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Delta Air Lines Valuation

Equity Valuation

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Abstract

Title: Delta Air Lines Valuation
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Delta Air Lines is a company within the airlines industry, mainly operating with the transportation of people and cargo.

The purpose of my thesis is to achieve the Enterprise value of Delta Air Lines, by applying different Firm Valuation methodology. With this, it is expected to give a formal opinion on the company's shares.

The chosen methodologies to perform the valuation model was the Discounted Cash Flows valuation (DCF) and the Multiples model. The DCF valuation was based on four main assumption: number of seats available, number of miles travelled, number of passengers and number of planes. For the Multiples valuation, the information from similar companies within the same industry was used, with the purpose of serving as benchmarked to the DCF model.

In the end, the models created were compared with two different investments reports (Raymond James' e Cowen'). This comparison yield that all models analysed reached similar share price between $64 to $67. Since the company's shares are currently valued as $56, there is a favourable opinion to buy Delta Air Lines market share.

Key words: Firm Valuation, DCF Model, Multiples Model, Airlines Company's industry

Abstracto

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A Delta Air Lines é uma empresa que opera no sector dos transportes aéreos, principalmente de pessoas e carga, sendo conhecida como a empresa líder de mercado nos Estados Unidos.

O objetivo desta tese é avaliar a companhia aérea Delta Air Lines, aplicando as metodologias de avaliação de empresas, e posteriormente emitir uma opinião formal e objetiva da mesma.

Para a avaliação da empresa, foram utilizados os modelos de avaliação Fluxos de Caixa descontados e os modelos dos Múltiplos. No que diz respeito aos Fluxos de Caixa descontados, este teve por base quatro principais pressupostos: número de lugares disponíveis, número de milhas percorridas, número de passageiros e número de aviões. Quanto à construção do modelo dos Múltiplos, foram retiradas as informações de empresas similares do mesmo sector de atividade da Delta Air Lines, com objetivo de funcionar como referencia para os valores praticados no mercado.

Para concluir, os modelos criados irão ser comparados com dois relatórios de investidores (Raymond James' e Cowen'). Através da comparação entre estes relatórios de investimentos e os modelos desenvolvidos na tese, foi possível concluir que ambos chegavam a uma valorização aproximadamente igual. Encontrando-se as ações avaliadas entre os $64 e $67. Uma vez que, atualmente a empresa se encontra com um preço por ação de $56, existe um parecer favorável quanto à compra de ações da Delta Air Lines.

Palavras Chave: Avaliação de empresa, Fluxos de Caixa Descontados, Modelo dos Múltiplos, industria das companhias aéreas

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1. Introduction

The purpose of this paper is to evaluate Delta Air Lines, a public company in the stock market and to give a supported opinion to investors on whether to buy or sell the company's stocks.

Delta Air Lines operates in the aircraft industry since 1924. Due to its continuing effort to innovate, it has been growing over the time, currently leading the aircraft business. This paper will be structured in four main stages:

1. **Literature Review:** aims to understand the most suitable model to analyse the chosen company. Hence, taking into consideration the literature available, it will be further investigated the Discounted Cash flows Model and the Multiples Model, analysing the different possibilities to calculate and achieve the enterprise value.
2. **Company Overview**: the main purpose is to examine the company, getting a deeper knowledge of its history, values, strategy and financials. This overview enables to understand the company's value and strategy drivers, allowing to better predict Delta's financial behaviour and to get a critical opinion upon the model and the results achieved.
3. **Results' Discussion and Results' comparison with investors report:** analyses the achieved results for Delta Air Lines' enterprise value. Here, it will be discriminated the model's construction and the meaning of the achieved value for the enterprise value.
4. **Conclusion:** To better sustain the company's evaluation, the conclusion aims to compare the values obtained with an investment report. The company that provided the investment report on Delta Air Lines was Raymond James & Associates. The conclusion will also include a reflection on the limitations found in the thesis and future steps to be taken.

2. Literature Review

To choose the most suitable valuation model to analyse Delta Air Lines, a deeper analysis to the different valuation methods was conducted. As such, during this section it will be investigated the main valuation models: Discounted Cash Flow (DCF) & WACC; Discounted Cash Flow (DCF) & APV; and Multiples Model.

2.1. Cash Flow Valuation

The Discounted Cash Flow (DCF) model is a widely used model in the economic world (Luehrman, 1997). The DCF Model enables investors to value a company based on their future cash flows. The objective is to predict the future cash flows that the company will generate based on present assumptions and discounting them into the present. The importance to discount the cash flows relies on the *"Time value of Money"* principle that states that the money is worth more today than in the future (Beneda, 2003). This model gives the enterprise value (EV) of the company considering both equity and debt (Goldman Sachs Analysts, 1999). The DCF Model calculation requires at least a five year forecast to achieve the EV and the calculation of the Terminal Value (TV) (Goldman Sachs Analysts, 1999). According to Goldman Sachs' Analysts, the key for having a proper DCF valuation relies on a long-term balance between *"the spread between the return and the cost of capital and the capital stock."* (1999).

To resume, the DCF model is guided through three main questions such as *"How much it generates in cash flows, when these cash flows are expected to occur, and the uncertainty associated with the cash flows."* (Weitzel, Gellings, Beimborn, & Konig, 2003).

The better suit the DCF valuation model, it will be done a detailed analysis on the different methods considering existent sources of information present in the literature. Following a simple ideology, the DCF model divides into seven main stages (Vaidya's, 2019): 1st Financial Statements Forecast; 2nd Calculation of the Free Cash Flows (FCF); 3rd Discount Rate; 4th Calculate Terminal Value; 5th Achieve the Enterprise Value; 6th Do adjustments on the Model; 7th Sensitivity & Scenarios Analysis.

2.1.1. Financial Statements Forecast

The projections are an important part of the model. It is the foundation for all the calculation. To better predict it is important to:

1. Categorise in which stage the company is in: Considering the life cycle on sales, the cash available and profit generated (Vaidya's, 2019);
2. Analyse the historical data;
3. Understand the growth of the industry it is included.

As stated by Schill (2014):

> *"Care should be taken to ensure that the cash-flows forecast is fully consistent with broader macroeconomic expectations as well as industry trends and competitive impact. Good cash-flows are grounded in the economic reality facing the firm."* (Schill, 2014)

This will enable to observe the trend and risk associated in order to conclude the suitable growth rate to apply for the financial statements. As to the forecasted period it *"(...) should be as long as one can expect abnormal profitability or growth to be maintained."* (Schill, 2014). The abnormal returns can be defined when the Expected Return on Capital (ROC) is different from the Cost of capital (Schill, 2014). It is crucial that the projection of the cash flows calculated reflects, as much as possible, a truthful approximation of the business reality *"(...) growth, profits, and assets efficiency."* (Schill, 2014). The estimations should be between five and ten years.

2.1.2. Calculation of the Free Cash Flows (FCF)

The essential idea behind the calculation of the FCF is to attain the amount of cash available to the investors after retrieving all the costs and expenses associated (Beneda, 2003) (Schill, 2014). This method is mostly used in companies that are already with a steady growth. For companies are in development (start-ups), the cash flows can appear to low or even negative meaning that the company is obtaining their funds from investors (Beneda, 2003). The free cash flows are flexible in a way that it is possible to do the necessary adjustment to achieve the most suitable method for the company in question (Beneda, 2003) (Weitzel, Gellings, Beimborn, & Konig, 2003). The possible adjustments can be *"after-tax interest income, increases in marketable securities and other non-operating cash flows"* (Beneda, 2003).

$$FCF = NOPAT + Depreciation\ \&\ Amortization - CAPEX - \Delta WC$$

Exhibit 1. Free Cash Flow Formula

"Although the mechanic are straightforward, a proper estimation of business cash flows is not an easy task" (Schill, 2014). This model should be reflection of the future of the business accounting for the profits, its potential growth and others. Other important aspect to have into consideration is to that the cash flows should be consistent with the macroeconomic expectations (Schill, 2014). This model can be analysed taking into consideration two different perspectives, either we calculated the value based on the equity (FCFE) or in the firm value (FCFF) (CFI, 2019). The approach selected will depend on the importance given to the investors, better explained bellow.

2.1.2.1. Free Cash Flow to the Firm (FCFF)

The FCFF is the model most commonly used to evaluate firms for considering that the value of the firm relies in the cash available to for both equity and debt holders after expenses. When performing the evaluation, should be consider the unleveraged value of the firm to achieve the Enterprise value (CFI, 2019). This model excludes the effect of net debt and interest expenses. So, to achieve the Enterprise value the cash flows must be discounted by the weighted average cost of capital (WACC) (CFI, 2019).

$$FCFF = EBIT(1-t) + Depreciation\ \&\ Amortization\ - Capital\ Expenditures - \Delta WC$$

Exhibit 2. Free Cash Flow to Firm Formula

2.1.2.2. Free Cash Flow to the Equity (FCFE)

This FCFE, contrary from the FCFF gives more relevance to the Equity Value of the company. In other words, the value of the company is represented by the money available to distribute to its Equity holders. When performing the evaluation, should be consider the leveraged value of the firm to achieve the Equity value (CFI, 2019). This model includes the effect of net debt and interest expenses. So, to achieve the Equity value the cash flows must be discounted by the cost of capital (CFI, 2019).

$$FCFE = Net\ Income + Depreciation\ \&\ Amortization\ - Capital\ Expenditures - \Delta WC - \text{Interest x } (1-t) + \Delta\ Net\ Debt$$

$$Or \quad FCFE = FCFF - \text{Interest x } (1-t) + \Delta\ Net\ Debt$$

Exhibit 3. Free Cash Flow Equity Formula

2.1.3. Discount Rate

The discount rate is the key to reach to the value of the present value of the future cash flows. It *"should compensate the investors for the risk of the cash flows"* (Schill, 2014). This enables the investors to know if there is an opportunity cost in their investment, meaning if the investment to be made is worth more or less the cost at the present moment (Weitzel, Gellings, Beimborn, & Konig, 2003). The most used methods to do this step are either the Weighted Average Cost of Capital (WACC) or Adjusted Present Value (APV) (Koller, Goedhart, & Wessels, 2010) (Vaidya's, 2019).

2.1.3.1. Weighted Average Cost of Capital (WACC)

Following the Schill (2014) opinion we should observe the discount rate as an opportunity of making other investments with a comparable risk. To better estimate this cost of capital opportunity it is commonly used the WACC in order to finance the company's assets either by using the equity or the debt. This model is often used to do the calculations of unleveraged firms, this means that, when it is used the FCFF method we should discount it by using the WACC. The reasoning behind this combination relies on the idea that, if it is calculated the Enterprise value (the company as a whole), it should also be discount taking into consideration *"the entire capital structure of the company."* (CFI, 2019).

It should be considering all the investors both shareholders and equity holders (CFI, 2019).

$$WACC = W_d k_d\,(1-t) + W_e k_e$$

Exhibit 4. WACC Formula

The objective of incorporating the weights in the formula is so that it is more informative model and better reflects the market values (Schill, 2014). The costs of debt rate can be calculated *"with the yield to maturity on the respective bonds" (Schill, 2014)*. A widely used formula is the CAPM (Capital Asset Pricing Model) discuss in the papers (Eugene F. Fama [a], 1997) and (Damodaran, 2012).

$$k_e = R_f + \beta(R_f - R_m)$$

Exhibit 5. Cost of Equity Formula

One of the most common errors is in the calculation of the risk-free rate, is the usage of the average of historical values as the value for the risk-free rate (Pablo Fernández, 2004). Also, following Damodaran assessment, it is important to take a close look at the risk premium used in the model. This component can have large impacts in the model calculation than other components such as cash flows or betas (Damodaran, 2012). *"Using a larger equity risk*

premium will increase the expected returns for all risky investments, and by extension, reduce their value." (Damodaran, 2012). In case of the company wanting to adjust the debt level in the future for believing in a major shift, it is possible to leverage or unleveraged the Beta.

$$\boldsymbol{\beta}_L = \beta_u[\,(1-t)\frac{D}{E}\,]$$

Exhibit 6. Formula of Beta Leverage

2.1.3.2. Adjusted Present Value

The Adjusted Present Value is a method used to discount the free cash flows to equity. As mention above, this method is used to evaluate leverage companies by discounting their cash flows using the cost of equity (CFI, 2019). This discount rate has into consideration only the amount for the equity holders, that is what it is being analysed (CFI, 2019). Following Myers, *"the APV concept first evaluates the project (...) and then makes appropriate adjustments when debt and/or dividend policy is relevant and influenced by adoption of the project" (Myers, 1974)*.

$$Adjusted\ Present\ Value = Value\ of\ Unleverage\ Firm + Net\ Effect\ of\ Debt$$

Exhibit 7. Adjusted Present Value Formula

When calculating for the APV, it should also be accounted for the considered the bankruptcy costs. This model, gives importance to the additional of cash flows from the capital structure, such as tax shield and distress costs associated (Koller, Goedhart, & Wessels, 2010).

$$V^L = V^u + PV(Interest\ Tax\ Shield) - PV(costs\ of\ financial\ distress)$$

Exhibit 8. Adjusted Present Value formula with Financial Distress Costs

2.1.4. Calculate Terminal Value

The terminal is the present value of the business worth further into the future (Schill, 2014). In other words, this component is added in the last year forecast to account for all cash flows that it will still take place afterwards (Schill, 2014). *"Because it capitalizes all future cash flows beyond the terminal value, the terminal value can be a large component of the value of a company (...)"* (Schill, 2014). As a Group of Goldman Sachs Analysts (1999) states, *"The terminal value is the trend free cash flows divided by the free cash flow yield model (...)"*. Where in the calculation it is important to assume a constant growth (g) into perpetuity (Schill, 2014). The most commonly used formula is the Gordon Growth Model that takes into consideration the perpetuity of the business. This model gathers the last year cash flow

projections and applies it by the growth rate dividing then by the discount rate less the growth rate.

$$Terminal\ Value = \frac{Last\ Year\ Cash\ Flow\ \ Projection\ \ x\ (1+Growth\ Rate)}{Discount\ Rate-Growth\ Rate}$$

Exhibit 9. Terminal Value Formula

2.1.5. Achieve the Enterprise Value and do some adjustment on the model

The enterprise value will be dependent on the capability of its assets generating future cash flows discounted to its present value (Schill, 2014). *"By definition, enterprise value equals the market value of debt plus the market value of equity"* (Koller, Goedhart, & Wessels, 2010).

In this final stage of the calculation is where it is gather all the previous steps into one single formula, both the cash flows, the discount rate and the terminal value achieved.

$$Net\ Present\ Value = \sum_{t=1}^{n} \frac{Cash\ Flow\ Projections}{(1+Discount\ Rate)^t} + \frac{Terminal\ Value}{(1+Discount\ Rate)^n}$$

$$\text{or } V_h = \frac{FCFF_{h+1}}{(k-g)} \quad \text{or } E_h = \frac{FCFE_{h+1}}{(k_e-g)}$$

Exhibit 10. Net Present Value Formula

To the enterprise value be as near as possible to its true value, it is important to make some adjustments to the discounted cash flows. These adjustments are made to the assets and liabilities that weren't account in the cash flow projections (Vaidya's, 2019). The model may need to have reflected things such as investments, minority interests (Vaidya's, 2019).

2.1.6. Sensitivity Analysis

The concept of sensitivity Analysis is to determine and understand the impact of a specific change in the assumptions (Koller, Goedhart, & Wessels, 2010). This technique is used to analyse the outcome of different possible scenarios by creating changes in the variable under need the model, namely the underlining assets (Weitzel, Gellings, Beimborn, & Konig, 2003). Therefore, it is important to *"first examine the relationship between these two decisions by conducting a sensitivity analysis for different combinations of operating and environmental variables."* (Xu & Birge, 2004).

There are two possible types of variables the independent variables such as the Interest Rate and the dependent variables such as the Stock value. The variable more commonly used to test the assumption are the growth rate and WACC since they are the basis for the calculation of the model (Vaidya's, 2019). For example, a change in the growth rate means a different result for the future cash flows.

2.2. Multiples Valuation Model

The Multiples Valuation Model is a valuation that bases its analysis on historical data. This model uses companies with similar characteristics to the one being studied in order to predict its future by analysing the markets evolution (Schill, 2014). To this group of companies that have similar characteristics (Schill, 2014) it is call the Peer Group. The basic idea to this model is that similar assets have similar prices, so it's important to understand the value of the existent prices in the market to then be able to understand the value of the asset we are analysing. *"The value of any asset is equal to the amount the market is paying for similar asset."* (Schill, 2014)

To define the Peer Group the companies selected must obey to specific similarities to the company that is being subject of the valuation. These similarities are for example size of the company, profitability, industry, growth rate and debt to equity ratio.

Following a group of McKinsey analysts *"you must become an expert on the operating and financial specifics of each of the companies: what products they sell, how they generate revenue and profits, and how they grow"* to better define the peer group. (Goedhart, Koller, & Wessels, 2005). *"The basis used for the relative valuation metric should be something that is readily observable and highly correlated with market value"* (Schill, 2014). After the categorisation of the companies, its to apply the multiples in the selected companies.

The theory relies on the idea that similar companies will be valued at the same price. The Peer Group is important because it serves as benchmark to spot anomalies and to make adjustments to the valuation's models. To do the benchmark, it must be applied to the Peer group the multiples. Some of the most widely used multiples are:

✓ **EBITDA multiple:** This multiple is one of the most popular used methods. It analysis the company as a whole, consideration also the amount of debt that the company owns (Fernández, 2001). *"In general, this ratio is less susceptible to manipulation by changes in capital structure"* (Goedhart, Koller, & Wessels, 2005). It views the company as a buyer perspective, enabling to compare companies with different levels of leverage and considerable amounts of amortizations and depreciations, something that the P/E can't do (Fernández, 2001).

$$\frac{Enterprise\ Value\ (EV)}{Sales}\ or\ \frac{Enterprise\ Value\ (EV)}{EBIT}\ or\ \frac{Enterprise\ Value\ (EV)}{EBITDA}$$

Exhibit 11. EBTIDA Formula

✓ **Price Earnings Ratio** (PER or P/E)**:** One of the most used multiples is PER due to is link stablished between the profit of the company to its value and the simplicity of its calculation. *"The underlying idea behind P/E ratios is that high P/E ratios imply investors'*

belief in above average growth opportunities and relatively safe earnings for the firm." (Weitzel, Gellings, Beimborn, & Konig, 2003). Other possible scenario is that the earning per share are too low. Even though, this multiple is widely recognized within the investor's community (Weitzel, Gellings, Beimborn, & Konig, 2003).

$$PER = \frac{Current\ Market\ Price}{Earnings\ per\ share\ (EPS)}$$

Exhibit 12. PER Multiple Formula

✓ **Price per sales** (P/S)**:** This ratio gives importance to the comparation between the revenues that the company generates to the value of the stocks price in the market (Fernández, 2001). The difference from the Enterprise value to sales is that this ratio doesn't consider the debt in the equation. One of its limitation is that it doesn't give relevance to the earnings that the company generates.

$$P/S\ Ratio = \frac{Market\ Value\ Per\ Share}{Sales\ Per\ Share}$$

Exhibit 13. Price per Sales Multiple Formula

✓ **Price to book value** (P/BV)**:** The objective of this multiple is to compare the book value of a certain company to its market value. Enabling to identify future investments opportunities. This model considers the company is in continues growth (Fernández, 2001).

$$PBV = \frac{Current\ Market\ Price}{Book\ Value\ Per\ Share}$$

Exhibit 14. Price to Book Value Multiple Formula

The multiples approach reflects the market evolution and risk expectation to a set off companies with the same characteristics. Being characterized for being a straightforward model in what comes to compare and measure (Schill, 2014). However, *"The Market multiple is highly sensitive to volatility"* (Kane, Marcus, & Noh, 1996). This method has some limitation associated, such as the difficulty of predicting future trends, the possibility of the market being over or under valued miss guiding the analysis for the peer group and the difficulty in finding a proper Peer group. Other important issue to consider is that this method of evaluation, doesn't account for the company's cash flows. Being unable to know the true company's issues. This way of evaluation is more often used as a complementary analysis to another model, such as DCF (Fernández, 2001).

2.3. Conclusion

Delta Air Lines is characterized for being the leader on the market and having a stable growth, keeping its' business on the top position in the market. The model that best feats the valuation for Delta is the DCF Model. The advantages of using the DCF model are based on four mains criteria: 1) the valuation is based on cash flows, rather than profit; 2) it is a look-forward model, rather than based on historical values; 3) takes into consideration the time value of money; 4) reflects flexibility to different possible scenarios, depending on the expectations associated to the firm under analysis (Schill, 2014).

The risk associated with this model is that the cash flows are based on expectations of the company's evolution, being wise to calculate different scenarios (Schill, 2014).

However, the multiples is an important complementary valuation to the DCF. The aim of the multiples model analysis is to be an auxiliary valuation model to the DCF calculation. As stated by Fernandez *"a comparison with the multiples of comparable firms enables us to gage the valuation performed and identify differences between the firm valued and the firms it is compared with"* (2001).

3. Company Overview

The airline industry has been registering a substantial increase over the years (Ros, 2016), with the demand for this service being higher than ever. Also, this industry is marked for the exponential increase of low-cost airlines, which changed the markets dynamics and force existing players to adapt and reformulate their business strategies (Ros, 2016).

Delta Air Lines is considered to be the main airline company in the United States, operating in the market since 1924. Its main focus is in the transportation of passengers and cargo (Delta Air Lines Company, 2019).

The company has an aircraft with more than 800 planes, covering 306 different destinations with more than 15.000 daily flights (Delta Air Lines, 2018). Delta's highest priority is people: *"The heart of our business is about connecting people with each other"* (Delta Air Lines, 2018).

From 2016 to 2018, they have increased their customer satisfaction (Delta Air Lines, 2017; Delta Air Lines, 2018). This is visible on the investment made by the company to improve their

facilities and technology, with the implementation of facial recognition as an option to do the boarding in international flights and other innovative initiatives (Delta Air Lines Company, 2019).

One of Delta's strategic initiatives are related to Environmental changes, where its concern with fuel efficiency is highlighted: *"The No. 1 contributor to our carbon footprint is our use of jet fuel, and it is the chief focus of our efforts to reduce our emissions and manage our environmental impact"* (Delta Air Lines, 2018). Hence, over the years the company has been trying to reduce their consumption (Delta Air Lines, 2017; Delta Air lines, INC., 2018).

Other strategic initiatives are related to the investment in *"premium branding"* and *"Transforming Travel Through Tech"* (Delta Air Lines, 2018). A good prove of their commitment is the development made recently in *"first-ever facial recognition biometric terminal in US"* all measures to improve the clients experience, comfort and loyalty (Delta Air Lines Company, 2019) (Delta Air Lines, 2017).

The company's revenues are divided into three main groups, namely Passengers (89%), Cargo (2%) and Other (9%) (Delta Air lines, INC., 2018). The passengers group is divided into two main segments: Mainline that represent 84% of the revenues and Regional Carriers that present 16%, as demonstrated in the exhibit 15 (Delta Air lines, INC., 2018).

The Mainline refers to the flights performed with the Delta aircraft, predominantly international. The Regional Carriers are contracts celebrated with other airlines companies for domestic and regional flights, which enable Delta to have power over the tickets, prices, cargo and other, during a 10 years period. Even if, Regional Carriers aren't a part of the Delta Air Lines aircraft it counts for the generation of the revenues (Delta Air lines, INC., 2018).

The other significant source is "Others", representing 9% of the total revenues. The "other" refers mainly to the Loyalty programs, administrative fees, club and on-board sales, ancillary businesses and refinery and baggage fees (Delta Air lines, INC., 2018). This category is surpasses cargo earnings (Delta Air lines, INC., 2018).

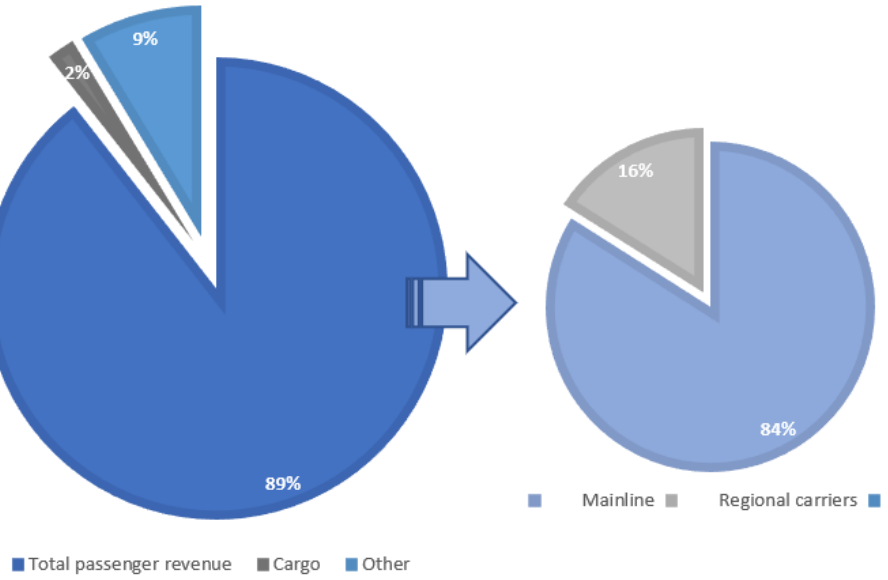

Exhibit 15. Delta Airline's Revenue Breakdown

As to the Loyalty programs where it is contemplated the credit cards service, a join partnership with American Express is turning out to be highly lucrative for Delta Air Lines (Delta Air lines, INC., 2018; Mutzabaugh, 2019). This partnership is in place since 1996 and it was now renewed until 2029 (Mutzabaugh, 2019). The aim of this service is for Delta Air Lines' clients to earn miles thought the usage of the American Express credit card.

"Cardholders earn mileage credits for making purchases using cobranded cards, may check their first bag for free, are granted discounted access to Delta Sky Club lounges and receive other benefits while traveling on Delta. Additionally, participants in the American Express Membership Rewards program may Exchange their points for mileage credits under the loyalty program. We sell mileage credits at agreed-upon rates to American Express which are then provided to their customers under the co-brand credit card program and the Membership Rewards program" (Delta Air lines, INC., 2018).

The description above is also a good example of the value adding provided by Delta Air Lines to its clients.

In the last four years, the company has presented a consistent increasing trend on their revenues. Although, in 2016 it has registered a slight decrease, in 2017 and 2018 the company was able outperform the past years (Delta Air lines, INC., 2018). The company has registered a growth of approximately $1 Billion and $3 Billion in 2017 and 2018, respectively, as it possible to verify in the exhibit 16. (Delta Air lines, INC., 2018). The Net income in the last four years has also depicted a constant trend, with values comprehended from $3 to $4 Billion.

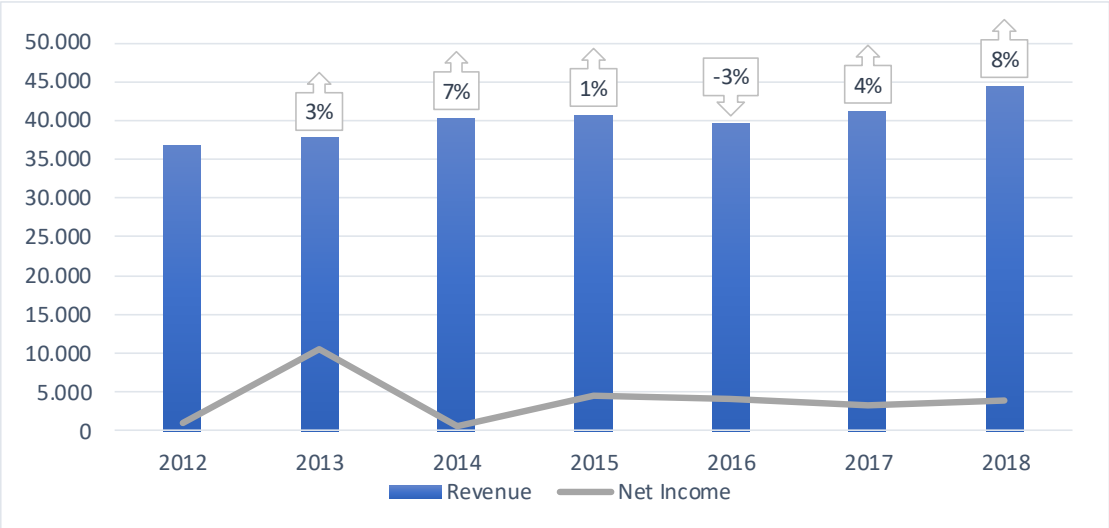

Exhibit 16. Revenues & Net income variations

When analysing the operating expenses depicted in exhibit 17, it is possible to perceive that the costs have been increasing in a higher proportion than the revenues. This development leads to lower margins and consequentially lower profits (Delta Air lines, INC., 2018).

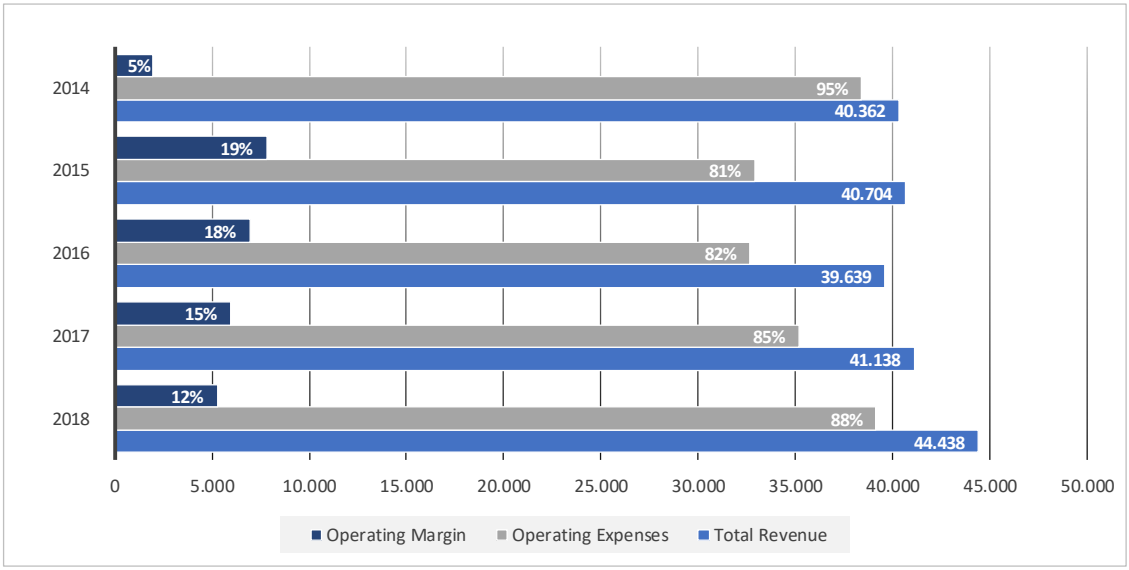

Exhibit 17. Operating Margin

Delta Air Lines has its assets valued in $60 Billion, representing an increase of approximately $6 Billion (11%). This positive variation is explained by the increase on the tangible assets, in part due to the expansion of their fleet and technology.

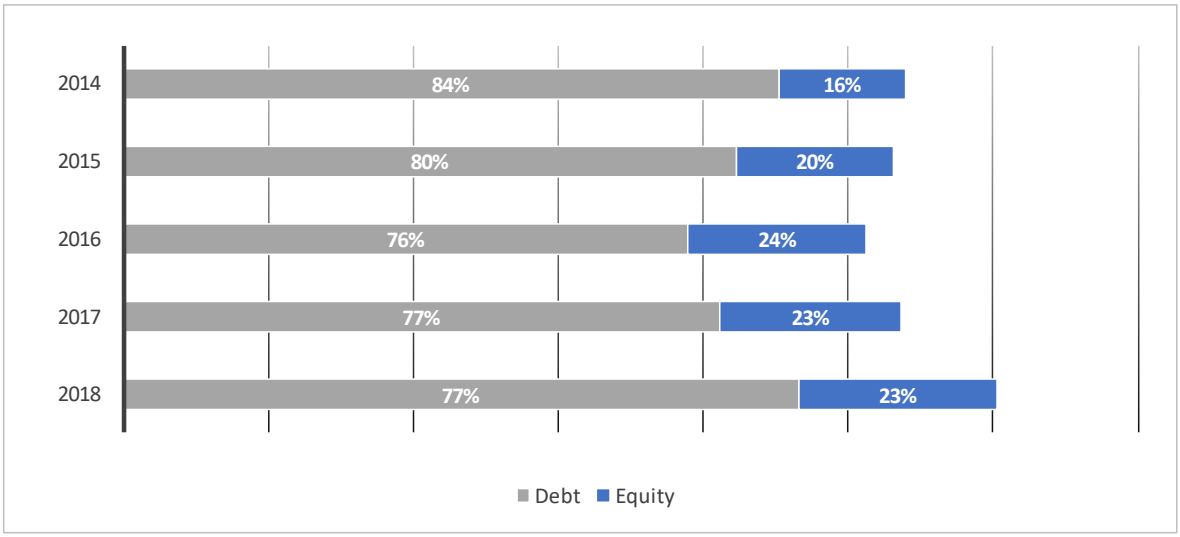

Exhibit 18 . Delta's Capital Structure

As to the liabilities, Delta has a debt level of $ 46 Billion (Delta Air lines, INC., 2018). However, the company presents a debt to assets ratio significant high in about 77%. This ratio has been constantly decreasing over the years, showing the commitment of the company in reducing their debt exposure (exhibit 18). From 2014 to 2018, the company was able to decrease from a value of 84% to 77%, respectively (Delta Air lines, INC., 2018).

4. Delta Air Lines' Financial Valuation

The objective of these chapter is to better discuss the methodology and the results achieved in the financial model applied to evaluate Delta Air Lines. This part will be divided into three main section, the first is the DCF Valuation Model discussion, the second is the Multiples Valuation Model and the last is the Discussion of the Results.

4.1. Discounted Cash Flow Model

In this section it will be discussed the main steps and assumption taken towards the calculation of the enterprise value of the Free Cash Flows valuation.

4.1.1. Methodology

To achieve Delta Air Lines' enterprise value, was used the DCF model as described in the literature review. First the projections were made for the income statement and the balance sheet considering a 5 years period. Afterwards, the FCF to the firm were calculated, in order to determine the company value for both equity and debt holders. The values obtained from the FCF, were discounted using the WACC. Subsequently, it was calculated the terminal value,

assuming the perpetuity of the business, and the enterprise value was achieved. Lastly, in order to get the share price, the Equity value was calculated by subtracting the net debt to the EV.

4.1.2. Model Assumptions

For the Delta's projections, it was considered four main value drivers: number of plains in the fleet, number of seats available, number of miles travelled per year and number of passengers. These are expected to drive the company's growth, both for revenue and cost.

A. Number of planes: According to Delta Air Lines' purchase intentions, the company aims to add several new planes to its fleet over the course of the next years, as depicted in exhibit 19 (Delta Air lines, INC., 2018). From 2019 until 2021 their fleet is planned increase by 222 planes. After 2021, Delta Air Lines is expecting to buy more 108 planes (Delta Air lines, INC., 2018). Assuming the company after 2021 reached a steady state, the additional 108 planes will be distributed for the following 10 years period. This means that for remaining forecasting years not specified in Delta Air Lines Report (2022 and 2023) it will be acquired an additional 22 planes equally distributed over the two years. The 11 planes will cover not only the annual amortization, but also enable the replacement of older plane models by new models or even possible maintenance.

Delta Airlines' Airplaine Purchase Intention									
Year	2014	2015	2016	2017	2018	2019 P	2020 P	2021 P	After 2021 P
Acquisiton (variation)	-4	+20	+10	+15	+74	+87	+75	+60	+108

Exhibit 19. Delta Air Lines' Airplane Purchase Intention

B. Number of seats available: Reflects the maximum occupancy of the plane, considering a two class composition for all airplanes. For each plane type, it was considered the total number of plains and the number of seats, as seen in exhibit 20.

Planes & Seats Available								
Legend		2018			2017			
Type of Fleet	Plan Type	Number planes	Maximum number Seats	Total seats	Number planes	Maximum number Seats	Total seats	Average Age
Delta Air Line Aircraft	B-717-200	91	117	10.647	91	117	10.647	17
	B-737-700	10	132	1.320	10	132	1.320	10
	B-737-800	77	162	12.474	77	162	12.474	17
	B-737-900ER	112	180	20.160	89	180	16.020	3
	B-757-200	100	200	20.000	100	200	20.000	21
	B-757-300	16	243	3.888	16	243	3.888	16
	B-767-300	2	269	538	2	269	538	26
	B-767-300 ER	56	269	15.064	57	269	15.333	23
	B-767-400 ER	21	304	6.384	21	304	6.384	18
	B-777-200ER	8	400	3.200	8	400	3.200	19
	B-777-200LR	10	400	4.000	10	400	4.000	10
	A220-100	4	108	432	0	0	0	0
	A319-100	57	156	8.892	57	156	8.892	17
	A320-200	62	150	9.300	62	150	9.300	23
	A321-200	65	196	12.740	34	196	6.664	1
	A330-200	11	335	3.685	11	335	3.685	14
	A330-300	31	335	10.385	31	335	10.385	10
	A350-900	11	276	3.036	6	276	1.656	1
	MD-88	84	152	12.768	109	152	16.568	28
	MD-90	43	153	6.579	65	153	9.945	22
Regional Carriers	CRJ-200	119	50	5.950	136	50	6.800	-
	CRJ-700	47	66	3.102	82	66	5.412	-
	CRJ-900	157	86	13.502	152	86	13.072	-
	Embraer 170	21	70	1.470	20	70	1.400	-
	Embraer 175	101	78	7.878	70	78	5.460	-
	Total	**1.316**		**197.394**	**1.316**		**193.043**	**15**

* Assuming a composition of two classes for the seats (business and economic class - nº of seats depend on the classes of the plane)

Exhibit 20. Delta Air Lines Fleet in 2018 and 2017

C. Number of Miles Travelled: Since the total number of miles travelled in 2018 is not available, and this information is necessary to project the number of miles for the following years, the first step was to achieve this value. Hence, several variables were combined (total revenues, available seat mile, total revenues per average seat mile, number of seats and average mile per seat) as depicted in exhibit 21. Where, **available seat miles** (ASM) refers to a measure of an airplane carrying capacity to generate revenues, being calculated by multiplying the total number of seats available in an airplane by the total number of miles travelled.

$$Revenues_{2018} = ASM_{2018}\ x\ Revenues\ per\ ASM_{2018}$$

$$Revenues_{2018} = [\#Seats_{\ 2018}\ x\ Miles_{\ 2018}]\ x\ Revenues\ per\ ASM_{2018}$$

$$Miles_{\ 2018} = \frac{Revenues_{2018}}{\#Seats_{\ 2018}\ x\ Revenues\ per\ ASM_{2018}}$$

Exhibit 21. Miles travelled in 2018 formula

Having the number of miles travelled in 2018, and considering that the planes will, on average, travel the same miles, the miles travelled in the following years are achieved by multiplying the number of seats in the respective year of analysis (exhibit 22) by the average mile per seat.

$$Miles_{\ n+1} = \#\ Seats_{n+1}\ x\ Average\ Mile\ per\ seat$$

Exhibit 22. Miles Projections formula

D. Number of passengers: The number of passengers are calculated by multiplying the Available seat miles (ASM), shown in exhibit 23, for the passenger load factor. The later

measures the average utilization capacity of an airplane, which is considered that will remain equal throughout the projections period (0,86).

Available seat miles (in millions)				
2014	2015	2016	2017	2018
239.676	246.764	251.867	254.325	263.365

Exhibit 23. Available seat miles (in millions)

In summary, exhibit 24 depicts the projections made for the value drivers described above, as well as, the planes purchase intention.

	Historic	Projections				
ECONOMIC ASSUMPTIONS	2018	2019	2020	2021	2022	2023
A. Number of seats available	197.394	211.264	224.382	237.046	238.769	240.492
B. Number of Miles Travelled	1.334.460	1.478.848	1.570.671	1.659.323	1.671.384	1.683.444
C. Number of Passengers	168.772	180.631	191.846	202.674	204.148	205.621
D. Number of planes	1.316	1.400	1.472	1.529	1.537	1.545
Acquisiton	-	87	75	60	11	11

Exhibit 24. Value Drivers' Projections and Purchase Intention (millions)

The variables represented in exhibit 24 are a representation of the constant investment that the company deploys to develop the business.

Henceforth, the remaining assumptions for the DCF model will be based on the above mentioned value drivers.

4.1.2.1. Revenues

The estimated revenue for the forecasted years was calculated by multiplying the revenue per available seat mile by the number of available seat miles. Even so, two main assumptions were considered. Firstly, it was considered that each year, from 2019 to 2023, three planes would be placed out of business. Being the number of planes to be placed out of business defined by the percentage of planes depreciated from 2017 to 2018 (Delta Air lines, INC., 2018). This calculation gave a percentage of 0,23%, that was then applied to the total number of planes giving the number of planes to be fully depreciated each year. As the fleet number does not have substantial changes over the projections period, the fully depreciated planes remains stable with three planes per year. This logic is based on the idea that the fleet must be renovated. Secondly, it was considered that the current planes will be used for the same routes and with the same periodicity.

Regarding the **total revenue per available seat mile,** it was considered that it will maintain the growth tendency presented from 2017-2018, which is increasing in line with the company's effort to enhance clients' experience, comfort and satisfaction (Delta Air Lines Company, 2019).

In what concerns the **available seat per mile**, its projections were based on following assumptions:

A. Number of planes in the fleet**:** As referred earlier in the report, according to Delta Air Lines' annual report, the company intends to buy new airplanes to reinforce its fleet (2018). Hence, considering the above mentioned assumptions regarding the planes retirement, routes and periodicity, the company will increase its available seat miles by acquiring new airplanes.

B. Capacity of the airplanes**:** Following the assumption that three airplanes will be retired or reformulated, the capacity of the fleet only depends on the acquisition of new airplanes and the depreciation of three planes.

C. Route periodicity and length**:** In consequence of the assumption that the routes will follow the same periodicity and miles, this factor won't impact the available seat miles.

In addition, to the assumptions made above, it is known that Delta Air Lines has extended the contractual agreement with American Express until 2029 (Mutzabaugh, 2019). The extension of the contract implies that the company will continue to provide the Delta SkyMiles credit cards through American Express (Delta Air Lines Company, 2019; American Express Company, 2019). This partnership has been proving to be very lucrative for both companies. Since the partnership will continue to exist, it will be assumed that the profit retrieved from the partnership will vary with the change on the activity. Meaning that with the increase of the offer provided by adding more planes for the fleet, it will also increase the usage of the credit card to have access to more advantages when travelling with Delta Air Lines.

Having this in consideration, one is able to compose the five-year projection for Delta Air Lines' revenues, which is projected to increase in the period in analysis (exhibit 25).

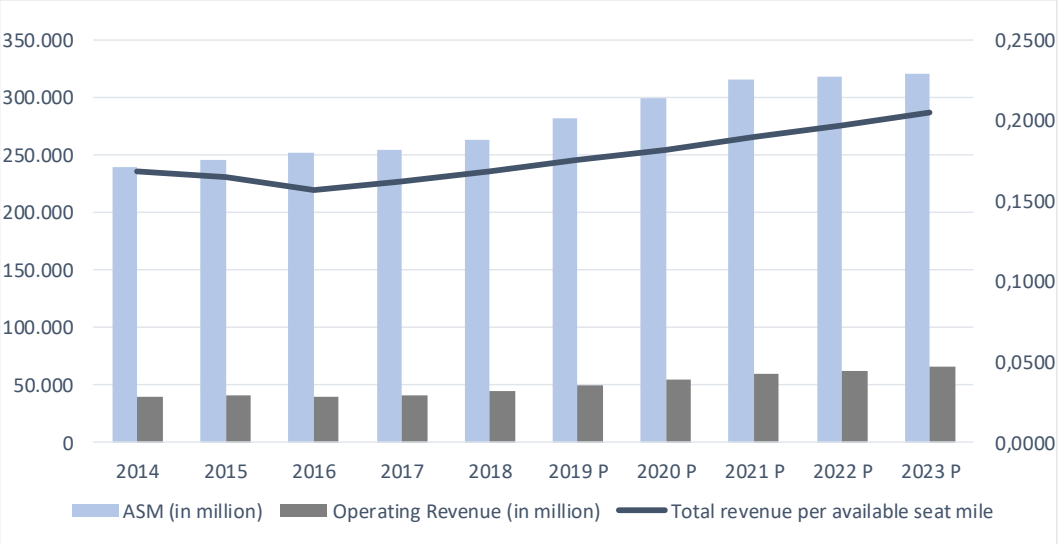

Exhibit 25. Operating Revenues (millions)

4.1.2.2. Operating Expenses

The Operating Expenses are mainly constituted of Salary Costs and Aircraft Fuel Expense. In order to project the Operating Expenses, this account was divided into its sub-accounts. The objective to divide is to better analyse each sub-account nature and get a closer estimation of cost to the reality. Below, it is possible to observe the logic applied for each sub-account.

A. Fuel Expenses: However, there is a constant effort from the company to increase their fuel efficiency (Delta Air lines, INC., 2018), the fuel cost continues to represent the second highest cost in the company. This expense can change accordingly to three factors: price of fuel, miles travelled and airplane's fuel consumption. For the price of fuel gallon, it was used the current market price (Barrientos & Soria, 2019). In what regards the consumption, the value was achieved by multiplying the miles travelled by the gallons consumed, where, it was assumed that the consumption per mile didn't change over the projections period.

B. Salaries and related costs: With the increase of the number of the planes each year, it is also expected a need for an employee's reinforcement to operate and give support. Assuming that, the management & administrative department will remain constant, the salaries calculation will be correlated with the increase on the number of planes. Following Delta Air Lines' annual report, the company has working for them 16.978 employees (excluding management & administrative department) (Delta Air lines, INC., 2018). Assuming that between 2018 and 2023, there are no people leaving the company it is needed an increment of 10 to 13 people per

plane. This number was achieved by making a correlation between existent planes and people working for these same planes. By this making this correlation, it is possible to obtain the increment of people needed for each single plane. Considering this assumption, in the end of 2023 the employees number will have an increment of 2.951 people, which corresponds to an increase of the costs in about $ 1.866 million. In addition, it should also be considered for this account an increment of the annual salary. As it is stated in the Corporate Responsibility Report, the main focus of the company continues to be the people and they are proud to announce *"Consistent pay increases – 10 times over the past 10 years, increasing the total annual compensation …"* (Delta Air Lines Company, 2019). Therefore, it will be considered a 10% increment on the annual salary.

C. Regional carriers' expense: Taking into account that the contracts with regional carriers are made for usually *an "initial terms of at least 10 years"* (Delta Air lines, INC., 2018), and assuming that Delta won't be adding or reducing regional carriers' contracts, this cost item will not vary significantly over the period in analysis. In addition, knowing that Regional Carriers' correspond to 35% of the fleet proportion in 2018, this account will correspond to 35% to the all fleet. Assuming, that the aircraft distribution will remained the same.

D. Depreciation and amortization: This account is mainly composed by Flight equipment, representing 77% of the account. The remaining 23% are mainly constituted by equipment. Regarding the Flight Equipment account, which refers to Delta Air Lines' aircrafts, the depreciation rate is calculated considering the following points:

- The depreciation period was retrieved from the annual report of Delta Air Lines. It was possible to retrieve the lifetime expectancy for each group of planes with a range from one to twenty-eight years (Delta Air lines, INC., 2018). By preforming an average, it was reached the medium lifetime for the all aircraft of 15 years.
- The aircraft is always subject to fluctuations, due to the high rotation of assets. Every year the company acquires new planes and fully depreciates others. For this reason, the fleet must be constantly renewed. Hence, for the depreciation to be accurate, it should be added the cost of the planes bought and retrieved the planes that were already fully depreciated. As to the acquisition of new planes it will be considered that the planes price remains the same. As to the fully depreciation of the planes, it will be assumed that the company fully depreciates its planes and sells them for their residual value.

- The residual value of the company ranges from 5% to 10% (Delta Air lines, INC., 2018). It will be assumed for the calculation a residual value of 5%. The logic will be based on the idea that the company maximizes the depreciation of its planes to reach their maximum utility. As to the Equipment, the depreciation rate is calculated considering the following points:
- The depreciation time can depend on the estimated useful life, following the Delta's annual report (Delta Air lines, INC., 2018). Once the assets constituting these accounts have lower amounts, it will be assumed that they will be depreciated in a shorter period. Therefore, it will be considered the lower limit of 1 to 3 years for the depreciation of the goods.
- The residual value will follow the same logic as the flight equipment, adopting a 5% rate.

E. Contracted services: In accordance with Delta's annual report, the contracted services are related to the additional labour expenses to enhance the clients' experience, by improving their technology and infrastructures (Delta Air lines, INC., 2018). Thus, the contracted services will increase with the increase in the number of passengers. Since it was assumed that passengers' load factor won't change over the projections period, and considering that the company will increase its fleet, the number of passengers will subsequently increase, increasing the value of the contracted services' account as well. Furthermore, it will also be assumed that the contracts' price doesn't change over the projections period.

F. Aircraft maintenance materials and outside repairs: Since the company will acquire more planes over the projections period, it will also bear more costs associated with the maintenance of the fleet. For this calculation, it will be assumed that the maintenance necessities will be directly connected to the increase of the fleet. Assuming also that the unit costs associated with them don't change over the projections period.

G. Passenger commissions and other selling expenses: These are mainly associated with advertising costs (Delta Air lines, INC., 2018). Since Delta Air Lines is going to expand their aircraft by acquiring new planes (Delta Air lines, INC., 2018), it also needs to do more advertising to compensate that increment of planes. With the aim to be able to keep the same occupancy as in 2018. Therefore, to spread the information about the increase of their services they need to increase the publicity to better inform the clients. Consequently, when calculating the passenger commissions and other selling expenses it must be done the correlation between

this cost and the increase in the number of passengers. It will be considered that the marketing strategy won't change over the projections period and the company will have the same unitary cost for the publicity.

H. Landing fees and other rents: This account is related to the costs of renting space for the planes and fees for having landing authorisations (Delta Air lines, INC., 2018). Hence, if Delta's fleet increases, the renting charges and landing fees will also increase. Assuming the unit rental cost per plane and the landing fees will remain the same.

I. Passenger service: This *account "includes the costs of on-board food and beverage, cleaning and supplies"* (Delta Air lines, INC., 2018), implying that this account is directly correlated with the number of passengers. Thus, the passenger commissions and other selling expenses will increase with the increase in the number of passengers.

J. Profit sharing: Related to Delta Air Lines' initiative to give a part of their annual profit to charity (Delta Air lines, INC., 2018). In 2018 it has donated to charity ~30% of the company's Revenues (Delta Air lines, INC., 2018). Assuming that the percentage doesn't change over the projections period, the profit sharing will represent ~30% of each year revenues.

K. Aircraft rent: When an airplane is bought using leasing, this is the account where it is registered (Delta Air lines, INC., 2018). Accordingly, with the company's annual report, only a minority of the bought planes are financed through a leasing option (Delta Air lines, INC., 2018). Even though, the company intends to buy an additional of 330 planes (Delta Air lines, INC., 2018) in a period of about 5 years, it will be assume that only a minority of planes will be financed though leasing. Therefore, assuming that the leasing conditions doesn't change over the projections period, the aircraft rent will change with the increase of the number of airplanes (Delta Air lines, INC., 2018).

L. Ancillary businesses and refinery: This account is used for the registration of the costs *"aviation-related, ground support equipment maintenance and professional security services"* (Delta Air lines, INC., 2018). However, due to the sale of this segment of the business the account will be discontinued. This services will go to a *"new subsidiary of Argenbright*

Holdings, LLC" (Delta Air lines, INC., 2018). This new subsidiary is detained in 49% for Delta Air Lines.

M. Other: According to Delta's annual report, this account registers the costs associated with the sale of non-jet fuel products such as Gasoline, Diesel and others (Delta Air lines, INC., 2018). Hence, its projections are related to the fuel costs and will change with its variation.

When analysing the evolution of the operating expenses versus revenues, it is perceivable that in general, over the projections period, there is an increase of the Operating Income as stated in exhibit 26. In other words, the forecast is consistent with the company's intention to reduce their costs. The company highlights in the reports their effort to decrease the expenses and waste (Delta Air lines, INC., 2018). One of the accounts that they have their focus on is in Fuel costs (Delta Air lines, INC., 2018).

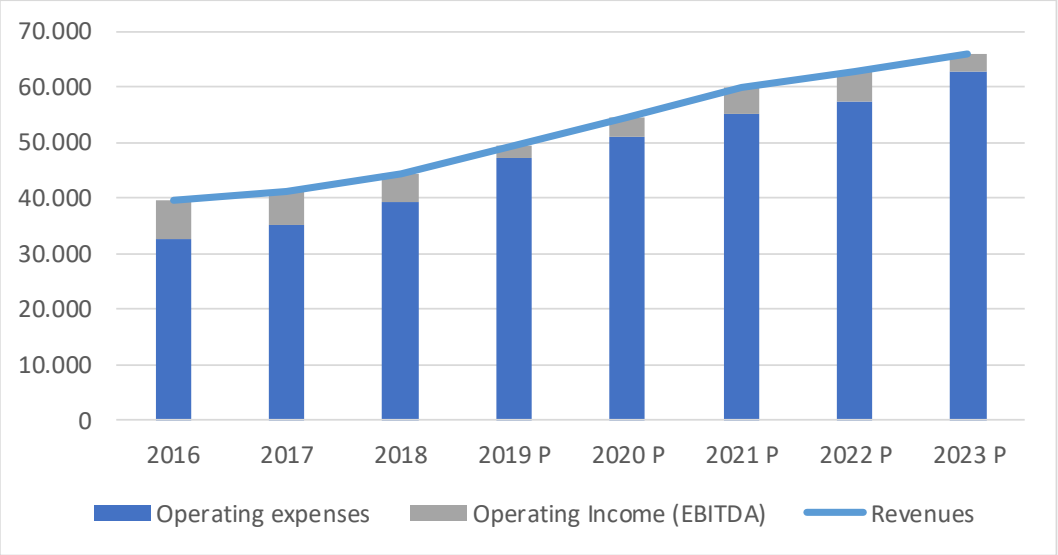

Exhibit 26. Operating Income Evolution over projections period (millions)

4.1.2.3. Assets

In 2018, Delta Air Lines' assets were evaluated in $60 Billion. Through the projections period, from 2019 until 2023, the company were able to improve their worth to $63 Billion. The accounts that have more weight in the assets are Property Plant Equipment (47%), Goodwill (16%) and Operating lease right-of-use assets (10%) and other minor assets (27%) as it is possible to perceive in exhibit 27 (Delta Air lines, INC., 2018).

From the other 27%, one of the accounts that stands out is the *"Other noncurrent assets"* that represent 22% of the sample. This non-specified account, is regarding the hedging of contracts mainly related to fuel and currency.

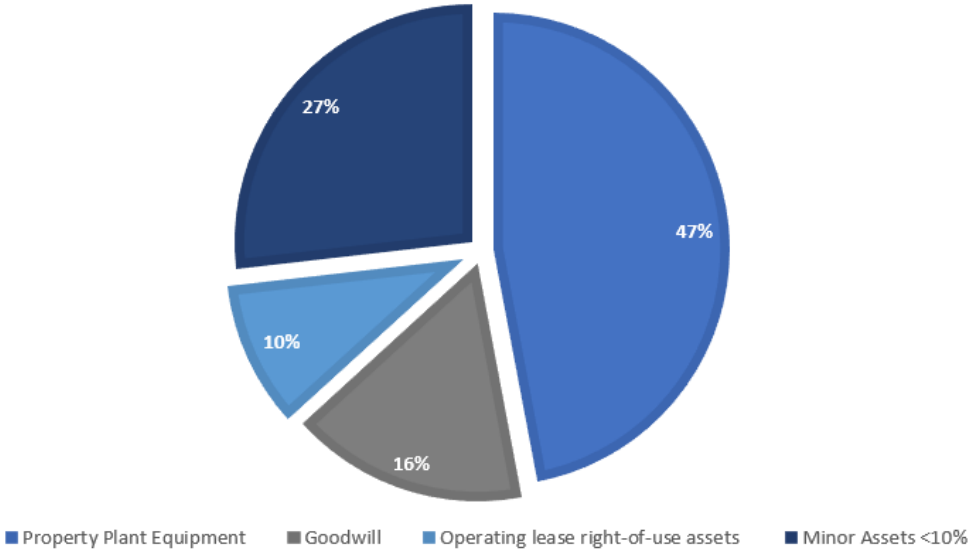

Exhibit 27. Assets Distribution

With the exception of Goodwill, that did not change over the projections period, follows the assumptions for the accounts previously indicated:

A. Property Plant Equipment: considering that during the forecast period the company main assets aren't sold, the variation of this account will be driven by the amortizations of the current assets.

B. Operating lease right-of-use assets: as the name suggests, the evolution of this account is directly related to company planes acquired by lease. Therefore, when forecasting, it was considered the evolution from 2017 to 2018 of the number of lease planes and replicated for the following years. Assuming that all variables remained stable.

C. Other Non-Current Assets: Delta Air Lines has announced that will have eight new flights that will be equally divided through Europe and Japan (Delta Air Lines Company, 2019; PointsPros, Inc., 2019). For Europe is *destinated "New York-JFK to Lisbon", "Los Angeles to Paris and Amsterdam", "Indianapolis to Paris"* and *"Orlando to Amsterdam"* (Delta Air Lines Inc., s.d.). As to Japan will be assign *"Los Angeles to Shanghai, Detroit to Beijing and Shanghai and Atlanta to Seoul-Incheon"* (PointsPros, Inc., 2019). Assuming the company won't extend

their miles travelled and will only replace some of the existing destinations in a year period. This will mean an extra need of contracts. All in all, the company will increase the international flights for Japan and Europe in eight flights. This means with the increment of new flights it will be needed the addition of new contracts for currency. Assuming new flights correspond to a new contract, with the transfer of eight flights to places with different currencies, it will be needed eight more contracts. Then by adding the incremental value of the new contracts to the existent contracts value, it will be reached the forecasted cost (assuming a perpetuity growth). For this forecast, it will also be assumed that the conditions of the contracts will remain and that there are no contracts sold in the forecast period.

4.1.2.4. Liabilities

The company's liabilities are valued in $46 Billion, representing a debt structure of 77%. As referred before, the company intends to decrease their costs (Delta Air Lines, 2018) and for the last five years, this tendency was visible (exhibit 18). In the forecast period, this tendency of decrease has been maintained, as depicted in exhibit 28.

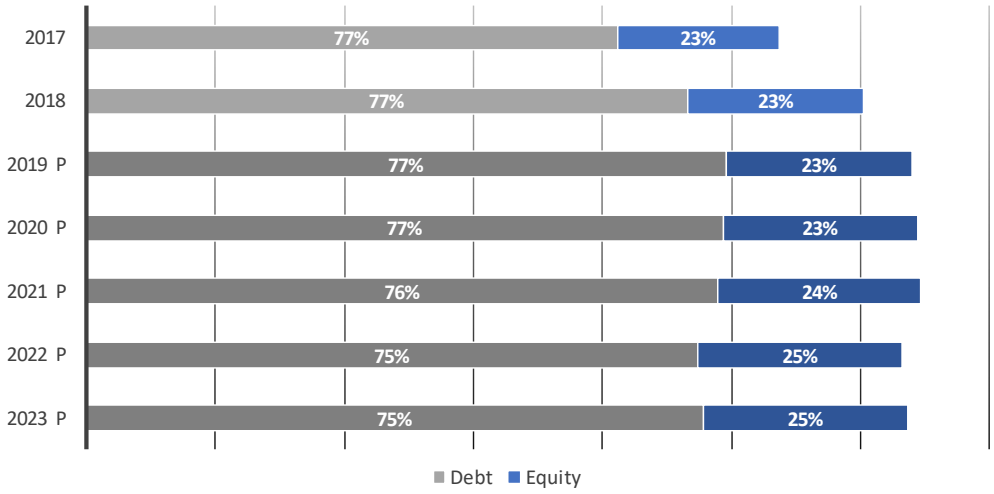

Exhibit 28. Capital Structure over forecast period

The expectation is that over time the company be able to reduce their debt weight over the total assets.

The liability accounts with higher representativeness are related to the accrued Salaries and Pensions, Operating leases (current and non-current) and Fuel costs. A common aspect between them is that all accounts are directly or indirectly correlated to the business. Hence, when forecasting a growth tendency on the business, it is also expected an increment on this cost. To

forecast for the period under analysis it was considered the evolution of the revenues and the aircraft.

4.1.2.5. Weighted Average Cost of Capital

For the WACC calculation it was used the formula presented in the literature review. Assuming there is no change in the Delta capital structure, it was possible to achieve a discount rate of 4%, as presented in exhibit 29.

WACC Calculation	
Risk free interest rate	2,69%
Market risk premium	5,96%
Equity beta	1,17
Cost of equity	9,66%
Cost of debt	2,61%
Corporate tax rate	23,60%
Book Value Debt (Million)	46.579
Book Value Equity (Million)	13.687
Target Debt/Assets Value (D/V)	77%
Target Equity/Assets Value (E/V)	23%
WACC	**4%**

Exhibit 29. WACC Calculation (millions)

The main variables in the model are:

- The Cost of Equity that was obtained by the combination of the Risk free, Market Premium and Equity Beta presenting a value of 9,66%.
- The Cost of debt that was retrieved from the Thomson Reuters using the corporate bond yield (2,61%).
- The Corporate tax that was retrieved from their annual report that states a percentage of 23,60% (Delta Air lines, INC., 2018).
- The Book value for Debt and Equity presents a value of $46.579 million and $13.687 million, respectively.

4.1.2.6. Working Capital

To achieve the working capital it was considered both current assets and current liabilities. Historically, Delta Air Lines presents negative Working Capital, with a substantially deterioration in 2017, as observed in exhibit 30.

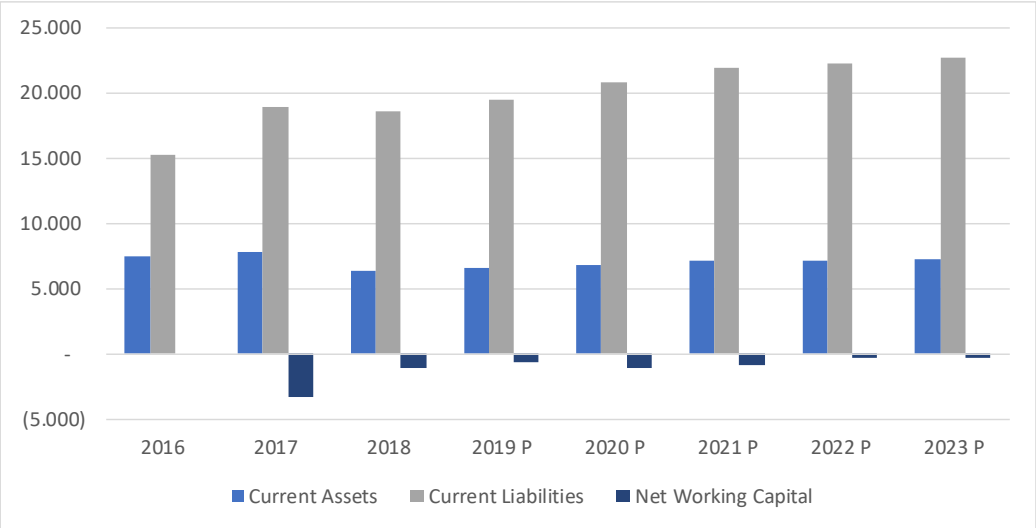

Exhibit 30. Net Working Capital Projections (millions)

The same tendency continues in the projections period, where the working capital continues to present negative values. This is justified by the huge investment made in the increase of their aircraft and by the improvement of the airport of New York-LaGuardia and Los Angeles International Airport (Delta Air lines, INC., 2018). Both these events have repercussions on the current liability's evolution. However, the negative variation decreases. In the projections, the increase of the investments made in the planes led to the increase of the number of tickets sold and, consequentially, to the increase of the Revenues. This increase on revenues has generated more cash, allowing Delta to reinvest the cash generated into the business (for example airport development) and improving their liquidity, even with the huge costs that Delta Air Lines is facing on the airports. In exhibit 30, it is possible to perceive this development.

4.1.2.7. Capex

As referred before Delta Air Lines has been investing substantially in their company. Which is going to remain in the following years of projections. The company has invested over the years in the renewal of their aircraft. The increase of planes will lead to the increase of number of passengers traveling. With the growth of number of passengers will make the company invest more in development of the technology and facilities, such as airports improvements for their clients as referred before. For example, in the beginning of 2017, Delta has developed *the "first-ever facial recognition biometric terminal in US"* (Delta Air Lines, Inc., 2017). Another example is the developments being made in the improvement on the airport infrastructures in 2018 (Delta Air lines, INC., 2018). This will justify the pike verified in 2019 projections due

to the higher investment made in the first years and in the final years of the projections. In addition, with the increase of the planes bought, it also will increase the depreciations amount.

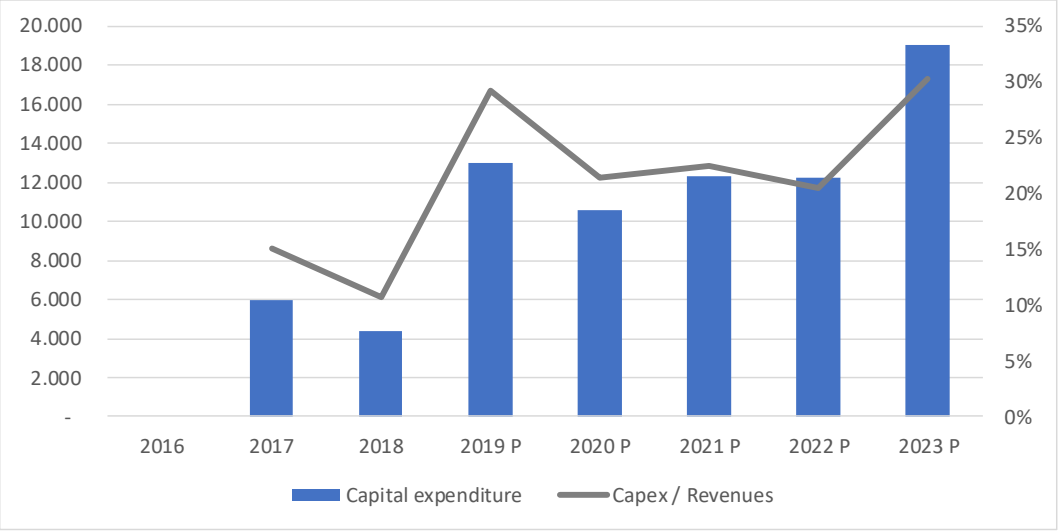

Exhibit 31. Capital Expenditures (millions)

To resume, by analysing exhibit 31, it is possible to conclude that with the increase on investment it also leads to the increase of the revenues.

4.1.3. DCF Valuation Results

The calculation of the DCF Model is divided in two main parts: the Free Cash Flows and the Enterprise value achieved. Following the methodology and assumptions previously stated, the Free Cash Flows generated are presented in exhibit 32.

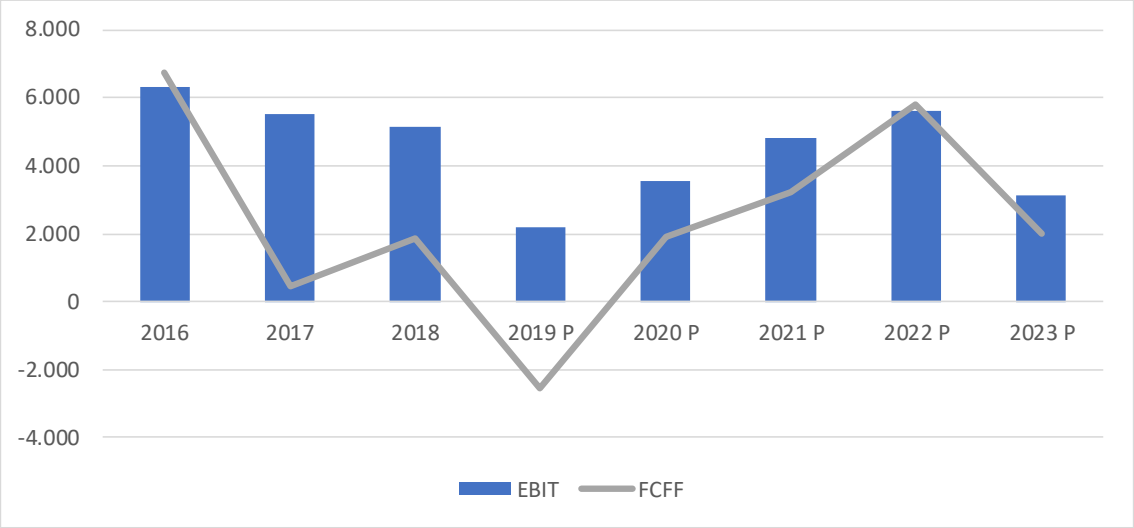

Exhibit 32. Free Cash Flow Projections VS EBIT VS Gross Margin (millions)

The FCF's projections for Delta Air Lines grow predominant after the first years of projections, coherent with the investment made in the business. Higher investments made, leads to less cash flows available and consequentially less Net Income. Therefore, the substantial investment made in 2019 in the airport and the planes led to a lower cash flow available verified in the exhibit 32. In addition, other reason for that downturn was that with the acquisition of planes 87 (Delta Air lines, INC., 2018), led to an increase on the depreciations amount, the highest value acquired so far. This led to the exponential increase on the operating expenses compared with the revenues generated at that time with the existing aircraft. In the following years, with the acquisition of less planes, it is possible to perceive a higher margin as presented before in exhibit 26. The following two years in the stabilization period of the investment, the company reaches its peak of the FCF and then starts to stabilize with lower values. In exhibit 31, it is perceivable the investments swings.

The enterprise value for the DCF model was $ 91.431 million. To achieve the Equity value, it is discounted the enterprise value by the debt and excess cash, achieving a value of $ 44.175 million. Being the shares for Delta Air Lines valued in $64 per share (assuming the shares outstanding will remain the same, 688), observable in exhibit 33.

All in all, considering the value achieved for $64 per share the Delta Air Line stock will be worth more in the future.

DCF Valuation Model	
Present Value Terminal Value	140.467
Estimated Enterprise Value	**91.431**
(-) Debt	46.579
(-) Excess Cash	676
Equity Value	**44.175**
# Shares Outstanding	688
Share price	**64**

Exhibit 33. Results from DCF Model (millions)

4.1.4. Sensitivity & Scenario Analysis

Following the valuation analysis, it is important to test the variables to evaluate the different results obtained. This section will be divided in the sensitivity analysis and the scenario analysis. Where the aim is to predict and prepare for possible future scenarios. It will be tested four scenarios per parameter: two scenarios simulating an increase on the parameters and other two simulating the opposite reactions.

4.1.4.1. Sensitivity analysis

A few years ago, the global market has suffered a global recession on the economy affecting the business growth. What would happen if during the forecast period, the global economy should experience another downturn? The aim in this chapter is to analyse the impact that a change in the economy would affect the Delta Air Lines share price. Where it will be tested both positive (prosperity of the global economy) and a negative scenario (recession on the global economy).

These scenarios will be tested with two parameters: the growth rate and the equity beta. The growth rate was chosen because it indicates the pace at which the market is growing, enabling to observe the reaction in case of changes in the market. As to the equity beta, it was chosen because it measures the volatility. Exhibit 34 summarizes the valuations for each scenario.

Growth Rate			
Change %	**%**	***Equity Value***	***Share Price***
(+) 0,10%	2,30%	50.030	73
(+) 0,05%	2,25%	47.004	68
	2,20%	**44.175**	**64**
(-) 0,05%	2,15%	41.525	60
(-) 0,10%	2,10%	39.037	57

Equity BETA			
Change	**%**	***Equity Value***	***Share Price***
(+) 0,20	1,37	29.021	42
(+) 0,10	1,27	35.979	52
	1,17	**44.175**	**64**
(-) 0,10	1,07	53.969	78
(-) 0,20	0,97	65.871	96

Exhibit 34. Sensitivity Analysis Results (millions)

In what concerns the growth rate parameter, it corresponds to the growth of the US economy, equivalent to a rate of 2,20% (World Bank Group, 2019). The growth is important because it considers the perpetuity of the business after the projection of the cash flows. When observing an improvement in market conditions of 0,05% and 1% percentage units of growth rate, the stock price for Delta increases immediately $4 and $9, respectively. When simulating a reduction in the GDP growth rate of 0,05% and 0,1% percentage unit, it is possible to verify a decrease on the shares' value to $60 and $57, respectively. This demonstrate the impact that market fluctuations have in the economy, influencing the company's share prices. A reflection of this impact is the 2008 recession. In 2008, the economy suffered a downturn which impacted negatively the tourism, and, consequentially, as affected the number of tickets bought and Delta Air Lines' revenues (Markus & Florian, 2011).

As regards to the equity beta, the model considered a value of 1,17. This value is the illustration between the volatility of the returns and the market's competitors. Therefore, an increase of one point in this parameter means an increase on the company's volatility comparing to the market. When adding more volatility to the beta of 0,1 and 0,2, it was observed a share price decrease

of about $12 and $22, respectively. In the opposite scenario, when it is observed a drop on beta of 0,1 and 0,2, the shares prices increase to $78 and $96, respectively.

4.1.4.2. Scenario analysis

In this section, the entrance of a low-cost company in the market will be tested. The parameters that have more impact in this case are the company's revenues and the miles travelled. Both parameters have an important role in the model. The revenues are the sustainability of the company and the miles travelled represent a possible change in the routes. In exhibit 35, it is presented the valuations of each scenario that will be explained.

Revenues		
Change %	*Equity Value*	*Share Price*
+0,2%	48.033	70
+0,1%	46.104	67
	44.175	**64**
-0,1%	42.247	61
-0,2%	40.318	59

Miles Travelled		
Change	*Equity Value*	*Share Price*
+0,10%	39.941	58
+0,5%	42.058	61
	44.175	**64**
-0,5%	46.293	67
-0,10%	48.410	70

Exhibit 35. Scenario Analysis Results (millions)

In the latest years, a substantial number of low-cost airlines entered the markers. Hence, it is important to consider the impact of this scenario on the revenues. When a new low-cost player enters the market, two situations arise. First, their lower price for the tickets will create the need for the other companies to keep up with the prices established and decrease their margin. Second, the low prices practiced will lead to gain more market share. Nowadays, people give more important to the lower prices than better services (Bhaskara, 2015). Thus, Delta Air Lines will experience a decrease on the passengers travelling leading to a lost in the market share to the new low-cost company and consequentially a decrease on the revenues. Both situations, influence negatively the company. When simulating a decrease on the revenues in about 0,1% or 0,2%, it is possible to witness an impact of shares value in about $3 and $6, respectively. Nevertheless, there is always market for enterprises that provide a differentiated service for clients. Delta was proven to be client driven, thus, when testing for the increase of the revenues due to the creation of value for clients in about 0,1% and 0,2%, it was possible to observe an increase of shares to a value of $61 and $59.

As to the miles travelled, the Delta management team each year predicts the number of routes and which routes they will have functioning, hence changing the miles travelled accordingly with these two parameters. What if they have chosen a different number of routes? Or have chosen more long-distance routes? What would be the impact on the share price? When

increasing the number of miles travelled, the share price goes down, due to the increase of the costs associated for the same revenues per mile earned. One of the possible factors contributing for the increase of the cost is related to the crew compensation for being more time away from their home country. In the model, when the routes increased by 0,5% or 0,10% the share price decreases for a value of $61 and $58, respectively. In the opposite situation, when increasing the miles travelled by 0,5% or 0,10%, it increases the value of the share price to a value of $67 and $70, respectively. The same reasoning is applied here. The main source of the company's revenues is the passenger's travels as mentioned in the company's overview chapter.

4.2. Multiples Valuation Model

In this section it will be discussed the methodology used, as well as, the peer group selected to achieve the enterprise value of the Multiples valuation.

4.2.1. Methodology

The aim of the multiples model analysis is to be an auxiliary valuation model to the DCF calculation (Fernández, 2001). In the valuation, it was used as the multiple EV/EBIT. This ratio valuates the company as a whole, including the debt as part of the equation in the valuation.
First step towards the enterprise value, is to obtain the industry average of Delta's peer group. The calculation of the EV/EBIT average retrieved from the peer group selected gave a value of 17. This average was then multiplied by the Delta's EBIT, giving the enterprise value ($87.183 million). Afterwards, in order to reach equity value, it was subtracted from the EV the debt of $46.579 million, giving an equity value of $39.928 million. Having the equity value, the share price will be reached by dividing the equity value by the number of shares outstanding (688), resulting in a share price of $58 presented in the exhibit 36.

Multiples Valuation Model

	Peer Group Ind. Average
EV/EBIT	17
EBIT	5.151
Estimated Enterprise Value	**87.183**
(-) Debt	46.579
(-) Excess Cash	676
Equity Value	**39.928**
# Shares Outstanding	688
Share Price	**58**

Exhibit 36. Result from Multiples Model (millions)

4.2.2. Peer's Group

Fifty companies in the same industry as DAL were collected to compose the initial peer group sample (Reuters, 2019). Afterwards, based on a set of defined criteria, six companies were selected to constitute Delta's peer group. The criteria defined took in consideration the company's sector, shareholders equity amount, the debt, the revenues, and other. However, the focus was in the capital structure. The logic was based on the idea that companies with similar structure (debt versus equity) should be evaluated equally. Being one of the most important criteria is the peer group having similar capital structure ratio. For this reason, all the companies chosen have a D/E ratio approximate to the company under analysis. The final peer group is constituted by five companies: AerCap Holdings NV, Northrop Grumman Corp, Qantas Airways Ltd, Spirit AeroSystems Holdings Inc and United Airlines Holdings Inc. The peer group chosen is represented in exhibit 37 below.

($ Millions)	Companys informations							
Company Name	Identifier	REVENUES	EBIT	Shareholders Equity	Total debt	Stock Price	Common Shares Outstanding	EPS (Last 12M)
Delta Air Lines Inc	DAL	44.438	5.151	13.687	46.579	$ 56,36	688	$ 5,69
Industries Peer Group								
AerCap Holdings NV	AER.N	7.204	2.168	8.828	34.381	$ 52,74	143	$ 6,05
Northrop Grumman Corp	NOC.N	62.695	3.780	8.187	29.466	$ 370,54	171	$ 18,11
Qantas Airways Ltd	QAN.AX	6.129	1.299	2.946	10.856	$ 3,90	1.660	$ 0,48
Spirit AeroSystems Holdings Inc	SPR.N	7.700	850	1.238	4.448	$ 74,40	65	$ 5,71
United Airlines Holdings Inc	UAL.OQ	22.347	3.779	10.042	38.982	$ 86,98	270	$ 9,12
Average		**21.215**	**2.375**	**6.248**	**23.627**	**$ 118**	**462**	**$ 7,89**

Exhibit 37. Peer Group Selected (millions)

4.3. Methods discussion

One of the conclusions reached within the two models performed was that both models gave similar share prices. For the DCF model it gave a share price of $64, while in the multiples model it was reached a value of $ 58. This demonstrates consistency in the models created, shown in exhibit 38.

DCF Valuation Model	
Present Value Terminal Value	140.467
Estimated Enterprise Value	**91.431**
(-) Debt	46.579
(-) Excess Cash	676
Equity Value	**44.175**
# Shares Outstanding	688
Share price	**64**

Multiples Valuation Model		
	Peer Group	Ind. Average
EV/EBIT		17
EBIT		5.151
Estimated Enterprise Value		**87.183**
(-) Debt		46.579
(-) Excess Cash		676
Equity Value		**39.928**
# Shares Outstanding		688
Share Price		**58**

Exhibit 38. Valuation Model Results (millions)

The other conclusion reached is that the difference verified in exhibit 38, between DCF and Multiples Model, can be justified by the industry positioning of Delta Air Lines. Delta is the

market leader in their industry. So, when using a peer group, there is no clear company to match it. This could mean that when using the peer to do the evaluation it will give an inferior value to its true value.

4.3.1. Investment Report comparison

In this chapter, two investments reports will be compared with the results achieved in the analysis performed. First, it will be analysed an Investment Report from Raymond James, from the last quarter of 2018. Afterwards, will be analysed Cowen Investment repot from the first quarter of 2019, visible in exhibit 39. The aim is to compare two different perspectives from different points in time (one of the valuations from 2018 and the other from the beginning of 2019) to the model with the DC valuation that has been developed in this thesis.

Raymond James' Investment Report

Equity Value	**45.606**
# Shares Outstanding	691
Share price	**66**

COWEN Investment Report

Equity Value	**45.761**
# Shares Outstanding	683
Share Price	**67**

Exhibit 39. Results from the investments reports

4.3.1.1. Raymond James' investment report

In the Raymond James' investment report, from the last quarter of 2018, it was reached a value of $66 per share (Syth, 2018). The investors used a multiples valuation model approach, choosing from the different possibilities the P/E ratio and EBITDAR. The P/E ratio given for 2019 depicts a value 8,5 times the earning. This proportion has decreased over the projection period, ending in 2020 with a value of 7,8 times the earnings (Syth, 2018). The investors' opinion about Delta is that the company has *"outperformed due to its attractive valuation, anticipated continued unit revenue recovery, and strong balance sheet"* (Syth, 2018).

4.3.1.2. Cowen' Investment report

In Cowen' Investment report from the first quarter of 2019, it has reached a value of $67 per share (Becker, Cunningham, & Seidman, 2019). The investors expect that Delta Air Lines will continue to improve their business. "We believe the core business is improving as pricing remains solid while non-fuel costs are manageable" (Becker, Cunningham, & Seidman, 2019). The investors considered that Delta Air Lines will continue to improve their profitability by

gaining more market share through their capacity to upgrade their value adding (Becker, Cunningham, & Seidman, 2019). In addition, with the continuity of the agreement with the American Express for the credit card, it is expected that it will increase the revenues.

Their model is based under the following assumptions *"Capacity growth of ~3,5 %", " Traffic growth of ~3,5%", "Jet Fuel of $2,12/gallons"* and "Yields up ~2,25% y/y" (Becker, Cunningham, & Seidman, 2019). With the assumption mentioned previously it were used a multiples valuation model approach, choosing from the EV/EBITDAR and EV/S. The EV/EBITDAR gave a value of 5,5 times the EBITDAR and the EV/S gave a value of 7,8 times the sales.

4.3.1.3. The investment report results versus model created in the thesis

When analysing the both models comparing to the valuation that has been developed it is possible to conclude that the three valuation gave similar prices, round $60 per share. Although, investment reports analysed gave higher expectations to the Delta Air Lines than the valuation developed. This discrepancy occurs since the valuation thesis is more conservative. In the reports of Delta Air Lines, it is perceived the true effort for the company to reduce their costs year after year making a more efficient company, for example in the fuel (Delta Air lines, INC., 2018; Delta Air Lines, 2018). Even with this intention, the expenses continue to increase due to the increase of the activity making it difficult to measure the efficiency improvement. Therefore, when predicting the expenses, it was assumed the logic that the expenses with evolve along with the increase of the activity, depending on the type of expenses. In addition, in the valuation model created it wasn't made into account the increment on value of the continuity of the agreement with American Express. Since the agreement was not going to change, it wouldn't have a significant impact on the revenues. The impact would only be visible if the company wouldn't have renewed the partnership.

Despite the differences found, the opinion regarding the Delta Air Line is unanimous. The three models indicate a valorisation of the stock price between $64 and $67 per share. Considering that the stock is valued at $56 per share, it would represent a gain between $11 and $8 per share.

5. Conclusion

The main conclusions of this project can be divided in two parts, the first regarding the Delta Air Lines evaluation, and the second, concerning the opinion to investors regarding the company.

Regarding the company's evaluation, Delta Air Lines is a client driven company, always focus on innovation (Delta Air Lines Company, 2019). Therefore, when analysing the company, it could be observed a huge investment to create value for their clients. Two good examples of that was either the development of Delta Sky miles and the Biometric system, to make the check-in process easier (Delta Air Lines Company, 2019). This type of investments enables the company to distinguish itself from other airline companies in the market. For this reason, the company is able to create client loyalty and constantly improve their revenues, being reflected in the company's evaluation.

Furthermore, the company shows a huge commitment to be more efficient and reduce operational costs. Both for environmental issues and for profitability. In the end, it all comes to profitability, and Delta Air Lines in the projections period was able to increase, in the overall, their margins.

Taking all in consideration, from the projections point of view, it is expected that the company is going to increase their Enterprise value to $91.431 million and share price to $64, in the next five years.

In what concerns the opinion to investors, results retrieved from the investment reports analysed and from the model developed, both for the DCF and Multiples models, yield similar share prices. Common to all analysis, it was concluded that Delta Air Lines stock, at this moment, is undervalued. Currently, the share price for the company is $56, while the investors and the developed model predicted a share value between $64 and $67, respectively, representing a gain per share between $8 and $11. Hence, there is a unanimous favourable opinion regarding Delta Air Lines shares. Investors should buy the company stock.

To conclude, this model faces two limitation: the influence of Delta's airplane purchase intentions and the reduction of costs initiative. Firstly, many of the projections in the forecast model are, directly or indirectly, dependent on the number of planes bought. Hence, in the case the company changes its purchase intentions, the model could entail different results. Secondly, the company clearly states over their reports their intention to reduce costs (Delta Air Lines,

2018). However, there was not clear indication to what extent would be the company steps to pursue their intent.

6. Appendix

Appendix 1. Model Basic Assumptions

	Historic	Projections				
ECONOMIC ASSUMPTIONS	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
A. Number of seats available	**197.394**	**211.264**	**224.382**	**237.046**	**238.769**	**240.492**
B. Number of Miles Travelled	**1.334.460**	**1.478.848**	**1.570.671**	**1.659.323**	**1.671.384**	**1.683.444**
C. Number of Passengers	**168.772**	**180.631**	**191.846**	**202.674**	**204.148**	**205.621**
D. Number of planes	**1.316**	**1.400**	**1.472**	**1.529**	**1.537**	**1.545**
Acquisiton	-	87	75	60	11	11

Planes & Seats Available								
Legend		**2018**			**2017**			
Type of Fleet	**Plan Type**	**Number planes**	**Maximum number Seats**	**Total seats**	**Number planes**	**Maximum number Seats**	**Total seats**	**Average Age**
Delta Air Line Aircraft	B-717-200	91	117	10.647	91	117	10.647	17
	B-737-700	10	132	1.320	10	132	1.320	10
	B-737-800	77	162	12.474	77	162	12.474	17
	B-737-900ER	112	180	20.160	89	180	16.020	3
	B-757-200	100	200	20.000	100	200	20.000	21
	B-757-300	16	243	3.888	16	243	3.888	16
	B-767-300	2	269	538	2	269	538	26
	B-767-300 ER	56	269	15.064	57	269	15.333	23
	B-767-400 ER	21	304	6.384	21	304	6.384	18
	B-777-200ER	8	400	3.200	8	400	3.200	19
	B-777-200LR	10	400	4.000	10	400	4.000	10
	A220-100	4	108	432	0	0	0	0
	A319-100	57	156	8.892	57	156	8.892	17
	A320-200	62	150	9.300	62	150	9.300	23
	A321-200	65	196	12.740	34	196	6.664	1
	A330-200	11	335	3.685	11	335	3.685	14
	A330-300	31	335	10.385	31	335	10.385	10
	A350-900	11	276	3.036	6	276	1.656	1
	MD-88	84	152	12.768	109	152	16.568	28
	MD-90	43	153	6.579	65	153	9.945	22
Regional Carriers	CRJ-200	119	50	5.950	136	50	6.800	-
	CRJ-700	47	66	3.102	82	66	5.412	-
	CRJ-900	157	86	13.502	152	86	13.072	-
	Embraer 170	21	70	1.470	20	70	1.400	-
	Embraer 175	101	78	7.878	70	78	5.460	-
	Total	**1.316**		**197.394**	**1.316**		**193.043**	**15**

* Assuming a composition of two classes for the seats (business and economic class - nº of seats depend on the classes of the plane)

Adicional planes for the Delta Airlines Fleet		2019			2020			2021			2022			2023		
	Plan Type	**Number planes**	**Max. Seat**	**Total seats**	**Number planes**	**Max. Seat**	**Total seats**	**Number planes**	**Max. Seat**	**Total seats**	**Number planes**	**Max. Seat**	**Total seats**	**Number planes**	**Max. Seat**	**Total seats**
NEW Model->	A220-100	24	108	2.592	12	108	1.296	0	108	0	0	108	0	0	108	0
NEW Model->	A220-300	0	108	0	6	108	648	12	108	1.296	3	108	346	3	108	346
	A321-200	32	196	6.272	27	196	5.292	3	196	588	0	196	0	0	196	0
NEW Model->	A321-200neo	0	244	0	16	244	3.904	36	244	8.784	5	244	1.171	5	244	1.171
NEW Model->	A330-900neo	4	287	1.148	4	287	1.148	9	287	2.583	2	287	517	2	287	517
	A350-900	2	276	552	2	276	552	0	276	0	1	276	276	1	276	276
	B-737-900ER	18	180	3.240	0	180	0	0	180	0	0	180	0	0	180	0
	CS100	7	108	756	8	108	864	0	108	0	0	108	0	0	108	0
	Total incremental of planes	**87**		**14.560**	**75**		**13.704**	**60**		**13.251**	**11**		**2.309**	**11**		**2.309**
Depreciation	MD-88	1	152	152												
	B-767-300 ER	2	269	538												
	plane retirement	**-3**		**-690**	**-3**		**-586**	**-3**		**-586**	**-3**		**-586**	**-3**		**-586**
	Total	**1.400**		**211.264**	**1.472**		**224.382**	**1.529**		**237.046**	**1.537**		**238.769**	**1.545**		**240.492**

Primary calculations

Auxiliar calculations	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of Planes	1.316	1.316	1.400	1.472	1.529	1.537	1.545
Number of Seats	193.043	197.394	211.264	224.382	237.046	238.769	240.492
ASM (in million)	**254.325**	**263.365**	**281.870**	**299.372**	**316.269**	**318.568**	**320.867**

*Includes the operations of our regional carriers under capacity purchase agreements

Revenue per ASM	2014	2015	2016	2017	2018
Total revenue per available seat mile	0,1684	0,165	0,1574	0,1622	0,1687
CAGR				3%	4%

Source : Delta Airlines Financal Statments Report

Calculation of Number of Passengers	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Available seat miles (in millions)	193.043	197.394	211.264	224.382	237.046	238.769	240.492
Passenger load factor	0,86	0,86	0,86	0,86	0,86	0,86	0,86
Total Passengers	**165.052**	**168.772**	**180.631**	**191.846**	**202.674**	**204.148**	**205.621**

*Assuming that the plane occupation doesn't change over time

Miles Calculation

Logic

1. Achieve the 2018 Miles:

$$Revenues_{2018} = ASM_{2018} \; x \; Revenues \; per \; ASM_{2018}$$

$$Revenues_{2018} = [\#Seats_{2018} \; x \; Miles_{2018}] \; x \; Revenues \; per \; ASM_{2018}$$

$$Miles_{2018} = \frac{Revenues_{2018}}{\#Seats_{2018} \; x \; Revenues \; per \; ASM_{2018}}$$

2. Discover the Averge Mile

$$Average \; Mile \; per \; seat = \frac{Miles_{2018}}{Number \; seats_{2018}}$$

3. Calculate Miles for 2018

$$Miles_{n+1} = \#Seats_{n+1} \; x \; Average \; Mile \; per \; seat$$

Calculation

1. Achieve the 2018 Miles:	
Revenues	44.438.000.000
Number Seats for 2018	197.394
Revenues per ASM 2018	0,17
Miles Travelled 2018	**1.334.460**

2. Discover the Averge Mile	
Miles Travelled 2018	1.334.460
Number Seats for 2018	197.394
Average Mile per seats	**7,0**

3. Calculations of Miles	2019 P	2020 P	2021 P	2022 P	2023 P
Average Mile per Seat	7,0	7,0	7,0	7,0	7,0
Number Seats (projections)	211.264	224.382	237.046	238.769	240.492
Miles Travelled (projections)	**1.478.848**	**1.570.671**	**1.659.323**	**1.671.384**	**1.683.444**

Appendix 2. Income Statement Forecast

Annual Income Statement	Historic			Projected				
FY ($ Millions)	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Revenues	**39.639**	**41.138**	**44.438**	**49.457**	**54.633**	**60.029**	**62.889**	**65.881**
Operating expenses	**32.687**	**35.172**	**39.174**	**47.229**	**51.061**	**55.211**	**57.284**	**62.759**
Salaries and related costs	10.034	10.058	10.743	12.572	13.218	13.730	13.800	13.870
Aircraft fuel and related taxes	5.133	6.756	9.020	8.979	9.766	10.565	10.897	11.239
Regional carriers expense (except fuel)	4.311	3.466	3.438	3.657	3.846	3.994	4.015	4.035
Depreciation and amortization	1.902	2.222	2.329	9.442	10.811	12.704	14.144	18.969
Contracted services	1.991	2.108	2.175	2.328	2.472	2.612	2.631	2.650
Aircraft maintenance materials and outside repairs	1.823	1.591	1.575	1.676	1.762	1.830	1.839	1.849
Passenger commissions and other selling expenses	1.710	1.827	1.941	2.077	2.206	2.331	2.348	2.365
Ancillary businesses and refinery	0	1.495	1.695	0	0	0	0	0
Landing fees and other rents	1.490	1.501	1.662	1.768	1.859	1.931	1.941	1.951
Passenger service	907	1.123	1.178	1.261	1.339	1.415	1.425	1.435
Profit sharing	1.115	1.065	1.301	1.448	1.599	1.757	1.841	1.929
Aircraft rent	285	351	394	419	441	458	460	462
Other	1.986	1.609	1.723	1.602	1.742	1.885	1.944	2.005
Operating Income (EBITDA)	**6.952**	**5.966**	**5.264**	**2.228**	**3.572**	**4.818**	**5.604**	**3.123**
Other Non-Operating Income (Expense)	-643	-466	-113	-55	-26	-13	-6	-3
EBIT	**6.309**	**5.500**	**5.151**	**2.174**	**3.546**	**4.806**	**5.598**	**3.120**
Income tax provision	-2.158	-2.295	-1.216	-1.099	-1.012	-923	-846	-773
Net Income	**4.151**	**3.205**	**3.935**	**1.074**	**2.534**	**3.883**	**4.752**	**2.346**

Appendix 2.1. Auxiliary calculation for Income Statement Forecast

Revenues Calculations

	2014	2015	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
ASM (in million)	239.676	246.764	251.867	254.325	263.365	281.870	299.372	316.269	318.568	320.867
Total revenue per available seat mile	0,1684	0,1650	0,1574	0,1622	0,1687	0,1755	0,1825	0,1898	0,1974	0,2053
Operating Revenue (in million)	**40.362**	**40.704**	**39.639**	**41.138**	**44.438**	**49.457**	**54.633**	**60.029**	**62.889**	**65.881**
Revenue Growth					**9%**	**12%**	**11%**	**10%**	**5%**	**5%**

Fuel Calculations

Calculation of Miles	
1. Achieve the 2018 Miles:	
Gallons conumed	4.113.000.000
Miles Travelled	1.334.460
Consuptions per Mile	**3.082**

2. Achieve Cost of Fuel	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Consuptions per Mile	3.082	3.082	3.082	3.082	3.082	3.082
Average Price per Fuel Gallon	2,200	1,970	2,017	2,066	2,115	2,166
Miles Travelled	1.334.460	1.478.848	1.570.671	1.659.323	1.671.384	1.683.444
Fuel cost		**8.979.310.710**	**9.765.727.936**	**10.564.532.069**	**10.896.711.615**	**11.238.750.609**

Salaries Calculations

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes	1.316	1.400	1.472	1.529	1.537	1.545
Number people working	16.978	**18.062**	**18.991**	**19.726**	**19.827**	**19.927**
Increment of people		1.084	929	736	101	101
Increment of Planes		87	75	60	11	11
Increment of people per Plane		13	13	13	10	10
Salaries	10.743	**11.429**	**12.016**	**12.482**	**12.545**	**12.609**
		10%	10%	10%	10%	10%
Salaries	10.743	**12.572**	**13.218**	**13.730**	**13.800**	**13.870**
Change (%)		18%	6%	4%	1%	1%

Categories of Delta Airlines Employees	2017	2018
Delta Pilots	13.234	13.203
Delta Flight Superintendents (Dispatchers)	420	432
Endeavor Air Pilots	1.805	1.976
Endeavor Air Flight Attendants	116	1.307
Endeavor Air Dispatchers	55	60
Total Employees	**15.630**	**16.978**
		9%

Regional carriers expense

Calculation Regional carriers expense	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of Planes	1 316	1 400	1 472	1 529	1 537	1 545
% of Regional Carriers	34%	34%	34%	34%	34%	34%
Regional Carreirs	445	473	498	517	520	522
Regional carriers expense	3 438					
Regional carriers expense - Expenses		**3 657**	**3 846**	**3 994**	**4 015**	**4 035**

Fleets proportions		
Planes International routes	871	66%
Regional Carriers	445	34%
Total	**1 316**	

Depreciation and amortization

Flight equipment	2017	2018
Property/Plant/Equipment	30 688	33 898
Useful Life: (20 -34 years)		15
Residual value: (5% to 10%)		1 695
Depreciaiton value (yearly)		**2 179**
Depreciaiton Rate		**6%**

Ground property and equipment	2017	2018
Ground property and equipment	7 665	8 028
Useful Life: (2 -40 years)		3
Residual value: (5% to 10%)		401
Depreciaiton value (yearly)		**2 542**
Depreciaiton Rate		**32%**

Flight and ground equipment under finance l	2017	2018
Flight and ground equipment under finance le	1 147	1 055
Useful Life: Estimated useful life		2
Residual value: (5% to 10%)		53
Depreciaiton value (yearly)		**668**
Depreciaiton Rate		**64%**

Advance payments for equipment	2017	2018
Advance payments for equipment	1 160	1 177
Useful Life: Unkown (**)		2
Residual value: (5% to 10%)		59
Depreciaiton value (yearly)		**559**
Depreciaiton Rate		**48%**

USD $ in millions	2016	2017	2018	Depreciation Rate (%)	2019 P	2020 P	2021 P	2022 P	2023 P
Flight equipment	28 135	30 688	33 898	6%	39 563	45 095	50 359	53 928	57 727
Ground property and equipment	6 581	7 665	8 028	32%	10 570	13 917	18 325	24 127	31 768
Flight and ground equipment under finance leases	1 056	1 147	1 055	64%	1 730	2 838	4 654	7 632	12 516
Advance payments for equipment	1 059	1 160	1 177	48%	1 736	2 561	3 777	5 571	8 217
Property and equipment, gross	**36 831**	**40 660**	**44 158**		**53 600**	**64 411**	**77 114**	**91 259**	**110 228**
Accumulated depreciation and amortization	-12 456	-14 097	-15 823		-25 265	-36 076	-48 779	-62 924	-81 893
Planes Sold (Value)					-117	-117	-117	-117	-117
Planes Acquired (Value)					3 393	2 925	2 340	429	429
Property and equipment, net	**24 375**	**26 563**	**28 335**		**31 611**	**31 143**	**30 558**	**28 647**	**28 647**
				Depreciations period	**9 442**	**10 811**	**12 704**	**14 144**	**18 969**

Calculation of cost with the inclusion of new planes & fully Amortization of the old planes	
Legend	**2018**
Number of planes	871
Flight equipment value	33 898
Value of expenses with flight equipment per plane	**39**

Legend	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes Sold	-3	-3	-3	-3	-3
Number of planes acquired	87	75	60	11	11
Value of expenses with flight equipment per plane	39	39	39	39	39
Depreciated Planes (Value)	**-117**	**-117**	**-117**	**-117**	**-117**
Acquire Values (Value)	**3 393**	**2 925**	**2 340**	**429**	**429**

Contracted services

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of seats available	197 394	211 264	224 382	237 046	238 769	240 492
Variation		7,03%	6,21%	5,64%	0,73%	0,72%
Contracted services	2 175					
Contracted services		**2 328**	**2 472**	**2 612**	**2 631**	**2 650**

Aircraft maintenance materials and outside repairs

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes	1 316	1 400	1 472	1 529	1 537	1 545
Maintenance	1 575					
Aircraft maintenance materials and outside repairs - Projectio		**1 676**	**1 762**	**1 830**	**1 839**	**1 849**

Passenger commissions and other selling expenses

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of seats available	197 394	211 264	224 382	237 046	238 769	240 492
Variation		7,03%	6,21%	5,64%	0,73%	0,72%
Passenger commissions and other selling exp	1 941					
Passenger commissions and other selling expenses - Projectec		**2 077**	**2 206**	**2 331**	**2 348**	**2 365**

Landing fees and other rents

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes	1 316	1 400	1 472	1 529	1 537	1 545
Variation		6,38%	5,14%	3,87%	0,51%	0,51%
Landing fees and other rents	1 662					
Landing fees and other rents - Projected		**1 768**	**1 859**	**1 931**	**1 941**	**1 951**

Passenger service

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of seats available	197 394	211 264	224 382	237 046	238 769	240 492
Variation		7,03%	6,21%	5,64%	0,73%	0,72%
Passenger service	1 178					
Passenger service - Projected		**1 261**	**1 339**	**1 415**	**1 425**	**1 435**

Profit sharing

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Revenues	44 438	49 457	54 633	60 029	62 889	65 881
Variation		11,29%	10,47%	9,88%	4,76%	4,76%
Profit sharing	1 301					
Profit sharing - Projected		**1 448**	**1 599**	**1 757**	**1 841**	**1 929**

Aircraft rent

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes	1 316	1 400	1 472	1 529	1 537	1 545
Variation		6,38%	5,14%	3,87%	0,51%	0,51%
Aircraft Rent	394					
Profit sharing - Projected		**419**	**441**	**458**	**460**	**462**

Other

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Fuel cost	9 020 000 000	8 979 310 710	9 765 727 936	10 564 532 069	10 896 711 615	11 238 750 609
Variation		-0,45%	8,76%	8,18%	3,14%	3,14%
Other	1 609					
Other - Projected		**1 602**	**1 742**	**1 885**	**1 944**	**2 005**

Appendix 3. Balance Sheet Forecast

Annual Balance Sheet	Historic			Projected				
FY ($ Millions)	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Assets								
Cash & Equivalents	2.762	1.814	1.565	1.753	1.946	2.140	2.247	2.360
Short Term Investments	487	825	203	227	252	278	291	306
Accounts receivable, net of an allowance for uncollectible accounts	2.064	2.377	2.314	2.477	2.630	2.779	2.799	2.819
Fuel inventory	519	916	592	633	671	698	705	712
Expendable parts and supplies inventories, net of an allowance for obsolescence	372	413	463	495	525	546	552	557
Prepaid expenses and other	1.247	1.459	1.203	992	818	674	556	458
Total Current Assets	**7.451**	**7.804**	**6.340**	**6.578**	**6.843**	**7.115**	**7.151**	**7.213**
Property/Plant/Equipment, Total - Net	24.375	26.563	28.335	31.611	31.143	30.558	28.647	28.647
Operating lease right-of-use assets	0	0	5.994	6.244	6.504	6.775	7.057	7.351
Goodwill, Net	9.794	9.794	9.781	9.781	9.781	9.781	9.781	9.781
Identifiable intangibles	4.844	4.847	4.830	4.888	4.942	4.991	5.016	5.041
Cash restricted for airport construction	0	0	1.136	737	818	900	945	992
Deferred income taxes, net	3.064	1.354	242	259	274	285	288	291
Other noncurrent assets	1.733	3.309	3.608	3.860	4.081	4.261	4.305	4.349
Total Long-term Assets	**43.810**	**45.867**	**53.926**	**57.380**	**57.543**	**57.552**	**56.040**	**56.453**
Total Assets	**51.261**	**53.671**	**60.266**	**63.958**	**64.386**	**64.667**	**63.190**	**63.666**
Liabilities								
Current maturities of long-term debt and capital	1.131	2.242	1.518	1.658	1.758	1.828	1.847	1.865
Current maturities of operating leases	0	0	955	168	144	119	101	95
Air traffic liability	4.626	4.364	4.661	4.959	5.214	5.415	5.443	5.471
Accounts payable	2.572	3.634	2.976	3.214	3.439	3.645	3.682	3.719
Accrued salaries and related benefits	2.924	3.022	3.287	3.879	4.111	4.276	4.319	4.362
Loyalty program deferred revenue	1.648	2.762	2.989	3.348	3.716	4.088	4.292	4.506
Fuel card obligation	431	1.067	1.075	1.070	1.164	1.259	1.299	1.339
Other accrued liabilities	1.907	1.868	1.117	1.195	1.267	1.318	1.331	1.344
Total Current Liabilities	**15.239**	**18.959**	**18.578**	**19.490**	**20.813**	**21.949**	**22.312**	**22.701**
Long-term debt and capital leases	6.201	6.592	8.253	8.831	9.361	9.735	9.832	9.931
Pension, postretirement and related benefits	13.378	9.810	9.163	14.841	13.271	10.866	8.466	7.928
Loyalty program deferred revenue	2.278	3.559	3.652	4.047	4.298	4.541	4.574	4.607
Noncurrent operating leases	0	0	5.801	1.017	878	726	611	578
Other noncurrent liabilities	1.878	2.221	1.132	1.339	1.583	1.872	2.214	2.619
Total Long-term Liabilities	**23.735**	**22.182**	**28.001**	**30.075**	**28.513**	**27.015**	**25.087**	**25.085**
Total Liabilities	**38.974**	**41.141**	**46.579**	**49.566**	**49.326**	**48.963**	**47.399**	**47.786**
Equity								
Additional Paid-In Capital	12.294	12.053	11.671	11.671	11.671	11.671	11.671	11.671
Retained Earnings (Accumulated Deficit)	7.903	8.256	10.039	10.744	11.412	12.056	12.143	12.231
Accumulated other comprehensive loss	-7.636	-7.621	-7.825	-7.825	-7.825	-7.825	-7.825	-7.825
Treasury stock, at cost	-274	-158	-198	-198	-198	-198	-198	-198
Total Equity	**12.287**	**12.530**	**13.687**	**14.392**	**15.060**	**15.704**	**15.791**	**15.879**
Total Liabilities & Shareholders' Equity	**51.261**	**53.671**	**60.266**	**63.958**	**64.386**	**64.667**	**63.190**	**63.666**

Appendix 3.1. Auxiliary calculation for Balance Sheet Forecast

Air traffic liability

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of planes	1 316	1 400	1 472	1 529	1 537	1 545
Air traffic liability	4 661					
Air traffic liability - Projected		**4 959**	**5 214**	**5 415**	**5 443**	**5 471**

Fuel card obligation

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Fuel Costs	9 020	8 979	9 766	10 565	10 897	11 239
Fuel Card Obligation	1 075					
Fuel Card Obligation - Projected		**1 070**	**1 164**	**1 259**	**1 299**	**1 339**

Loyalty program deferred revenue

1. Lets assume the 50% of Delta Airline passengers is using the miles as a form of payment

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of miles travelled	1 334 460	1 478 848	1 570 671	1 659 323	1 671 384	1 683 444
Frequent flyer deferred revenue	3 652					
Frequent flyer deferred revenue - Projected		**4 047**	**4 298**	**4 541**	**4 574**	**4 607**

Accounts receivable, net of an allowance for uncollectible accounts

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of Passengers	168 772	180 631	191 846	202 674	204 148	205 621
Accounts receivable	2 314					
Accounts receivable - projected		**2 477**	**2 630**	**2 779**	**2 799**	**2 819**

Accounts receivable, net of an allowance for uncollectible accounts

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
C. Number of Passengers	168 772	180 631	191 846	202 674	204 148	205 621
Retained Earnings (Accumulated Deficit)	10 039					
Retained Earnings (Accumulated Deficit) - Projected		**10 744**	**11 412**	**12 056**	**12 143**	**12 231**

Other noncurrent assets

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Number of contracts	9 443	10 103	10 680	11 152	11 267	11 383
Fuel Contracts: Number of planes	1 316	1 400	1 472	1 529	1 537	1 545
Foreign currency exchange contracts: Japanes yen		4	4	4	4	4
Foreign currency exchange contracts: Euro		4	4	4	4	4
Other noncurrent assets	3 608					
		3 860	**4 081**	**4 261**	**4 305**	**4 349**

Volume of contracts		
Foreign currency exchange contracts : Japanese yen	6 934	+ 4 routes
Interest rate contracts	1 893	
Foreign currency exchange contract: Euros	397	+ 4 routes
Fuel hedge contracts	219	
Total Contracts	**9 443**	

Miles	1 334 460
Number of Planes	1 316
# Miles per Plane	**1 014**

Operating lease right-of-use assets

It will depend on the evolution of lease planes in the fleet.

	2017	2018	Assumption
Operating lease	144	150	
Variation vaiation		4%	Lets assume it will growth at a constant rate of 4%

	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Operating lease right-of-use assets	5 994					
Variation vaiation		4%	4%	4%	4%	4%
		6 244	**6 504**	**6 775**	**7 057**	**7 351**

Cash restricted for airport construction						
	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Cash	1 565	1 753	1 946	2 140	2 247	2 360
Cash restricted for airport construction	1 136					
Proportion	42%					
		737	818	900	945	992

Current maturities of long-term debt and capital leases & long-term debt and capital leases						
Legend	2018	2019 P	2020 P	2021 P	2022 P	2023 P
long-term debt and capital leases	8 253					
Current maturities of long-term debt and capital leases	1 518					
Variation		7%	6%	4%	1%	1%
long-term debt and capital leases		**8 831**	**9 361**	**9 735**	**9 832**	**9 931**
Current maturities of long-term debt and capital leases		**1 658**	**1 758**	**1 828**	**1 847**	**1 865**

Legend	2016	2017	2018	
Long-term debt and finance leases (including current maturities)	**7 332**	**8 834**	**9 771**	
long-term debt and capital leases	6 201	6 592	8 253	
Current maturities of long-term debt and capital leases	1 131	2 242	1 518	
long-term debt and capital leases Proportion	**15%**	**25%**	**16%**	**19%**

Appendix 4. Working Capital Forecast

Working Capital	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Current Assets	**7.451**	**7.804**	**6.340**	**6.578**	**6.843**	**7.115**	**7.151**	**7.213**
Cash & Receivables	2.762	1.814	1.565	1.753	1.946	2.140	2.247	2.360
Short Term Investments	487	825	203	227	252	278	291	306
Accounts Receivable	2.064	2.377	2.314	2.477	2.630	2.779	2.799	2.819
Fuel inventory	519	916	592	633	671	698	705	712
Inventory	372	413	463	495	525	546	552	557
Prepaid Expenses	1.247	1.459	1.203	992	818	674	556	458
Current Liabilities	**15.239**	**18.959**	**18.578**	**19.490**	**20.813**	**21.949**	**22.312**	**22.701**
Current maturities of long-term debt and capital leases	1.131	2.242	1.518	1.658	1.758	1.828	1.847	1.865
Current maturities of operating leases	-	-	955	168	144	119	101	95
Air traffic liability	4.626	4.364	4.661	4.959	5.214	5.415	5.443	5.471
Accounts payable	2.572	3.634	2.976	3.214	3.439	3.645	3.682	3.719
Accrued salaries and related benefits	2.924	3.022	3.287	3.879	4.111	4.276	4.319	4.362
Loyalty program deferred revenue	1.648	2.762	2.989	3.348	3.716	4.088	4.292	4.506
Fuel card obligation	431	1.067	1.075	1.070	1.164	1.259	1.299	1.339
Other accrued liabilities	1.907	1.868	1.117	1.195	1.267	1.318	1.331	1.344
Working Capital	**-7.788**	**-11.155**	**-12.238**	**-12.913**	**-13.970**	**-14.833**	**-15.161**	**-15.488**
Net Working Capital		**-3.367**	**-1.083**	**-675**	**-1.058**	**-863**	**-328**	**-327**

Appendix 5. CAPEX

CAPEX	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
Net Property Plant&Equipment	24.375	26.563	28.335	31.611	31.143	30.558	28.647	28.647
Other assets	1.733	3.309	3.608	3.860	4.081	4.261	4.305	4.349
Deperciation and Amortization	1.902	2.222	2.329	9.442	10.811	12.704	14.144	18.969
Capital expenditure	**-**	**5.986**	**4.400**	**12.970**	**10.563**	**12.299**	**12.277**	**19.014**

Appendix 6. Free Cash Flow

	2016	2017	2018	2019 P	2020 P	2021 P	2022 P	2023 P
EBIT	6.309	5.500	5.151	2.174	3.546	4.806	5.598	3.120
Tax on EBIT	-1.489	-1.298	-1.216	-513	-837	-1.134	-1.321	-736
Depreciation & Amortization	1.902	2.222	2.329	9.442	10.811	12.704	14.144	18.969
Change in NWC				-675	-1.058	-863	-328	-327
CAPEX		-5.986	-4.400	-12.970	-10.563	-12.299	-12.277	-19.014
FCFF	**6.722**	**438**	**1.864**	**-2.542**	**1.899**	**3.213**	**5.816**	**2.012**
Terminal Value								140.467
FCFF Total				**-2.542**	**1.899**	**3.213**	**5.816**	**142.479**
WACC				4%	4%	4%	4%	4%
Discount Factor				0,964	0,929	0,832	0,719	0,598
Discounted CashFlows				**-2.451**	**1.764**	**2.675**	**4.181**	**85.261**

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