LISBOA
SCHOOL OF
ECONOMICS &
MANAGEMENT

MASTER OF SCIENCE IN

FINANCE

MASTERS FINAL WORK

PROJECT

EQUITY RESEARCH OF TURKISH AIRLINES

SERCAN DAYSAL

SEPTEMBER - 2014

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SUPERVISOR(S):

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EQUITY RESEARCH OF TURKISH AIRLINES

By Sercan Daysal

The present project aims to value Turkish Airlines (THY), flag carrier airline of Turkey. Before the actual valuation procedure, main valuation techniques and their advantages and disadvantages were examined throughout a literature review chapter. After the review, an intrinsic value of 8.08 TRY was discovered for THY stocks as of December 2013 using discounted cash-flows method. This suggests that THY's stocks are undervalued with a price of 6.44 TRY, and there is a 25.53% appreciation potential. Finally, relative valuation method is also applied to have a better outlook on the companies in the industry, and to identify THY's position compared to these other companies.

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Abstract

Turkish Airlines (THY) is the flag carrier airline of Turkey and it aims to be a permanent global actor in the airlines sector. THY considers itself having a constant competitive advantage since it is located on a natural hub, Istanbul.

The following Master's Final Work is completed with an aim of discovering an intrinsic value for the stocks of THY as of December 2013. This project includes a literature review presenting pros and cons of different valuation techniques followed by an industry and company specific analysis. It continues with the actual valuation of THY performed by using Discounted Cash-Flows method. The final outcome using this method suggested an intrinsic value of 8.08 TL for THY stocks of those are undervalued with a price of 6.44 TL. This result indicates a 25.53% potential appreciation of the stock price for THY.

Finally, relative valuation method is also applied to identify THY's position compared to how other companies in airline industry are being evaluated.

Keywords: Equity Research, Valuation, Free Cash Flow to Firm, Discounted Cash-Flows, Relative Valuation, Multiples, Turkish Airlines, THY

Resumo

A Turkish Airlines (THY) é a companhia aérea nacional da Turquia e tem como objetivo ser uma referência global no setor das companhias aéreas. A THY tem uma vantagem competitiva dada a sua localização central em Istambul.

O Trabalho Final de Mestrado que se segue tem como objetivo principal a estimatıva do valor intrínseco das ações da THY, a partir de Dezembro de 2013. Este projeto inclui uma revisão literária aos diferentes métodos de avaliação, enfatizando os seus pontos fortes e fracos. É feita uma análise específica ao nível do sector e da empresa.

Procede-se uma avaliação da THY através do método Discounted Cash-Flow, resultando um valor intrínseco de 8,08 TL por ação, indicando uma subvalorização face ao preço atual de 6,44 TL. Esta avaliação indica um potencial de valorização na ordem dos 25,53% do preço por ação.

Por fim, aplica-se o método de avaliação relativa para estimar a posição da THY no seu sector de atividade..

Palavras-chave: Equity Research, Valuation, Free Cash Flow to Firm, Discounted Cash-Flows, Relative Valuation, Multiples, Turkish Airlines, THY

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Abbreviations

ASK: Available seat kilometers

APV: Adjusted present value

DCF: Discounted cash-flows

DDM: Dividend discount model

EBIT: Earnings before interest and taxes

EBITDA: Earnings before interest, taxes, depreciation and amortization

EV: Enterprise value

EV/EBITDA: Enterprise value-to-EBITDA ratio

FCFE: Free cash-flow to equity

FCFF: Free cash-flow to firm

GDP: Gross domestic product

M&M: Modigliani and Miller

P/BV: Price-to-book value ratio

P/E: Price-to-earnings ratio

RPK: Revenue passenger kilometers

ROA: Return on assets

ROE: Return on equity

R&D: Research and development

1. INTRODUCTION

This master project is completed with the aim of discovering an intrinsic value for Turkish Airlines' (THY) stocks as a final assignment of the Master of Science in Finance at Lisbon School of Economics and Management (ISEG). The motivation behind this work is to discover a share price for a company in the very challenging sector of airlines which is affected by countless numbers of variables from political conflicts to erupting volcanoes. I decided to choose THY as a subject of my project since it has been trying to grow and become a global actor from an emerging market, Turkey, which makes all the project even more challenging.

The dissertation is mainly divided into three parts except the introduction. The first one is literature review (Chapter 2). It presents the frameworks and approaches of valuation and continues with the different valuation techniques including their advantages and disadvantages. I made use DCF valuations and Relative valuation in this dissertation among the approaches of those had been presented.

The second part presents industry and company information (Chapter 3). It includes a general outlook of airlines industry and goes on with providing detailed information about Turkish Airlines.

The third part presents THY's valuation (Chapter 4). It starts with the assumptions for the actual DCF valuation. After the assumptions, DCF valuation section follows with the share price discovered. This fourth chapter also includes a relative valuation section which allows a comparison of industry averages with the DCF valuation results.

As a summary, an intrinsic value of 8.08 Turkish Liras with a market cap of ~11.16B is discovered for THY which suggests a 25.53% increase compared to 6.44 TRY of share price on December 31st, 2013. In the relative valuation section, price-to-book value estimations offer us a share price of 11.68 TRY where price-to-earnings offers an 8.76 TRY and price-to-sales offers a 7.01 TRY.

2. LITERATURE REVIEW

2.1 Frameworks and Approaches of Valuation

Valuation studies and exercises, by their nature, cannot be considered completely scientific and objective ways to find out true values of assets (Damodaran 2012). Having this premise in hand, it is still fair to suggest that valuation exercises are forming starting points and providing base data in many situations. Fernández (2007) points out the importance of valuation from a corporate finance standpoint and states that "for anyone involved in the field of corporate finance, understanding the mechanisms of company valuation is an indispensable requisite". Mergers, acquisitions, restructurings, investment evaluations, initial public offerings, credit processes, accounting and taxation procedures can be counted amongst the major reasons that require valuation assignments.

Valuation exercises include various assumptions and subjectivity; therefore there is not an absolute correct way of performing them. Yet, Fernández (2007) considers that methods of which are based on cash-flow discounting are conceptually correct compared to the other methods in his classification, namely: balance sheet-based methods, income statement-based methods and mixed methods. The term conceptually correct here means

their approach is similar to a cash budget approach which requires a comprehensive forecast of the cash to receive and to be paid in each period. Booth (2007) has a parallel opinion with Fernández on the idea of being conceptually correct and indicates that although there are numerous ways of calculating the value of a firm, it is possible to claim a conceptually correct value. Damodaran (2012) categorizes valuation approaches under three main segments: discounted cash-flow valuations (DCF), relative valuation, and contingent claim valuation. In the following sections, I will elaborate on these practices, of which I mentioned latter. I will focus on discounted cash flow methods since they are widely used in the market.

2.2 Discounted Cash-Flow Valuations

Generally speaking, the rationale behind calculating an asset's value with this method is based on predicting expected cash-flows to be generated by the firm and discounting them to present time using a certain discount rate. Luehrman (1997) simplifies this rationale in other words and notes that "DCF valuation methodologies are all built on a simple relationship between present value and future value". Before DCF valuation methodologies started gaining popularity in Europe and the USA around 1995, the dominant approach had been dividend discount model (DDM) of which introduced by Gordon (1959): the model that estimates value of a share through discounting dividends of those owners will receive at the cost of equity.

DCF valuation methodologies typically have advantages and disadvantages for valuation of firms in a broad sense. Taking a firm's potential of growth, time value of

money and goodwill into consideration as well as allowing different scenario analysis can be regarded among advantages of DCF valuation. In contrast, difficulties on predicting future cash-flows and application of these methodologies to firms with negative cash-flows can be counted amongst drawbacks of DCF valuations[1]. In addition to these drawbacks, there is only limited empirical evidence to support DCF valuations deliver credible assessments in terms of market value (Kaplan & Ruback 1995).

Nowadays, there are different approaches present considering the implementation of DCF valuations. Kruschwitz & Löffler (2005) refer to entity approach and equity approach along with their competition against each other, in addition to this; they also classify concepts such as adjusted present value (APV) and weighted average cost of capital (WACC) under entity approach. Damodaran (2012) also categorizes DCF valuation approaches under two main groups of those are named as equity valuation and firm valuation, and describes them as such: "The first is to value just the equity stake in the business, while the second is to value the entire business, which includes, besides equity, the other claimholders in the firm (bondholders, preferred stockholders)." In the following sections, I will present DDM and free cash flow to equity (FCFE) considering equity valuation, and then I will continue with presenting free cash flow to firm (FCFF) and APV considering firm valuation. In a broad sense, FCFE and FCFF concepts will be versions of Damodaran's (2010) value of asset formula, of which cash flow component and discount rates are customized accordingly.

[1] PricewaterhouseCoopers, 2013. İndirgenmiş Nakit Akım (Discounted Cash-Flow). In *Şirket Değerleme Yöntemleri ve Uygulamaları (Company Valuation Methods and Applications) PwC Business School*. Istanbul, p. 60

$$(1) \qquad Value\ of\ Asset = \sum_{t=1}^{t=N} \frac{E(Cash\ Flow_t)}{(1+r)^t}$$

In this equation, $E(Cash\ Flow)_t$ represents the expected cash flows of an asset. N represents the asset's life time, and finally r is the discount rate which incorporates the risk factors of both the cash flow and financing (Damodaran 2010).

2.2.1 Equity Valuation

As I mentioned in the previous sections, there are many different valuation techniques and approaches. Equity valuation techniques also diverge into some subgroups. A great deal of them contains forecasting the future, but they differ on the variable to be forecasted, namely: dividends, cash flows, operating profit, or residual income (Penman 1998). I will represent DDM in the following section, and then I will continue with FCFE.

2.2.1.1 Dividend Discount Models (DDM)

DDM is considered to be the oldest DCF valuation methodology in use and although analysts tend to prevent using it nowadays, its fundamental principles still hold considering other DCF models (Damodaran 2005). DDM can be used to provide an assessment of expected return for stocks, and one can compare this return with the expected return on bonds using yield to maturity calculation before making an investment decision (Farrell 1985). The present value of dividends through infinity would represent the value of a stock according to Damodaran (2005), and it is formulized similar to Equation 1 with the necessary arrangements:

$$(2) \qquad Value\ per\ share\ of\ stock = \sum_{t=1}^{t=\infty} \frac{E(DPS_t)}{(1+r)^t}$$

In this equation, $E(DPS_t)$ represents expected dividends per share in period *t*, and r represents the discount rate, of which is cost of equity (k_e) in this case. I will expand on cost of equity (k_e *)* as a part of this very section, and then I will proceed with introducing two versions of DDM briefly considering different expectations about future growth.

- *Cost of Equity (k_e)*

A simple definition of cost of equity would be the approximate return of which an equity investor would expect from a target firm. The risk-free rate, the market risk premium, and a company-specific risk adjustment form three main components of whose cost of equity is based upon (Goedhart et al. 2010).

Capital asset pricing model (CAPM) is the model widely used for estimation of cost of equity, yet, there are also Fama-French three-factor model and the APT arbitrage pricing theory (APT) model available. According to Goedhart et al. (2010), CAPM and Fama-French three factor models differ from each other based on their definition of risk; a stock's sensitivity to the market is the primary concern for CAPM, whereas Fama-French three-factor model worries about the stock market, a portfolio based on firm size, and a portfolio based on book-to-market ratios regarding risk definition.(Fama & French, 2004) I will abide by CAPM factoring in the model's largely use in practice. CAPM was originally introduced by Treynor (1961), Sharpe (1964), and Lintner (1965); and it builds on the

portfolio selection study of Markowitz (1959). According to Fernández (2007), CAPM is formulated in the following way:

(3) $$K_e = R_F + \beta\,(\overline{R_M} - R_F)$$

Where;

$R_F =$ Rate of return for risk-free investments (treasury bonds)

$\overline{R_M} =$ Expected market return

$R_M - R_F =$ Market risk premium or equity premium

$\beta =$ Share's beta

Fama - French (2004) prefer to use β_i regarding the notation of beta for an asset *i;* and defines it such: "it is the covariance of its return with the market return divided by the variance of the market return". It is then formulated in the following way:

(4) $$\beta_i = \frac{cov(R_i,\ R_M)}{\sigma^2(R_M)}$$

Market risk premium is another component to be explained in CAPM formula. It is described as the additional return on top of risk-free rate an investor anticipates for investing in the risky stocks, and found by subtraction of the risk-free rate, R_F, from an investment's expected return in the whole stock market, $\overline{R_M}$ (Stephenson 2009).

2.2.1.1.1 Two Versions of Dividend Discount Models

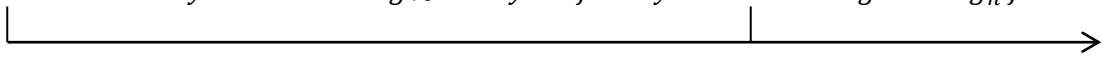
Analysts tend to fragment their forecasts into two stages: first stage usually takes care of forecasts of financial statement articles up to a maximum horizon of 15 years in most cases, and second stage concerns forecasting even beyond the horizon (Ohlson & Zhang 1999).

According to Damodaran (2012) based on different expectations about future growth, different DDM versions have been established. The first one is **Gordon Growth Model**, a very sensitive model to assumptions about the growth rate, which can be utilized to discover a firm's value in steady state with a sustainable stable growth of dividends (Damodaran 2012). The Gordon Growth Model is expressed in the following way:

$$(5) \qquad Value\ of\ stock = \frac{Expected\ dividends\ next\ period}{(Cost\ of\ equity - Expected\ growth\ rate\ in\ perpetuity)}$$

The second model is **Two-Stage Dividend Discount Model**, which considers a first growth phase with an extraordinary growth rate and a secondary phase of which regards a stable growth rate perpetually (Damodaran 2012). It is then formulated in the following way:

(6) $Extraordinary\ Growth\ Rate: g\%\ each\ year\ for\ n\ years$ | $Stable\ growth: g_n\ forever$



$$Value\ of\ stock = PV\ of\ dividends\ during\ extraordinary\ phase$$

$$+PV\ of\ terminal\ price$$

2.2.1.2 Free Cash Flow to Equity (FCFE)

FCFE's goal is simply finding out the value of the equity of a firm. It does not offer a drastic difference from the DDM (Damodaran 2005). Instead of using WACC as in FCFF method, this methodology uses cost of equity (k_e) to discount cash-flows-to-equity for estimating equity value, additionally, it can be challenging to implement since it causes some forecasting difficulties due to having capital structure embedded in the cash flow (Goedhart et al. 2010). According to Damodaran (2005), potential dividends are discounted rather than actual dividends with the FCFE model, and free cash flow to equity can be a measure of cash flows after debt payments and reinvestment needs of a firm with the following formulae:

(7)
$$\begin{aligned}\text{FCFE} = {} & \text{Net income} + \text{Depreciation} - \text{Capital expenditures} \\ & - \text{Change in non-cash working capital} \\ & - (\text{New debt issued} - \text{Debt repayments})\end{aligned}$$

Using FCFE, the value of equity is calculated in the following way:

(8)
$$Value\ of\ Equity = \sum_{t=1}^{t=n} \frac{Cash\ Flow\ to\ Equity_t}{(1+k_e)^t}$$

In this equation, $Cash\ Flow\ to\ Equity_t$ represents the expected cash flow to equity in period *t*, and k_e is the cost of equity (Damodaran 2010).

2.2.2 Firm Valuation

Firm valuation, also referred as enterprise valuation, means discovering value of a

business as a whole including assets-in-place and growth assets (Damodaran 2005). During a reorganization time, an enterprise's value can be obtained by projecting its earnings in future on the basis of its assets and prospects, and discounting them at a proper discount rate (Blum & Katz 1965). To set an example, this discount rate is chosen as WACC while applying FCFF method. First, I will present FCFF under this firm valuation section, and then I will continue with APV.

2.2.2.1 Free Cash Flow to Firm (FCFF)

According to Beneda (2003), FCFF is the available cash flow from operations to investors after deducting capital expenditures and investments in working capital required for ongoing operations, and it is explained in the following way:

(9) $$Free\ cash\ flow\ to\ firm = EBIT(1-t) + depreciation\ and\ amortisation - increase\ in\ operating\ working\ capital - capital\ expenditures$$

In this equation, $EBIT(1-t)$ represents after-tax operating income, which is also paralleled by Damodaran (2005).

Using FCFF, Damodaran (2012) suggests estimating a firm's value with the following method adopting WACC as the discount rate:

(10) $$Value\ of\ firm = \sum_{t=1}^{t=n} \frac{Cash\ Flow\ to\ firm_t}{(1+WACC)^t}$$

Where $n =$ Life of the asset

$Cash\ Flow\ to\ firm_t =$ Expected cash flow to firm in period t

$WACC =$ weighted average cost of capital

I will elaborate on WACC in the following passage as a part of this FCFF section.

- *Weighted Average Cost of Capital (WACC)*

WACC, in a broad sense, is utilized to find out an optimal capital structure of a firm that can provide a maximized total market value to the firm (Arditti 1973). WACC is denoted by the rates of return of a company's both debt and equity holders require; and it is equal to weighted average of the after-tax cost of debt and cost of equity for a company financed only with debt and equity (Goedhart et al. 2010):

(11) $$WACC = \frac{D}{V}k_d(1 - T_m) + \frac{E}{V}k_e$$

$$where\ V = D + E$$

Also, $D/V =$ target level of debt to enterprise value using market-based (not book) values

$E/V =$ target level of equity to enterprise value using market-based values

$k_d =$ cost of debt

$k_e =$ cost of equity

$T_m =$ company's marginal income tax rate

In this equation, cost of debt (k_d) is usually characterized by yield to maturity of the company's long-term, option free bonds for investment-grade companies (Goedhart et

al. 2010). It should be multiplied by 1 minus marginal tax rate to have an after-tax calculation, of which reflects the benefits of tax-deductible interest (Bruner et al. 1998).

2.2.2.2 Adjusted Present Value (APV)

Adjusting the unlevered value of a firm for the advantages to using debt can make a brief definition for APV (Booth 2007). The idea of APV method lies on examining value of financial side effects (interest tax shields, costs of financial distress) individually, and then adding those to the value of base-case that symbolizes value of a project as it was totally financed with equity (Luehrman 1997a). Goedhart et al. (2010) offers that usage of APV method does the job best when a company projects to change its capital structure, and the authors exemplify this with a usual case that a company obtains higher cash flows and decides to pay down its debt to lower debt-to-value ratios, where using WACC method would inflate the value of tax shields.

As it is also mentioned in the study of Booth (2007), Modigliani & Miller's (1958) well-recognized proposition 1, of which assumes the value of the firm is not dependent on its use of debt in a perfect world without tax obligations, constitutes a point of origin for most valuation models as well as APV:

$$V_L = V_U + \gamma D \tag{12}$$

Where $V_L =$ value of the firm with debt

$V_U =$ value of the firm without debt

$\gamma =$ advantage to using debt (e.g. corporate income tax)

$D =$ debt.

It is possible to conclude that $V_L = V_U$ in M&M's perfect world without taxes according to Equation 12, and interactions start to happen once taxes are acknowledged. Based on this approach, APV has been advanced by Myers (1974), also making reference to possible other sources of interactions, namely; transaction costs or other market imperfections.

According to Damodaran (2005) a mathematical expression to estimate value of a firm using APV method can be delivered in the following way:

$$(13) \qquad Value\ of\ business = Value\ of\ business\ with\ 100\%\ equity\ financing + Present\ value\ of\ expected\ tax\ benefits\ of\ debt - Expected\ bankruptcy\ costs$$

Damodaran (2005), then, enlarges upon the elements of this formula and expresses them one by one, starting with the value of the unlevered firm:

$$(14) \qquad Value\ of\ unlevered\ firm = \frac{FCFF_0(1+g)}{\rho_u - g}$$

Where $FCFF_0$ = current after-tax operating cash flow

ρ_u = unlevered cost of equity

g = expected growth rate of cash flows

The second component of the formula to elaborate is value of tax benefits:

$$(15) \qquad Value\ of\ tax\ benefits = \sum_{t=1}^{t=\infty} \frac{Tax\ rate_t \times Interest\ rate_t \times Debt_t}{(1+r)^t}$$

Considering this Equation 15, Damodaran (2005) adds that, if tax rate and debt were taken as constants and the pre-tax cost of debt utilized as discount rate, the equation would turn into the following one:

$$(16) \qquad Value\ of\ tax\ benefits = \frac{(Tax\ rate)(Cost\ of\ debt)(Debt)}{Cost\ of\ debt}$$

$$= (Tax\ rate)(Debt)$$

$$= t_c D$$

Finally, third component of Equation 13 is also explained mathematically:

$$(17) \qquad PV\ of\ expected\ bankruptcy\ cost$$

$$= (Probability\ of\ bankruptcy)(PV\ of\ bankruptcy\ cost)$$

$$= \pi_a BC$$

Despite a lot of useful features, APV method has its handicaps like other methods. To set some examples, Luehrman (1997a) introduces two limitations of APV: firstly, analysts can overvalue the benefits of present value of tax shields due to taxation rate differences among investors, and secondly, analysts tend to ignore cost of financial distress related to corporate leverage.

2.3 Relative Valuation

The fundamental argument of relative valuation proposes that, it is possible to estimate value of most assets considering how market values the similar assets (Damodaran 2012). It can be regarded an easy and fast method to implement and revise, and it reflects the conditions in the marketplace accurately on the time of valuation. On the other hand, issues on the depth and efficiency of markets, or difficulties during obtaining the multiples and applying the method to the companies tend to grow can set drawbacks of relative valuation.

A relative valuation involves a multiples analysis, of which comparing a firm's multiples with other companies alike, and can provide an examination of robustness of DCF valuations as well as explaining performance mismatches of a company compared to the marketplace (Goedhart et al. 2010). According to the same authors, "Using the right multiple", "calculating the multiple in a consistent manner", and "using the right peer group" are key requirements for a well-structured multiples analysis. Regarding finding the identical companies issue, Damodaran (2005) thinks that it is not an easy task to find sufficient number of comparable firms in a particular sector, or to define firms as comparable in a sector if their profiles (risk, growth, cash flows) are different. Damodaran (2005) adds that, if the market is not systematically overpricing or underpricing the whole sector or an asset group, relative valuations and DCF valuations would converge to each other.

The multiples of those have a common usage in the market are P/E (price to earnings) and P/BV (price to book value) associated with equity value, and EV/EBITDA (enterprise value to earnings before interest, taxes, depreciation and amortization) associated with enterprise value. Koller et al. (2011) observes that, bankers and sophisticated investors prefer EV/EBITA (not EBITDA) nowadays since it affords an even better comparison. I will expand on these multiples I mentioned in this paragraph except EV/EBITA, sticking to Damodaran's (2005) and Berk et al.'s (2012) way of formulating them.

P/E value stands for a company's share price over its earnings per share, and although being common in the market it is subject the same limitations of dividend discount model since it concerns about equity and neglects debt effects (Berk et al. 2012). According to Damodaran (2005) it is possible to talk about three versions of P/E; the first one is current P/E estimated using current earnings, the second one is trailing P/E estimated using earnings over the last four quarters, and third one is forward P/E estimated using earnings in the next year. For a firm with stable growth, the author calculates P/E in the following way:

$$\frac{P_0}{EPS_0} = PE = \frac{Payout\ ratio\ \times (1 + g_n)}{k_e - g_n} \tag{18}$$

Where P_0 = value of equity, EPS_0 = earnings per share, k_e = cost of equity, and g_n = expected stable growth rate of cash flows. Briefly, a higher P/E ratio for a company compared to lower ones is better for investors since it shows an expectancy of higher growth.

Only adding the return on equity (ROE) variable to Equation 18, Damodaran's (2005) calculation of P/BV ratio is the following:

$$(19) \qquad \frac{P_0}{BV_0} = PBV = \frac{ROE \times Payout\ ratio \times (1 + g_n)}{k_e - g_n}$$

According to Berk et al. (2012), unlike P/E ratio which is associated only with the equity value, EV/EBITDA can provide comparison for companies with different leverage levels. The same authors calculate EV/EBITDA ratio considering a constant growth of expected cash-flows in the following way:

$$(20) \qquad \frac{V_0}{EBITDA_1} = \frac{\frac{FCF_1}{r_{wacc} - g_{FCF}}}{EBITDA_1} = \frac{FCF_1/EBITDA_1}{r_{wacc} - g_{FCF}}$$

In this equation, $V_0 =$ current enterprise value, $FCF_1 =$ free cash flow, $r_{wacc} =$ firm's WACC, and $g_{FCF} =$ constant long-run growth rate for free cash flows.

2.4 Contingent Claim Valuation

This method, of which uses option pricing models, is generally utilized to estimate the value of assets which shows option characteristics (Damodaran 2005). These option pricing models are mostly associated with valuing risk, or uncertainty. According to Vernimmen et al. (2009), we would not even have options if we knew the future accurately, because options value the risk that is associated with an uncertain future. As a different interpretation, Luehrman (1997b) prefers to name these situations as opportunities, and he further explains that they can be considered as potential future operations. According to the same author again, deciding on how much, or on which kind of R&D expenses to make

would be estimating those opportunities. On the other hand, Goedhart et al. (2010) introduces another definition called managerial flexibility related to option pricing; and they add that it is not the same thing with uncertainty, because it discusses the decisions of those managers make depending on the news among different business plans.

Binomial model and Black-Scholes model are the two models that are used frequently to value options. To explain in a broad sense, Cox et al. (1979) propose that "virtually all corporate securities can be interpreted as portfolios of puts and calls on the assets of the firm". Generally speaking, the application of option pricing models to firms is not an easy task.

Regarding drawbacks of option pricing models, Damodaran (2012) emphasizes that, valuing long-term options on non-traded assets are subject to some limitations. The author notes that dealing with constant variance while estimating long-term options is tough. Considering non-traded assets, the author adds that if the underlying asset is a non-traded one, its value has to be evaluated instead of being extracted from the markets.

I will not enlarge on contingent claim valuation since I will not make use of it during valuation process due to its complex structure.

3. INDUSTRY AND COMPANY INFORMATION

3.1 A General View of Airlines Industry

Counting in its specific operations and effects on linked industries, airline industry can be easily conceived as a global economic actor which has taken a crucial part also in the making of a global economy (Belobaba et al. 2009). Aviation industry as a whole contributes $539 billion to world GDP –expected to be $1 trillion by 2026-, which would place it on 19th in the world in terms of GDP if it was a country[2]. Being such a giant, it is sensitive to the general state of the economy. Fuel prices, as an example, have a direct effect on the costs of airlines.

The industry has become more and more competitive after putting deregulation policies into practice; of those make cost efficiency, operating profitability and competitive behavior the number one issues instead of government policies with the beginning of 1980s (Belobaba et al. 2009). Although the industry shows a characteristic of sustained and rapid growth for the last 50 years, it has still not been highly profitable (Doganis 2010). According to the same author, growth rates vary a lot from one year to another (four-five years of downturn are likely to be followed by five-six years of high performance), since the industry seems to be cyclical and affected by outer factors. Another characteristic of the airlines industry is being capital intensive.

[2] Air Transport Action Group 2012, http://www.atag.org/facts-and-figures.html (accessed on 11th Apr 2014).

According to International Air Transport Association (IATA) data[3], passenger traffic – expressed in revenue passenger kilometers (RPK)[4] – grew by 5.3% in 2012, which indicates that air travel showed a 2.5 times faster growth than global GDP. In addition, Europe's contribution to international air travel growth during 2012 was 23%, which may look like a good performance if the Eurozone crisis is considered, but it should be noted that this particular statistic includes Turkey and Russia where growth rate was higher compared to Eurozone. Another detail from IATA data indicates that, in terms of generating highest margins and largest profits, Asia-Pacific was the best performer in 2012 while European airlines could only broke even, mostly due to the Eurozone crisis.

According to Malighetti et al. (2011), some of the main factors affect valuations in the airlines industry are revenues, EBITDA margin, cash-flows, and beta considering financial side, ownership structure, and firm size and age considering other sides along with industry specific determinants such as passengers, passenger load factor[5], number of routes and alliance agreements. The same authors note that low-cost airlines companies are likely to be valued greater than conventional ones by the market.

[3] Annual Review 2013, available on: http://www.iata.org/about/Documents/iata-annual-review-2013-en.pdf

[4] Revenue passenger miles/kms: "The basic measure of airline passenger traffic. It reflects how many of an airline's available seats were actually sold. For example, if 200 passengers fly 500 miles on a flight, this generates 100,000 RPMs." http://web.mit.edu/airlinedata/www/Res_Glossary.html (accessed on 14th Apr 2014)

[5] "Load factor represents the proportion of airline output that is actually consumed. To calculate this figure, divide RPKs by *Available Seat Kms*.(A measurement of airline output that refers to one aircraft seat flown one km, whether occupied or not.An aircraft with 100 passenger seats, flown a distance of 100 miles, generates 10,000 available seat miles.) Load factor for a single flight can also be calculated by dividing the number of passengers by the number of seats." http://web.mit.edu/airlinedata/www/Res_Glossary.html (accessed on 15th Apr 2014)

3.2 Turkish Airlines at a Glance

Turkish Airlines (THY) is the flag carrier airline of Turkey. The company was established in 1933. It has been a member of Star Alliance since 2008 - according to Malighetti et al. (2011), alliance membership contributes positively to an airline regarding its valuation . THY enjoyed three prizes at the 2013 Skytrax World Airline Awards in the following categories: "*Best Airline Europe*" (3rd consecutive year), "*Best Business Class Catering*" and "*Best Airline in Southern Europe*". As of December 2013, THY has flights to 201 international destinations in 105 countries as well as 43 domestic lines, and a total passenger number of 48.3 million during 2013[6]. The company steadily increases its global market share from 0.7% to 1.6% since 2007. Its fleet has 233 aircrafts with a considerably young average fleet age of 6.7 years. THY has already ordered 95 aircrafts from Boeing and 117 aircrafts from Airbus, of those will be delivered until 2021.

Being located on a natural hub, Istanbul, THY considers itself having a permanent competitive advantage since this "reduces flight time and introduces the flexibility to use a variety of aircraft of diverse capacity" [7]. In details, being located in such a geographic place allows THY to use narrow body aircrafts which enables the company to save costs[8]. The company is planning to increase its flight network by taking advantage of this situation.

[6] http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/trafik/sunum_aralik_2013.pdf

[7] http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/icerikler/turkish_airlines_fact_sheet_eng.pdf

[8] THY 2012 Annual Report, p.22.

The state (Republic of Turkey Prime Ministry Privatization Administration) owns 49% of THY, and 51% of the company is open to public. It employs a total of 23,160 people as of December 2013[9]. The company has the following subsidiaries and affiliates:

Name	Participation*
Turkish Technic	100%
HABOM	100%
THY HABOM	100%
Aydın Çıldır Airport Man.	100%
Sun Express	50%
Turkish Opet	50%
Turkish Ground Services	50%
Turkish Do&Co	50%
Turkish Engine Center	49%
Goodrich Turkish Technic	40%
Turkish Cabin Interior	51%
TSI Aviation Seats	50%
Turkbine Technic	50%
*Direct & indirect	

Table 1: Subsidiaries and affiliates of THY

THY is planning to follow a strategy of implementing more alliances and create more sub-brands for a better outcome regarding overall success.

[9] http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/finansal/2013_12_Months_Financial_Report.pdf

THY has been trying to raise its effectiveness and brand awareness through many sponsorship deals especially in Europe. The company had signed agreements with Manchester United and Barcelona, of those ended before the end of 2013. It still has ongoing agreements with clubs like Borussia Dortmund, Olympique de Marseille, and Aston Villa. The company has also some sponsorship deals with well-known athletes such as Lionel Messi, Kobe Bryant, Wayne Rooney, and Caroline Wozniacki as well as Europe-wide basketball organization, Euroleague. Additional to Europe, as stated in the company's 2012 annual report, THY has intentions to implement a growth strategy in Africa. The company has already been flying to 33 airports in 23 countries as of December 2012; and it is planning to increase these numbers.

4. THY'S VALUATION

After the literature review and presenting the company itself, a DCF valuation based on WACC rates and using FCFFs is considered proper to adopt for the actual valuation of THY. The reasoning behind this can be the following: a DCF approach incorporates FCFFs makes a better representative of the value that a company generates from its core business instead of the value comes from debt and cash. By this method, finding out the cash that is available to both equity and debt investors is going to lead us an outcome of Enterprise Value. The DCF valuation is going to have a first stage during 2014-2016, a second stage during 2017-2019, and a terminal stage. These three different stages are adopted due to changing levels of country risk, fuel costs forecasts, and personnel cost forecasts over time.

Through the next section I will present the assumptions used for the DCF valuation and state the reasoning behind them from time to time. After the DCF valuation results, I will go ahead with presenting the relative valuation results.

4.1 Assumptions

4.1.1 Sales Revenue

In this study, the most important metric of which sales revenue forecasts are based on is RPK. As it has already been mentioned in the footnote 4, RPK is "the basic measure of airline passenger traffic. It reflects how many of an airline's available seats were actually sold". Therefore, it is considered highly relevant for forecasting. Three different metrics are incorporated in a small algorithm to obtain a final RPK forecast both for international and domestic flights (Formula 21). Please refer to Appendix (1), (2), and (3) to see the overall outcome of forecasting for this section.

$$(21)\quad RPK\ f. = \big((1 + Passenger\ no\ forecast) \times (1 + ASK\ change\ forecast) - 1\big) * Passenger\ load\ factor\ forecast$$

In this formula, RPK is the Revenue Passenger Kilometers, representing how many of an airline's available seats were sold. ASK is available seat kilometers which is a measurement of airline output that refers to one aircraft seat flown one km, whether occupied or not. Load factor is calculated by dividing RPKs by ASKs which represents the proportion of airline output that is actually consumed.

Basically, this formula is trying to discover the compound effect of passenger no forecast and ASK change forecast with the first part in paranthesis. Being the biggest player

in Turkish market, it is highly likely that THY's passenger numbers will follow the trend of passenger number forecasts until 2016 of those announced by General Directorate of State Airports Authority (DHMI). These forecasts are seperated into two groups as international and domestic flights in the report. Following 2016, the forecast rates (percentages) are going to be reduced slightly by 5%. These passenger number forecasts are then incorporated in a formula with the ASK forecasts[10] to discover the compound effect of them both. Finally, the value obtained in paranthesis is multiplied by the passenger load factor forecasts (varies for international and domestic passengers) which were based on average of previous five year's numbers, since it is not reasonable to assume a 100% load factor all the time and compute the RPK forecasts on this assumption. Please refer to Appendix (4), (5), and (6) to see the forecasting inputs used in this study.

4.1.2 Costs and Expenses

In this study, I chose to forecast the cost of sales initially with a reasoning to obtain gross profit forecasts before expenses. Please refer to Appendix (1), (2), and (3) to see the relevant numbers. Cost of sales items are tried to be predicted one by one with a focus on fuel and personnel expenses bearing in mind that they are the most contributing ones to overall costs (Appendix 7,8 and 9). These two items were forecasted using different methods to be explained in the following paragraphs. Rest of the items' forecasts are based on previous five year's average except an item of which forecasts are already available in the annual reports -operational lease expenses-.

[10] ASK forecasts were computed using the compound effect of fleet development numbers in the following years from the Annual Report presentation (2013), and total flight kilometers forecasts (based on last five year average). Please refer to Appendix (4), (5), and (6) to see forecasting inputs.

While calculating the forecasts for fuel costs, commodity price forecasts obtained from Bloomberg is made use of, as well as reports from EIA (U.S Energy Information Administration) and World Bank Commodity Market Outlook. Fuel costs are computed as 'per ASK'. Fuel cost per ASK forecasts are the most challenging ones to compute in overall study for the obvious uncertainty and unstability reasons since fuel prices are easily affected by political and possible military conflicts. Based on the reports and forecasts from various sources, it is chosen not to increase fuel costs per ASK until 2016, and then it is decided to be increased by 0.50% in 2017, and 1% per year for 2018-19 with a reasoning that assuming no increase after the forecast period might not be realistic (Appendix 4, 5, and 6).

Personnel costs are also computed as per ASK. Even though THY obviously considers to grow, its proven success in terms of saving personnel costs are presumed to continue. Therefore, personnel costs per ASK is considered to increase the previous five years average where personnel number always grows steadily (Appendix 4, 5, and 6).

General administrative expenses and marketing & sales expenses are forecasted as a percentage of sales revenues based on previous three years ratios. THY's operating profit after expenses had not been stable during the period of time between 2009-2011, therefore it is considered more suitable to rely on previous three years ratios where stable increase occurs. Another reasoning for using previous three years for these two kind of expenses would be THY's developing marketing policy to raise brand awareness for the last three years. (Appendix 1,2, and 3)

4.1.3 EBITDA Margins

Having obtained operating profits and EBIT margins depending on them, the challenge faced is deciding the forecasts for depreciation and amortization. Based on the annual report presentation (2013), upcoming six years' fleet development pace will be 80.21% of the previous five years fleet development in terms of percentage change.

Fleet development (increase by percent)			
Prev. 10Y Average	**2009-13 average**	**2013-19 average**	**Ratio ('13-'19/'09-''13)**
11.54%	15.27%	8.41%	55.09%
Total growth (Δ) between:	**2009-13**	**2013-19**	**Ratio ('13-'19/'09-''13)**
	76.52%	61.37%	80.21%

Table 2: Fleet development (averages, total growth, and ratios among different years)

Depreciation and amortization is presumed to follow this trend, and reflect 80% of the average of previous five years depreciation and amortization rate compared to sales revenue (Appendix 10 and 11). After deciding the forecasts for depreciation and amortization, EBITDA margins for the upcoming years are going to represent the trend in Figure 1.

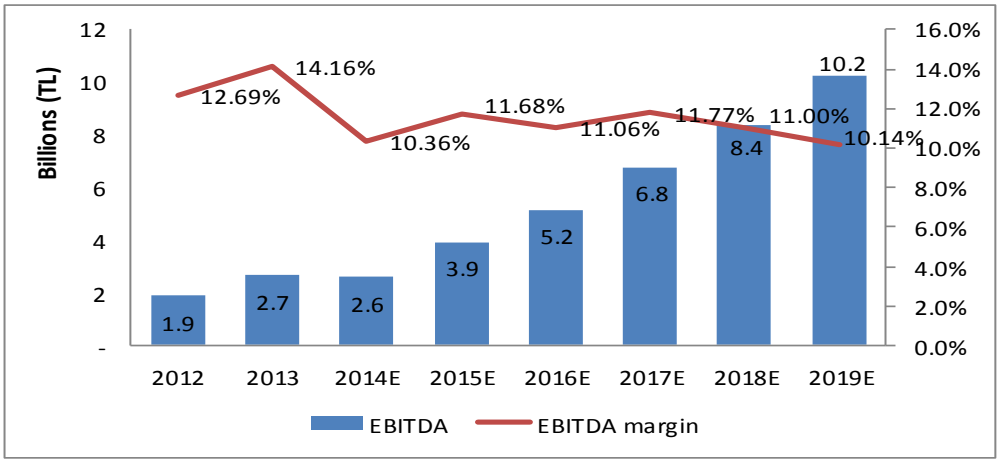


Figure 1: EBITDA Margins

Please refer to Appendix (16) and (17) for the relevant calculations in Figure 1.

4.1.4 Cost of Equity

CAPM is implemented to compute cost of equity for THY. Formula (3) was made use of during calculations with a little difference. An additional country risk premium using Damodaran's approach based on sovereign ratings (Moody's Baa3) is applied on top of computed cost of equity, considering Turkey being an emerging, and obviously not the most stable market in economic and political terms.

(21) $$K_e = R_F + \beta\,(R_M - R_F) + Add.country\ risk$$

Ke, Cost of equity, (Using CAPM)	2014-16	2017-19	Terminal
Risk free rate (Rf)	9.20%	9.20%	9.20%
Beta	1.13	1.13	1.13
Expected market return (Rm)	15.42%	15.42%	15.42%
Additional country risk premium (rating based)	2.20%	2.43%	3.43%
Ke, Cost of equity	**18.43%**	**18.66%**	**19.66%**

Table 3: Cost of equity calculations for THY

In Table 2, Risk free rate (Rf) was obtained from Bloomberg using 10Y Turkish Government Bonds. Beta, and Expected market return (Rm) were as well acquired from Bloomberg. Three different additional country risk premium for Turkey are calculated bases on Damodaran's approach that puts ratings into use (Moody's Baa3). As the time passes, additional country risk premium is considered to increase due to growing uncertainty. It is assumed that Turkey's additional country risk premium will be on the

same level of Western European countries' average (obtained from Damodaran) in the medium term. Then in the long term an additional 1% risk applied on top of Western European countries average of 2.43%.

4.1.5 Cost of Debt

An approach of adding a spread on top of bond rate (Rf) is employed to compute cost of debt.

(22) $$K_d = Bond\ rate\ (Rf) + Spread$$

By the help of Damodaran's synthetic rating estimation approach, a rating and spread is discovered that can be considered suitable for THY.

	2014	
Kd, Cost of debt		
Synthetic rating estimation (Damodaran)		
EBIT, (2013)	1,417,506,979	
Interest expense, (2013)	272,577,511	
Debt value of operating leases (Damodaran)	835,154,822	
Interest coverage ratio	**4.18**	
Corresponding rating	**A-**	
Corresponding spread	**1.30%**	
Pre-tax Cost of debt	**10.50%**	
After-tax Cost of debt	**8.40%**	**7.43%**

Table 4: Cost of debt calculations for THY

To assign a synthetic rating to THY, which will lead discovering a spread; it is first required to find out an interest coverage ratio. Including a circular reference in the calculations, the following approach had been followed:

(23) $$Interest\ coverage\ ratio = \frac{EBIT + (D.value\ of\ op.leases * Pretax\ cost\ of\ d.)}{Interest\ exp. + (D.value\ of\ op.leases * Pretax\ cost\ of\ d.)}$$

The interest coverage ratio value then used to find out corresponding rating, and spread. There are two after-tax cost of debt values computed. For the first value (8.40%), the tax rate applied is the one in THY's statements (20%). The second one (7.43%) is computed using the effective tax-rate of which is 29.27% for the FY 2013. This second value with effective tax rate is then chosen to be used during WACC computation as a best assumption, because firms usually defer taxes for tax saving reasons and this creates a deviation from the standard tax rate. Effective tax rate would also be a better representative of what a company is paying instead of what it should be paying. It can display a better picture of the additional tax burden for each unit of pre-tax profit. Unlike cost of equity calculations, there are not three different cost of debts are computed for three different stages.

4.1.6. Capital Structure and WACC

Capital structure of THY is distributed in the following way with a weight of 64.02% on debt.

Capital structure		2013
Total equity - E		6,962,490,356
	Total %	35.98%
Short term borrowings		1,188,220,823
Long term borrowings		10,364,269,509
Total debt - D		**12,387,645,154**
	Total %	**64.02%**
Total - E+D		**19,350,135,510**

Table 5: Capital structure of THY

Based on this capital structure, and assuming it is not going to change dramatically over the next years three different WACC rates are calculated for three different stages.

	2014-16	2017-19	Terminal
WACC			
Share of Equity (%)	35.98%	35.98%	35.98%
Cost of equity	18.43%	18.66%	19.66%
Share of Debt (%)	64.02%	64.02%	64.02%
After-tax Cost of debt	7.43%	7.43%	7.43%
WACC	**11.39%**	**11.47%**	**11.83%**

Table 6: WACC Calculations

As it is shown in Table 6, 11.39% of discount rate will be applied to the unlevered free cash flows forecasts between 2014-2016, and 11,47% is to be applied between 2017-2019, and a 11.83% discount rate for the terminal period respectively.

4.2 DCF Valuation

To implement the DCF valuation method, future FCFF values are needed to be estimated. Taking formula 9 (p.10) into account, working capital needs and capital expenditure forecasts are required to come up with FCFF forecasts.

Working capital items (e.g. trade payables/receivables, inventories, passenger flight liabilities) are forecasted one by one based on their percentage compared to sales revenues –or cost of sales for inventory and trade payables-. The base approach is to use previous five year's average for these items. Please refer to Appendix (12) and (13) to see the forecasts.

While estimating CapEx forecasts, the fleet development rates in Table 2 are consulted again. Factoring these ratios in together with the company's fleet development plan, it can be assumed that investments on P&E will follow the same trend. A 5.07% year

over year change is presumed based on previous five year's average percentage change multiplied by the relative fleet development rate of ~80% except 2017 since the company does not plan to develop their fleet during that year.

Having obtained all the forecasts for EBIT*(1-T), depreciation and amortization, working capital needs, and CapEx, FCFFs are computed. These FCFFs are then discounted on two different WACCs depending on their year, and a third WACC (11.83% in Table 6) rate is applied to terminal value. After the necessary calculations a share price of 8.08 Turkish Liras is discovered for THY. It offers us a 25.53% potential increase compared to 6.44 TRY of share price on December 31st, 2013. This difference might stem from the planned fleet and route development plan of THY that will try to meet the increasing passenger demand, in case the company implements a successful cost-saving program and manages to hedge itself especially against the fuel costs. Please refer to Appendix (14) and (15) to see the calculations.

4.3 Relative Valuation

Before deciding the peer group for THY, a company basket had been constituted which included twenty companies[11] of those found suitable initially. There are companies in this initial list from various geographies of the world even though airlines based in/around Europe have more weight. The reasoning behind this is to have a better idea about the global picture, and to have bigger chances to find out companies which have a potential to be considered similar to THY. A number of sixteen metrics are chosen for

[11] Air France-KLM, Intl Consolidated Airline, Lufthansa, Aeroflot-Russian Airlines, SAS AB, China Eastern Airlines, Hainan Airlines, Cathay Pacific Airways, Singapore Airlines, Thai Airways, AER Lingus, Easyjet, Ryanair, Norwegian Air Shuttle, Air Arabia, Delta Airlines, American Airlines, United Airlines, Garuda Indonesia, Copa Holdings.

comparison, some of those related with margins (EBITDA, operating profit, pretax profit, net profit), some related with liquidity ratios (current, quick), some related with profitability ratios (ROA, ROE), some related with investment valuation ratios (PBV, NFY PE, PS, NTM EV/EBITDA), and some individual basic metrics like Debt/EV, Market Cap, and Revenue one-year growth.

Nine companies[12] out of those initial twenty are chosen to be in the peer group after those metrics are analyzed. Using the PBV, NFY PE, PS, NTM EV/EBITDA ratios belonging to these nine companies, different market values for THY are discovered.

THY Market value	PBV	NFY PE	PS	NTM EV/EBITDA
Peer group average values	2.32	12.53	0.52	5.23
THY value (Actual book value, earnings, sales, and EBITDA)	6,962,490,356	965,244,255	18,776,784,325	2,658,034,138
Enterprise value	N/A	N/A	N/A	13,910,378,657
- Net debt (-)	N/A	N/A	N/A	11,552,490,332
- Financial investments (+)	N/A	N/A	N/A	513,555,407
- Cash&cash equivalents (+)	N/A	N/A	N/A	1,338,983,835
Equity value	16,122,620,456	12,090,059,701	9,670,043,927	4,210,427,567
Average (PBV, PE, PS)	12,627,574,695			
Price	11.68	8.76	7.01	3.05
Price (if average of PBV, PE, PS was considered)	9.15			

Legend

PBV: Price-to-book value NFY PE: Next fiscal year price-to-earnings

PS: Price-to-earnings NTM EV/EBITDA: Next 12 months Enterprise value/EBITDA

Table 7: Relative valuation results

It turns out that a share price of 9.15 TRY obtained which is 13.2% higher than the one obtained in DCF valuation which was 8.08 TRY.

[12] Air France-KLM, Lufthansa, Aeroflot-Russian Airlines, SAS AB, Cathay Pacific Airways, Norwegian Air Shuttle, Air Arabia, Garuda Indonesia, United Airlines.

5. CONCLUSIONS

Throughout this project, the main aim has been obtaining a share price for THY to come up with an idea of company's potential in terms of growing. After the literature review and following industry and company information chapters the actual valuation chapter started with my assumptions. I had presented different assumptions for sales revenue, costs and expenses, EBITDA margins, cost of equity, cost of debt and capital structure of those guided me obtaining three different discount rates (WACC). Forecasting future fuel and personnel costs was a real challenge during this project besides all the other assumptions. Three different discount rates (WACC) were later applied to the cash-flows for DCF valuation's three different stages respectively for 2014-'16, 2017-'19, and a terminal stage. I also applied relative valuation method right after DCF to see THY's position compared to how other companies in airline industry are being evaluated.

A further research idea in scope of this project might be elaborating on which tax rate to incorporate during cost of debt calculations. I decided to apply effective tax rate instead of a statutory tax rate with a reasoning that it would make a better representative of what a company is paying instead of what it should be paying. Additionally, companies usually defer taxes for tax saving reasons and this creates a different tax burden for them compared to what they would have with the statutory tax rates. On the other hand, according to Damodaran's Q&A section in his web-site, it is not feasible to assume companies will defer their taxes in perpetuity.

Using the DCF valuation method, I ended up with a share price of 8.08 Turkish Liras for THY. It offers us a 25.53% potential increase compared to 6.44 TRY of share

price on December 31st, 2013. The market cap discovered for THY using DCF valuation method was ~11.16B.

Using the relative valuation method, twenty companies were analyzed initially on sixteen different metrics. This analyze led me nine comparable companies for THY of those are the following; Air France-KLM, Lufthansa, Aeroflot-Russian Airlines, SAS AB, Cathay Pacific Airways, Norwegian Air Shuttle, Air Arabia, Garuda Indonesia, United Airlines. After the necessary estimations I ended up having a share price of 11.68 TRY using price-to-book value multiple. Using price-to-earnings multiple the result I had was 8.76 TRY. Finally, using price-to-sales multiple I had a share price of 7.01 TRY.

APPENDIX

Appendix 1: Sales revenue, costs and expenses forecasts 2014-15

Income Statement	2014E	Sales %	2015E	Sales %
Sales revenue	25.131.458.439	100,00%	33.660.333.403	100,00%
Cost of sales	(20.721.054.728)	82,45%	(27.309.723.824)	81,13%
Gross profit	**4.410.403.711**	**17,55%**	**6.350.609.579**	**18,87%**
General administrative expenses	(663.946.798)	2,64%	(889.270.737)	2,64%
Marketing and sales expenses	(2.681.571.841)	10,67%	(3.591.618.148)	10,67%
Other operating income	337.542.435	1,34%	452.094.371	1,34%
Other operating expenses	(184.785.110)	0,74%	(247.495.721)	0,74%
Operating profit	**1.217.642.398**	**4,85%**	**2.074.319.345**	**6,16%**
Income from investment activities	251.314.584	1,00%	336.603.334	1,00%
Share of investments' profit/loss by using the equity method	22.679.863	0,09%	30.376.738	0,09%
Operating profit before financial income/expense	**1.491.636.844**	**5,94%**	**2.441.299.417**	**7,25%**
Financial income	323.045.631	1,29%	432.677.780	1,29%
Financial expenses (including interest)	(665.787.222)	2,65%	(891.735.748)	2,65%
Profit before tax from continuing operations	**1.148.895.253**	**4,57%**	**1.982.241.449**	**5,89%**
Tax expense of continuing operations	(346.558.260)	1,38%	(464.169.901)	1,38%
Net profit for the period	**802.336.993**	**3,19%**	**1.518.071.549**	**4,51%**

Appendix 2: Sales revenue, costs and expenses forecasts 2016-17

Income Statement	2016E	Sales %	2017E	Sales %
Sales revenue	46.601.369.490	100,00%	57.391.566.629	100,00%
Cost of sales	(38.097.492.180)	81,75%	(46.512.024.718)	81,04%
Gross profit	**8.503.877.310**	**18,25%**	**10.879.541.911**	**18,96%**
General administrative expenses	(1.231.159.350)	2,64%	(1.516.225.052)	2,64%
Marketing and sales expenses	(4.972.449.986)	10,67%	(6.123.783.439)	10,67%
Other operating income	625.906.363	1,34%	770.830.281	1,34%
Other operating expenses	(342.647.810)	0,74%	(421.985.337)	0,74%
Operating profit	**2.583.526.526**	**5,54%**	**3.588.378.364**	**6,25%**
Income from investment activities	466.013.695	1,00%	573.915.666	1,00%
Share of investments' profit/loss by using the equity method	42.055.365	0,09%	51.792.969	0,09%
Operating profit before financial income/expense	**3.091.595.586**	**6,63%**	**4.214.086.999**	**7,34%**
Financial income	599.024.877	1,29%	737.724.589	1,29%
Financial expenses (including interest)	(1.234.572.057)	2,65%	(1.520.427.946)	2,65%
Profit before tax from continuing operations	**2.456.048.406**	**5,27%**	**3.431.383.642**	**5,98%**
Tax expense of continuing operations	(642.624.444)	1,38%	(791.419.309)	1,38%
Net profit for the period	**1.813.423.961**	**3,89%**	**2.639.964.334**	**4,60%**

Appendix 3: Sales revenue, costs and expenses forecasts 2018-19

Income Statement	2018E	Sales %	2019E	Sales %
Sales revenue	76.262.459.725	100,00%	100.715.796.206	100,00%
Cost of sales	(62.394.048.179)	81,81%	(83.257.652.989)	82,67%
Gross profit	**13.868.411.546**	**18,19%**	**17.458.143.217**	**17,33%**
General administrative expenses	(2.014.774.274)	2,64%	(2.660.805.800)	2,64%
Marketing and sales expenses	(8.137.341.691)	10,67%	(10.746.556.699)	10,67%
Other operating income	1.024.286.610	1,34%	1.352.721.140	1,34%
Other operating expenses	(560.738.130)	0,74%	(740.537.185)	0,74%
Operating profit	**4.179.844.061**	**5,48%**	**4.662.964.673**	**4,63%**
Income from investment activities	762.624.597	1,00%	1.007.157.962	1,00%
Share of investments' profit/loss by using the equity method	68.822.990	0,09%	90.890.882	0,09%
Operating profit before financial income/expense	**5.011.291.648**	**6,57%**	**5.761.013.517**	**5,72%**
Financial income	980.295.452	1,29%	1.294.624.345	1,29%
Financial expenses (including interest)	(2.020.359.119)	2,65%	(2.668.181.409)	2,65%
Profit before tax from continuing operations	**3.971.227.981**	**5,21%**	**4.387.456.453**	**4,36%**
Tax expense of continuing operations	(1.051.645.506)	1,38%	(1.388.852.587)	1,38%
Net profit for the period	**2.919.582.475**	**3,83%**	**2.998.603.866**	**2,98%**

Appendix 4: Forecasting inputs 2014-15

Forecasting inputs/rates	2014E		2015E	
	% Change 13/14		% Change 14/15	
Domestic flights passenger increase		16,22%		13,95%
International flights passenger increase		9,65%		10,00%
Passenger numbers	12,38%	54,281,520	11,70%	60,632,401
International	9,65%	30,921,300	10,00%	34,013,430
Domestic	16,22%	23,360,220	13,95%	26,618,971
Revenue passenger kilometers (RPK)	37,80%	126,776,184,092	34,76%	170,844,667,923
International	36,71%	108,954,824,018	34,03%	146,034,470,201
Domestic	44,88%	17,821,360,074	39,22%	24,810,197,722
International Passenger load factor	N/A	76,00%		76,00%
Domestic Passenger load factor	N/A	78,47%		78,47%
Projected passenger load factor (general)	N/A	80,50%	2,39%	82,43%
Revenue ton kilometers - cargo	24,72%	14,431,402,489	24,72%	17,998,909,152
Total cargo and mail tons (i.crg+d.crg+i.mail+d.mail)	24,22%	702,352	24,22%	872,490
Available ton kilometers - cargo	N/A	N/A	N/A	N/A
Total flight kilometers	22,15%	843,523,359	22,15%	1,030,351,155
Fleet development	10,73%	258	7,75%	278
Available seat kilometers (ASK)	35,25%	157,480,948,191	31,62%	207,272,296,592
Fuel costs per ASK	0,00%	0,056	0,00%	0,056
Personnel costs per ASK	1,39%	0,020	1,39%	0,020
Personnel number	11,16%	25,744	11,16%	28,617
Other costs per ASK	4,73%	0,058	4,73%	0,061
Other costs total	41,65%	9,165,506,868	37,84%	12,633,578,733

Appendix 5: Forecasting inputs 2016-17

Forecasting inputs/rates	% Change 15/16		% Change 16/17	
Domestic flights passenger increase	-26,88%	10,20%	-5,00%	9,69%
International flights passenger increase	-20,00%	8,00%	-5,00%	7,60%
Passenger numbers	8,97%	66.068.610	8,53%	71.702.907
International	8,00%	36.734.504	7,60%	39.526.327
Domestic	10,20%	29.334.106	9,69%	32.176.581
Revenue passenger kilometers (RPK)	39,58%	238.467.333.829	23,04%	293.406.588.258
International	39,05%	203.055.035.267	22,64%	249.017.849.418
Domestic	42,73%	35.412.298.561	25,35%	44.388.738.840
International Passenger load factor		76,00%		76,00%
Domestic Passenger load factor		78,47%		78,47%
Projected passenger load factor (general)	-0,42%	82,08%	2,01%	83,73%
Revenue ton kilometers - cargo	24,72%	22.448.319.275	24,72%	27.997.643.303
Total cargo and mail tons (i.crg+d.crg+i.mail+d.mail)	24,22%	1.083.842	24,22%	1.346.392
Available ton kilometers - cargo	N/A	N/A	N/A	N/A
Total flight kilometers	22,15%	1.258.558.511	22,15%	1.537.310.379
Fleet development	14,75%	319	-1,25%	315
Available seat kilometers (ASK)	40,16%	290.519.504.695	20,62%	350.415.504.939
Fuel costs per ASK	0,00%	0,056	0,50%	0,057
Personnel costs per ASK	1,39%	0,020	1,39%	0,021
Personnel number	11,16%	31.811	11,16%	35.360
Other costs per ASK	4,73%	0,064	4,73%	0,067
Other costs total	46,79%	18.544.583.871	26,32%	23.425.117.463

Appendix 6: Forecasting inputs 2018-19

Forecasting inputs/rates	% Change 17/18		% Change 18/19	
Domestic flights passenger increase	-5,00%	9,21%	-5,00%	8,75%
International flights passenger increase	-5,00%	7,22%	-5,00%	6,86%
Passenger numbers	8,11%	77.518.723	7,71%	83.498.525
International	7,22%	42.380.128	6,86%	45.286.980
Domestic	9,21%	35.138.596	8,75%	38.211.545
Revenue passenger kilometers (RPK)	33,49%	391.675.463.806	32,58%	519.278.746.881
International	33,01%	331.230.983.522	32,11%	437.602.221.739
Domestic	36,17%	60.444.480.284	35,13%	81.676.525.142
International Passenger load factor		76,00%		76,00%
Domestic Passenger load factor		78,47%		78,47%
Projected passenger load factor (general)	-0,22%	83,55%	-0,41%	83,21%
Revenue ton kilometers - cargo	24,72%	34.918.784.827	24,72%	43.550.863.215
Total cargo and mail tons (i.crg+d.crg+i.mail+d.mail)	24,22%	1.672.541	24,22%	2.077.697
Available ton kilometers - cargo	N/A	N/A	N/A	N/A
Total flight kilometers	22,15%	1.877.801.613	22,15%	2.293.706.558
Fleet development	9,52%	345	8,99%	376
Available seat kilometers (ASK)	33,78%	468.791.797.354	33,12%	624.075.168.097
Fuel costs per ASK	1,00%	0,057	1,00%	0,058
Personnel costs per ASK	1,39%	0,021	1,39%	0,021
Personnel number	11,16%	39.306	11,16%	43.692
Other costs per ASK	4,73%	0,070	4,73%	0,073
Other costs total	40,10%	32.819.739.732	39,42%	45.756.067.987

Appendix 7: Cost of sales breakdown 2014-15

Cost of sales breakdown	2014E	Sales %	2015E	Sales %
Fuel expenses	8,889,864,019	35.37%	11,700,606,027	34.76%
Personnel expenses	3,100,987,729	12.34%	4,138,093,495	12.29%
Depreciation expenses	1,543,240,160	6.14%	2,066,970,305	6.14%
Ground services expenses	1,481,406,889	5.89%	2,006,110,077	5.96%
Passenger service and catering expenses	1,114,769,660	4.44%	1,493,089,567	4.44%
Air traffic control expenses	1,117,540,714	4.45%	1,496,801,036	4.45%
Landing and navigation expenses	1,206,705,342	4.80%	1,616,225,506	4.80%
Maintenance expenses	761,951,406	3.03%	1,020,535,216	3.03%
Short term aircraft leasing expenses	344,273,279	1.37%	461,109,465	1.37%
Other airlines' seat rents	336,511,634	1.34%	450,713,747	1.34%
Operating lease expenses	306,818,229	1.63%	167,034,046	0.89%
Service expenses	122,878,506	0.49%	164,579,843	0.49%
Insurance expenses	122,084,159	0.49%	163,515,917	0.49%
Aircraft finance administrative fees	N/A	N/A	N/A	N/A
Other rent expenses	72,239,618	0.29%	96,755,611	0.29%
Transportation expenses	51,137,375	0.20%	68,491,890	0.20%
Tax expenses	29,353,990	0.12%	39,315,868	0.12%
Communication expenses	N/A	N/A	N/A	N/A
Utility expenses	18,681,711	0.07%	25,021,732	0.07%
Other expenses	100,610,309	0.40%	134,754,477	0.40%
Total cost of sales	20,721,054,728	82.45%	27,309,723,824	81.13%

Appendix 8: Cost of sales breakdown 2016-17

Cost of sales breakdown	2016E	Sales %	2017E	Sales %
Fuel expenses	16.399.945.017	35,19%	19.880.004.254	34,64%
Personnel expenses	5.880.596.037	12,62%	7.191.448.566	12,53%
Depreciation expenses	2.861.636.744	6,14%	3.524.227.242	6,14%
Ground services expenses	2.777.378.222	5,96%	3.420.459.292	5,96%
Passenger service and catering expenses	2.067.122.086	4,44%	2.545.748.682	4,44%
Air traffic control expenses	2.072.260.465	4,45%	2.552.076.813	4,45%
Landing and navigation expenses	2.237.598.810	4,80%	2.755.698.010	4,80%
Maintenance expenses	1.412.889.709	3,03%	1.740.033.711	3,03%
Short term aircraft leasing expenses	638.387.395	1,37%	786.201.202	1,37%
Other airlines' seat rents	623.994.944	1,34%	768.476.287	1,34%
Operating lease expenses	167.034.046	0,89%	167.034.046	0,89%
Service expenses	227.854.133	0,49%	280.612.047	0,49%
Insurance expenses	226.381.171	0,49%	278.798.031	0,49%
Aircraft finance administrative fees	N/A	N/A	N/A	N/A
Other rent expenses	133.954.228	0,29%	164.970.323	0,29%
Transportation expenses	94.824.250	0,20%	116.780.093	0,20%
Tax expenses	54.431.228	0,12%	67.034.370	0,12%
Communication expenses	N/A	N/A	N/A	N/A
Utility expenses	34.641.575	0,07%	42.662.572	0,07%
Other expenses	186.562.120	0,40%	229.759.178	0,40%
Total cost of sales	38.097.492.180	81,75%	46.512.024.718	81,04%

Appendix 9: Cost of sales breakdown 2018-19

Cost of sales breakdown	2018E	Sales %	2019E	Sales %
Fuel expenses	26,861,764,454	35.22%	36,117,094,762	35.86%
Personnel expenses	9,754,389,224	12.79%	13,165,701,124	13.07%
Depreciation expenses	4,683,026,687	6.14%	6,184,625,609	6.14%
Ground services expenses	4,545,138,847	5.96%	6,002,524,433	5.96%
Passenger service and catering expenses	3,382,815,067	4.44%	4,467,504,905	4.44%
Air traffic control expenses	3,391,223,948	4.45%	4,478,610,070	4.45%
Landing and navigation expenses	3,661,797,732	4.80%	4,835,942,553	4.80%
Maintenance expenses	2,312,173,348	3.03%	3,053,565,025	3.03%
Short term aircraft leasing expenses	1,044,711,636	1.37%	1,379,695,392	1.37%
Other airlines' seat rents	1,021,158,601	1.34%	1,348,590,145	1.34%
Operating lease expenses	167,034,046	0.89%	151,948,537	0.81%
Service expenses	372,879,957	0.49%	492,442,834	0.49%
Insurance expenses	370,469,475	0.49%	489,259,438	0.49%
Aircraft finance administrative fees	N/A	N/A	N/A	N/A
Other rent expenses	219,214,135	0.29%	289,504,511	0.29%
Transportation expenses	155,178,498	0.20%	204,936,033	0.20%
Tax expenses	89,075,909	0.12%	117,637,841	0.12%
Communication expenses	N/A	N/A	N/A	N/A
Utility expenses	56,690,431	0.07%	74,868,053	0.07%
Other expenses	305,306,182	0.40%	403,201,724	0.40%
Total cost of sales	62,394,048,179	81.81%	83,257,652,989	82.67%

Appendix 10: CapEx, Depreciation & amortization forecasts 2014-15-16

	2014E	2015E	2016E
Purchase of P&E and intangible assets	1,274,488,642	1,707,012,457	2,363,289,670
Revenue %	5.07%	5.07%	5.07%
Depreciation and amortization	1,311,202,536	1,756,185,962	2,431,368,398
Revenue %	5.22%	5.22%	5.22%
Provisions	96,175,448	128,814,555	178,338,539
Revenue %	0.38%	0.38%	0.38%

Appendix 11: CapEx, Depreciation & amortization forecasts 2017-18-19

	2017E	2018E	2019E
Purchase of P&E and intangible assets	2,363,289,670	3,867,488,987	5,107,588,111
Revenue %	**0.00%**	**5.07%**	**5.07%**
Depreciation and amortization	2,994,333,491	3,978,898,829	5,254,721,196
Revenue %	**5.22%**	**5.22%**	**5.22%**
Provisions	219,631,489	291,848,411	385,428,758
Revenue %	**0.38%**	**0.38%**	**0.38%**

Appendix 12: Working capital items forecasts 2014-15-16

	2014E	2015E	2016E
Change in current operating assets			
Trade receivables	(285,952,376)	(382,996,170)	(530,242,699)
Revenue %	**(1.14%)**	**(1.14%)**	**(1.14%)**
Other receivables related to operations	N/A	N/A	N/A
Revenue %			
Inventory	(103,897,912)	(139,157,796)	(192,658,337)
Cost of sales %	**(0.41%)**	**(0.41%)**	**(0.41%)**
Prepaid expenses	(81,412,407)	(109,041,374)	(150,963,370)
Revenue %	**(0.32%)**	**(0.32%)**	**(0.32%)**
Other current assets	N/A	N/A	N/A
Revenue %			
Change in current operating liabilities			
Trade payables	431,657,860	578,149,793	800,424,993
Cost of sales %	**1.72%**	**1.72%**	**1.72%**
Deferred income	59,654,790	79,899,865	110,618,129
Revenue %	**0.24%**	**0.24%**	**0.24%**
Passenger flight liabilities	510,961,884	684,367,260	947,478,778
Revenue %	**2.03%**	**2.03%**	**2.03%**
Other payables	N/A	N/A	N/A

Appendix 13: Working capital items forecasts 2017-18-19

	2017E	2018E	2019E
Change in current operating assets			
Trade receivables	(653,016,414)	(867,734,423)	(1,145,970,949)
Revenue %	**(1.14%)**	**(1.14%)**	**(1.14%)**
Other receivables related to operations	N/A	N/A	N/A
Revenue %			
Inventory	(237,266,929)	(315,282,552)	(416,376,988)
Cost of sales %	**(0.41%)**	**(0.41%)**	**(0.41%)**
Prepaid expenses	(185,917,805)	(247,049,348)	(326,265,005)
Revenue %	**(0.32%)**	**(0.32%)**	**(0.32%)**
Other current assets	N/A	N/A	N/A
Revenue %			
Change in current operating liabilities			
Trade payables	985,757,389	1,309,883,797	1,729,894,236
Cost of sales %	**1.72%**	**1.72%**	**1.72%**
Deferred income	136,230,926	181,024,951	239,070,076
Revenue %	**0.24%**	**0.24%**	**0.24%**
Passenger flight liabilities	1,166,860,374	1,550,535,165	2,047,709,768
Revenue %	**2.03%**	**2.03%**	**2.03%**
Other payables	N/A	N/A	N/A
Net change in operating working capital	**1,212,647,542**	**1,611,377,590**	**2,128,061,140**

Appendix 14: FCFF, Terminal value, and share price

	2013	2014E	2015E	2016E
Unlevered free cash-flow (FCFF)				
EBIT*(1-T) (+)	1,134,005,583	1,033,911,247	1,739,546,253	2,177,703,661
Depreciation and amortization (+)	1,240,527,159	1,311,202,536	1,756,185,962	2,431,368,398
Provisions (+)	-	-	-	-
Working capital needs (-)	468,456,465	531,011,838	711,221,578	984,657,494
CapEx (-)	1,092,367,554	1,274,488,642	1,707,012,457	2,363,289,670
Free cash-flow to firm	**813,708,723**	**539,613,302**	**1,077,498,180**	**1,261,124,895**
Discount rate	**N/A**	**11.39%**	**11.39%**	**11.39%**
Years from today	**N/A**	**1**	**2**	**3**
Discounted cash-flows	**N/A**	**484,456,652**	**868,482,551**	**912,588,363**
Present value of free cash-flows	**6,050,583,730**			
Terminal value	**30,588,605,624**			
Present value of Terminal value	**15,640,844,536**			
Enterprise value	**21,691,428,266**			
(-) Net debt	**(12,387,645,154)**			
(+) Financial investments	**513,555,407**			
(+) Cash and cash equivalents	**1,338,983,835**			
Equity value	**11,156,322,354**			
Share price	**8.08**			

Appendix 15: FCFF, Terminal value, and share price

	2017E	2018E	2019E	Terminal
Unlevered free cash-flow (FCFF)				
EBIT*(1-T) (+)	3,007,259,128	3,525,332,741	3,970,013,049	
Depreciation and amortization (+)	2,994,333,491	3,978,898,829	5,254,721,196	
Provisions (+)	-	-	-	
Working capital needs (-)	1,212,647,542	1,611,377,590	2,128,061,140	
CapEx (-)	2,363,289,670	3,867,488,987	5,107,588,111	
Free cash-flow to firm	**2,425,655,407**	**2,025,364,993**	**1,989,084,995**	
Discount rate	**11.47%**	**11.47%**	**11.47%**	**11.83%**
Years from today	4	5	6	
Discounted cash-flows	**1,571,187,402**	**1,176,933,444**	**1,036,935,318**	

Appendix 16: EBIT, EBITDA values and forecasts 2014-16

	2014E	2015E	2016E
EBIT	**1,292,389,059**	**2,174,432,816**	**2,722,129,576**
EBIT margin	**5.14%**	**6.46%**	**5.84%**
Depreciation and amortization	1,311,202,536	1,756,185,962	2,431,368,398
% Change	5.70%	33.94%	38.45%
EBITDA	**2,603,591,595**	**3,930,618,778**	**5,153,497,974**
EBITDA margin	**10.36%**	**11.68%**	**11.06%**

Appendix 17: EBIT, EBITDA values and forecasts 2017-19

	2017E	2018E	2019E
EBIT	**3,759,073,910**	**4,406,665,926**	**4,962,516,312**
EBIT margin	**6.55%**	**5.78%**	**4.93%**
Depreciation and amortization	2,994,333,491	3,978,898,829	5,254,721,196
% Change	23.15%	32.88%	32.06%
EBITDA	**6,753,407,401**	**8,385,564,755**	**10,217,237,508**
EBITDA margin	**11.77%**	**11.00%**	**10.14%**

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