of a company is the difference between total assets and total liabilities (Akgüç 2008, p. 209).

Ministry of Finance explains the equity capital in annual financial statement as:"it includes the paid-in-capital which indicates the amount of capital investments made to the firm at the date of annual financial statement by owners or partners of enterprise and capital reserves, retained earnings, profits and deficits of prior years and the net profit and deficit of the period."

Any commercial enterprise cannot show activities without equity which consist of paid in capital and company funds that gained previous year. Equity capital shows not only finance function but also the rights of partners in enterprise (Berk 2010, pp. 194-195)

The company uses the equity to finance all or part of its operations. The lowest profitability rate expected from the invested equity can be defined as cost of equity.

We estimate the cost of equity by looking at the beta (or betas) of the company in question, the cost of debt from a measure of default risk (an actual or synthetic rating) and apply the market value weights for debt and equity to come up with the cost of capital (Damodaran 2009, p 32). Some approaches of cost of equity are: Gordon Dividend Model, Arbitrage Pricing Model and Capital Asset Pricing Model. Even if the three of the models emerged as an alternative of another in different times, Capital Asset Pricing Model is the most applied model to calculating the cost of equity capital by shareholder analysts.

[8]http://pages.stern.nyu.edu/~adamodar/New_Home_Page/dam2ed.htm

3.2.1.1 Capital asset pricing model (CAPM)

For more than 30 years financial theorists generally have favored the notion that using CAPM is the preferred method to estimate the cost of equity capital. In spite of many criticisms, it is still one of the most widely used models for estimating the cost of equity capital, especially for larger companies (Shannon 2002, p. 70). CAMP is mainly used for getting the best profit in return of risk and the time. The greater the risk the greater the profit shall be. All interest is taken on the maturity date when investing on a treasury bond, when investing in riskier options such as stocks, the expected return and the risk premium is much higher than treasury bonds due to risk incurred(Brealey and others 2003, p. 275).

CAPM is an equation for required return that should hold in equilibrium (the condition in which supply equals demand) if model's assumptions are met; among the key assumptions are that investors are risk averse and that they make investment decisions based on the mean return and variance of returns of their portfolio (Pinto and others 2010, p. 57).

Some other assumptions of CAMP's stand by:

i. Investors makes plan for just one and equal gaining time,
ii. Investors have the possibility of borrow and take loan at every rate over the standing risk free rate,
iii. Investors do not pay tax and commission,
iv. Investors act rationally,
v. Investors which are assumed as having homogenate expectations, have the equal information about the possible distribution of return in future. (Öztürk 2009, p. 43)

Consider the standard approach to estimating cost of equity (Damodaran)[9]:

$$\text{Cost of Equity} = R_f + \text{Equity Beta} * (E(Rm) - R_f)$$

[9]http://pages.stern.nyu.edu/~adamodar/New_Home_Page/dam2ed.htm

Where,

R_f = Riskfree rate

E (R_m) = Expected Return on the Market Index (Diversified Portfolio)

Explaining the formula briefly, the return risk free rate means a return gained by an investment out of risk. The equity beta measures equity's market or systematic risk, which shows the tendency to move with market or sensitivity to market. Risk premium [E (R_m)-R_f] is the minimum amount of money by which the expected return on a risky asset must exceed the known return on a risk-free asset, or the expected return on a less risky asset, in order to induce an individual to hold the risky asset rather than the risk-free asset. Thus it is the minimum willingness to accept compensation for the risk.

3.2.1.2 Beta

A share's beta measures the incrementel risk added by a share to a given portfolio. This risk, called market risk, is that cannot be eleminated by creating a diversified portfolio. The market risk exists because in the economy as a whole, in addition to the specific risk of a company or business, there are other factors that threaten all businesses. A share's beta is calculated as the covariance between the stock and market returns, divided by the variance of the market returns, multiplied by the share's volatility and divided by the market volatility (Fernandez 2002, p. 203). In other words:

Beta = [Cov Rj, Rm] / σ^2m

Table 3.1: Example of one common method forthe calculation beta

Weekly End, t □	Return on Security A □	Return on S&P Index □	Calculated Covariance □	Calculated variance □
Jan-89	0.041	0.069	0.00211	0.0035
Feb-89	(0.007)	(0.029)	0.00045	0.00168
Mar-89	0.052	0.021	0.00043	0.00008
*				
*				
Oct-98	0.113	0.077	0.00709	0.00423
Nov-98	0.033	0.057	0.00131	0.00203
Dec-98	(0.016)	0.055	(0.00086)	0.00185
Sum	0.500	1488	0.21060	0.26240
Average	0.004	0.012	0.00176^f	0.00219^g

a.120 month or 10 Year

b. Return based on end of week prices and dividend payments(Versus quarterly or annually)

c. Return based on end of week S&P Index

d.Values in this column are calculated as:
(Observed return on Security A - Average return on Security A)*(Observer return on S&P Index - Average return on S&P Index)

e.Values in this column are calculated as:
(Observed return on S&P Index - Average return on S&P Index)^2

f.The Average of this column is the covariance between Security A and S&P

g.The Average of this column is the variance of return on the S&P Index

Source: Shannon 2002, p. 81

$$Beta = \frac{Covariance\ (Security\ A, S\&P\ Index)}{Variance\ of\ S\&P\ Index} = \frac{0.00176}{0.00219} = 0.80$$

In time, Beta has a tendency to 1. The comment of Beta in the terms of value:

When Beta > 1,00 ; when market rates of return move up or down, the rates of return fort he subject tend to move in the same direction and with greater magnitude.

When Beta = 1, 00; fluctuations in rates of return fort he subject tend to equal fluctuations in rates of return fort he market.

When Beta < 1,00 ; When market rates of return move up or down, rates of return fort he subject tend to move up or down, but to a lesser extent.

Technological developments made easier to calculate the betas of shares or indexes which consequently helped analysts. All they need to do is choosing the right time frame for the needed stock. Some programes also provide an option for the indexes as well. The definition and the calculation of the beta will be evaluated in this chapter even though the mathematical calculation is no more needed due to preset programs. And the estimation methods of beta will be evaluated. Finally, the interpretation of the beta and its effect on value will be appraised.

Various estimations and the databases might lead to different beta results as it can be seen above. Generally databases use regression analysis for estimation of beta. For calculating the beta for a given period, stock and market returns are subjected to regression for that period.

Differences in the beta measurement derive from choices within 3 variables(Shannon 2002, p. 82);
*Length of the measurement period;*time interval chosen by the anayst has a direct impact on the value. The most commonly used period is 2 to 5 years in general. The most important factorto be consideredwhenselectingthe period is the changes in company operational of financial structure. For instance if a firm of 10 years has changed it operational or financial structure 3 years ago, using the last 3 years' data would be recommended when calculating its beta.

The periodicity of measurement within that time period; Data may be measured daily, weekly, monthly, quarterly or annually. Analysts use short intervals such as daily and weekly, in order to get more precise results. On the other hand, another opiion suggest that monthly datas give more accurate results in terms of long term investment advices.

*The choice of an index to use as a market proxy;*Another important point when calculating beta is the base index. The weight of the stock in index is just as important

as by how much index is reflecting the total market. For precise analysis the index should indicate the market well.

The Table 3.2 below is given to indicate the important of the points mentioned above.

Table 3.2 : Differences in the beta measurement

FROTO's Beta	FROTO-XU100	Daily	Weekly	Monthly
05.11.2002	For 10 years	0,78	0,87	0,87
05.11.2007	For 5 years	0,75	0,92	0,86
05.11.2009	For 3 years	0,68	0,72	0,69
05.11.2011	For 1 years	0,41	0,35	-
Average		0,65	0,72	0,81
FROTO's Beta	FROTO-XU30	Daily	Weekly	Monthly
05.11.2002	For 10 years	0,71	0,81	0,81
05.11.2007	For 5 years	0,66	0,86	0,79
05.11.2009	For 3 years	0,60	0,64	0,62
05.11.2011	For 1 years	0,35	0,31	-
Average		0,58	0,65	0,74

Source: Finnet Data

3.2.1.2.1 Determinants of betas

The beta of a firm is determined by three variables -(1) the type of business(es) the firm is in, (2) the degree of operating leverage in the firm and (3) the firm's financial leverage (Aswath Damadoran 2007);

Type of Business Since betas measure the risk of a firm relative to a market index, the more sensitive a business is to market conditions, the higher is its beta. Thus, other things remaining equal, cyclical firms can be expected to have higher betas than non-cyclical firms.

Degree of Operating Leverage The degree of operating leverage is a function of the cost structure of a firm, and is usually defined in terms of the relationship between fixed

costs and total costs. A firm that has high operating leverage (i.e., high fixed costs relative to total costs), will also have higher variability in earnings before interest and taxes (EBIT) than would a firm producing a similar product with low operating leverage. Other things remaining equal, the higher variance in operating income will lead to a higher beta for the firm with high operating leverage.

Degree of Financial Leverage Financial leverage is the measure of the financial risk and emerges from the financial expenditures. The companies' have more debt to equity ratio in other words have higher financial leverage, have higher beta. Financial leverage is calculated as follow;

Financial Leverage= Total Debt / Equity or
= Total Debt / Total Assets

Betas which are calculated by regression analysis are the leverage betas because these betas are calculated by the stock prices which reflect financial leverage. When determining the market price of a stock, company's financial leverage is assumed to be taken into account by the market. But the problem here is that the beta reflects the regression periods' average financial leverage not the current leverage. On the other hand, as valuation methods take future cash flows into consideration, the current debt to equity ratio is not enough for finding the right beta. In order to find company's future beta, company's future capital structure and the public companies' debt to equity ratio which are in similar industry should be evaluated. The capital structure of companies operating at the same industry suggest about the optimal capital structure will be formed by company at next period. Because of that, firstly the leveraged beta which emerged from the regression analysis shall be rendered unleveraged and then emerged number shall be rendered leveraged again according to the determined optimal capital structure.
Leveraged Beta is formulized as a function of capital structure and unleveraged Beta(Öztürk 2009, p. 47):

$ß_L = ßu\ (1 + (1\text{-}t)\ (D/E))$

Where;
$ß_L$ = Levered Beta for equity in the firm
$ß_U$ = Unlevered beta of the firm (i.e., the beta of the firm without any debt)
t = Corporate tax rate
D/E = Debt/Equity Ratio

The reason of using the rate of tax is that the financial liabilities from which the company is responsible are providing tax advantage to the company.

For the D/E ratio, market value should be utilized instead of book value. Very common mistake is using current book value that the current market value should be used for equity value.

3.2.1.2.2 Alternatives to regression betas

3 methods will be mentioned as an alternative regression analysis to calculate beta. Even if different methods are mentioned in different sources the most emphasized methods are modified regression betas, relative risk measures (relative volatiliy-accounting betas) and market drived beta. The most practical one of these methods is the beta estimation without regression, and that method can be used for both public and private companies.

1-Modified Regression Betas

Once a regression beta has been estimated it can be modified to reflect our need to estimate a beta for future time periods. We talked about one such adjustment that many services make, where they shrink all betas towards one after the estimation is done. There are, however, some estimation services that adopt far more sophisticated adjustments to make the regression betas reflect the current fundamentals of the firm. Income statement and balance sheet variables are important predictors of beta - high

payout is predictive of low beta; high variability of earnings and covariability with economy-wide earnings are predictive of high beta. A series of researchers have looked at the relationship between betas and fundamental variables. Beaver, Kettler and Scholes (1970) examined the relationship between betas and seven variables dividend payout, asset growth, leverage, liquidity, asset size, earnings variability and the accounting beta. Rosenberg and Guy did a similar analysis of the relationship between betas and financial fundamentals. Rosenberg and Marathe suggest that fundamental information about a firm can be used in conjunction with historical beta estimates to provide superior predictors of future betas. This approach can be generalized and updated to estimate modified betas for all firms.

2-Relative Risk Measures

Our objective when we began this process was to come up with a measure that reflected a firm's exposure to market risk, relative to other firms in the market. The regression of stock prices on the market index was the tool we used to arrive at this estimate, and we have argued that it is flawed because of the noise in the estimate. There are relative risk measures that we can compute that do not require historical prices, but do require that we make other assumptions about the nature of risk:

a) Relative Volatility

The relative volatility measures the volatility of an asset's price relative to the average volatility across all assets in that market. Thus the relative volatility of any asset can be defined as follows:

Relative Volatilityj = Standard Deviation j / Average Standard Deviation across All Assets

Note that the denominator is not the standard deviation in an index, but an average of the asset-specific standard deviations in the market (Damodaran 1999).

b) Accounting Betas

Accounting betas are generally used for the cases when there is no stock price, in other words at the calculating of non public companies' betas. Beta assumption is done by simple regression between percentage change of market index return and percentage change of company's accounting profits (İvgen 2003, pp. 85-86).

Δ Profits (company) = c+ ß*Δ Profits (chose index of common stock)

Here the regression slope of line ß refers the accounting beta of company. If the net profit used as earning, leveraged beta will be found and if the operation profit used unleveraged beta will be found. There are some disadvantages of accounting betas (Öztürk 2009, p. 48);

First, accounting earnings tend to be smoothed out relative to the underlying value of the company, resulting in betas that are "biased down", especially for risky firms, or "biased up", for safer firms. In other words, betas are likely to be closer to one for all firms using accounting data.

Second, accounting earnings can be influenced by non-operating factors, such as changes in depreciation or inventory methods, and by allocations of corporate expenses at the divisional level. Finally, accounting earnings are measured, at most, once every quarter, and often only once every year, resulting in regressions with few observations and not much power (Damodaran 1999).

3. Market Derived Betas

This method is generally used for calculating the betas of non public companies but it can be used for calculating the betas of public companies as well. And also it has some advantages for public companies.

At this method assumption of beta is done by using the betas of company or companies as base which is operating at the same industry with the company whose beta is looking for. When finding the similar company, one of the important definers of beta, the rates of operation leverage and financial leverage need to be care.

Firstly the companies which are operating at the same industry with the company are being determined. (If it is possible at this stage companies which have similar operation/financial leverage structure shall be separated and they shall embody to analysis.) Unleveraged betas of determined public companies are being calculated. It is possible to calculate this calculation with leveraged beta. After finding the weighted average of determined unleveraged betas, using the current debt (if it possible the expected)/equity ratio of the company whose beta is searching can be rendered as leveraged beta. If it is difficult to estimate the structure of company's debt/equity, the rates of capital of industry can be used.

The usage of this method will be suitable when especially calculating the betas of companies which are went to public recently if there is not enough data for the calculation of regression.

3.2.1.3 Risk free rate

The interest rate that can be earned with certainty, it is risk free in terms of default risk instead of inflation risk (Lee and Lee 2006).

There might be a huge difference between the realized return emerged at the end of the investment process and returns expected to be realized at the beginning of the investment process. The main reason behind this is the risk factor which was not determined at the beginning. But some investors don't like the risk factor and expected to know the return which will be gained at the end of the investment process. Risk free investments can be defined as the investment purged from risk and expected by this kind of investors. Briefly, when realized return and expected return are equal to each

other, this situation is called as “Risk free”. Return rate gained at the end of the risk free investment is called as “Risk Free Rate”.

Aswath Damodaran (2008) explained the conditions of an investment accepted as risk free and expected return to be equal to realized return in 2 ways:

1- *There can be no default risk. Essentially, this rules out any security by a private firm, since even largest and safest firms have some measure of default risk. The only securities ha have chance of being risk free are government securities, not because governments are better run than corporations, but because they control the printing of currency.*

2- *Riskless securities need to fulfill that is often forgotten. For an investment to have actual return equal to its expected return there can be no reinvestment risk. For example; a six month treasury bill rate, while default free, will not be risk free, because there is the reinvestment risk of not knowing what treasury bill rate will be in six monts. Even a 5 year treasury bond is not risk free, since the coupons on the bond will be reinvested at rates that cannot be predicted today. The risk free rate for a 5 year time horizons has to be the expected return on a default free five year zero coupon bond.*

As it can be understood from the previous explanations the risk free interest rate is the rate of risk free return promised to the investors by the government treasury. Nevertheless, the first problems analysts faced at determining the risk free return rate are that in which period he accepts it and determine which return rate as risk free.Generally in valuation of the common stocks it is accepted that the companies are eternal. After determining the cash flows in a specific period the terminal value growth rate is determined and the cash flow is calculated as it is eternal.Short period cash flows (ex: 3-5 years) are calculated for mature companies and companies which have fixed their capital structure, while long period cash flows (ex: 10 years) are generally calculated for the companies in growing stage (ex: 10 years).Analyst needs to decide whether to calculate the ‘risk free rate’ for each year or to use just one rate for

forecasted periods.In practice it is common to use one 'risk free rate' for forecasted period, but some analysts determine risk free rate for each year especially for short term analysis. However, that makes valuation difficult to determine by raising the number of input and raises the possibility of failure at the same time.Additionally, short term return rates are more volatile in short term.In this respect using of one rate seems more correct in practice. Determining the rate to be used in forecasted period is coming problem. The first answer is using the short term fixed rate Treasury bond. Some of the theoreticians (Damodaran), say that using the 10 year return rates is proper, some others (Shannon 2002)prefer 20 year return rate more frequently.

Despite the general acceptance some analysts think using government bonds as a risk free rate is a mistake at global economic conditions, and some other alternatives shall be used. "Although the risk-free interest rate is the yield on T-Bills or T-Bonds, professionals use the London Interbank Offer Rates (LIBOR) as an approximation for the short-term risk-free interest rates, since ". . . treasury rates are too low to be used as risk-free rates . . . " (Hull, 2008, p. 74) It is therefore common to use the LIBOR as the risk-free rate for valuation purposes."[10]

In practice there is not a great difference between the 10-20 or 30 years rates, which removes the variety of values. The duration of forecasted period is also should be considered when determining the rate to be used. For example: if terminal value is calculated according to a 5 year forecasted period, using the 5 years bond rate for the first 5 years and using the 20-30 years rate for the terminal value will be proper.

3.2.1.4 Equity risk premium

At this part of the study, firstly the 'Equity Risk Premium' will be explained and then the risk premium will be interpreted through the general formula. Then the method of risk premium calculation will be mentioned. The results of calculations also will be interpreted.

[10]Florian Steiger, European Business School, The Validity Of Company Valuation Using Discounted Cash Flow Methods, Seminar Paper-2008

The equity risk premium is the incremental return (Premium) that investors require for holding equities rather than a risk-free rate asset. Thus, it is difference between the required return on equities and a specified expected risk-free rate of return (Pinto and others 2010, p. 44). The equity risk premium answers to a question that what return can investors expect from stock market above the risk-free rate over the next few years (Fernandez 2002).

If R_f is the risk free rate and E (R_m) is the expected market return;

$$\text{Market Risk Premium} = [E(R_m) - R_f]$$

The main problem is that this formula is based on expectations and expectations cannot be predicted certainly. The risk premium is calculated by asking the future expectations and desired risk premium to all inventors and the average of those figures is used. However, this way is not feasible. And another issue is that the risk expectations and perceptions of inventors is not homogeny despite all assumptions.

Aswath Damadoran lists the determinants of risk premium as:

a) *Risk Aversion and Consumption Preferences;*
b) *Economic Risk;*
c) *Information;*
d) *Liquidity;*
e) *Catastrophic Risk;*
f) *Government Policy;*
g) *The behavioral/ irrational component;*

There are a lot of suggestions about the calculation of the risk premium, whose determinants listed above, both in practice and the academic area. Considering the general and common calculations the historical equity risk premium estimate is the standard usage.

A historical equity risk premium estmate is usually as the mean value of difference between broad based equity market index returns and government debt returns over some selected sample period. There are 4 main factors at historical risk premium calculation.The first one is which average estimate will be used. When some of the studies see the arithmetic average as proper, some others sees the geometric average as proper. Which of the average model will be used should be determined by analyst firstly. Geometric average is the most common used method because it is proved by academic studies. The second issue is which index will be used. Analysts shall select the index which represents the total space of the analyzed company best. As an example for Turkey it will be proper for an analyst to select ISE 100 index. However, when considering the last years' index, it is seen that ISE 30 index companies directed the whole index and in some fields the ISE 100 index is decomposed from other companies. In that case if analyst analyses a company from ISE 30 index, it should use the ISE 30 index to analyze the right trend. The third issue is which risk free returns rate will be used at the prime calculation. As it is mentioned before long term fixed investment rates are proper to use. Even if the short term risk free return rates represents the current economic conditions and risks, long term rates should be used because analyzed cash flows are spread on the long term.The last issue is that which period will be analyzed. Even if there are some academic arguments on it, when the period is long, the validity of analysis will be coherent. But in some cases the analyst have to select a short period, especially structural changes at developing countries are affecting the returns of investments at a considerable extent. Even if the historical equity risk premium estimate is not using at this countries, if it is going to be used the period which represents the last conjuncture which is not including the fluctuant periods should be used.

The inputs of historical equity risk premium calculation can change the result considerably. Even the ones who prefer the usage of that method do not agree on one risk premium, and there will be big varieties between the numbers. At the same time, different numbers suggested at different times for the USA risk premium which is called as 'Mature market' and will be mentioned next parts. Brealey and Myers suggested the rate of 8.2%-8.5% for the USA in their study in 1996, and suggested 6%-8.5% in 2000. Copeland, Koller and Murrin suggested the rate of 4.5%-5% in 2000. When Aswath

Damadoran suggested the rate of 6.00%-5.00% at different times, Bodie and Merton suggested the rate of 8% at 2000.

The difference between the rates can be observed. The rates given at different time will are different, different people also suggesting different rates for the same period.

Forward Looking Estimate is commonly suggested as an alternative of the historical equity risk premium estimate. Because the equity risk pemium is based only on expectations for economic and financial variables from the present going forward, it is logical to estimate the premium directly based on current information and expectations concerning such variables (Pinto and others 2010, p. 53).

This method can be explained in 2 ways: 'Gordon Grown Model Estimate" and "Macroeconomic Model Estimate". The Formula suggested at Gordon Grown Model" (Sum referances call as Gordon- Sharipo Formula) is:

$$\text{Risk Premium} = (EPS / P) + g - R_f$$

EPS is the average dividend-based market return, g is the growth of dividends expected by market and R_f is the risk-free rate.

The problem with this method is that investors' expectations are not homogenous. However as expectations are not homogenous, it is obvius that the investors who expect a higher growth will have higher market risk Premium. On the other hand, not all investors expect dividends to grow geometrically at a constant rate.

This model seems to be proper for the capital markets like USA. It is easier to estimate the expected earnings of natural index and companies in such markets. And at the same time it is easier to implement the model since the performance of dividend is steady and presumable. Besides that it seems to be difficult to apply for indexes like ISE, which is still developing and can be accepted as shallow in liquidity. ISE 100 index, the

companies distributed the dividend are approximately 30% of the index in the last 5 years.

Another method of “Forward Looking Estimate” is “Macroeconomic Model Estimate”. The model fictionalized by Ibbotson and Chen (2003) is not used in practice but it needs to be told.

The formula of the model:

Equity risk Premium = {[(1+ EINFL)(1+ EGREPS)(1+EGPE)-1]+ EINC} – Expected Risk-free Return

EINFL: Expectec inflation

EGREPS: Expected growth rate in real earnings per share

EGPE: Expected the ratio of share price to earning per share (Expecte growth rate in P/E ratio

EINC: Expected income component, including return from reinvesment of income

The risk premium has some problems although it is accepted both in practice and theory and become a basic component. The first problem of the model is accepting the all investors at the same perception risk. Another important problem is, especially at the historical risk premium, the trend of historical data may not persist in the future. However considering the academic studies and questionnaires on the subject and especially when researching the impalements, it is seen that the risk premiums change over time. This shift also changes the calculation of risk premium with the change of risk perception. So the risk premium may increase or decrease in time. However by denying the trends at theory, the expectations and the data of the last years and the perception of the inventors are accepted as the same with the ones of previous years. Another problem of the subject is the approach of the historical risk premium which has a common acceptance is giving different values for different time periods and the developing markets. So, the risk premium calculation problem emerged because of the

globalization and shifting funds to the developing countries in the last 20 years. For the countries in which the historical risk premium estimate cannot be applied, Turkey at the first place, there are some other estimation methods. But the main point of the all methods is the risk factor of country is added to the USA risk prime, which is called as mature market.

Country equity risk premium = USA Risk Premium + Country risk premium

As explained before the rates emerged from the methods can be used as USA risk premium. Analysts generally prefer to use the generally accepted rates instead of the USA risk premium calculation.

For the risk premium used at CAPM, there is need for equity risk premium rather than the country risk premium. These two terms can be same in some situations and can be different also.

The different alternatives for the estimation of country risk premium and equity risk premium(Öztürk 2009, p.50-54):

Country risk premium: the return of the bond of country at the base of dollar – USA risk free interest rate

The main logic of this formula is that, when the global markets invest in a nation's debt instrument they desire a risk premium upper than the US Treasury long term rate.(USA risk premium is accepted as risk free.) If there are USD based debt instruments in the country, the interest rates of market in the country which exceed the USA risk rates accepted as the risk premium.

Country equity risk premıum: USA risk premium*(σ nation/σ USA)

It is emphasized that the developing markets shall be more risky since the developing markets equity shall be more volatile than the USA market in the formula. A risk factor

coefficient can be determined by taking the standard deviation of the two countries' equity.

Country Risk Premium=default spread of country (CDS) * (σ the market of country equity / σ country bond)

This method is the most used and realistic approach in the practice. Country Default Swap of a country indicates the risk of the country more clearly since CDS market is very active and constantly updated. There are two ways to measure the CDS. One of them is the calculation published by a credit rating agency which is widely accepted by markets. Another indicator is CDS-Credit Default Swap. CDS means the premium paid for the assurance according to the possibility failure at payments of a country. CDSs represent the actual data since it is traded in a liquid market. (It should be emphasized that after the global crises started at the USA in 2008 made the CDS markets volatile. When it is understood that the both CDS and the ratings given by the credit rating agencies do not represent the real risks of nations, the instruments' credibility is lowered.) Table 3.3 shows ratings, spreads and premiums of selected countries;

Table 3.3 : Some countries' rating and risk premiums

Country	*Region*	*Local Currency Rating*	*Adj. Default Spread*	*Total Risk Premium*	*Country Risk Premium*
Argentina	Central and South America	B3	600	15,00%	9,00%
Bangladesh	Asia	Ba3	325	10,88%	4,88%
Canada	North America	Aaa	0	6,00%	0,00%
Cyprus [1]	Western Europe	Baa3	200	9,00%	3,00%
France [1]	Western Europe	Aaa	0	6,00%	0,00%
Georgia	Eastern Europe & Russia	Ba3	325	10,88%	4,88%
Germany [1]	Western Europe	Aaa	0	6,00%	0,00%
Greece [1]	Western Europe	Caa1	700	16,50%	10,50%
Hong Kong	Asia	Aa1	25	6,38%	0,38%
Israel	Middle East	A1	85	7,28%	1,28%
Italy [1]	Western Europe	A2	100	7,50%	1,50%
Malaysia	Asia	A3	115	7,73%	1,73%
Netherlands [1]	Western Europe	Aaa	0	6,00%	0,00%
New Zealand	Australia & New Zealand	Aaa	0	6,00%	0,00%
Norway	Western Europe	Aaa	0	6,00%	0,00%
Portugal [1]	Western Europe	Ba2	275	10,13%	4,13%
Russia	Eastern Europe & Russia	Baa1	150	8,25%	2,25%
Singapore	Asia	Aaa	0	6,00%	0,00%
Slovenia [1]	Eastern Europe & Russia	A1	85	7,28%	1,28%
South Africa	Africa	A3	115	7,73%	1,73%
Spain [1]	Western Europe	A1	85	7,28%	1,28%
Taiwan	Asia	Aa3	70	7,05%	1,05%
Turkey	Asia	Ba2	275	10,13%	4,13%
Ukraine	Eastern Europe & Russia	B2	500	13,50%	7,50%
United Kingdom	Western Europe	Aaa	0	6,00%	0,00%
United States of America	North America	Aaa	0	6,00%	0,00%

Source:" http://pages.stern.nyu.edu/~adamodar/ "and "www.moodys.com"

Other important issue is how much the company that is valued carries the country risk. This subject should be included to formulation in the cost of equity.

For example, if the subject company carries country risk;

Cost of equity = US Risk free rate + Beta (US country risk Premium) + Country risk Premium

If the subject company does not carry the country risk;

Cost of equity =US Risk free rate + Beta* (US country risk Premium)
+ Lambda (□)*Country risk Premium

The reason for such a special situation can be the company's high export revenue or company's high rate of FX denominated revenue; Lamda (□) is calculated as ratio of the subject company's domestic revenue to international revenue divided by domestic revenue to international revenue ration in the company's industry or index(Damodaran 2002).

3.2.2 Cost of Debt

Other than equity, the companies can finance their operations through external financing, which is called debt. External financing can be achieved through credit usage from financials institutions or debt issuance (bond, etc) new debt issues motivated byunexpected cash flow shortfall, unexpected need to finance capital investment, unexpected increase in financial leverage or normal and expected refinancing needs (Akhigbe and others 1997, p. 37).

The expenses endured during obtaining the external debts are also should be included in the calculation of cost of debt. (Berk 2010, p. 248)

Usually the cost of debt is equivalent to company's interest expense and is readily ascertainable from the footnotes to the company's financial statements. Existence of these reports makes analysis easier for analysts. Analysts can reach detailed public information from reports required by regulators for public companies. Cost of debt is among that information. Financial debt amount, debt duration, cost of debt are also presented in these reports. Other important point is the duration of debts. Traditionally, only long-term liabilities are included in a capital structure. However, many businesses, especially smaller closely held businesses, use what is technically short-term interest-bearing debt as if it were long-term debt. In these cases, it becomes a matter of the analyst's judgment whether to include the short-term debt as part of the debt component of the capital structure for the purpose of estimating the business's WACC (Shannon 2002, p. 62).

Other important issue is the shadow debts hiden in balance sheets. Some companies do not show liabilities to shareholders as financial liabilities, which is very common also in Turkey. Ignoring such liablities will violate whole financial liability analysis.

Because interest expense on debt is a tax-deductible expense to a company, the net cost of debt to the company is the interest paid less the tax saving resulting from the deductible interest payment. This cost of debt can be expressed by the next formula:

$K_d = K_{d(pt)}(1-t)$

K_d= Discount rate for debt

$K_{d(pt)}$

The first option for calculation of cost of debt is the ratings given credit rating agencies. This option is used especially in developed markets. For example, the cost of debt for a BBB rated company is default spread for BBB rating plus risk free rate. If the company is in US, the risk free rate is long term US Treasury bond. If the company is not in US, the cost of debt for the company is US risk free rate + Country default spread + Company defaul spread. Or if the country uses USD based long term financing, the cost of debt for a company in that country is cost of long term USD based financing forthe country + company spread. The analyst should consider that smaller companies may

have higher costs of debt than larger companies. Also, smaller companies may not be able to borrow as high a proportion of their capital structure as larger companies. Some companies have more than one class of debt, each with its own cost of debt capital.

If the company has not been rated, a syntetic rating based on interest coverage ratio of the company can be used.

Interest coverage ratio = Earnings before Tax and Interest / Interest

The cost of debt is calculated as interest coverage ratio minus default spread.

Table 3.4: Synthetic rating table by DAMODARAN

For large manufacturing firms				**For financial service firms**			
If interest coverage ratio is				*If long term interest coverage ratio is*			
>	*≤ to*	*Rating is*	*Spread is*	greater than	≤ to	Rating is	Spread is
-100000	0,199999	D	12,00%	-100000	0,049999	D	12,00%
0,2	0,649999	C	10,50%	0,05	0,099999	C	10,50%
0,65	0,799999	CC	9,50%	0,1	0,199999	CC	9,50%
0,8	1,249999	CCC	8,75%	0,2	0,299999	CCC	8,75%
1,25	1,499999	B-	6,75%	0,3	0,399999	B-	6,75%
1,5	1,749999	B	6,00%	0,4	0,499999	B	6,00%
1,75	1,999999	B+	5,50%	0,5	0,599999	B+	5,50%
2	2,2499999	BB	4,75%	0,6	0,749999	BB	4,75%
2,25	2,49999	BB+	3,75%	0,75	0,899999	BB+	3,75%
2,5	2,999999	BBB	2,50%	0,9	1,199999	BBB	2,50%
3	4,249999	A-	1,65%	1,2	1,49999	A-	1,65%
4,25	5,499999	A	1,40%	1,5	1,99999	A	1,40%
5,5	6,499999	A+	1,30%	2	2,49999	A+	1,30%
6,5	8,499999	AA	1,15%	2,5	2,99999	AA	1,15%
8,50	100000	AAA	0,65%	3	100000	AAA	0,65%

Source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/dam2ed.htm

In this table, the ratings for high and low market capitalisations are given. The calculation should be in USD and include country default spread for a correct representation. The result shows cost of debt in USD (Damodaran 2002, p. 211).

It is claimed that the rating of company cannot be higher than the ratings of the country the company located for long years. However, after globalisation and change in financial markets (especially after 2006), some companies' credit ratings are higher than those companies' country's credit ratings. The companies which has high export rate, high proportion of revenue in foreign FX, and manufacturing facilities out of country may have higher credit ratings.

The debt instruments increased in line with development of financial markets. The instruments used in developed markets are also used in emerging markets since 2000s. One of these instruments is company bond issuance while the other is preferred stock.

The pre-tax cost of debt for companies that issues bonds is the sum of bond yield and bond issuance expense.

While the cost of debt can be assumed as the initial cost of debt in the issuance, the current price/interest information can also be used if there is liquid market for the company bonds. Second approach is more appropriate becuase it shows market's most recent evaluation about the company.

For firms, the other source of financing is preferred stock. Preferred stocks are securities that pay fixed dividend and have no maturity. This instrument is defined as hybrid since it has bothshare and bond characteristics(Fabozzi and others 1994, p. 432).

Preferred stocks have priority over cash flows and dividends in comparison to common stocks (Campbell and Kracaw 1993, p. 53). The most important disadvantage of preferred stocks is that these stocks are more costly than bank financing due to dividends are not tax deductable. Advantage of this stock is that they are postponable in the event of financial difficulties such as bankrupcy (Chambers 2005, p. 51).

3.2.3 Weighted Average Cost of Capital

Cost of a company's capital may be defined as; the lowest price of company shares' which investors may offer. This return must be equal to yield and risk premium which encompasses time value of money. Shareholders are exposed to considerable risksince they have rights only on residual amount of income; they expect to have high returns. In other point, cost of capital may also be defined as capitalization of cash flows (Shapiro 1996, p. 579).

A capital of company's encompasses few components. Those components which are provided from several sources have various costs. Cost of capital which is formed by its components may be calculated by weighted average cost of capital (Ceylan 2000, p. 178).

If capital of company is formed by only debts, cost of capital will only be cost of interest expense after tax. If capital of company is formed by only equities, cost of capital will only be equal to cost of equities means shareholders expected return. After discussing capital components and their calculation at the beginning of this section we will be mentioning about calculation of company's total cost of capital. In practice even if WACC seems to be easy, a miscalculated WACC will lead away value of company to somewhere unwanted. WACC formulation may be shown as:

$$WACC = We(Ke) + Wd\ (Kpt)(1 - t)$$

Where:

We = Percentage of equity in the capital structure (at market value)
Ke = Cost of equity
Wd= Percentage of debt in the capital structure (at market value)
Kpt = Cost of debt, pretax
t = Tax rate

Note that the weights used in WACC calculation are target, market value weights and not book value weights. Market value reflects the value of the firm better than the book value. Book value reflects the historical value of assets in place whereas market value reflects the value of both assets in place and present value of future growth opportunities. Moreover, securities are issued at market values and not book values. Further, the proportions are the target proportions the company intends to maintain. The concept of target capital structure will be taken up later. The weighted average cost of capital is the hurdle rate to be applied to projects that have similar risk characteristics (and financing) as the firm. That is, investments should earn the hurdle rate to meet investors' expectations. Otherwise investors will be worse off (Vishwanath 2007, p. 97).

Most of analysts consider company's Debt /Equity ratio is equal to expected Debt / Equity ratio of firm. In this point analyst use industry's avarage Debt/Equity ratios which firms expected to reach. The assumption on this issue might be that the company will get close to industry's avarages after a while (Pereiro 2002, p. 130). This assumption may be correct however analyst must decide through analysing companies past datas. If company has no trend for getting closer to industry avarages when company's last 3-5 year data been considered, using industry avarages will not be accurate.

4. DISCOUNTED CASH FLOW MODELS

In this section, 3 relevant models suggested in income based valuation approach will be discussed: Dividend Discounted Cash Flow Model (DDM), Free Cash Flow to Equity Model(FCFE), Free Cash Flow to Fırm Model (FCFF). (Even though the title of the models can be selected as cash flow analysis, it is useful to put forth that many references do not consider DDM as part of the cash flow analysis category.) In this section the establishment of a general frame for the models, weaknesses and strengths of the models both among themselves and in comparison with other valuation approaches will be explained. There are many effective inputs in the preparation of models. Detailed explanations of these inputs will be explained after the models.

4.1 DIVIDEND DICOUNTED CASH FLOW MODEL

The dividend discount model is considered the basis of most valuation models where the value of a business depends on the present value of expected future cash flows discounted by the cost of equity. As the research evolves in time the usefulness of the model is questioned in that dividend policy is arbitrary and the timing and amount of dividends are difficult to foresee (Jenkins and Kane 2006, pp. 21-22).

In the strictest sense, the only cash flow you receive from a firm when you buy publicly traded stock in it is a dividend. The simplest model for valuing equity is the dividend discount model- the value of a stock is the present value of expected dividends on it (Damodaran 2002, p. 322).

Investors of publicly traded firms generally expect to receive cash flows in two ways. First way is dividends that earned within the holding period, and second one is capital gain that is the difference between buying price and selling price of the stock at the end of the holding period. According to this information we can formulate that;

$P_0 = [D_1 / (1+r)] + [(P_1 /(1+r)]$

Selling price (P1) is determined by the future dividend payments and value of the share is the discounted future expected dividends of a company. In general, value is determined in DDM by the following formula (Damodaran 2006, p. 701);

$$\sum_{t=1}^{t=\infty} \frac{DPS_1}{(1+r)^t}$$

DPS = Dividend per Share

r = Cost of Equity or expected return

In this formula, there are 2 elements that the analyst should estimate. One is the expected dividends and the other is the discount rate. Since the estimation of the discount rate was explained in detail in the previous section, it will not be repeated in this section. The estimation of the expected dividend requires the analyst to make two further estimations. First is the estimation of the profit from which dividends will be distributed and the second is the estimation of the payout ratio of the company. Three models stand out for the estimation of the expected dividends. The main foundation of all these models has been determined as dividend growth ratio.

4.1.1 Growth Models

4.1.1.1 Gordon growth model

First calculation procedure under different assumptions for dividend growth in DDM is the constant growth model. Constant growth model and its main formula systematically stated by David Durand using various studies in the finance (Duran 1957, pp. 42-51). This model was popularized by Gordon, Myron J. and named after the author as the Gordon's growth model. Assuming a steady state implies within itself that the growth rate is not only for dividends paid but also for the earnings and the payout ratio, since if earnings do not grow at the same rate, dividends exceed earnings and if the payout ratio does not change dividends converge to zero. Also, it has an insight that the growth rate of the company may not exceed the growth rate of the economy in which the company

operates(Gordon and others 1956, pp. 104-106). The formula for the Gordon's growth model is:

$$\text{Value Of Stock} = \frac{DPS_1}{r - g}$$

Where;

DPS = Dividend per Share

r = Cost of Equity or expected return and **g** = growth rate in dividends.

Like human beings, companies also have a life-cycle. Generally, companies have a higher growth rate than overall economy in early stage of their life-cycle. Than growth rate stabilizes and begins to reach the same point to the economy this is moderate stage. Finally companies have lower growth rates than overall economy in the last stage (Besley and Brigham 2005, p. 226). As a result of this fact non-constant growth model was emerged.

4.1.1.2 Two stage growth model

The rapid growth stages of companies that have not reached their maturity periods have been considered and 2 stage growth models have been put forth as an alternative to the steady state growth model. In this model, it is expected that the company will have a rapid growth rate during its extraordinary growth period after which it will continue to grow forever with a constant growth rate. The estimation that growth will continue forever at a constant rate states the concept of "Terminal Value" for companies. Again using the Gordon growth model the formula for a two stage dividend discount model would be (Damodaran 2006, p. 704);

$$\mathbf{P_0} = \sum_{t=1}^{t=n} \frac{\mathrm{DPS_t}}{(1 + \mathrm{k, high\ growth})^{\mathrm{t}}} + \frac{\mathrm{P_n}}{(1 + \mathrm{k, stable\ growth})^{\mathrm{n}}}$$

Where $P_n = \frac{DPS_{n+1}}{k_{e,st} - g_n}$

DPS = Expected Dividend pers hare in year t

k□ = Cost of Equity *(High Growth, Stable Growth)*

P_n = Price at the end of the year n

g = Extraordinary groth rate fort he first n years

g_n= Growth rate forever after n year

One of the main foundations of the two stage growth model brings with it a forced assumption. In this model, the shift from the rapid growth period to the constant growth period is instantaneous and there is no reference point that can explain this rapid fall.

4.1.1.3Multy stage growth model

The last model that based on growth rate is multistage (3 Stage) growth model;

It allows for an initial period of high growth, a transitional period where growth declines, and a final stable growth phase. It is the most general of the models because it does not impose any restrictions on the payout ratio. The value of the stock is then the present value of expected dividends during the high growth and the transitional periods, and of the terminal price at the start of the stable growth phase (Damodaran 2002, p. 340).

$$\sum_{t=1}^{t=n1} \frac{EPS_0 * (1+g)^t * \Pi_a}{(1+k_{e,hg})^t} + \sum_{t=n1+1}^{t=n2} \frac{DPS_t}{(1+k_{e,t})^t} + \frac{EPS_{n2} * (1+g_n) \quad * \Pi_n}{(k_{e,st} - g_n)^t}$$

High Growth Phase Transition Stable Growth Phase

$EPS_t =$ Earning per share in year t

$DPS_t =$ Dividend per share in year t

$g_a =$ High growth rate

$g_n =$ Stable growth rate

$\Pi_a = P$ayout ratio in high growth phase

$\Pi_n = P$ayout ratio in stable growth phase

$k_e =$ Cost of Equity in high growth (hg)and transitions (t), and stable growth (st)

Expected growth rate = (1- Payout ratio) * Return on equity

4.1.2 Limitations of DDM

The first problem that arises in the steady growth model assumption (Gordon Growth Model) of this valuation method is that steady growth assumption narrows down the activity area of the analyst considerably. Both the income and profit of the company along with dividend payout ratios are fixed when the dividend growth rate is constant. In addition, the necessity of the dividend growth ratio to be smaller than the growth ratio of the profits arises. If the increase in the dividend growth ratio is greater than the profit increase ratio then after a certain amount of time the paid out dividends will be greater than the obtained profit. Even though this case can be valid for a couple of periods, it is not sustainable in the long run. When the dividend growth rate is smaller than the profit growth rate, cash flows that stretch out to infinity along with the paid out dividends will approach zero. Another shortcoming of the model is that it is very sensitive to growth and discount rate due to its formula. For instance, a considerable change in the growth rate will result in a significant difference in the determined value. When all this is considered, there is a very limited usage area for DDM when it is based on the Gordon Growth Model.

The problem that arises in the two-stage standard model is related to the inconsistency regarding the instantaneous growth rate decrease during two stages. The probability of encountering such a situation in real life is small.

The three-stage growth model allows the analyst to make a more realistic analysis in comparison with the other growth models. Despite the model is comfortable due to its flexibility, the number of data to be estimated increases causing considerable difficulties. Consistency is increased in comparison with the two previous models, since profit payout ratios are included in the calculation.

The main foundation of the Dividend discounted Model" is that the value of a stock should be equal to the current value of the dividends to be paid out in the future by the company. Analysts carrying out the valuation process first make an analysis study on the past data of the company. If there is instability in the past periods, then the use of this model will not yield correct results. It is difficult to find stable companies in terms of both the paying out of dividends and the dividend ratio in developing countries such as Turkey with economic fluctuations and risks. Even though companies that fit this definition can be found in developed countries such as USA, the model significantly decreases the number of companies that can be analyzed.

One of the most positive aspects of DDM is the ease with which Gordon Growth Model can be applied. The greatest advantage of dividend discount model is that it is based on a simple basis and that it is easy to use (Molodovsky and others 1985, pp. 104). Dividend discount model has been tested and it has been put forth that this model yields positive results in the long term. However, it has not yet been clarified whether this result is due to the success of the model in finding cheap stocks or due to whether it takes the place of popular empirical irregularities related with price/income ratios and dividend yield (Whitbeck and Kisor 1998, pp. 55-62).

4.2 FREE CASH FLOW TO EQUITY MODEL (FCFE)

Whereas dividends are the cash flow actually paid to stockholders, free cash flows are the cash flows available for distribution to stockholders. Unlike dividends, FCFE (Or FCFF which explained after this section) are not readily available data. Analysts need to

compute these quantities from available financial information, which requires a clear understanding of free cash flows and the ability to interpret and use the information correctly. (Pinto and others 2010, p. 146)

In the dividend discount model, we implicitly assume that firms pay out what they can afford to as dividends. In reality, though, firms often choose not to do so. In some cases, they accumulate cash in the hope of making investments in the future. In other cases, they find other ways, including buybacks, of returning cash to stockholders. Extended equity valuation models try to capture this cash build-up in value by considering the cash that could have been paid out in dividends rather than the actual dividends. The free cash flow to equity model does not represent a radical departure from the traditional dividend discount model. In fact, one way to describe a free cash flow to equity model is that it represents a model where we discount potential dividends rather than actual dividends. Damodaran (1994) a measure of free cash flow to equity that captures the cash flow left over all reinvestment needs and debt payments (Damodaran 2010):

FCFE = Net Income + Depreciation - Capital Expenditures – Change in non-cash Working Capital – (New Debt Issued – Debt repayments)

To estimate how much cash a firm can afford to return to its stockholders, we begin with the net income and convert it to a cash flow by subtracting out a firm's reinvestment needs. First, any capital expenditure, defined broadly to include acquisitions, is subtracted from the net income, since they represent cash outflows. Depreciation and amortization, on the other hand, are added back in because they are noncash charges. The difference between capital expenditure and depreciation is usually a function of the growth characteristics of the firm.

Second, increases in working capital drain a firm's cash flows, while decreases in working capital increase the cash flows available to equity investors. Firms that are growing fast, in industries with high working capital requirements (retailing, for instance), typically have large increases in working capital. Since we are interested in the cash flow effects, we consider only changes in non cash working capital in this analysis.

Finally, equity investors also have to consider the effect of changes in the levels of debt on their cash flows. Repaying the principals on existing debt represents a cash outflow, but the debt repayment may be fully or partially financed by the issue of new debt, which is a cash inflow. Again, netting the repayment of old debt against the new debt issues provides a measure of cash flow effects of changes in debt.

In the above formula, it has been assumed that company capital consists of debt and equity. In addition, it was stated previously that a third financing tool for companies is preferred stocks and that constant dividend payouts are made for these stocks. If the company already has preferred stocks issued, then in addition to the formula the dividends paid for the preferred stocks should be taken out of the cash flow and if there is a requirement for new stocks then this requirement should be added to the cash flow.

Whereas the cash flows of the company are stated in detail in the above formula, for some cases it can be easier to estimate by the use of various assumptions. If it is assumed that the changes in net capital expenditures and working capital are financed with a certain debt ratio and that the debt principal repayments are covered with new debts, the "net debt issued" in the formula can be included proportionally. In this case the formula becomes;

FCFE = Net Income – (1–DR) (Capital Expenditures –Depreciation) –/+(1–DR)(Change in non-cash Working Capital)

DR =Debt Ratio= Debt / (Debt+Equity)

When using this formula, the analyst should decide whether the book value or the market value of equity will be used when calculating the debt ratio. Fluctuation problem may arise when the market value is used. Since the market value of the companies that are open to public continuously vary, if the analyst is going to use the market value then it will be beneficial for the analyst to examine the past data of the company and use an average value.

The same method specified in the dividends discount model can be used to calculate the expected growth rate in FCFE. However, some corrections are required. The expected growth in FCFE can be calculated as follows;

Expected Growth = Equity Reinvestment Rate*Non cash Return on Equity

Equity Reinvestment Rate = (Net Capital Expenditure + Net change in working capital – Net debt issued) / Net Income

Non Cash Return on Equity= (Net Income – After-tax Income from Cash and Cash Equivalents) / (Book Value of Equity- Cash Equivalents)

Growth assumptions in FCFE can be specified in three stages as was explained for the dividends model; Fixed growth assumption, two stage growth and lastly 3 stage growth model. Since cash flows to equity are analyzed in FCFE, it should be kept in mind that equity cost is used as the discount rate.

4.3 FREE CASH FLOW TO FIRM MODEL (FCFF)

The idea behind FCFF by discounting free cash flows to their current values is based on the calculation of the equity as a whole and subtracting from this value all the debts and cash expenses for liabilities. FCFF represents the operation income owned by all the lenders and the equity owners of the company, in other words to all parties providing capital to the company(Chambers 2005, p 155).

The origins of the firm valuation model lie in one of corporate finance's most cited papers by Miller and Modigliani (1958) where they note that the value of a firm can be written as the present value of its after-tax operating cash flows (Modigliani and Miller 1958, pp. 261-297):

$$\text{Value of Firm} = \sum_{t=1}^{t=\infty} \frac{E(X_t - I_t)}{(1 + \text{Cost of Capital})^t}$$

Where Xt is the after-tax operating earnings and it is the investment made back into the firm's assets in year t. While there are varying definitions of the expected after-tax operating cash flow in use, the most common one is the free cash flow to the firm, defined as follows(Damodaran 2006, p. 26):

Free Cash Flow to Firm = After-tax Operating Income – (Capital Expenditures – Depreciation) – Change in non-cash Working Capital

Basically, FCFF is the cash flow left to all owners providing capital to the company after all the operating costs (including taxes) are paid and tangible/intangible fixed asset investments are made. Since FCFF is calculated prior to the payment of all debts, it is also known as "unlevered cash flow". In this method, since free cash flows are by definition prior to interest expenses, cash flows do not have any effect on the debt level of the company and the debt structure of the company is put forth in WACC.

In FCFF, WACC is used instead of cost of equity when calculating the discounted value and the obtained value is "Enterprise Value" not "Equity value".

$$\text{Value of Firm} = \sum_{t=1}^{t=\infty} \frac{\text{FCFF}}{(1 + \text{WACC})^t}$$

As in the previous two models, fixed growth or 2 and 3 stage growth models can be applied in this model.

"Adjusted Present Value Model" is another alternative to the standard FCFF analysis. Adjusted present value model is based on the calculation of the current value of future cash flows using a suitable discount ratio after taking the tax benefit into consideration. The difference of this model from the standard approach is that in the standard approach the total cahs flow is calculated and analyzed via WACC (Tax benefit considered into WACC calculation), whereas in the adjusted model cash flows are discounted with cost of equity to reach debtless company value and the tax advantage that will be obtained

financing costs is discounted separately with borrowing cost and added to the value (Kruschwitz and Löffler 2003, p. 22).

Free cash flow analysis has some advantages in comparison with DMM. The pros and cons of DDM were given in detail in the relevant section. The most important difference of cash flow analysis from DDM is that it takes into account cash flows instead of company profit. Cash flow analysis takes into account not only the profit and profitability but also all the cash input and output related with the investment. As can be seen from the formulas, adjustments regarding depreciation and other accounting applications that do not require cash outflow are carried out and more concrete data is obtained. Hence, cash flows are used first and foremost when giving a decision about an investment or when the companies are valued. When it is considered that the usage area of DDM is limited, it will be realized that cash flow analysis either as FCFE or FCFF have a wider usage area as an alternative. For instance, whereas DDM is not suited for the valuation of companies that do not payout dividends or do make payouts irregularly and at low rates, FCFE can be used for the valuation of such companies. In addition, the under value valuation risk of companies is eliminated.

There are only two conditions under which the value form using the FCFE in discounting cash flow valuation will be the same as the value obtained from using the DDM. The first is the obvious one, where the dividends are equal to the FCFE. The second condition is more subtle, where the FCFE is greater than dividends, but the excess cash (FCFE minus Dividends) is invested in projects with net present value of zero (Damadoran 2002, p.374)

When carrying out valuation studies, stock investors generally prefer to take into account FCFE which in other words is the cash flows remaining after debt payments. The reason for this is that the payment of debt interest and principal repayments require a cash outflow in terms of equity capital owners. Whereas in the FCFF model, it is assumed that the company is not in debt and thus there will be no payments regarding any debts. Since FCFE model takes into account the debt repayments of the company, it represents the sensitivity of equity capital owners in a much better way. In addition, the free cash flow to the firm (FCFF) of companies in great debts can be high or positive whereas FCFE is negative (Konuralp 2005). Generally FCFE is in the forefront in

companies with low dividend or with no dividend payout. In addition, FCFE is used in the valuation of banks, insurance companies and other financial service firms for which interest income and expenses are part of the activities.

In addition, FCFE is generally determined to be negative for companies with high debts and significant fluctuations in periodical sales figures. It is quite difficult to calculate FCFE in cases when there are significant changes in company debts. Thus, FCFF model will be better for companies with high financial leverage and with significant changes expected to occur in their debt ratios(İvgen 2003, p. xi).FCFF is suggested for the valuation of companies especially in countries such as Turkey with high foreign currency deficits and financing expenses. The changes that can occur in such cases give rise to significant fluctuations in the cash flows of companies making the exchange rate and foreign currency position estimations very difficult for the analyst.

In the previous section, standard models were discussed to estimate DDM, FCFE and FCFF growth ratios. Even though each model has its own specific usage areas, it is not always possible to use standard growth models. In standard models, generally company values are determined over the growth ratios of cash flows. However in practical applications, the estimations of sub-items that make up the cash flows are made separately within a foreseeable time period instead of estimation over the growth of cash flows. The investors for which stock analysts have responsibilities are especially eager to learn about the details of these items. Hence, detailed cash flow analyses are more appropriate. Thus, the changes in the cash flows of the company, the reasons for these changes and the total cash flow of the changed items and their effect on the company value can be analyzed in a much better way.

4.4 FORECASTING CASH FLOWS

4.4.1 Forecasting Sales and Profits

Olsson, Ribbing and Werner (2002) presented the shortcomings of the discounted cash flow (DCF) model as it is used in company valuation. The implications of the shortcomings are discussed and methods to overcome them are argued for. In the literature study it was found that one way to improve the DCF model would be to forecast the future sales of the company.

As is the case in general for the stock analysis reports, the analyst starts cash flow estimations with the sales income estimation. Standard growth models can be used for the estimation of future sales income while sales estimation can also be made by considering the potential that the company has in the industry. After the analyst determines the noncumulative sales growth via arithmetic average/geometric average or regression analysis methods, he/she considers the current economic status, the competition in the industry and the growth stage of the company to carry out future sales estimations. The past sales performance of the company along with its reaction to macroeconomic growth plays an important role in the estimation of future periods. For instance, if the past growth performance of the company is following a decreasing trend then the analyst who thinks the sales income of the company will increase in the upcoming period should provide tangible foundations regarding this estimation. When carrying out estimations regarding the future, the special characteristics of the company come to the forefront. Whereas analysis for a manufacturing company can be carried out using income per product and sales prices, analysis for a retail company can be carried out using unit area or income analysis per unit sold. The knowledge of the analyst regarding the industry and the company will have direct effects on the success ratio of these subjective estimations.

Another important topic that should be taken into account when making sales estimations of companies especially manufacturing companies is the capacity utilization rate. The analyst should take into account the CUR when making sales estimations. If he/she is making estimations that are not possible according to current CUR values, the required investment amount and relevant financing methods should be included in the cash flow analysis.

Following the sales estimation, the analyst should carry out EBIT estimations for FCFF and net profit estimations for FCFE and DDM. The most important factor that the analyst bases his/her estimations is the past profit margins of the company and the reaction of expense items in the face of sales. It will be suitable to use average profit margins unless important structural changes are foreseen for companies that have operated with constant profit margins in the previous period. However, possible profit margin increases that can take place with increasing sales due to scale economy should

be taken into account during EBIT estimations especially for companies in their growth periods. In addition, it should not be forgotten that competition environment will apply pressure on profit margins even if inside the growth period. In such cases the reactions of each expense item to sales growth should be analyzed separately. For companies that are subject to government authority, this should be taken into account when making future profit margin estimations. The decisions regarding the future of corporations that are closely involved in cost items such as labor or energy prices along with foreign trade liberalization have a great impact on company profits.

When making EBIT estimations in order to reach cash flows, one of the topics that should be taken into account is non-operating or one-time incomes and expenses. The analyst should leave out non-operating or one-time income and expenses when carrying out EBIT calculations for the analysis of past income tables. Otherwise, the real operating profit of the company cannot be calculated and the estimations regarding future periods will have been based on erroneous foundations.

4.4.2 Depraciation&Amortization

Depreciation for companies is loss of value in tangible assets due to wear, aging and technological obsolescence. For intangible assets this is called amortization. Depreciation allocation is the process of systematic distribution of the cost of tangible asset to the useful life of this asset (Akgüç, 2008, p. xi).

Since depreciation and amortization are included in income statement as costs they are deducted from the tax thus providing tax advantage. Even though these costs are included in the income statements as costs they do not require cash outflow. Therefore they have to be included in cash flow calculations. (Öztürk 2009, p.55)

There can be other items besides depreciation and amortization that do not require cash outflow. Even though these items are excluded from standard calculations, they should be included if they are present for the analyzed company. Provisions for employee termination benefits, deferred tax costs or cash outflows due to option stocks given to employees or related tax expenses should be considered in the calculation of cash flow if necessary.

Depreciation expense is the function of tangible assets and new investments. Depreciation expenses increase as the investments to tangible assets increase. Depreciation of forthcoming years can be estimated as the percentage of income or the tangible assets (Koller and others 2005, p.238). The estimation of depreciation expenses using average ratios obtained according to future sales estimations following the analysis of the ratio of past depreciation expenses to sales is a common usage. While this usage is more suited to situations in which capital expenses are regular, it is more suitable to use the ratio of depreciation expenses to tangible fixed assets for situations where capital expenses are irregular. Outside of general usage, the analyst can perform depreciation expense analysis in more detail if desired. Proportional estimations will yield erroneous results especially when there are irregularities in noncumulative ratios. The analyst can analyze tangible fixed assets in detail as a function of the proportioning method to calculate depreciation. First, the useful lives of the assets of the company subject to depreciation are analyzed and this analysis is compared with the accumulated depreciation amount of the company. The analyst can spread the depreciation expenses of these assets using the useful lives of fixed assets to cash flows over the years. Afterwards he/she adds the estimated investment amount along with the depreciation values determined using the useful lives of the assets for which these investments are made to the cash flows. (The depreciation allocation method of the company should be considered during this analysis.). Thus, the analyst will have made more detailed depreciation estimations. Even though it is more complex in terms of calculation, this method will yield better results for cases where there is sufficient information. Because proportioning the depreciation expenses to sales for companies which will not make any new investment expense in the coming years will yield higher depreciation results. This can be the case for companies operating with low or those that have completed their investments recently.

4.4.3 Capital Expenditure

Investment in fixed capital represents the outflows of cash to purchase fixed capital necessary to support the company's current and future operations. These invesments are capial expenditures for long term assets, such as property, plant, and equipment necessary to support company's operations. Necessary capital expenditures may also

iclude intangible assets, such as trademarks. In the case of cash aquisitions of another company the cash purchase amount can also be treated as a capital expenditure that reduces company's free cash flow. In the case of large aquisitions (and aslo noncash aquisitons), analyst must take care in evaulating the impact on the future cash flow.

It is first required to examine the past investment expenses of the company in order to estimate capital expenses. If the company has similar capital expenditures in the past years or if the ratio of these expenditures to sales is close to each other, these ratios can then be used. There can be high capital expenditures in one year especially for companies in their growth stage and those that have recently completed their investments. In such cases the average capital expenditures should be normalized. Especially for the cases where the capital expenditures made to increase the sales of the company (for capacity increase), it will be proper to estimate capital expenditures by ratio of sales in the coming years. Otherwise it is very difficult to estimate capital expenses because such capital expenditures are related to executive decisions. In such a case it is required to have knowledge of the future investment plans of the company. If the future investment plans of the company have been declared to the public then these plans should be added to the cash flow. When these investments are included in the cash flows, the effect of these investments to the company sales, profitability or the debt structure should be similarly included in the cash flows.

4.4.4 Working Capital

The other point to cover is the important adjustment for net increases in working capital. Analyst can find this information by examining either the company's balance sheet or cash flow statement.

The excess of current assets over current liabilities is called net working capital or, simply, working capital. Current liabilities are to be paid in the ordinary course of business, (normally within one year) out of the income generated by the company or from the proceeds from sale of current assets. Fixed assets are to be financed by owners' equity and long-term liabilities while current assets are partly financed by long-term sources and partly by current liabilities and short-term loans given by bank (Wishvanath 2007, p.269)

Although working capital is often defined as current assets minus current liabilities, working capital for cash flow and valuation purpose is defined to exclude cash and short-term debt. When finding the net increase in working capital fort the purpose of calculating free cash flow, we define working capital to exclude cash and cash equivalents as well as notes payable and the current portion of long term debt. Cash and cash equivalents are excluded because a change in cash what we are trying to explain. Notes payable and the current portion of long-term debt are excluded because they are liabilities with explicit interest cost that make them financing items rather than operating items. (Pinto and others 2010, p. 152)

A cleaner definition of working capital from a cash flow perspective is the difference between non-cash current assets (inventory and accounts receivable) and non-debt current liabilities (accounts payable).

Any investment in this measure of working capital ties up cash. Therefore, any increases (decreases) in working capital will reduce (increase) cash flows in that period. When forecasting future growth, it is important to forecast the effects of such growth on working capital needs, and building these effects into the cash flows. Since free cash flow is a function of net working capital, reducing investment in working capital for a given level of sales (growth) increases cash flows and, hence, the stock price (Damodaran 2002, p. 275)

The shortest method used in the estimation of the working capital is to take the ratio of the capital need of the company (or the change in the working capital need of the company between two years) to the sales and relating this ratio with sales in upcoming years. For a more detailed analysis, working capital items can be proportioned with single sales or to the cost of the sales.

Credit sales give rise to Account Receivable (A/R). In turn, the change in A/R determines the difference between sales and collections. The more credit that firm gives

its clients or the larger the fraction of the firm's sales to credit customers, larger amount of A/R will be outstanding relative to sales.

A ratio that we used in the analysis of the relation of A/R to sales is the average collection period. The average collection period is the number of days of sales that are represented by the year-end A/R and is calculated;

ACP = (A/R at year end) / (Annual sales /365)

Analyzed A/R, our goal is the prediction of future A/R based on sales projection. We can use the same ratio with which we analyze the past A/R to predict the future A/R or, alternatively, we migth combine facts about the historic collection period with company's future credit strategy or industry average ratio(Benninga and Sarig, 1997, p.181).

Other working capital component (Inventory or Account Payable) can analyze with same methods and strategy.

Inventory .days = Inventory / (COGS/365)

Average Payable Period = (A/P) / (COGS/365)

Working capital is an important topic in terms of valuation. The working capital needs of companies have the power to affect both their cash flows and their debt/equity capital ratios. For instance targeting high turnover growth for companies with high working capital needs can push the company to high cash demand in the upcoming periods with the current working capital ratios. This problem is frequently encountered in companies the working capital of which is badly managed.

4.4.5 Tax Effect

To compute the after tax operating income, you multiply the earnings before interest and taxes by an estimated tax rate. This simple procedure can be complicated by three issues that arise in valuation. The first is the wide differences you observe between effective and marginal tax rates for these firms. The second issues arises usually with firms with large losses, leading to net operating losses that are carried forward and can save taxes in future years. The third issue arises from the capitalizing of researh and devolopment and other expenses (Damodaran 2002, p.247)

Analysts are faced with a choice of several different tax rates. The most widely reported tax rate in financial statements is the effetive tax rate;

Effective tax rate= Taxes Due / Taxable Income

The second choice on tax rates is the marginal tax rate, which is tax rate the firms faces on its last dolar of income. This rate depends on tax code and reflects what firms have to pay as taxes on their marginal income.

Even though the tax ratio to be used depends on the choice of the analyst, it will be safer to use “Marginal Tax Rate”. However, if the past taxes ratios of the company (according to taxed income) differs from the “marginal tax rate” then past ratios should be considered. In addition, if the company has deficits in the past years, the tax advantage brought about by these deficits should be considered. According to the tax legislation of the country, tax may not be calculated until the effects of past deficits ends (5 years for Turkey). If the company has special tax advantages (due to R&D studies, foreign sales, investments or regional incentives), these advantages should be included in the cash flow analysis.

4.4.6 Terminal Value

An important assumption in company value determination is assuming the company's time of life as infinite. Since companies are supposed to have infinite lives, valuation is undertaken for two stages. First, cash flows to company are estimated in detail for the forecast period. Then, the value of cash flows to company after the forecast period is calculated at the end of forecast period. "Terminal Value" approach that involves making some assumptions about long-term cash flow growth is used in order to find the after forecast period of the company.In this case, it enables the analyst to calculate for example the ten years period' s cash flows in detail, and then calculating the terminal value for the after ten years period (Üreten and Ercan 2002, p. xi).The terminal value formula is presented below;

$$X = \sum_{t=n+1}^{\infty} \frac{CFt}{(1+WACC)^{t-n}}$$

Where *X* is the terminal value*, CFt* is the cash flows to company in period *t, n* is the forecast period and *WACC* is defined as the weighted average cost of capital. The discounting process yields the terminal value. Hence, company value can be expressed as;

Company Value=Present Value of the cash flows in forecast period+ Present value of the cash flows after forecast period

Cashflow basis method assumes that the cashflows will continue growing at a constant rate forever. This allows application of perpetuity model. Assuming that the company generates a cashflow to firm of CFt at terminal year t and such cashflow grows with a constant growth rate of stable after terminal year, net present value of cashflows to firm after year t discounted at a discount rate of WACC can be calculated as follows:

$$X = \frac{CFn(1+g)}{(WACC-g)} * \frac{1}{(1+WACC)^{\mathrm{n}}}$$

Where *X* stands for the terminal value as at the beginning of forecast period. The model uses this formula;

Terminal value = Final projected year cash flow /(Discount rate–growth rate)

This formula rests on the big assumption that the cash flow of the last projected year will stabilize and continue at the same rate forever.

X = (FCFn) / (WACC-g)

Where;

X: terminal value
FCF_n: free cash flow generated by the firm in year n
n :last year of the projections
g :constant rate of increase in perpetual free cash flows
WACC: discount rate

The subject of growth rate can be analyzed in two aspects. Since cash flow values are estimated for each year separately (in 5 or 10 years period); growth rate is found by taking "Net Sales" into account. The increase in net sales is proportionally discounted to cash flows and EBIT after necessary additions and disposals. Furthermore, the growth rate (g) that is used in the measurement of terminal value (Öztunalı 2008). This ratio has an important impact on continuance value and company's value. The economic conditions of the country should be taken into the account while calculating this ratio. Mainly, growth rate that is lower than the country' s expected growth rate is determined and also lower than average growth of a projected year before. In the above model, it is assumed that FCF will remain constant, "g" will be constant forever and WACC will remain constant.

4.5 LIMITATIONS OF DCF VALUATION

Damodaran (2002) explained limitations of DCF Valuation and listed that contains some scenarios where discounted cashflow valuation might run into trouble and need to be adapted;

i. *Firms in trouble*
ii. *Cyclical Firms*
iii. *Firms with unutilized assets*
iv. *Firms with patents or product options*
v. *Firms in the process of restructuring*
vi. *Firms involved in acquisitions*
vii. *Private Firms*

Even though cash flow analysis is one of the most used and trusted methods in practice, each input of the model includes subjective criteria. The items that constitute cash flows, the debt/equity capital structure that the company is thought to have in the future and even the used discount ratio is completely based on the opinions of the analyst. The optimism or pessimism of the analyst is quite effective on the outcome values. In addition, the changes that can occur in the used assumptions can have temporary or permanent effects on the expectations of the analyzed years. For instance when bad weather conditions that occur in an analyzed year would change the analyzed values only for that period, an unexpected change in minimum wages can have permanent effects on all analyzed years (Ruback and Richards 2010). In addition, the expectations of the analyst can stay above or below the actual values due to economic conjuncture. In such cases the analyst will have to reconsider the analysis which is commonly seen in practice for the stock evaluations which are updated regularly in the light of new data and trends.

5. IMPLEMENTING CASF FLOW ANAYSIS ON BIMAS

Discounted cash flow analysis (DDM, FCFE, FCFF) and the valuation process was implemented on BIMAS which is traded ISE (Istanbul Stock Exchange market).

5.1 ECOMOMIC ANALYSIS

5.1.1 Global Economy

Uncertainties in global economic activity persist due to unfavorable growth indicators in advanced economies. Lingering concerns regarding the EU economy; and growth problems and fiscal constraints in the US and Japan fuel volatility in the markets. To tackle these problems, the authorities in the advanced economies are taking measures that are welcome by the markets while central banks are implementing expansionary monetary policies that cause a global liquidity surplus. Despite these measures and ample liquidity, the credit channel in advanced economies still fails to function as effectively as desired. Lingering uncertainties coupled with ample liquidity conditions do not only adversely affect growth and price stability in countries importing raw materials by pushing commodity prices up, but also pose a serious risk to financial stability in developing countries as they induce volatility in capital inflows. As these developments influence the growth momentum in developing countries, their growth projections have recently been revised downwards.

5.1.2 Domestic Economy

In the 2012, the slowdown in economic activity continued and the growth composition showed that demand components were rebalancing. The current account deficit narrowed on the back of net exports' significant contribution to growth. A relative decline in budget performance is observed that can be attributed to the decrease in growth rate of tax revenues driven by the deceleration in economic activity and acceleration in primary expenditures. Growth rate in household liabilities has slowed down owing to measures taken by the authorities; and the rise in corporate indebtedness observed in 2010-2011 halted. Although inflation in 2012 remained above expectations

due to energy prices, unprocessed food products prices and public price adjustments; core inflation indicators and moderate growth suggest that inflation will assume a downward trend in the upcoming period. Since mid-2012, the monetary policy became more accommodative in response to the partial improvement in the global risk appetite, the stronger rebalancing process in economy on the back of the policies implemented; and the stronger contribution of domestic demand to disinflation. With the positive effect of the CBRT'S accommodative policies coupled with the partial improvement in the global risk appetite, domestic market rates decreased and loan rates are gradually decreasing in tandem with the former. It is expected that both demand and supply factors will assume a trend that will support credit volume starting from the final quarter of the year and growth is expected to pick up owing to the moderate recovery in consumption demand. (CBRT-**Central Bank of The Republic Of Turkey- Financial Stability Report-November 2012-Volume 15)**

5.2 INDUSTRY ANALYSIS

5.2.1 The Turkish Retail Market

The Turkish retail market is the 6th largest by value in Europe and the 12th globally with total retail sales reaching. Organised retail is estimated around 60% of total Turkish retail trade in 2012, a low share when compared to the rest of Europe. The retail industry in Turkey is expected to grow at a fast pace, fuelled by positive catalysts such as favourable demographics, accession to negotiations with EU, declining inflation coupled with increased purchasing power, boding well for changes in consumer consumption.

5.2.2 The Turkish Food Retail Market

Grocery retail sales have also increased strongly over the last few years. The increase in food retail sales was in line with that of total retail sales and expected to continue to grow at solid rates, as grocery remains an important component, accounting for 64% of

total sales, much higher than all other European countries, and 23% of total Turkish household consumption.

The stable growth in Turkey in the last 10 years has changed the people's consumption patterns in addition to macroeconomic structure of the county. The increase in household income level and disposable income, made retailing one of the most popular industrys in Turkey in the first ten years of the twenty first century. Information technologies and electronic items industry, ready wear industry and food retailing industry, generated a growth more than country's average growth and they became locomotive industrys besides construction industry. According to retailer industry report which was prepared by Deloitte, in the year of 2010 the food retailing was the most important subindustry with 96 billion dollars gross revenue in retailing industry, whose gross revenue is equal to 187 billion dollars.

Due to the increasing foreign investments and mergers and acquisitions taken place in the industry in the last five years, an aggressive competition has been experienced in all the segments of the industry. Despite intense competition in almost every segment of the industry, rapid growth has still been attracting new investors to enter into the market. Fast and high growth opportunities with low capital costs, is another reason why new investors are interested in entering into the retail industry.

The industry has concentrated for nearly 2 years on a draft law which aims to defend the rights of small retail stores. The draft projects to bring new rules for super markets and shopping centers whose size are over a definite square meter. The new regulation will define the opening conditions of stores which are bigger than 400 squares meters. So, the analysts think that fierce competition likely to occur between the stores and markets whose size is less than 400 square meters. This segment is mostly formed by discount markets and not only local small investors, but also bigger firms with foreign partnerships have the investments in this segment.

Even though each customer's average shopping cart size is smaller at discount markets compared to supermarkets, discount store customers prefer those store since shopping is

less time consuming there. However, discount markets are visited more often than supermarkets and hypermarkets. Even though, intense competition is expected to decrease the profit margins in the industry, discount markets are expected to step forward. The reasons for that are having small stores and being close to customers, selling the convenience and more inelastic goods at reduced price.

Turkish retail industry has been changing radically from traditional retailing to organized retailing. Organized retailing market, whose market share in retailing industry was 31% in 2005, still keeps growing in Turkey. However, traditional retailing still has a %55-60 of market share in retailing industry.
Within the organized food retailing market, discount markets are the ones growing the fastest. BIM and A-101 are the fastest growing discount store chains in the industry.

In organized retailing market, the highest market share belongs to supermarket segment. In terms of the revenue generated from the FMCG, BIM has replaced MIGROS' market leader position in 2009 and has been the market leader since then. Other FMCG seller chains in the market are respectively; CarrefourSa, Metro/Real, Bizim Toptan, Tesco / Kipa, Kiler, Makromarket and A-101.

Total market value of the 4 biggest retailers (CR4 ratio), is equal to %91 in Sweden, %68 in England, %67 in Germany, %65 in France, %50 in Hungary and %20 in Italy, while this ratio is equal to only %19 in Turkey. Considering economic developments in Turkey and the high market share of traditional retail stores in Turkish retail market, it seems promising for organized retailer chains that there might be some opportunities for acquisitions and growth for the future.

Turkey Grocery Retail Industry Swot;

Strengths

- Expansion of organised grocery industry underpinned by rapid urbanisation, increasing number of working women and the young, growing population
- GDP per capita forecast to more than double by 2019 significantly increasing the customer base for organised retail sales
- Potential for new stores in urban centres and secondary Cities

Weaknesses

- Fragmented food retail market still dominated by small, family-run outlets
- Traditional Turkish consumer's preference for fresh, nonpacked foods constraining the expansion of food retail chains
- New entrants would find themselves behind competition as consolidation of the country's organised retail industry is progressing
- Modern distribution mainly limited to larger urban areas

Opportunities

- Food retail sales expected to grow 7.2% over the next 5 years
- Favourable incentives for foreign investment, as the government ensures the same treatment as domestic companies
- Expanding discount industry providing a good opportunity for entering rural lower-income markets
- Rising levels of car ownership will make hypermarkets more accessible to a larger consumer base
- Pension and labour code reforms to lower labour costs

Threats

- Failing to be accepted for EU membership could pose the risk to lose out to competition from other countries for FDI, stifling further MGR and food processing development
- Approaching maturity, Turkey will start shifting its expenditures from food to discretionary items
- Global economic crisis could have significant impact on consumer spending
- Instability in Middle East and domestic or regional terrorism could lower investor confidence

5.2.3 Comparative Data of Public Companies Operating In the Same İndustry

The Table 5.1 below shows the generated revenue and profitability of the public companies operating in food retail industry and listed on ISE (Istanbul Stock Exchange).

Table 5.1: Comparative data of public companies

Averages of the last 5 Years	BIMAS	KILER	MGROS	KIPA	UYUM	CARFA	SECTOR
Gross Profit Margin	%16,5	%26,6	%25,6	%24,0	%23,5	%21,8	**%22,9**
EBIT Margin	%4,2	%4,9	%4,5	-%1,1	-%0,4	-%0,3	**%1,9**
EBITDA Margin	%5,2	%6,1	%6,6	%4,8	%1,9	%3,2	**%4,6**
Net Income Margin	%3,5	-%0,7	%1,5	-%2,1	-%1,3	-%1,6	**%0,7**
Operating Expenses Margin	%12,4	%22,6	%21,1	%27,1	%23,8	%22,9	**%21,5**
P/E	27,24	N.A.	20,42	N.A.	N.A.	N.A.	**20,41**
EV/EBITDA	17,94	10,88	13,07	10,31	N.A.	26,73	**14,09**
EV/SALES	0,93	0,77	0,71	0,50	0,79	0,76	**0,67**
Price to Book	13,33	1,93	2,44	1,49	2,64	1,98	**3,93**

BIMAS's position in the market and its gross pofit margin are the two important points in the Table. BIMAS is differentiating itself within the other public retail stores as it is operating in discount sub-industry. This reflects in industry's gross margin. The average gross margin of the industry excluding BIMAS is 24,3 %. We observe that the EBIT and EBITDA margins may vary between the firms that have close gross margins. So it's obviously seen that operating expense managemet is the main point of succes.

5.3 COMPANY ANALYSIS

BİM takes justified pride of being the first representative of the hard-discount model in Turkey as well as its commitment to offer high quality products to its customers at the best possible prices, without compromising its quality service policy, since its inception. Adherence to the organic growth model is one of the key elements to BİM's success. Thus, the Company has chosen to establish new stores instead of acquisitions.

BİM continued its leadership for the second consecutive year, in terms of the number of stores and sales volume. Maintaining a sustainable growth, BİM continues its journey of success with a total of 3,584 stores across Turkey, after its inception in 1995 with 21 stores. In 2012's first 9 month, BİM maintained its position as the most extensive retail company by opening three new regional offices and 295 new stores.

Besides its operations in Turkey, in 2012 BİM opened 27 stores in Morocco, increasing total number of stores to 103 and carried on its operations at full speed. Aiming to become a global company, BİM continues its efforts to invest in new markets. In 2012, the Company also enter into the retail market of Egypt.

Backed with its high performance and by steadily improving its services as part of its responsibility of its leadership in food retail industry, between 2006-2011(2012 is not complated) BİM achieved a 30% compound annual growth rate (CAGR) which is well above both Turkey's GNP and the retail industry's overall growth rate. Company's market value reflected this success with an almost twelve-fold increase realised in 6.5 years as from the date BİM went public. BİM ranked 194th among the largest 250 retail companies of the world, according to the "Global Powers of Retailing 2012" report prepared by Deloitte Touche. Moreover, it ranked seventh among the fastest growing retail companies between the years 2005-2010.

5.3.1 Differences Generated Bim in Retail Industry

5.3.1.1 Decentralised organisatıon

The business model implemented by BİM is the most important factor underlying its success in gaining the largest share in the organised retail industry which is growing every year. BİM is coordinated through regional offices managed by general managers with their own staff and warehouses. The most outstanding feature of this organisation, contributing to the Company's high performance, is that management is decentralised and lean

5.3.1.2 Hard-discount concept

BİM carries on its operations based on the principle to keep the costs at the lowest level and to pass the gains to customers in the way of price reductions. As the pioneer of hard discount model in Turkey with its organisational structure, effective cost management and limited product portfolio, BİM bases its hard discount concept on three mainelements: to accelerate decision-making and implementation processes,to avoid any excessive expenses,to maintain quality standards controls in the most effective manner by having around 600 products in itsproduct portfolio and to ensure that the products are offered at the best possible price.

BİM is the major purchaser of most of the products it sells and by virtue of its high purchasing power, the Company encourages its suppliers to produce high quality products at low cost while it also procuring quality products at affordable prices.

5.3.1.3 Effective cost management

With its effective cost management policy which is implemented in all operations, BİM secures its strong position in the organised retail industry with each passing day. In this scope, all logistic activities are carried out within BİM organisation itself without any outsourcing.

5.3.1.4High inventory turnover rate

The inventory managed by regional offices is effectively monitored during its transfer from warehouses to stores and from stores to customers. Owing to efficient inventory management implemented in BİM, inventory shortage is well below the industry average.

5.3.1.5 Source of financing

BİM conducts its activities with a negative net working capital and is able to secure its own financing, owing to its cash collection capability.

5.3.1.6 Product range

High quality and low prices constitute the basic criteria for defining BİM's product portfolio. Products offered by BİM to its customers are divided into four categories:

a) *Private Label Products:* BİM is the initiator of private label products in Turkey. The most outstanding feature of these products is that their prices are 15-45% lower than those of similar products of the same quality. In 2012/09, the sales ratio of private label products to total sales increased to 65,7%.

b) *Spot Products:* These are products with a long shelf-life but which are not kept in stock for long terms and are offered to customers in weekly periods. Spot products increase the number of customers visiting the stores and increase the sales of standard listed products as well.

c) *Exclusive Products:* These are the branded products offered in package sizes or contents specially designed for BİM.

d) *Branded Products:* These are branded products that are widely recognised in the market.

The Turkish market is still very underdeveloped and provides a significant structural opportunity in grocery retailing (Turkish grocery space per capita is 82% lower than Western European average). Given this structural growth opportunity, BIM has amongst the highest level of visibility on its growth trajectory in the medium term in our industry.

5.4 FINANCIAL STATEMENT ANALYSIS

Table 5.2: Horizontal Analysis

BALANCESHEET	2008/12K	2009/12K	2010/12K	2011/12K	2012/09K
Current assets	**100,0%**	**144,7%**	**192,6%**	**254,0%**	**263,9%**
Cash and cash equivalents	**100,0%**	**295,0%**	**456,3%**	**645,9%**	**548,6%**
Trade receivables	**100,0%**	**141,2%**	**168,4%**	**237,1%**	**254,3%**
Inventories	**100,0%**	**111,7%**	**145,5%**	**175,3%**	**203,5%**
Other current assets	**100,0%**	**122,9%**	**134,1%**	**159,9%**	**215,8%**
Non-current assets	**100,0%**	**117,2%**	**134,0%**	**158,3%**	**188,1%**
Property and equipment	**100,0%**	**118,5%**	**135,9%**	**160,3%**	**187,6%**
Intangible assets	**100,0%**	**126,7%**	**99,0%**	**100,5%**	**103,3%**
Total assets	**100,0%**	**131,1%**	**163,5%**	**206,5%**	**226,3%**
Current liabilities	**100,0%**	**124,6%**	**153,4%**	**196,5%**	**216,7%**
Trade payables	**100,0%**	**128,3%**	**156,8%**	**200,2%**	**220,0%**
Other current liabilities	**100,0%**	**126,2%**	**141,6%**	**277,7%**	**327,4%**
Non-current liabilities	**100,0%**	**110,5%**	**110,8%**	**141,3%**	**165,1%**
Reserve for employee termination benefits	**100,0%**	**119,2%**	**150,0%**	**205,3%**	**249,5%**
Total liabilities	**100,0%**	**124,2%**	**152,2%**	**194,9%**	**215,2%**
Equity	**100,0%**	**145,8%**	**188,1%**	**231,5%**	**250,3%**
Paid-in share capital	**100,0%**	**100,0%**	**200,0%**	**200,0%**	**200,0%**
Net income for the period	**100,0%**	**186,5%**	**215,1%**	**261,8%**	**215,7%**
Prior year profits	**100,0%**	**112,8%**	**95,5%**	**187,1%**	**404,4%**
Restricted reserves allocated from profits	**100,0%**	**175,0%**	**265,0%**	**418,4%**	**530,1%**
Total liabilities and equity	**100,0%**	**131,1%**	**163,5%**	**206,5%**	**226,3%**

INCOME STATEMENT	2008/12K	2009/12K	2010/12K	2011/12K	2012/09K
Net sales	**100,0%**	**125,5%**	**155,0%**	**193,0%**	**172,7%**
Cost of sales (-)	**100,0%**	**123,5%**	**154,2%**	**194,0%**	**174,1%**
Gross profit	**100,0%**	**135,6%**	**158,6%**	**188,0%**	**165,2%**
Operating Expense (-)	**100,0%**	**124,6%**	**147,7%**	**174,7%**	**156,7%**
Selling, marketing and distribution expenses	**100,0%**	**124,9%**	**149,0%**	**175,6%**	**158,3%**
General and administrative expenses	**100,0%**	**123,0%**	**139,3%**	**168,4%**	**146,7%**
Net Operating Profit	**100,0%**	**177,3%**	**199,8%**	**238,1%**	**197,3%**
Other operating income	**100,0%**	**121,1%**	**134,5%**	**195,2%**	**192,6%**
Other operating expenses (-)	**100,0%**	**149,1%**	**163,9%**	**101,8%**	**20,2%**
Operating profit	**100,0%**	**175,0%**	**197,2%**	**239,6%**	**202,2%**
Financial income	**100,0%**	**333,1%**	**589,4%**	**886,7%**	**582,9%**
Financial expense (-)	**100,0%**	**19,2%**	**41,0%**	**30,1%**	**62,1%**
Profit Before Tax	**100,0%**	**187,3%**	**213,4%**	**263,4%**	**217,2%**
Tax expense for the period	**100,0%**	**190,3%**	**206,5%**	**269,7%**	**223,2%**
Net income	**100,0%**	**186,5%**	**215,1%**	**261,8%**	**215,7%**
Depreciation and Amortization	**100,0%**	**128,1%**	**149,7%**	**177,7%**	**159,0%**
EBITDA	**100,0%**	**166,0%**	**188,3%**	**224,3%**	**188,6%**

Horizontal analysis for 2008 and afterwards can be seen from the Table 5.2. Company's assets and liabilities can be derived from the table as well as its revenues and profits throughout the years.

Company's cash and cash equivalents grew by 5,5 times. This proves company's ability to generate cash. During the same period, total assets grew by 2,26 while liabilities and equity grew by 2,15 and 2,5 respectively. Its asset growth is driven by its equity rather than its liabilities. It can be seen clearly that the high profits enabled the equity growth.

Company increased its sales by 1,72 times, gross profit by 1,65 times, net operating profit by 1,97 times ant the net profit by 2,15 times after the 2008 crisis. As it seen obviously from the table, during this period while gross margin is dropping off, effective management of operating expenses led to a higher operating margin.

Table 5.3: Vertical and Common Analysis

BALANCESHEET	2008/12K	2009/12K	2010/12K	2011/12K	2012/09K
Current assets	**50,43%**	**55,66%**	**59,38%**	**62,01%**	**58,80%**
Cash and cash equivalents	**6,73%**	**15,14%**	**18,77%**	**21,04%**	**16,31%**
Trade receivables	**13,63%**	**14,67%**	**14,03%**	**15,64%**	**15,31%**
Inventories	**27,52%**	**23,45%**	**24,49%**	**23,35%**	**24,74%**
Non-current assets	**49,57%**	**44,34%**	**40,62%**	**37,99%**	**41,20%**
Property and equipment	**48,18%**	**43,57%**	**40,04%**	**37,40%**	**39,93%**
Intangible assets	**0,33%**	**0,32%**	**0,20%**	**0,16%**	**0,15%**
Total assets	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**
Current liabilities	**66,28%**	**63,03%**	**62,17%**	**63,07%**	**63,46%**
Trade payables	**60,72%**	**59,42%**	**58,22%**	**58,87%**	**59,04%**
Non-current liabilities	**2,00%**	**1,68%**	**1,35%**	**1,37%**	**1,46%**
	0,00%	**0,00%**	**0,00%**	**0,00%**	**0,00%**
Total liabilities	**68,28%**	**64,71%**	**63,53%**	**64,44%**	**64,91%**
Equity	**31,72%**	**35,29%**	**36,47%**	**35,56%**	**35,09%**
Paid-in share capital	**9,05%**	**6,90%**	**11,06%**	**8,76%**	**8,00%**
Net income for the period	**13,61%**	**19,36%**	**17,90%**	**17,25%**	**12,97%**
Prior year profits	**4,38%**	**3,77%**	**2,56%**	**3,96%**	**7,82%**
Restricted reserves allocated from profits	**2,32%**	**3,10%**	**3,76%**	**4,70%**	**5,44%**
Total liabilities and equity	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**

The distribution of the balance sheet items in total assets is examined in the Table 5.3. The ratio of current assets in total assets has been increasing since 2008. So the company has become more liquid so its ability to turn its assets into cash has risen.

60% of the Company's assets are provided by tradepayables, which mean new suppliers' finances. This rate is stable throughout the years which enabled company to successively generate cash. This amount of trade payable can be percepted negative but it does not constitute a major problem when looking at the long term vision of the company.

Table 5.4: Ratio Analysis

	2008/12	2009/12	2010/12	2011/12	2012/09
Acid test-Quick Ratio	0,31	0,47	0,53	0,58	0,50
Asset Profitability (%)	13,60	19,36	17,90	17,25	12,97
Equity Profitability (%)	42,91	54,87	49,09	48,51	36,97
Gross Margin (%)	16,42	17,75	16,80	15,99	15,72
Net Operating Profit Margin (%)	3,44	4,86	4,43	4,24	3,93
Net Income Margin (%)	2,69	4,00	3,74	3,65	3,36

Ratio analysis is executed in Table 5.4. The acid-test ratio has been increasing so the cash and liquidity situation of the company has been improving. This was proved by the previous tests as well. Fluctuation of net profit margin and decreasing gross profit margin was noteworthy during this period. Even though profitability is not increasing, it is stable due to revenue increases.

5.5 EXPACTATIONS and ASSUMPTIONS ABOUT CASH FLOWS

After economic and industry analysis and company and financial statements analysis, it is reasonable to make company cashflow forecasts. In this section, the forecasts and the assumptions that the forecasts based will be explained.

The first issue to be explained is about company subsidiaries. Egypt and Morocco are not included in the projections. According to annaouncement by the company Morocco operations will be profitable after 2014. The sales revenue of Morocco operations (103

stores) is relatively very small. The subsidiaries negative pressure on EBITDA margin will turn to be positive addition to the margins starting from 2015. Additionally, sum of Morocco and Egypt operations' effect are also relatively small in the company's overall cash flow. Since these subsidiaries' effect is expected to be small on the medium term, they are excluded from the analysis.

Continued topline strength is paramount to the BIM story and we expect new space and an increase in basket size as being the key drivers going forwards. We believe a strong underlying Turkish macro environment, a fragmented developed retailing arena and strong company specific operating characteristics will enable this to play out over the coming years.BIM have guided to 4,000-4,500 stores by the end of 2014. As seen above, we forecast 4,260 stores in total on this timeline.

The income statements items are projected as item per store. Historical revenue per store, cost per store and profitability are examined before making projections. It is assumed that strong growth in store numbers will continue for a time and then there will be moderate growth in store numbers as affirmed by the company officials. In line with slowing grwoth in store numbers increasing store per person will cause to slowing revenue growth.

Despite the high growth and ecomies of scale, the company kept the gross profit margin stable and concentrated to the sales growth. The company's huge size enable it to make pressures on suppliers and manipulate the profit margins. It is assumed that gross profit margin will be constant because of increasing competition and company officials.

BIM is the fastest growing stock in ISE, having expanded topline by nearly 489% over the last 5 years or 30% CAGR. On our numbers, BIM is forecast to deliver 15,6% sales CAGR over the next 3 years(2012-2015) and %9,6 over the next 8 year (2012-2020) . With stable profit marigns, company BIMAS is forecast to deliver 18,2% EBITDA CAGR over the next 3 years(2012-2015) and %11,1 over the next 8 year (2012-2020).

With gross margin currently sitting at 15,50-16,00% and opex costs running at 11,50-12,00% of sales, EBITDA margin sits in the region of 5,00-5,50%. Over time, we expect for opex to come down as a percentage of sales to 11,00-11,50%, a result of

leverage and S,G&A savings and gros margin will sit 16-16,50% and EBITDA margın will sit 5,50-6,00 %.

The historical datas and assumptions generated by those assumptions mentioned are shown Table 5.5, table 5.6, Table 5.7below.

Table 5.5: "Per store" historical data of BIMAS

'000 TL "per Stores"		2008/12	2009/12	2010/12	2011/12
Number of Stores		2.285	2.628	2.951	3.289
	Growth		*15,01%*	*12,29%*	*11,45%*
Sales per Store		1.856,64	2.025,64	2.227,70	2.489,86
	Growth		*9,10%*	*9,98%*	*11,77%*
Cost of Sales per Store		1.551,76	1.666,10	1.853,36	2.091,76
	Growth		*7,37%*	*11,24%*	*12,86%*
Gross Profit per Store		304,87	359,55	374,34	398,09
	Growth		*17,93%*	*4,11%*	*6,35%*
Cost of Marketing per Store		208,21	226,02	240,19	254,08
	Growth		*8,56%*	*6,27%*	*5,78%*
General Administrative Expenses per Store		32,80	35,08	35,36	38,37
	Growth		*6,96%*	*0,81%*	*8,51%*
Depreciation Expenses per Store		18,96	21,11	21,97	23,41
	Growth		*11,36%*	*4,08%*	*6,53%*
EBITDA per Store		82,82	119,55	120,76	129,05
	Growth		*44,35%*	*1,01%*	*6,86%*
CAPEX per Store		0,00	387,25	438,74	534,28
	Growth			*13,30%*	*21,78%*
'000 TL		**2008/12**	**2009/12**	**2010/12**	**2011/12**
Total Sales		4.242.412	5.323.390	6.573.951	8.189.135
Cost of Sales		3.545.782	4.378.501	5.469.272	6.879.805
	Margin	*83,58%*	*82,25%*	*83,20%*	*84,01%*
Gross Profit		696.630	944.889	1.104.679	1.309.330
	Margin	*16,42%*	*17,75%*	*16,80%*	*15,99%*
Cost of Marketing		475.760	593.992	708.805	835.662
	Margin	*11,21%*	*11,16%*	*10,78%*	*10,20%*
General Administrative Expenses		74.938	92.188	104.358	126.214
	Margin	*1,77%*	*1,73%*	*1,59%*	*1,54%*
Depreciation Expenses		43.313	55.475	64.837	76.980
	Margin	*1,02%*	*1,04%*	*0,99%*	*0,94%*
EBITDA		189.245	314.184	356.353	424.434
	Margin	*4,46%*	*5,90%*	*5,42%*	*5,18%*
CAPEX		191.191	132.826	141.714	180.587
	Margin	*4,51%*	*2,50%*	*2,16%*	*2,21%*

Source: Finnet Data

Table 5.6: Historical income statement

Income Statement (Million TL)	2005/12	2006/12	2007/12	2008/12	2009/12	2010/12	2011/12
Net sales	1.673,08	2.221,62	2.978,38	4.242,41	5.323,39	6.573,95	8.189,14
Cost of sales (-)	1.372,79	1.834,98	2.453,38	3.545,78	4.378,50	5.469,27	6.879,81
Gross profit	300,29	386,64	525,01	696,63	944,89	1.104,68	1.309,33
Operating Expense (-)	249,53	307,61	397,03	550,70	686,18	813,16	961,88
Selling, marketing and distribution expenses	0,00	0,00	0,00	475,76	593,99	708,81	835,66
General and administrative expenses	0,00	0,00	0,00	74,94	92,19	104,36	126,21
Net Operating Profit	50,76	79,03	127,98	145,93	258,71	291,52	347,45
Other operating income	2,55	3,34	6,89	8,37	10,13	11,25	16,33
Other operating expenses (-)	12,05	1,68	2,73	4,34	6,46	7,10	4,41
Operating profit	42,01	87,10	135,90	149,96	262,38	295,67	359,37
Financial income	0,00	0,00	0,00	2,37	7,91	13,99	21,05
Financial expense (-)	0,00	0,00	0,00	8,93	1,71	3,66	2,69
Profit Before Tax	42,01	87,10	135,90	143,41	268,57	306,00	377,74
Tax expense for the period	11,81	15,13	27,43	29,23	55,63	60,36	78,83
Net income	30,20	71,97	108,47	114,18	212,94	245,64	298,91
Depreciation and Amortization	23,73	25,85	32,67	43,31	55,48	64,84	76,98
Capital Expenditure	29,12	79,52	129,72	191,19	132,83	141,71	180,59
EBITDA	74,49	104,87	160,66	189,25	314,18	356,35	424,43

Source: Finnet Data

Table 5.7: Historical income statement margins

MARGINS							
Sales Growth		**32,79%**	**34,06%**	**42,44%**	**25,48%**	**23,49%**	**24,57%**
Cost of sales (-)	82,05%	82,60%	82,37%	83,58%	82,25%	83,20%	84,01%
Gross profit	**17,95%**	**17,40%**	**17,63%**	**16,42%**	**17,75%**	**16,80%**	**15,99%**
Operating Expense (-)	14,91%	13,85%	13,33%	12,98%	12,89%	12,37%	11,75%
Selling, marketing and distribution expenses	0,00%	0,00%	0,00%	11,21%	11,16%	10,78%	10,20%
General and administrative expenses	0,00%	0,00%	0,00%	1,77%	1,73%	1,59%	1,54%
Net Operating Profit	**3,03%**	**3,56%**	**4,30%**	**3,44%**	**4,86%**	**4,43%**	**4,24%**
Other operating income	0,15%	0,15%	0,23%	0,20%	0,19%	0,17%	0,20%
Other operating expenses (-)	0,72%	0,08%	0,09%	0,10%	0,12%	0,11%	0,05%
Operating profit	**2,51%**	**3,92%**	**4,56%**	**3,53%**	**4,93%**	**4,50%**	**4,39%**
Financial income	0,00%	0,00%	0,00%	0,06%	0,15%	0,21%	0,26%
Financial expense (-)	0,00%	0,00%	0,00%	0,21%	0,03%	0,06%	0,03%
Profit Before Tax	**2,51%**	**3,92%**	**4,56%**	**3,38%**	**5,05%**	**4,65%**	**4,61%**
Tax expense for the period	28,11%	17,37%	20,18%	20,38%	20,71%	19,73%	20,87%
Net income	**1,80%**	**3,24%**	**3,64%**	**2,69%**	**4,00%**	**3,74%**	**3,65%**
Depreciation and amortization	1,42%	1,16%	1,10%	1,02%	1,04%	0,99%	0,94%
Capital Expenditure	1,74%	3,58%	4,36%	4,51%	2,50%	2,16%	2,21%
EBITDA	**4,45%**	**4,72%**	**5,39%**	**4,46%**	**5,90%**	**5,42%**	**5,18%**

Table 5.8: Assumptions "per store"

Assumptions "per Stores" '000 TL		2012 E	2013 E	2014 E	2015 E	2016 E	2017 E	2018 E	2019 E	2020 E
Number of Stores		3.638	3.975	4.260	4.473	4.652	4.792	4.911	4.961	5.010
	Growth	*10,60%*	*9,27%*	*7,17%*	*5,00%*	*4,00%*	*3,00%*	*2,50%*	*1,00%*	*1,00%*
Sales per Store		2.728,40	2.964,26	3.203,15	3.413,32	3.566,92	3.709,59	3.857,98	4.012,29	4.172,79
	Growth	*9,58%*	*8,64%*	*8,06%*	*6,56%*	*4,50%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
Cost of Sales per Store		2.303,50	2.489,98	2.688,71	2.867,19	2.996,21	3.116,06	3.240,70	3.370,33	3.505,14
	Growth	*10,12%*	*8,10%*	*7,98%*	*6,64%*	*4,50%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
Gross Profit per Store		424,89	474,28	514,43	546,13	570,71	593,53	617,28	641,97	667,65
	Growth	*6,73%*	*11,62%*	*8,47%*	*6,16%*	*4,50%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
Cost of Marketing per Store		275,59	298,19	322,36	341,33	347,77	361,69	376,15	391,20	406,85
	Growth	*8,47%*	*8,20%*	*8,11%*	*5,89%*	*1,89%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
General Administrative Expenses per Store		41,07	45,95	48,05	51,20	53,50	55,64	57,87	60,18	62,59
	Growth	*7,02%*	*11,88%*	*4,57%*	*6,56%*	*4,50%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
Depreciation Expenses per Store		20,49	29,64	32,03	34,13	35,67	37,10	38,58	40,12	41,73
	Growth	*-12,48%*	*44,70%*	*8,06%*	*6,56%*	*4,50%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
EBITDA per Store		128,73	159,79	176,06	187,73	205,10	213,30	221,83	230,71	239,94
	Growth	*-0,25%*	*24,13%*	*10,18%*	*6,63%*	*9,25%*	*4,00%*	*4,00%*	*4,00%*	*4,00%*
CAPEX per Store		608,71	500,00	506,97	525,00	551,25	578,81	607,75	638,14	670,05
	Growth	*13,93%*	*-17,86%*	*1,39%*	*3,56%*	*5,00%*	*5,00%*	*5,00%*	*5,00%*	*5,00%*

Table 5.9: Income statement as per store assumptions

Assumptions (Million TL)	2012/12	2013/12	2014/12	2015/12	2016/12	2017/12	2018/12	2019/12	2020/12
Net sales	9.925,25	11.783,21	13.645,96	15.268,39	16.593,69	17.775,16	18.948,32	19.903,32	20.906,44
Cost of sales (-)	8.379,59	9.897,90	11.454,39	12.825,45	13.938,70	14.931,13	15.916,59	16.718,78	17.561,41
Gross profit	1.545,66	1.885,31	2.191,57	2.442,94	2.654,99	2.844,03	3.031,73	3.184,53	3.345,03
Operating Expense (-)	1.151,91	1.367,97	1.577,99	1.755,87	1.866,79	1.999,71	2.131,69	2.239,12	2.351,97
Selling, marketing and distribution expenses	1.002,51	1.185,33	1.373,30	1.526,84	1.617,88	1.733,08	1.847,46	1.940,57	2.038,38
General and administrative expenses	149,39	182,64	204,69	229,03	248,91	266,63	284,22	298,55	313,60
Net Operating Profit	393,75	517,35	613,58	687,08	788,20	844,32	900,05	945,41	993,06
Other operating income	18,33	21,76	25,19	28,19	30,64	32,82	34,98	36,75	38,60
Other operating expenses (-)	9,14	10,86	12,57	14,07	15,29	16,38	17,46	18,34	19,26
Operating profit	402,93	528,25	626,20	701,20	803,55	860,76	917,57	963,82	1.012,39
Financial income	14,47	17,09	19,78	22,15	24,07	25,78	27,48	28,87	30,32
Financial expense (-)	7,72	9,12	10,55	11,82	12,84	13,76	14,67	15,40	16,18
Profit Before Tax	409,68	536,22	635,42	711,53	814,77	872,79	930,39	977,28	1.026,54
Tax expense for the period	83,47	109,25	129,46	144,97	166,00	177,82	189,56	199,11	209,15
Net income	326,21	426,97	505,96	566,56	648,77	694,96	740,83	778,17	817,39
Depreciation and Amortization	117,83	117,83	136,46	152,68	165,94	177,75	189,48	199,03	209,06
Capital Expenditure	212,29	168,67	144,53	111,83	98,63	80,78	72,80	31,34	33,24
EBITDA	511,58	635,18	750,04	839,76	954,14	1.022,07	1.089,53	1.144,44	1.202,12

Table 5.10: Income statement margins as per store assumptions

MARGINS	2012/12	2013/12	2014/12	2015/12	2016/12	2017/12	2018/12	2019/12	2020/12
Sales Growth	**21,20%**	**18,72%**	**15,81%**	**11,89%**	**8,68%**	**7,12%**	**6,60%**	**5,04%**	**5,04%**
Cost of sales (-)	84,43%	84,00%	83,94%	84,00%	84,00%	84,00%	84,00%	84,00%	84,00%
Gross profit	**15,57%**	**16,00%**	**16,06%**	**16,00%**	**16,00%**	**16,00%**	**16,00%**	**16,00%**	**16,00%**
Operating Expense (-)	11,61%	11,61%	11,56%	11,50%	11,25%	11,25%	11,25%	11,25%	11,25%
Selling, marketing and distribution expenses	10,10%	10,06%	10,06%	10,00%	9,75%	9,75%	9,75%	9,75%	9,75%
General and administrative expenses	1,51%	1,55%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%	1,50%
Net Operating Profit	**3,97%**	**4,39%**	**4,50%**	**4,50%**	**4,75%**	**4,75%**	**4,75%**	**4,75%**	**4,75%**
Other operating income	0,18%	0,18%	0,18%	0,18%	0,18%	0,18%	0,18%	0,18%	0,18%
Other operating expenses (-)	0,09%	0,09%	0,09%	0,09%	0,09%	0,09%	0,09%	0,09%	0,09%
Operating profit	**4,06%**	**4,48%**	**4,59%**	**4,59%**	**4,84%**	**4,84%**	**4,84%**	**4,84%**	**4,84%**
Financial income	0,17%	0,17%	0,17%	0,17%	0,17%	0,17%	0,17%	0,17%	0,17%
Financial expense (-)	0,08%	0,08%	0,08%	0,08%	0,08%	0,08%	0,08%	0,08%	0,08%
Profit Before Tax	**4,13%**	**4,55%**	**4,66%**	**4,66%**	**4,91%**	**4,91%**	**4,91%**	**4,91%**	**4,91%**
Tax expense for the period	20,37%	20,37%	20,37%	20,37%	20,37%	20,37%	20,37%	20,37%	20,37%
Net income	**3,29%**	**3,62%**	**3,71%**	**3,71%**	**3,91%**	**3,91%**	**3,91%**	**3,91%**	**3,91%**
Depreciation and amortization	1,19%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%
Capital Expenditure	2,14%	1,43%	1,06%	0,73%	0,59%	0,45%	0,38%	0,16%	0,16%
EBITDA	**5,15%**	**5,39%**	**5,50%**	**5,50%**	**5,75%**	**5,75%**	**5,75%**	**5,75%**	**5,75%**

The historical numbers are examined in working capital account. One of the most important advantages of the company is that it has negative working capital and fund its cash needs thanks to its suppliers. Normally this situation can cause to increasing costs. However, it is not the case thanks to its high buyer strenght on suppliers. The historical working capital accounts are examined since 2005 in Table 5.11 and assumptions sare shown in Table 5.12;

Table 5.11: Historical working capital

Working Capital	2005/12	2006/12	2007/12	2008/12	2009/12	2010/12	2011/12
Trade Receivables	38.152.750	57.196.750	90.206.750	128.060.500	155.405.000	181.486.250	232.824.000
Trade Payables	151.184.500	215.116.750	296.511.500	540.926.000	629.151.250	782.260.000	941.707.750
Inventories	98.825.000	128.536.750	175.114.750	260.638.500	257.049.750	312.849.750	390.848.500
Net Sales	1.673.077.000	2.221.616.000	2.978.384.000	4.242.412.000	5.323.390.000	6.573.951.000	8.189.135.000
Cost Of Good Sold	1.372.787.000	1.834.978.000	2.453.377.000	3.545.782.000	4.378.501.000	5.469.272.000	6.879.805.000
OPEX	249.529.000	307.612.000	397.026.000	550.698.000	686.180.000	813.163.000	961.876.000
Depreciation and Amortization	23.727.000	25.847.000	32.674.000	43.313.000	55.475.000	64.837.000	76.980.000
Total cash expense(COGS+OPEX - A&D)	1.598.589.000	2.116.743.000	2.817.729.000	4.053.167.000	5.009.206.000	6.217.598.000	7.764.701.000
Daily Expenses	4.440.525	5.879.842	7.827.025	11.258.797	13.914.461	17.271.106	21.568.614
Daily Sales	4.647.436	6.171.156	8.273.289	11.784.478	14.787.194	18.260.975	22.747.597
Receivables Turnover	43,9	38,8	33,0	33,1	34,3	36,2	35,2
Inventory Turnover	13,9	14,3	14,0	13,6	17,0	17,5	17,6
Payable Turnover	9,1	8,5	8,3	6,6	7,0	7,0	7,3
Number of Days in receivables	8,2	9,3	10,9	10,9	10,5	10,1	10,2
Number of Days in inventories	25,9	25,2	25,7	26,5	21,1	20,9	20,5
Number of Days in payables	39,6	42,2	43,5	54,9	51,7	52,2	49,3

Table 5.12: Working capital assumptions

Working Capital Assumptions (Million TL)	2012 E	2013 E	2014 E	2015 E	2016 E	2017 E	2018 E	2019 E	2020 E
Trade Receivables	278,32	330,42	382,65	428,15	465,31	498,44	531,34	558,12	586,25
Trade Payables	1.131,29	1.336,27	1.546,40	1.731,50	1.881,79	2.015,78	2.148,82	2.257,12	2.370,88
Inventories	469,53	554,61	641,82	718,65	781,02	836,63	891,85	936,80	984,01
Net Sales	9.925,25	11.783,21	13.645,96	15.268,39	16.593,69	17.775,16	18.948,32	19.903,32	20.906,44
Cost Of Good Sold	8.379,59	9.897,90	11.454,39	12.825,45	13.938,70	14.931,13	15.916,59	16.718,78	17.561,41
OPEX	1.151,91	1.367,97	1.577,99	1.755,87	1.866,79	1.999,71	2.131,69	2.239,12	2.351,97
Depreciation and Amortization	9,14	10,86	12,57	14,07	15,29	16,38	17,46	18,34	19,26
Total cash expense(COGS+OPEX - A&D)	9.522,35	11.255,01	13.019,81	14.567,25	15.790,20	16.914,46	18.030,82	18.939,57	19.894,12
Daily Expenses	26,45	31,26	36,17	40,46	43,86	46,98	50,09	52,61	55,26
Daily Sales	27,57	32,73	37,91	42,41	46,09	49,38	52,63	55,29	58,07
Receivables Turnover	35,66	35,66	35,66	35,66	35,66	35,66	35,66	35,66	35,66
Inventory Turnover	17,85	17,85	17,85	17,85	17,85	17,85	17,85	17,85	17,85
Payable Turnover	7,41	7,41	7,41	7,41	7,41	7,41	7,41	7,41	7,41
Working Capital	-383,44	-451,24	-521,93	-584,71	-635,46	-680,70	-725,63	-762,20	-800,62
Change in Working Capital	-31,80	67,80	70,69	62,78	50,75	45,24	44,93	36,57	38,42
Working Capital / Sales	-3,9%	-3,8%	-3,8%	-3,8%	-3,8%	-3,8%	-3,8%	-3,8%	-3,8%
Change in Working Capital / Sales	-3204301,6%	0,6%	0,5%	0,4%	0,3%	0,3%	0,2%	0,2%	0,2%

5.6 VALUATION OF BIMAS

5.6.1 Discount Rate

5.6.1.1 Cost of equity

CAPM was used to find firm's cost of equity. Various methods were proposed in literature but in this practice classic CAPM method was applied.

Cost of equity= Rf+ Beta (Mature Market Premium + Country RiskPremium)

Mature Market Premium= 5,00

CDS = 1,23

σ*the market of country equity (2003-2013)* = 1,93

σ*country bond* = 1,58

Counrty Risk Premium =Default spread of country (CDS) * (σ the market of country equity / σ country bond) = 1,23 * (1,93 / 1,58) =1,50

In this formula, Turkey's current CDS and also standard deviations of XU100 and benchmark interest rate were used (01.01.2003-01.01.2013)

Rf =6,59 (10 year average)

Beta = 0,63

Beta was derived from Bloomberg and Finnet.

Cost of Equity = 10,69

5.6.1.2 Cost of debt

Forecast of cost of debt is relatively hard as the firm has no financial debt for a long time. Also, as the cost of debt is "0" it does not have any effect on WACC formula.

5.6.1.3 Weighted average cost of capital

WACC =We(Ke) + Wd (Kpt)(1 – t)

Where:

We = Percentage of equity in the capital structure (at market value)= % 100
Ke = Cost of equity =10,69
Wd= Percentage of debt in the capital structure (at market value) = % 0
Kpt = Cost of debt, pretax = N.A.
t = Tax rate = Marginal Tax Rate = % 20

WACC = 10,69

Weighted average cost of capital is equal to cost of equity as firm finances all of its operations and investments by equity.

5.6.2Dividend Discount Model

It should be mentioned that the assumptions used in previous sections will be used in DDM. In this section the past divident payment performance of the company will be analysed, the divident payments will be forecasted upon the presumed net profit and market value will be determined based on DDM. In the course of assumptions, after all datas up to 2020 is forecasted and the terminal value assumption has been made through constant growth rate.

However, subsequent to the base valuation, based on Gordon Growth Model value assessment will be made, an implementation will be shown and the differences between two results will be stated clearly.

The dividend distribution rate of the company is being determined upon the net dividend rate. The reason of the net rate usage is the opportunity to transfer the 85% percentage of the dividend to the investor due to 15% percentage stopage tax rate policy in dividend distributions. In this regard, while the value assessment is considered as the value which passes into the hands of the investors, the gross rates are not used.

Table 5.13: Dividend discount model implementation

DDM		2012 E	2013 E	2014 E	2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	Terminal Value
Net Income		326.211.111	426.968.064	505.959.497	566.560.324	648.769.872	694.962.287	740.829.798	778.167.620	817.387.268	
Margin		3,29%	3,62%	3,71%	3,71%	3,91%	3,91%	3,91%	3,91%	3,91%	
Dividend Ristribution Rate		%60,00	%60,00	%60,00	%60,00	%60,00	%60,00	%60,00	%60,00	%60,00	
Total Dividend		195.726.667	256.180.839	303.575.698	339.936.195	389.261.923	416.977.372	444.497.879	466.900.572	490.432.361	
Dividend Per Share		1,289	1,688	2,000	2,239	2,564	2,747	2,928	3,076	3,231	
Total Cash Flow		1,29	1,69	2,00	2,24	2,56	2,75	2,93	3,08	3,23	59,67
Growth			30,9%	18,5%	12,0%	14,5%	7,1%	6,6%	5,0%	5,0%	5,0%
Cost Of Equity		10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%
Discounted Dividend Per Share		1,29	1,52	1,63	1,65	1,71	1,65	1,59	1,51	1,43	23,93
Value of the Equity now per share	**37,93**										
Paid in Capital	151.800.000										
Market Value	5.757.627.660										
Net Debt (- Cash)	-322.242.000										
Firm Value	5.435.385.660										
Equity Value per Share	37,93										

The details of the dividend payments of the company are stated at Table 5.13.

As it seen Table 5.14; since it is initially public offered, the company makes stabilized dividend distribution and this dividend payment is respectively over the average

statistics based on the Turkey conditions. While the past years of the company is reviewed, averagely the %56 percentage of the net profit (%65,1 gross) is distributed to the company's investors. Additionally, during these years the company has made capitalization issue (2008, 2010) to transfer some part of the net profit to equity.

Table 5.14: Company dividend payout detail

	Total Cash Dividend		Date	Net İncome	Paid in Capital	Earning Per Share	Dividend Per Share		Dividend Ristribution Rate	
Period	Gross	Net					Gross	Net	Gross	Net
2004/12	20.103.000,00	18.256.386,68	27.05.2005	24.216.000	25.300.000	0,9572	0,7946	0,7216		
2005/12	25.300.000,00	22.770.000,00	20.04.2006	30.197.000	25.300.000	1,1936	1,0000	0,9000	83,78%	75,40%
2006/12	55.660.000,00	47.311.000,00	16.05.2007	71.972.000	25.300.000	2,8447	2,2000	1,8700	77,34%	65,74%
2007/12	48.070.000,00	40.859.500,00	28.05.2008	108.472.000	25.300.000	4,2874	1,9000	1,6150	44,32%	37,67%
2008/12	94.875.000,00	80.643.750,00	27.05.2009	114.180.000	75.900.000	1,5043	1,2500	1,0625	83,09%	70,63%
2009/12	132.825.000,00	112.901.250,00	18.05.2010	212.942.000	75.900.000	2,8056	1,7500	1,4875	62,38%	53,02%
2010/12	182.160.000,00	154.836.000,00	17.05.2011	245.640.000	151.800.000	1,6182	1,2000	1,0200	74,16%	63,03%
2011/12	197.340.000,00	167.739.000,00	25.05.2012	298.910.000	151.800.000	1,9691	1,3000	1,1050	66,02%	56,12%

The details of DDM are stated at Table 5.13 and Table 5.14. The assumptions are structured based on the consideration that the company will ditribute dividend close to the past average dividend payment amounts, after 2020 the terminal value is calculated. In this contex, the distributed part of the net profit is increased at the same rates with the net profit, because the distribution rate is constant.

As a result of the valuation, price per share of the company is 37,93 TL and total market value is calculated as 5,7 billion TL. The distributed dividend per share is increasing annually while the acceleration of the dividend distribution increase is falling down and it is coming up to an overall % 5 rate as of 2020. After 2020, terminal value is calculated based on a %5 constant growth rate (actually Gordon Growth Model). 23,93 TL (%63) of the total 37,9 TL price per share value is composed of terminal value account.

So what will be the value of the company if the theoretical framework has been used instead of base valuation technique?

To see the answer of this questions the valuation has been made based on the ‘’expected growth rate’’ and ‘’Gordon growth model’’ below.

Table 5.15: Historical divident growth of company

Net Dividend Growth Rate	Equity	Return on Equity	Undistributed Income Rate (Net)
	82.626.000	29,31%	
24,72%	92.720.000	32,57%	24,60%
107,78%	147.181.000	48,90%	34,26%
-13,64%	199.993.000	54,24%	62,33%
-10,53%	266.103.000	42,91%	29,37%
2,94%	388.055.000	54,87%	46,98%
-31,43%	500.432.000	49,09%	36,97%
8,33%	616.152.000	48,51%	43,88%

Because the past dividend growth rates are not constant, the ‘’expected growth rate formula’’ is applied. So the expected growth rate of the dividend of the company is found as %19,8.

Expected Growth Rate= Undistributed Income Rate * Return on Equity

Expected Growth Rate = 44,12% * 44,81% = 19,77%

$$\text{Gordon Growth Model} = \frac{DPS_1}{r-g}$$

$$DPS_1 = \frac{DPS_0\,(1+g_1)}{(r-g_n)}$$

$$DPS_1 = \frac{1{,}1050(1+0{,}198)}{(10{,}7-5{,}00)} = 27{,}16$$

Based on the result of the above formula application, the price per share is determined as 27,16 TL. The value found based on the GORDON Model is much lower than the value found based on our base analysis. It has been noticed that this model usage may give wrong results at the companies growing with higher growing rates. It is impossible to use the %19,7 growth rate of the company which is calculated through the past data of the company as constant growth rate. It has been explained in theoretical section that the infinite growth rate of a company can not be higher than the long term growth rate of the economy which the company is surviving in. Also conclusion will be negative with %19,7 rate which is higher than “r”.

DDM is a proper method for the stable and precitable dividend distributing companies but it has been noticed that GGM method may give wrong results for the companies with high growing rates. Generally the result of the DDM shall be analysed after with the application of the other cash flow analysis.

5.6.3Free Cash Flow to Equıty

In this section, projected data in the previous section tried to be placed on the model of the FCFE and market value will be determined according to the this model.

FCFE analysis which we have performed for BIM, are shown in the table 5.16 below in detail.

Table 5.16: FCFE implementation

FCFE (Million TL)	2012 E	2013 E	2014 E	2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	Terminal Value
Net Income	326,21	426,97	505,96	566,56	648,77	694,96	740,83	778,17	817,39	
Margin	3,29%	3,62%	3,71%	3,71%	3,91%	3,91%	3,91%	3,91%	3,91%	
Growth		30,89%	18,50%	11,98%	14,51%	7,12%	6,60%	5,04%	5,04%	
Depreciation and Amortization	74,52	117,83	136,46	152,68	165,94	177,75	189,48	199,03	209,06	
Margin	%1,19	%1,00	%1,00	%1,00	%1,00	%1,00	%1,00	%1,00	%1,00	
CAPEX	212,29	168,67	144,53	111,83	98,63	80,78	72,80	31,34	33,24	
Margin	%2,14	%1,43	%1,06	%0,73	%0,59	%0,45	%0,38	%0,16	%0,16	
Change in Working Capital	65,40	67,80	70,69	62,78	50,75	45,24	44,93	36,57	38,42	
Margin	%0,66	%0,58	%0,52	%0,41	%0,31	%0,25	%0,24	%0,18	%0,18	
New Debt Issued	-	-	-	-	-	-	-	-	-	
Debt repayments	-	-	-	-	-	-	-	-	-	
Total Cash Flow	254	444	569	670	767	837	902	982	1.032	19.004
Margin	%2,56	%3,77	%4,17	%4,39	%4,62	%4,71	%4,76	%4,94	%4,93	
Growth		74,9%	28,1%	17,9%	14,4%	9,2%	7,8%	8,9%	5,0%	5,0%
Cost Of Equity	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%	10,7%
Discounted Cash Flow	254	401	464	494	511	504	491	483	458	7.612

Present Value-Equity Value	11.418 TL
Market Value	**11.418 TL**
Paid in Capital	151,8
Equity Value per Share	75,22 TL

In this analysis, for each year FCFE formula applied to the resulting cash flows are then the cash flows has been discounted by cost of equity. After cash flows are estimated until 2020, Terminal Value is calculated with a constant growth rate of 5.00% and added to the estimated al cash flow. Value has been calculeted by FCFE is the market

value (equity value) of the company. The per share value of the company has been determined as 75,22 TL.

Notably in the table that FCFE specific “New Debt Issue” and “Debt repayment” values are “0”. The Company does not use financial debt for a long time, in the coming period is assumed that the new debt issuance and debt payment will not be happened. Although there is no financial debt, the financial expenses of company composes of “Foreign exchange losses”**,** **“**Finance charge on employee termination benefit”**,** **“**Banking charges” and **“**Other financial expense”. There is high financial income for the company's high cash balances and this income is higher than the financial expenses so that is reflected to the income statement as net financial income.

When we applied the Gordon Growth model to FCFF instead of the analysis above, market value of BIMAS is 6,8 billion TL and the price per share is 44,90 TL.

Equity Reinvestment Rate= (Net Capex + Net Workig Capital Change - Net Debt Issıued) / Net Income

Equity Reinvestment Rate= 203 / 326 = %62,28

Non Cash ROE = (Net Income- Income after taxes result from cash on hand) / (Equity Book Vaue- cash equivalents)

Non Cash ROE = 301 / 357 = %84,55

Expected Growth = Equity Reinvestment Rate* Non cash ROE

Expected Growth = %52,66
Gordon Growth Model = 388
Equity Value For Gordon Growth Model (Million TL) = 6.816
Equity Value per Share = 44,90 TL

Gordon Growth Model is applied where the resulting value is very low compared to our base analysis.

5.6.4Free Cash Flow to Firm

In this section, projected data in the previous section tried to be placed on the model of the FCFF and market value will be determined according to the this model.

FCFF analysis which we have performed for BIM, are shown in the table5.17 below in detail.

Table 5.17: FCFF implementation

FCFF (Million TL)	2012 E	2013 E	2014 E	2015 E	2016 E	2017 E	2018 E	2019 E	2020 E	Terminal Value
Net Operating Profit (EBIT)	393,752	517,348	613,575	687,078	788,200	844,320	900,045	945,407	993,056	
Margin	3,97%	4,39%	4,50%	4,50%	4,75%	4,75%	4,75%	4,75%	4,75%	
TAX Rate	20,00%	20,00%	20,00%	20,00%	20,00%	20,00%	20,00%	20,00%	20,00%	
TAX Expences	78,750	103,470	122,715	137,416	157,640	168,864	180,009	189,081	198,611	
Operatig Profit after Tax	315,001	413,879	490,860	549,662	630,560	675,456	720,036	756,326	794,445	
Margin										
Depreciation and Amortization	74,521	117,832	136,460	152,684	165,937	177,752	189,483	199,033	209,064	
Margin	1,19%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	
CAPEX	212,293	168,667	144,529	111,830	98,634	80,781	72,804	31,342	33,238	
Margin	2,14%	1,43%	1,06%	0,73%	0,59%	0,45%	0,38%	0,16%	0,16%	
Change in Working Capital	65,400	67,804	70,686	62,780	50,753	45,245	44,926	36,572	38,415	
Margin	0,66%	0,58%	0,52%	0,41%	0,31%	0,25%	0,24%	0,18%	0,18%	
Total Cash Flow	242,629	430,848	553,477	653,297	748,616	817,671	881,642	960,589	1.008,686	18.630
Margin	2,44%	3,66%	4,06%	4,28%	4,51%	4,60%	4,65%	4,83%	4,82%	
Growth		77,57%	28,46%	18,03%	14,59%	9,22%	7,82%	8,95%	5,01%	5,0%
WACC	10,69%	10,69%	10,69%	10,69%	10,69%	10,69%	10,69%	10,69%	10,69%	10,7%
Discounted Cash Flow	243	389	452	482	499	492	479	472	448	7.472

Present Value-Firma Value	**11.185**
Net DEBT (-CASH)	-322
Market Value-Equity Value	**11.507**
Paid in Capital	152
Equity Value per Share	**75,80**

In this analysis, for each year FCFF formula applied to the resulting cash flows are then the cash flows has been discounted by cost of equity. After cash flows are estimated until 2020, Terminal Value is calculated with a constant growth rate of 5.00% and added to the estimated al cash flow. Value has been calculeted by FCFF is the enterprise

value of the company. When we substracted the value of the company's net debt figure from the enterprise vaşu of company that we have calculeted by FCFF, we will get the market value of the company. Since the company is on net cash position, the company's market value is higher than the enterprise value. Market value of BIMAS has been determinde 11,5 billion TL and price per share has been determined 75,80 TL.

It has been seen that, the company's rapid growth phase is completed in past years by the company and a decreasing accelaration growth happens. After that the constant growth level begins.

Reinvestment Rate= (Net Capex + Net Workig Capital Change) / EBIT(1-T)

Reinvestment Rate= 203,17 / 3015,00 = %64,5

Return on Capital = (EBIT(1-t) / (Book Value of Equity + Book Value of Debt)

Return on Capital = 315,00 / 666,15 = %47,3

Expected Growth = Equity Reinvestment Rate* Non cash ROE

Expected Growth = %30,5

Gordon Growth Model =	316,63
Equity Value for Gordon Growth Model (Million TL)=	5.569,55
Equity Value per Share=	36,69

When we applied the Gordon Growth model to FCFF instead of the analysis above, market value of company will be 5,6 billion TL and the price per share will be 36,69 TL. It is obvious that the resulting value is very low compared to our base analysis.

6.COMPARISON AND INTERPRETATIONS OF MODELS

Table 6.1: Summary of models

BIMAS VALUATION	
Market Value of Firm (Million TL)	13.244
Current Stock Price	87,25
DDM	
Value (Million TL)	5.758 TL
Value Per Share	37,93 TL
Average Return on Equity	44,81%
Expected Growth Rate	19,77%
Gordon Growth Model Value (Million TL)	4.124 TL
Gordon Growth Model Value Per Share	27,16 TL
FCFE	
Value (Million TL)	11.418 TL
Value Per Share	75,22 TL
Non Cash ROE	84,55%
Expected Growth Rate	52,66%
Gordon Growth Model Value (Million TL)	6.816 TL
Gordon Growth Model Value Per Share	44,90 TL
FCFF	
Value (Million TL)	11.507 TL
Value Per Share	75,80 TL
Return on Capital	47,29%
Expected Growth Rate	30,50%
Gordon Growth Model Value (Million TL)	5.570 TL
Gordon Growth Model Value Per Share	36,69 TL

The results of different valuation models are shown above on the Table 6.1 .

Valuation resultsby using all valuation methods and current share price of company shown in the table above.

As seen in the table, DDM model has been ineffective in valuation of the company. Shares of te company reached the price of 37,90 TL, which have been calculated by using DDM model, the most recent in March and August 2010. The most important reason of the low valuation results of DDM model is that only dividends item of the company has been counted to the valuation and the item of undistributed profits have been supposed to be distributed in subsequent periods. However, the company still in growth phase in the coming period to be determined by how much the profit distribution ratio is not clear. As a result of the valuation of same company expectations, DDM model is insufficient in terms of company valuation. As it has been metioned before, DDM model is more effective in some of the companies which completed the rapid growth phase and distributed dividends on a regular basis.

FCFE and FCFF valuation results are close eachother. While the result of FCFE valuation is 75,22 TL, the result of FCFF valuation is 75,80 TL. Both valuation models' results are close to market value of the company.

Athough the results of FCFE and FCFF models are very close, the cashflow details of two models are considerably different.

While working capital, amortisation and capital expenditures are same for two models, there are differences;

EBIT is forecasted in FCFF model. Financial income/expenses and income/loss from other operations are naturally not included in the analysis. Income/loss from other operations are not included because they are one time figures. On the other hand, financial income/loss will be examined in net debt calculations.

On the other hand, all accounts are included in FCFE model.

Although the cash flows are very different in the models, after the net cash is added to the PV of cash flows in FCFF model the results of two models become closer. The net

cash is the only difference between two models because the company does not have financial debt or debt issuance. The present value of net cash in FCFE model and the net cash added to PV of cash flows are substituted each other and the final result become closer for the models.

Additionally, Gordon Growth Model does not give logical results. Althought it is appropriate for terminal value calculations, the model gives lower results when it is used for whole valuation. The assumption of expected growth rate is the fixed growth rate is unlogical in practice. It gives negative results.

After extensive analysis, the result is that DDM is insufficient for companies which have similar growth rates and FCFE and FCFF models are more appropriate. The main reason FCFE and FCFF results are so close is the company's lack of financial debt. If the financial leverage of the company was high, the result can be quite different.

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