ISCTE Business School
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EVALUATING THE PRIVATIZATION OF THE PORTUGUESE NATIONAL AIRLINE - TAP

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PROJECT REPORT

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Abstract

Portugal's deficit economy during several years and the high levels of Public Debt culminated with the need of an External Financial Assistance Program. Regarding this program a privatization plan of several state-owned companies was developed, in which TAP Group was included.

The main activity of TAP Group is air passenger and cargo transport. It also provides services to third party customers in areas related to the Group's core activities, such as Maintenance and Engineering services.

The Letter of Intent sent by Portuguese Government to International Monetary Fund (IMF), concerning the Portugal's Financial Assistance Program, and the State Budget for 2015 refer the need to restart the process of TAP privatization. On November 13th of 2014, the Council of Ministers approved the re-privatization process of TAP.

Consequently, in order to sell TAP Group at its fair value, it is essential to perform a financial corporate valuation. This way, in the next pages, it will be developed a valuation of TAP, using three corporate valuation methods: Multiples (or Relative) Analysis, Discounted Cash Flow method, using the Free Cash Flow for the Firm approach and the Free Cash Flow for the Equity approach, and a valuation method used to valuing firms with regular negative earnings, which is the case of TAP Group.

Considering the negative TAP's fair value estimated in all methods, Portuguese Government should simply transfer its capital and inherent obligations to the investors. However, TAP is valuable if it becomes more efficient, which is expected to occur in a privatization process.

JEL Classification: G32**,** L33

Keywords: Privatization, Corporate Valuation, Multiples Analysis, Discount Cash Flow

Resumo

Portugal perante uma situação de endividamento excessivo e de uma economia deficitária que perdurava há vários anos, solicitou um pedido de ajuda financeira externa. Neste pedido de ajuda externa foi estabelecido um programa de alienação de participações do Estado em empresas nacionais, sendo a TAP uma dessas empresas.

O Grupo TAP tem como principal atividade o transporte aéreo de passageiros e de carga, bem como um conjunto de serviços prestados a entidades terceiras em áreas ligadas aos negócios principais do Grupo.

Em novembro de 2014, foi deliberado em Conselho de Ministros o relançamento do processo de privatização do Grupo TAP.

De modo a que o Grupo TAP seja vendido pelo seu justo valor, é imprescindível realizar uma avaliação económico-financeira. Nas próximas páginas será realizada uma avaliação ao Grupo, utilizando três métodos: análise pelos Múltiplos, o método dos Fluxos de Caixa Descontados, quer na ótica dos Fluxos de Caixa Livres para a Empresa, quer na ótica dos Fluxos de Caixa Livres para os Acionistas, e, por último, um modelo de avaliação para empresas que apresentam sistematicamente resultados negativos, como é o caso da TAP.

O justo valor estimado nos três métodos de avaliação para o Grupo TAP é negativo. Assim, o Governo não deverá registar um encaixe financeiro com a operação, cedendo apenas aos investidores a sua posição no capital social e as respetivas obrigações do Grupo. Contudo, o Governo deve ter em conta que a TAP tem valor ao tornar-se uma empresa mais eficiente, algo que é expectável numa privatização.

Classificação JEL: G32**,** L33
Palavras-chave: Privatização, Avaliação de Empresas, Múltiplos, Método dos Fluxos de Caixa Descontados

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List of Acronyms

ACMI – Aircraft, Crew, Maintenance and Insurance

APV – Adjusted Present Value

BRIC – Brazil, Russia, India and China

CAPM – Capital Asset Pricing Model

CF – Cash Flow

DCF – Discounted Cash Flow

EC – European Commission

ECB – European Central Bank

EBIT – Earnings Before Interest and Taxes

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortization

EBITDAR – Earnings Before Interest, Taxes, Depreciation, Amortization and Rent

EUR – Euro

EV – Enterprise Value

FCFE – Free Cash Flow for the Equity

FCFF – Free Cash Flow for the Firm

GDP – Gross Domestic Product

ICAO – International Civil Aviation Organization

IMF – International Monetary Fund

IAG – International Airlines Group

IATA – International Air Transport Association

JEL – Journal of Economic Literature

LCCs – Low-Cost Carriers

MoU – Memorandum of Understanding

NWCN – Net Working Capital Needs

OECD – Organisation for Economic Co-operation and Development

PER – Price Earnings Ratio

P/L – Profit and Loss Statement

ROIC – Return on Invested Capital

RPK – Revenue Passenger Kilometers

TAP – Transportes Aéreos Portugueses

TV – Terminal Value

USD – United States Dollar

WACC – Weighted Average Cost of Capital

Sumário Executivo

O MoU assinado, em maio de 2011, pelo Governo Português com o FMI, a Comissão Europeia e o Banco Central Europeu, no âmbito do Programa de Assistência Financeira, foi o ponto de partida para um conjunto de privatizações de empresas públicas, bem como, para a venda de determinadas participações minoritárias em outras empresas. Este memorando resulta de uma economia deficitária que já perdurava há demasiados anos em Portugal e de uma situação de endividamento excessivo.

Assim, nos últimos três anos, algumas empresas públicas iniciaram um processo de privatização, como foi o caso da Energias de Portugal, S.A. e os CTT – Correios de Portugal, S.A. Por outro lado, havia um conjunto de empresas públicas que vinham sendo constantemente mencionadas pelo Governo Português e pelos media, que brevemente iriam seguir o mesmo caminho, como foi o caso do Grupo TAP.

O Grupo TAP tem como principal atividade o transporte aéreo de passageiros e de carga, bem como um conjunto de serviços prestados a entidades terceiras em áreas ligadas aos negócios principais do Grupo, tais como serviços de Manutenção e Engenharia. O Grupo TAP era detido a 100% pela Parpública Participações Públicas, SGPS, S.A., uma sociedade gestora de participações sociais de capitais exclusivamente públicos.

Desta forma, considerando o impacto que o Grupo TAP tem na economia portuguesa e na vida dos portugueses e, uma vez que, nos últimos anos, o processo de privatização do Grupo TAP tem sido discutido frequentemente, o objetivo deste projeto de mestrado é calcular o valor do Grupo TAP, de forma apurar qual é o valor do Grupo, para que se possa vender o Grupo TAP por um preço que seja bom para todos os stakeholders envolvidos neste processo. Assim, para determinar o valor do Grupo TAP serão utilizados três métodos de avaliação de empresas: a avaliação pelos múltiplos, o método dos Fluxos de Caixa Descontados, quer na ótica dos Fluxos de Caixa Livres para a Empresa, quer na ótica dos Fluxos de Caixa Livres para os Acionistas, e, por último, um modelo de avaliação para empresas que apresentam, de forma sistemática, resultados negativos, como tem sido o caso do Grupo TAP. A

avaliação pelos múltiplos, tem como base determinados rácios de empresas concorrentes, enquanto, os outros dois modelos têm em atenção a situação económica e financeira da empresa sob avaliação, tendo, no caso específico do DCF, uma especial atenção à capacidade de a empresa gerar fluxos de caixa positivos no futuro.

Em 2012, o Grupo Synergy, detido pelo empresário German Efromovich, através da sua subsidiária, a Synergy Aerospace, formalizou uma proposta para aquisição da TAP. Esta proposta foi rejeitada pelo Governo Português. Mais recentemente, em novembro de 2014, o Conselho de Ministros aprovou a reprivatização do Grupo TAP, através da privatização de 66% do capital social do Grupo, onde 61% do capital é afeto a investidores nacionais ou estrangeiros e os restantes 5% do capital é alocado para os trabalhadores do Grupo que pretendam adquirir uma participação na empresa. Numa fase avançada deste novo processo de privatização do Grupo TAP participaram três grupos de investidores: o Grupo Synergy do empresário German Efromovich, a Quifel Holdings, detida pelo empresário português Pais do Amaral e o consórcio Gateway, detido em 50,1% pelo português Humberto Pedrosa, dono da Barraqueiro, e por David Neeleman, fundador da empresa de aviação Azul e JetBlue.
Na fase de ofertas vinculativas, apenas as propostas do Grupo Synergy e do consórcio Gateway foram consideradas, com a decisão do Governo a pender para a proposta do consórcio Gateway como grande vencedora na corrida à privatização de 61% do capital do Grupo TAP.

A importância deste projeto está extremamente relacionada com o valor que a TAP tem para a economia portuguesa. As Exportações foram um dos pilares para a pequena retoma económica que o país apresentou em especial no último ano. Num Mundo global, a TAP é um instrumento vital para a internacionalização da economia portuguesa. De uma forma direta, a TAP, ano após ano, tem reforçado as vendas nos mercados externos, contribuindo para o aumento do valor das exportações. Por outro lado, através da sua atividade, a TAP tem a capacidade de influenciar as exportações de todos os outros agentes económicos presentes no país.

De salientar que este projeto de mestrado apresenta uma limitação de âmbito que está correlacionada exatamente com a capacidade que o Grupo TAP tem de influenciar as exportações de outros agentes económicos. Através da sua operação a TAP acaba por

gerar riqueza para o País. E o valor desta riqueza é certamente um fator que o Governo Português deve ter em conta no momento de avaliação das propostas dos investidores, de forma a perceber se está disposto a perder parte desse valor com esta operação. Uma vez que, é extremamente difícil precisar qual é o valor da geração de riqueza indireta pela TAP para o País, este valor não foi considerado no projeto, tendo o mesmo sido restringido apenas a uma análise económico-financeira do Grupo.

O justo valor estimado nos três métodos de avaliação para o Grupo TAP é negativo. Os valores estão compreendidos num intervalo que vai de – 102,287 milhares de euros a – 133,615 milhares de euros. Considerando o intervalo de valores estimado para o justo valor da TAP conclui-se que o Governo Português deve apenas transferir aos investidores a sua posição no capital social da empresa e as respetivas obrigações do Grupo, sem receber qualquer contrapartida financeira pela operação.

Contudo, importa realçar que o Grupo TAP tem valor caso, no futuro, se torne um Grupo mais eficiente. Aliás, esta é uma expectativa que frequentemente está implícita a um cenário de privatização.

1. Introduction

Portuguese Council of Ministers approved the re-privatization process of TAP Group. TAP Group was totally owned by Parpública Participações Públicas, SGPS, S.A., a state asset management entity that manages several positions that Portugal State has in its portfolio and supports the privatization process of state-owned companies.

Concerning the impact that TAP has in Portuguese economy and in life of Portuguese people and, since in the last three years the privatization of TAP has been frequently discussed, the aim of this Master Project is calculate TAP's fair value, in order to sell it at the right price, a price that can be good to all the stakeholders involved.
To achieve our purpose it will be used three of most known corporate valuation methods: Multiples (or Relative) Analysis, Discounted Cash Flow method, using the Free Cash Flow for the Firm approach and the Free Cash Flow for the Equity approach, and a valuation method used to valuing firms with regular negative earnings, which is the case of TAP Group.

First of all, it is going to be used Multiples Valuation method. In this approach TAP's fair value will be obtained by looking at market ratios of similar firms and the sector. The methodology consists by analyzing the ratios of similar companies/sector and then compares this information with some TAP's items reflected in company's annual report (Balance Sheet and Profit and Loss Statement).

However, in order to get a better understatement of what can be TAP's fair value it will be used the DCF valuation method, which is the most common and, for many experts and corporate valuation professionals, the best method to determine a company fair value. The DCF method is focused in the company's ability to generate future cash flows, by considering the company's past behavior in order to understand what can be its future. The DCF method will be performed by using two different approaches: Free Cash Flow for the Firm and Free Cash Flow for the Equity.

In the specific case of many privatizations, we are looking to value companies with long negative financial results, which is the case of TAP Group. Therefore, in order to get a better understanding of TAP's fair value, it will be used another valuation

method that can be extremely useful to apply when valuing companies with negative earnings facing a privatization process.

Nevertheless, it is important to refer that valuing a company, like valuing anything else, is an individual process that depends on subjective factors.

In the next subject, a review of literature on what corporate valuation is and its usefulness is presented, as well as, the valuation methods that are going to be used throughout the valuation of TAP. Then, an industry overview and a brief description of TAP Group, to understand the actual context of the industry and the company, are presented. This is extremely important for the company valuation process that will be performed after. The final section culminates with the presentation of TAP's valuation main conclusions.

2. Review of Literature

2.1 Corporate Valuation

Corporate valuation subject has always fascinated many academic students and professional people. Just looking at the purpose of corporate valuation it's easily to understand the interest of many people on this matter given that it plays a decisive role in defining the fair value of a company.

However, before entering in the vast world of valuation it is important to understand one specific topic which is one of the main philosophical basis for valuation: the difference between price and value.

First of all, the concept of price and value is not only limited just to corporate valuation. This topic is and was present through the years in all human beings life's, independent of its social, academic or professional situation. Oscar Wilde, a famous Irish writer and poet who lived in the 19th century, once described as "*an individual who knows the price of everything, but the value of nothing*" (Damodaran, 2002: 1). Recently, Buffet (2014: 20), the American business magnate and one of the most successful investors of the 20th and 21st century, in his letter to Shareholders of Berkshire Hathaway Inc., refers that "*Price is what you pay. Value is what you get*". So, it's clearly a big difference between price and value which is important to understand. Price is what people pay for a specific asset, can be a given product, a service, a company share, etc. Is the amount paid for that asset. On the other hand, value is what that asset worth. Value could be measured in financial terms, emotional terms, or in any number of ways.

A company value, according to Fama and Perez (2004) is a reflection of its utility to the evaluator and since utility and preferences are not clearly measurable, the calculation of company's fair value will reflect those levels of individual subjectivity. Conversely, they define price as being the exact amount of money involved in the financial transaction of the company.

Koller, Goedhart and Wessels (2010: 3) refer that:

"Value is the defining dimension of measurement in a market economy. People invest in the expectation that when they sell, the value of each investment will have grown by a sufficient amount above its cost to compensate them for the risk they took".

For them, value is extremely important because it takes into account the long-term interests of all the stakeholders in a company, and not just the shareholders. When companies maximize the value for their shareholders in the long term, and not only for the accounting earnings reflected in the short-term performance, they create more employment, treat better the employees and give more satisfaction to their customers than the competitors. Every company should follow the principle of value creation. Companies create value by investing capital they raise from investors to generate future cash flows at a higher rate of return than the cost of capital which is the rate that investors demand to be paid for using their money.

Valuation, like other subjects, developed several myths over time. In order to understand valuation and its process Damodaran (2002) clarifies the main myths.
Firstly, valuation is not an objective process only. The models used can be quantitative, however some of the inputs necessary to implement the model are based in subjective judgments. So, given the exposure to external information about a company, the majority of valuations will have bias.
Secondly, the process of a company valuation is continuous. Given the constant new information about the company and other economic indicators, a valuation of a firm has to be updated to reflect the recent information. Like Lord Keynes once said "*When the facts change, I change my mind. And what you do, sir?*" (Damodaran, 2002: 4).
Finally, some people believe that a good valuation provides a precise estimate value. Since, company valuation has in its foundations assumptions made about the future of the company and economy, it is unfeasible to expect a precise and absolute estimate to company value. A reasonable margin for error has to be taken into account when measuring company's value by any of valuation methods. The problems are not the valuation methods used but the difficulty in making assumptions for the future. The firms under analysis, the industry, the company life cycle or the economy wealth are

all factors that influence the precision of valuation. For instance, mature companies with a long financial history tend to be easier to value than growth companies, young start-up companies or even companies that are facing a privatization process.

Like was explained before, the study of corporate valuation is vast and has several ramifications. Some researchers dedicate their work to some particular aspects that may influence the value of the company. In particular, it is important to refer the study of Modigliani and Miller (1961) which focus their attention on the effect of certain policies on the value of the company. Their examined the impact of dividend policy on the shares prices. Firstly, Modigliani and Miller conclude that in the presence of perfect markets, where there are no transaction costs and taxes, and all the economic agents have the same financing conditions, the dividend policy and the capital structure is irrelevant to value creation. They show that there is no additional value to the company by using equity or debt funds to finance its activity. The value of the company only depends on the return of assets. Secondly, after a few years, Modigliani and Miller reviewed their initial study, by taking into account the existence of taxes. The fundamental point is that the interest paid by the company when using external financing can be deductable, resulting in a lower cost for the company in comparison with the equity cost. Therefore, in this situation the company profits increase and its value too. It is important to refer that in the real world this theory is difficult to implement. Here, Mota, Barroso, Nunes and Ferreira (2006) conclude that the costs of financial distress that may aware to the company by having a higher level of debt will destroy its value. The costs of financial distress can be direct costs, such legal costs occurred in a bankruptcy process, or indirect costs, like decrease of clients confidence in company products/services or agency costs that are costs originated by the conflict of interests between shareholders and debt holders.

Valuation is useful in an extensive sort of tasks. Damodaran (2002: 6) refers that:

"*The role it plays, however is different in different arenas*".

For the author valuation can be extremely useful in portfolio management, corporate finance and acquisition analysis.

In portfolio management, valuation is vital to fundamental analysts since the basis is the same. However, even for technical analysts, which believes that prices movements

depend on investor psychology or financial variables, valuation can be particularly useful. For instance, valuation can be used to calculate the support and resistance lines on a stock price, tools that are extremely important for the chartists' analysts.

The useful of valuation in corporate finance is extremely related with the purpose of corporate finance itself. The objective of corporate finance is the maximization of company value through a continuous process of value creation. According to Koller et al (2010) this is one of the basis of valuation.

In an acquisition analysis or privatization process, the bid part, before making its proposal, need to compute and measure what is the fair value of the target company. Similarly, the target company through valuation method needs to determine the value of the company in order to analyze the offer. The fair value of the company is, in the end, the initial price that will be the starting point for negotiation between the buyer and the seller company.

Now that is already understood what is and the purpose of corporate valuation, it is crucial to refer that exist several models to measure the fair value of a company.

Damodaran (2002: 11) refers that:

"Analysts use a wide spectrum of models, ranging from the simple to the sophisticated. These models often make very different assumptions about the fundamentals that determine value, but they do share some common characteristics and can be classified in broader terms."

The author argues that, in general terms, there are several models: Discounted Cash Flow (DCF), Multiples or Relative valuation, Contingent Claim Valuation (Options) and Asset Based Valuation.

2.2 Discounted Cash Flow Valuation

"[…] it is the foundation on which all the other valuation approaches are built"

Damodaran (2002: 11)

The value of a company in DCF valuation is related with the present value of expected future cash flows generated by the company.

According to Mota et al (2006), DCF valuation estimates the value of the company in a dynamic perspective. The company value does not depend on its historical and actual situation, even if it was and is extremely positive, but for its capacity to generate positive cash flows in the future.

DCF is the most known method to measure the value of an asset or a company. Moreover, according to Damodaran (2002), anyone who understands the basis of DCF will be able to use and analyze other different approaches. For instance, the option pricing models used to value any asset, financial or real, frequently have its starting point in a DCF valuation.

In generically terms, the DCF method is calculated as follows:

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

Where,

n = Life of the asset

CF_t = Cash Flow in period t

r = Appropriate discount rate

It is important to refer that exist many variations of DCF models.

Depending on the purpose of the appraiser and what he wants to value, Damodaran (2002) argues that exist three ways to apply the DCF model: value the entire company, value only the equity position in the business and value the company in pieces, which is called APV. The concept is similarly in the three approaches, which is discount the expected future cash flows for the present time. However, the calculation of cash flows and the discount rate will be different under each. We only will focus our attention in the first two approaches, which are the models that will be used in this work to value the company.

When valuing the entire company the appraiser pays attention to the FCFF which is the amount of cash that is available to the company after paying all the expenses, reinvestment needs and taxes. On the other hand, when evaluating the equity stake in the business the appraiser focuses on the FCFE, amount of cash available to be distributed to the shareholders, after paying all expenses, tax, reinvestment needs and net debt payments (interest, principal payments and new debt issuance). This way:

$FCFF_n = EBIT_n \times (1-Tax\ rate) - \Delta\ Net\ Working\ Capital\ Needs_n - Net\ Capex_n$ (2)

$FCFE_n = FCFF_n + (Debt_n - Debt_{n-1}) - Interest\ Expense_n \times (1\text{-}Tax\ rate)$ (3)

The discount rate to apply in each approach will be different too. If the appraiser is valuing the entire firm the discount rate to apply will be the weighted average cost of capital (WACC), which takes into account the overall risk of the company, usually financed by equity and debt sources.

$$WACC = \frac{Equity}{Equity+Debt} \times Cost\ of\ Equity + \frac{Debt}{Equity+Debt} \times Cost\ of\ Debt \times (1 - Tax\ rate) \quad (4)$$

Conversely, if it is used the FCFE approach, the discount rate should reflect only the risk of equity, which is the rate of return required by the equity investors.

In both approaches, since it becomes more difficult as time goes by to estimate cash flows, perpetuity technique is used to compute the terminal value (TV). For Mota et al (2006), the terminal value, frequently, represents the major part of the company value.

$$TV_n \text{ FCFF approach} = \frac{FCFF\ n+1}{WACC-g} \quad (5)$$

$$TV_n \text{ FCFE approach} = \frac{FCFE\ n+1}{Cost\ of\ Equity - g} \quad (6)$$

Where,
g = long term growth rate

DCF valuation is easy to use, especially, if the company under valuation has historical positive cash flows with a similar performance and a proxy for risk is available to obtain discount rates. However, this model in other situations needs to be computed very careful. According to Damodaran (2002), the DCF valuation model has to be flexible when applied to companies in trouble, companies facing a restructuring process, private companies, cyclical companies and companies involved in acquisitions in order to assume correctly all the specifications of these types of firms, which can have a higher impact in company's value.

2.3 Relative (or Multiple) Valuation

"[…] the reality is that most valuations are relative valuations"

Damodaran (2002: 18)

For Mota and Custódio (2006) the purpose of relative valuation is confront the value of the company with other companies that are similar to it, or with the average of the industry by using a range of multiples ratios.
Damodaran (2002) refers that in the real life relative valuation is the most used valuation. He (2002: 18) argues that "*in relative valuation, the value of an asset is derived from the pricing of comparable assets, standardized using the common variable such as earnings, cash flows, book value or revenues*".

There are a lot of different multiples that can be used, such the Price to Sales ratio, the Price to Book Value and the PER – Price earnings ratio. Other multiple that is frequently used by the appraisers, and will be the multiple used to perform the valuation of TAP's fair value is the EV/EBITDA.

The EV/EBITDA takes into account the debt being used by a company, an item which is not included, for instance, in the PER multiple. It is particularly interesting to analyze this ratio in a privatization scenario since the acquirer part would like to take into account the Debt amount of the company which is reflected in the Enterprise Value.
Moreover, the EV/EBITDA ratio ignores the effects of countries tax policy, extremely useful when we are comparing with other companies based in different countries.
Depending on the industry being analyzed, some multiples are more appropriate than others.

According to Massari, Visciano, Lagreca, Mele, Bellavita, Cera, Rippa, Peschiera, Spaltro and Papa (2004) exist other multiple that is extremely useful to value air transport companies, the EV/EBITDAR. This specific multiple is able to represent some specific characteristics of the airline industry, reason why it will be used too to measure TAP Group fair value. EBITDAR represents the gross operating margin before aircraft leasing costs. This allows a comparison between the airline companies,

regardless of the decision to own or lease the fleet. In fact, this multiple gives to the appraiser another perspective of the company value when we compare with the EV/EBITDA because, for instance, for companies that own the aircraft, the amount of debt repayment and the amount of interest expense are not included in the gross margin (EBITDA). Therefore, a comparison between airline companies that have leasing costs is not possible.

The DCF method, when applied to airline companies, is impacted by the cyclical nature of the business, which represents a limitation in projecting the future cash flows of the company under analysis. Moreover, in the specific case of the company that owns the aircraft, the allocation timing of the investments relative to new aircrafts will certainly lead to distortions in projecting the future cash flows.

The multiples analysis is very simple and easy to work. Nevertheless, they can be tricky, since the definition of comparable companies, used to compute the valuation, is subjective. A bad comparable company's choice can misuse all the valuation conclusions. Mota and Custódio (2006) conclude that multiples analysis needs to be seen as DCF complementary method and not like a DCF substitute method. Damodaran (2002: 20) goes further and enhances that "*while this potential bias exists with the discounted cash flow valuation as well, the analyst in the DCF valuation is forced to be much more explicit about the assumptions which determine the final value. With multiples, these assumptions are often left unstated*".

2.4 Other Valuation Models

Damodaran (2002) defends that there are, in general terms, two more different approaches that can be used in valuation: the Contingent Claim Valuation (Options) and the Asset Based Valuation.

The Option pricing models are the foundations of Contingent Claim Valuation.
Options pricing models, such the Binomial model or the Black and Scholes model, are commonly used in valuation of financial assets. However, these models have been adapted to value real assets, projects, companies and equity stakes. The usage of real options models are very useful to value businesses when the company is facing an

uncertainty context, since these models take into account the flexibility that the company has in the future on the occurrence of a certain event. By using real options analysis the appraiser values this flexibility, which is going to increase the value of the project.

According to Damodaran (2002) the fundamental principle to use option pricing models is that DCF models tend to minimize the value of assets that, on the occurrence of a certain event, provide different payoffs.

Myers (1976), one of the first authors to argue the importance of the real options models in corporate valuation, goes further than Damodaran, by assuming that real options are intrinsic assets of a company. In his working paper, The Determinants of Corporate Borrowing (1976), he picked in the theory of Modigliani and Miller (1961) and defends that a company at certain period in time is a collection of tangible assets, which are units of productive capacity, and intangible assets, options which give the right to the company to purchase additional units in the future.

It is important to refer that some limitations may aware in using the option pricing models, especially, if the underlying asset is not traded. In this situation, the inputs for the value of the underlying asset have to be predictable. Therefore, in this case, the final value will have a higher level of error than the final value calculated using information extracted from financial reports.

Some analysts use the Asset Based Valuation to measure the value of an asset. About this subject, Damodaran (2002) argues that this approach needs to be seen as an integrated part of the other three methods since some values obtained through the application of the Asset Based Valuation are calculated using at least one of that three approaches. The Asset Based Valuation models take into account the individual assets owned by a company and use that information to estimate the value of the company. There are several variants on the Asset Based Valuation models. One approach looks for the liquidation value, which is computed by adding and aggregating the estimated sale proceeds of the assets owned by the company under analysis. On the other hand, in the replacement cost approach, the appraiser is focus in what will be the cost to replace all the assets that company has in that period of time.

Finally, is extremely important to mention that, in most valuation methods presented until now, we have looked for companies that have positive earnings. It cannot be said

that these methods cannot be applied to firms that have negative earnings. However, Damodaran (2004) refers that when we are analyzing companies in this financial situation, these valuation methods need to be applied carefully in order to be adapted and reflect the underlying reasons that generate these negative earnings. A firm with negative earnings is more difficult to value than a firm with positive earnings because: exist in these companies the real possibility that these firms will go bankrupt if earnings continue negative, the estimation of taxes becomes more difficult to obtain and estimate the earnings growth rate is difficult because when current earnings are negative, applying a growth rate will just make it even more negative.

Damodaran (2004) refers that there is not a specific way to deal with negative earnings because this will depend upon why the company has negative earnings in first place. In his book, Damodaran (2004) explores the alternatives that he considers available to value companies with negative earnings. In the specific case of many privatizations, we are looking to value companies with a long negative financial record, like it will be shown upfront, was the case of TAP Group. Therefore, in order to get a better understanding of TAP's fair value, it will be used another valuation method that, Damodaran (2004) defends that can be extremely useful to apply when valuing companies with negative earnings facing a privatization process:

$$\textit{Value of the Firm} = \frac{EBIT\times(1-T)\times(1+g)\times(1-Reinvestment\ Rate)}{Cost\ of\ Capital-g} \quad (7)$$

Where,

$$\text{Reinvestment Rate} = \frac{g}{ROIC} \quad (8)$$

3. Industry Overview

Over the past four decades there has been an incredible growth in air transport services. In this period, the volume air travel, measured by worldwide scheduled RPK, has expanded ten times and the freight fourteen times. RPK is a measure of sales volume of passenger traffic and FTK measures the freight traffic. RPK is obtained by multiplying the number of revenue passengers on each flight by the total number of kilometers of that flight. The airline industry has been one of the fastest growing economic sectors, like it can be seen in figure 1. In graph is illustrated that the airline industry has an expansion three times greater that the growth of the world's economies and has a similar trend with the world trade. The growth of the airline industry was a key factor and is extremely responsible for the Globalization process that is now part of peoples and business life's. According to Belobaba, Odoni and Barnhart (2009) the airline industry itself is a major economic force, in terms of both its own operations and its impacts on other industries such as Tourism.

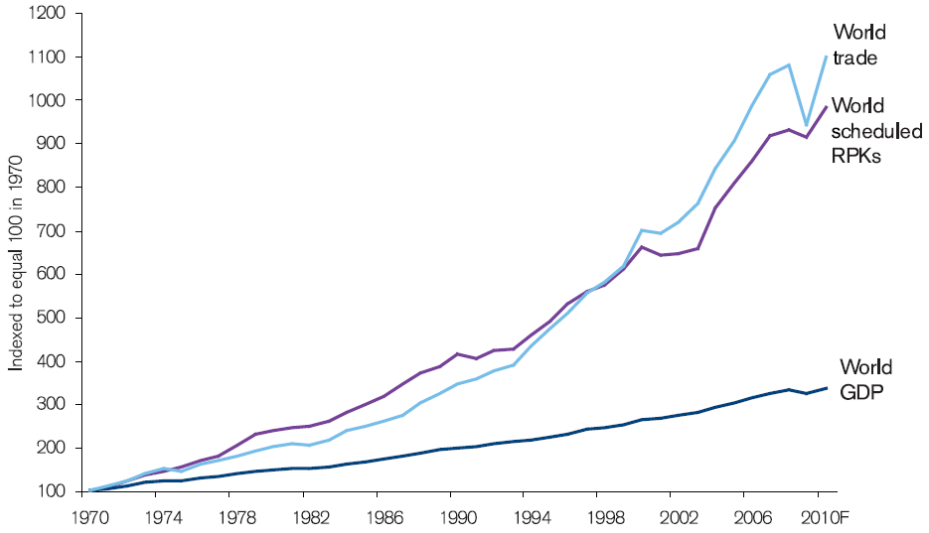

Figure 1 – Airline Industry Expansion in the past 40 years
Source: IATA Vision 2050 Report

We can see in figure 1 that, in an initial phase, the air travel grew faster than the world trade. However, in the 90s and 2000s, as the OECD markets matured the average income declined and air travel grew at a lower rate than world trade.

Looking at figure 2 we can conclude that once real GDP per capita reached $15,000-$20,000 the number of trips by air per head of population levels out. Today's large

markets in the US and Europe are approaching saturation. However, the BRIC economies have very underdeveloped travel markets and are likely to be a large source of new travel demand in the decades ahead.

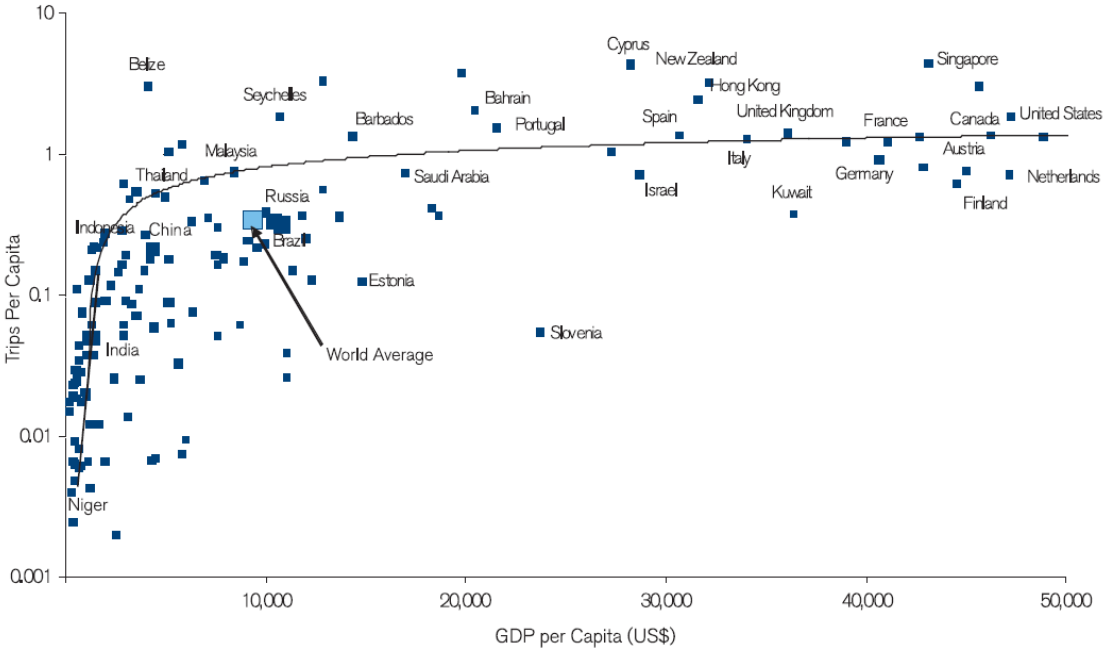

Figure 2 – Different stages of development of Travel markets
Source: IATA Vision 2050 Report

The Macroeconomic turmoil and the threat of terrorism since 9/11 had impact on volumes and values of traffic performed by the industry. In other hand, microeconomic changes, specially related to the growth of market power of LCCs, are putting into deep crisis the traditional airlines companies.

According to Jarach (2004) the traditional carriers' business model has been a great success in the past, but today it is showing to be unsustainable in the current form. He (2004: 29) refers that:

"In a condition of fixed-costs that reach up to 90% of total costs and with few chances of cutting them in the short period, this revenue-cost imbalance naturally gives life to huge deficits, liquidity crises, job cuts, network reductions and, eventually, bankruptcies".

Based on Jarach (2004) analysis the main differences between the Traditional airlines and the LCCs are:

Traditional Airlines	LCCs
• Massive marketing expenses (advertising, Frequent Flier Programs, travel agents' overrides, network analysis) • Expensive fragmented and complex services (classes of tariffs and service, catering, lounges, ground services, etc.) • Massive use of technology (hard technology: aircraft tailored for each route and prescription; soft technology: CRS legacy systems) • Ancient-regime financial targets (in contrast with macroeconomic shockwaves and lifestyle changes)	• Minimal marketing expenses (word-of-mouth on comparative advertising, airports' supports) • Personal, convenient and pleasant service (reengineering around core benefits, easy price discrimination) • Judicious use of technology (hard technology: fleet standardization; soft technology: Internet and CRS avoidance) • Realistic financial targets (based on their own business model) • Structural efficiencies (no overstaffing, high productivity, no hubbing costs)

Table 1 – Main Differences between the Traditional Airlines and the LCCs
Source: Future Scenarios for the European Airline Industry analysis by Jarach

These differences explain why LCCs have boomed in the recent years, like shown in Figure 3, and why the Traditional airlines need to respond and adapt quickly to this context.

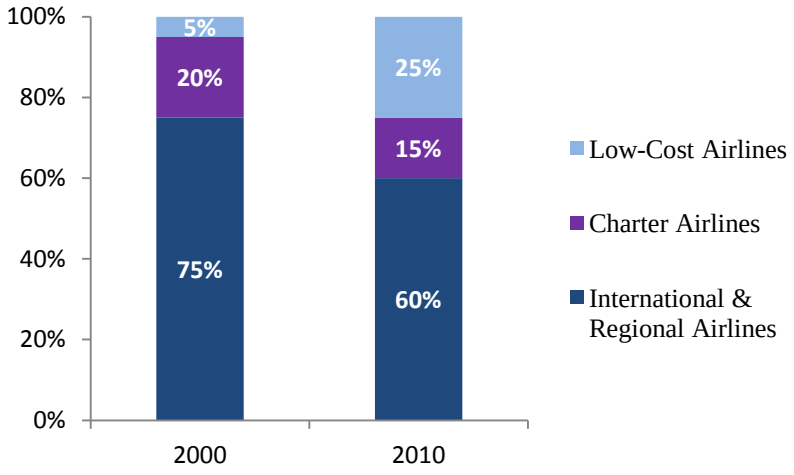

Figure 3 – Change in intra-European passenger market shares, 2000-2010
Source: IATA Vision 2050 Report

Many older airlines were companies owned by the Government. However, through the years this has changed with many companies facing a privatization process, especially in Europe and North America (figure 4). IATA predicts that this process will continue in the near future.

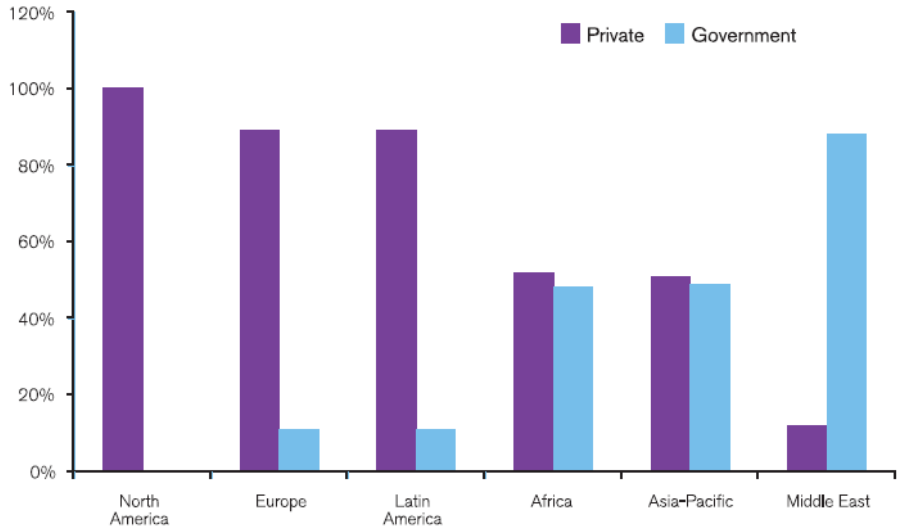

Figure 4 – % of Private and Government-owned Airlines by Region
Source: IATA Vision 2050 Report

4. TAP Group Description

"With Arms Wide Open"

TAP Group Slogan

The main activity of TAP Group is air passenger and cargo transport. It also provides services to third party customers in areas related to the Group's core activities, such as Maintenance and Engineering services. TAP starts its activity in 1945 and is the leading Portuguese airline. Currently, TAP has connections to 88 destinations in 38 countries all around the world and has a fleet of 77 aircraft (61 airbuses and 16 Portugália aircrafts).

The mission of TAP is based in three pillars:

- develop the international airline business, ensuring that is the best option for passengers and in cargo air transport services;
- be one of the best companies to work;
- be recognized as a company that provides its investors with appropriate levels of return.

TAP Group was totally owned by Parpública Participações Públicas, SGPS, S.A., a State Asset Management Entity. This entity manages several positions that Portugal State has in its portfolio and supports the privatization process of state-owned companies.

Recently, TAP has dedicated more its attention to some of its main markets, such as Brazil and other South American countries and some countries in Africa, particularly Angola and Mozambique. By following this expansion strategy, TAP was considered the number one airline between Europe and Brazil and in 2014 won the Leading European Airline to Africa and South America award from the World Travel Awards.

As described below, the TAP Group is constituted by several companies:

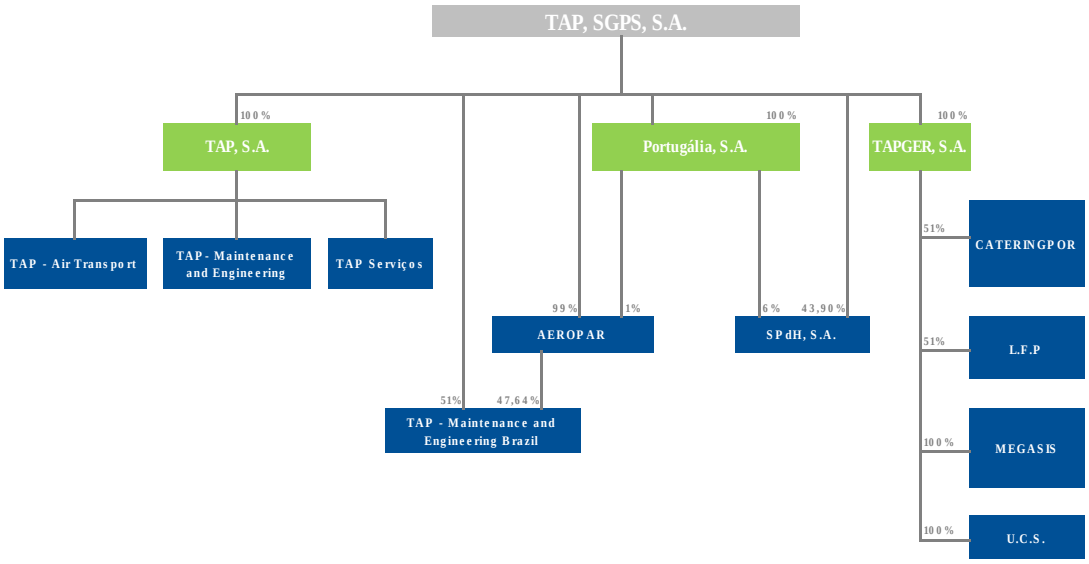

Figure 5 – TAP Group Structure
Source: TAP Group Annual Report

- **TAP S.A.:** Responsible for providing air passenger transport and the operational maintenance and engineering to third parties in its Lisbon Hub. Is also responsible for support and management services, contributing to improve the profitability of the Group.
- **TAP – Maintenance and Engineering Brazil:** Has two maintenance centers, located in Rio de Janeiro and in Porto Alegre. This entity is responsible for activities related to aircraft and component overhaul.
- **Portugália, S.A.:** Has a fleet of 16 aircrafts that can be rented at a ACMI basis (aircraft, crew, maintenance and insurance). Actually, this company plays a role of feeder-defeeder network function only to TAP Group. The company stopped to work independently in the regional market since was acquired by TAP in 2007, to work currently in a Group perspective as a provider of air passenger and cargo transport hired by TAP.
- **SPdH – Serviços Portugueses de Handling, S.A.:** Established in Lisbon, Porto, Faro, Funchal and Porto Santo airports this company provides a wide range of services to Group's core business and to third parties, such as ramp service, cargo, load control, airport security, baggage delivery and other services.

- **TAPGER, S.A.:** Company based in Lisbon that provides complementary services to Group's core business. The objective of this entity is supervise the management of its participated companies and give the necessary assistance to the companies Lojas Francas de Portugal, S.A. and CateringPor – Catering de Portugal, S.A.. Megasis is a Group entity specialized in IT technology and U.C.S. – Cuidados Integrados de Saúde, S.A. provides a range of healthcare services to the Group.

5. TAP Group Valuation

As explained in the previous sections, it will be used three different approaches in order to get a better understanding of what can be TAP's fair value: Multiples Analysis, DCF method, using the FCFF and the FCFE approaches, and a valuation method used to valuing companies with regular negative earnings.

5.1 Multiples Valuation Method

Multiples (or Relative) valuation method is one of the most common approaches used to estimate company's fair value. There are a lot of different multiples that can be used in Corporate Valuation, such as PER, Price/Book Value, EV/EBITDA, etc.

Depending on the industry being analyzed, certain multiples are more appropriate than others. Thus, when we are looking at the specific case of the airline industry and valuing airlines companies, the commonly multiples used are EV/EBITDA and EV/EBITDAR. In addition, PER ratio cannot be used to value unprofitable companies. Therefore, in order to estimate TAP's fair value it will be used these two multiples.

As discussed before, it is important to refer that the choice of comparable companies is fundamental in this valuation. A bad comparable company's choice can misuse all the valuation conclusions.
For the purpose of valuing TAP the comparable companies chosen were: Air France-KLM, Lufthansa and IAG. These three European airlines, like TAP, provide international and domestic air passenger and cargo transportation services. Furthermore, the final report produced in 2012 by the special committee for monitoring the privatization of TAP Group, refer that, in an initial phase of the privatization process, these three airlines have shown interest in acquiring the Portuguese Government stake in TAP.

Finally, after choosing the multiples and the comparable companies, is extremely important to get reliable data to compute the method. For both methods, InFinancials information will be the source to get the data needed. InFinancials gives access to market multiples, as well as company data, in a single click. Some of the most known companies of the financial world, such as KPMG and Crédit Agricole Corporate & Investment Bank., used InFinancials information on a daily basis. Therefore, this gives us confidence to believe that this information is consistent to perform TAP's valuation.

5.1.1 EV/EBITDA

In a privatization scenario, this multiple is extremely useful to analyze since the Enterprise Value takes into account the debt which the acquirer will have to assume. In this case, Enterprise Value is a better metric than market capitalization, which is used, for instance, in PER multiple. Additionally, this multiple is extremely valuable in this specific case of the airline industry because it ignores the effects of individual countries tax policies that can distort the valuation process.

The subsequent table summarizes EV/EBITDA ratio of comparable companies and sector, and the Enterprise Value of these companies, on December, 29th of 2014. EUR/USD exchange rate considered in this Master Project was 1.2198. This information was retrieved from Bloomberg Website, on December, 29th of 2014.

Comparable Company	EV/EBITDA	Enterprise Value (in thousands USD)	Enterprise Value (in thousands EUR)
IAG	4,54	17.542.992	14.381.859
Deutsche Lufthansa AG	2,78	10.251.981	8.404.641
Air France-KLM	3,61	10.349.003	8.484.180
Comparables Average	3,64		
Airline Sector EV/EBITDA	9,03		

Table 2 – EV/EBITDA and Enterprise Value
Source: InFinancials Website

EV/EBITDA of the airline sector is 9.03, which means, that, on average, an airline company that operates in this industry has a EV that is 9.03 times its EBITDA. On the other hand, the average of EV/EBITDA of comparable airlines is 3.64, a number that is lower than the sector.

As explained before, valuation is a subjective process and we need to take into account some particular aspects to achieve a better understanding. Thus, we need to examine why there is a significant difference between the two ratios. Analyzing the data and the composition of the airline sector[1] we conclude that LCCs airlines (such as Ryanair or Easyjet) are increasing the value of the sector. The business model of these LCCs airlines is different from "traditional" airlines, such as TAP or the comparable companies chosen. Therefore, in order to get a better understanding of what can be TAP's fair value it will be used the average of EV/EBITDA of comparable airlines, instead of the airline sector.

Looking at TAP's annual report of 2014 we retrieve the EBITDA of the company, which was 89,993 thousands of Euros. The Enterprise Value of TAP can be calculated as follows:

$$TAP's\ EV = TAP's\ EBITDA \times \frac{EV}{EBITDA}\ of\ Comparables \quad (9)$$

Comparable Company	TAP Enterprise Value (in thousands EUR)
IAG	408.568
Deutsche Lufthansa AG	250.181
Air France-KLM	324.875
Comparables Average	327.874

Table 3 – TAP Enterprise Value
Source: Author

[1] Individual Companies EV/EBITDA are illustrated in section 9. Annexes

However, the purpose of this project is not to measure TAP's Enterprise Value but TAP's Equity Value. Moreover, in order to compare TAP's value obtained in Multiples with other methods, such as DCF, we need to calculate the Equity Value of the company as follows:

Company's Equity Value = Company's EV + Non-Operating Assets – Market Value of Debt (10)

The amount of TAP's total non-operating assets in 2014 was 411,320 thousands of Euros.

Non-Operating Assets	2014
Current Assets	304.342
Other accounts receivable	63.061
Cash and bank deposits	241.281
Non-current assets	106.978
Investment properties	2.139
Other intangible assets	738
Other financial assets	2.122
Deferred tax assets	53.410
Other accounts receivable	48.569
Total Non-Operating Assets	**411.320**

Values in Thousands of Euros

Table 4 – TAP Group Non-Operating Assets

Source: TAP Group Annual Report

In other hand, the company's market value of debt tends to be similar to its accounting value. Therefore, we assume the market value of debt is equal to the book value of debt. The amount of TAP's total non-operating debt in 2014 was 1,536,728 thousands of Euros.

Non-Operating Debt	2014
Current liabilities	999.883
Shareholders	0
Loans received	633.682
Other accounts payable	366.201
Non-current liabilities	536.845
Total Non-Operating Debt	**1.536.728**

Values in Thousands of Euros

Table 5 – TAP Group Market Value of Debt

Source: TAP Group Annual Report

Thus, TAP Group Equity Value using the average EV/EBITDA multiple was – 797,534 thousands of Euros, as illustrated in the table below:

Comparable Company	TAP Enterprise Value (in thousands EUR)	Non Operating Assets (in thousands EUR)	Debt (in thousands EUR)	TAP Equity Value (in thousands EUR)
IAG	408.568	411.320	1.536.728	-716.840
Deutsche Lufthansa AG	250.181	411.320	1.536.728	-875.227
Air France-KLM	324.875	411.320	1.536.728	-800.533
Average	327.874	411.320	1.536.728	-797.534

Table 6 – TAP Group Equity Value using EV/EBITDA

Source: Author

5.1.2 EV/EBITDAR

EV/EBITDAR is an important multiple method to apply when valuing companies in the airline industry, given that it is more able to represent some specific characteristics of the industry, reason why it will be used to measure TAP Group fair value too.

As explained before, EBITDAR represents the gross operating margin before aircraft leasing costs, which allows a comparison between airline companies, regardless of the company's decision of owning or leasing the fleet.
Furthermore, making a comparison with the EV/EBITDA multiple, EV/EBITDAR has an advantage and gives to the evaluator a more accurate perspective of the company under valuation. For instance, if the company owns the aircraft, EBITDA will not include the debt repayment amounts and the financial costs (interest expenses). Therefore, in this specific case, it is not possible to make reasonable comparison with airline companies that have leasing contracts, where those costs are reflected in the cash flow margin.

Air France-KLM and IAG last Annual Reports have explicitly the value of company's EBITDAR. In other hand, TAP Group and Deutsche Lufthansa AG EBITDAR value is not displayed directly in the company's annual report and we need to perform some calculations to get the value. EBITDAR represents the gross operating margin before aircraft leases. Looking at Deutsche Lufthansa's Income Statement and explanation

note number 7 we can get the EBITDA and the aircraft leases costs of the company. We use the same procedure to measure TAP's EBITDAR. The only difference is that lease costs are reflected in explanation note number 41 in company's annual report. Finally, to obtain the EBITDAR of the company we just need to add to company's EBITDA the aircraft leases costs.

At this moment, we just need the numerator to complete the equation, the Enterprise Value. However, from the previous multiple ratio we already have this information. The next table summarizes the comparables EV/EBITDAR:

Comparable Company	EBITDAR (million of EUR)	Enterprise Value (in thousands EUR)	EV/EBITDAR
IAG	3.137	14.381.859	4,58
Deutsche Lufthansa AG	2.042	8.404.641	4,12
Air France-KLM	2.462	8.484.180	3,45
Average	2.547	10.423.560	4,09

Table 7 – Comparables EV/EBITDAR

Source: Author

The value of TAP Group EBITDAR in 2014 ascends to 147,308 thousands of Euros. However, we need to pay attention to a detail. TAP's EBITDAR of 2014 was extremely affected by the extraordinary costs that occurred in the year, costs that probably may not happen in the future. Company's annual report of 2014 refer that TAP's results were lower than expected. One of the main reasons for that were the several staff strikes that occurred and other that in the end not occurred but influenced client's decision, forcing TAP to outsource aircrafts to other companies, selling less and compensating Clients for this situation. Other reason where flights that not occurred during the year because the supplier delayed in delivering the new aircrafts. When we analyze the period 2010-2013 we conclude that TAP's EBITDAR improved in last year's. In 2010 TAP's EBITDAR was 192,412 thousands of Euros and in 2013 was 225,434 thousands of Euros[2].

[2] TAP's EBITDAR evolution is illustrated in section 9. Annexes

In other hand, Guerreiro and Fiúza (2015) refer that investors interested in TAP Group are considering in its valuations a TAP's EBITDAR of 250,000 thousands of Euros.

We believe this is a good estimate value to use in our valuation too because it does not take into account the extraordinary costs that happened in 2014, contributing to a lower EBITDAR and this value reflects, if excluding again the year of 2014, the evolution of TAP's EBITDAR in last year's.

Thus, considering an EBITDAR of 250,000 thousands of Euros, TAP Group Equity Value, using the comparables' average EV/EBITDAR multiple, was – 102,287 thousands of Euros, as illustrated in the table below.

Comparable Company	EV/EBITDAR	TAP Enterprise Value ('000 EUR)	Non Operating Assets ('000 EUR)	Debt ('000 EUR)	TAP Equity Value ('000 EUR)
IAG	4,58	1.146.148	411.320	1.536.728	20.740
Deutsche Lufthansa AG	4,12	1.028.972	411.320	1.536.728	-96.436
Air France-KLM	3,45	861.513	411.320	1.536.728	-263.895
Average	4,09	1.023.121	411.320	1.536.728	-102.287

Table 8 – TAP Group Equity Value using EV/EBITDAR

Source: Author

5.2 Discounted Cash Flow

DCF is the most known method used to measure a company's value. The value of a company is related with the present value of expected future cash flows generated by the company. In DCF valuation, the evaluator has to estimate the future free cash flows during the valuation horizon and the terminal value of the business at the horizon, and discount them at a rate that reflects their risk.

It is important to refer that we are interested in calculating the fair value of TAP Group, not only the holding company or a specific enterprise within the group. Therefore, we will only use values from TAP's consolidated financial statements.

As explained before, it will be used two different approaches to calculate the fair value of TAP: FCFF and FCFE.

First of all, before develop any model, based in TAP Group historical information and some future indicators of the airline industry, it will be calculated a specific data that is necessary to both approaches, such as TAP Group future revenues, the discount rate, etc. Only after getting this information it will be performed the two models. The first approach to apply will be the FCFF, which reflects the amount of cash that is available for the company after paying all the expenses and reinvestment needs. After that it will be performed the FCFE approach. The main reason to follow this order is because FCFF is used as an input to calculate the FCFE value.

Finally, is important to refer what will be the explicit forecast period. Looking at other airline companies' valuation we assume a forecast period of 5 years, from 2015 to 2019. Another forecast period could be assumed. However, in spite of the values obtained could be slightly different by using a different forecast period (3, 4 or 5 years are the most common periods used), is the Terminal Value, the perpetuity technique that represents the major part of the company value. So, in the end, our conclusions will be similar, independent of the forecast period chosen.
The financial projections are mainly based on the previous 5 years of financial performance (2010-2014) and economic conditions within the airline industry.

- ***Revenue Forecast***

One of the first steps we need to do in order to estimate the future cash flows necessary to compute the DCF model and calculate the company's fair value is forecasting what will be the company's revenue for the future. Forecasting a company's revenues is possibly the most important assumption we can make about its future cash flows and it can also be, in some cases, the most difficult assumption to make because we need to consider a wide range of factors. We need to pay attention if the company's market is expanding or contracting and think carefully about what the industry and the company could look in the future.

Firstly, we look for TAP's revenue of last 5 years. TAP's revenue can be subdivided in two groups: air transport and other services. The air transport revenue is related with the income generated by client's transportation in all markets were TAP operates. Other services revenue is related with the income associated to maintenance services to third parties in Portugal and Brazil, duty free shop, catering, holdings and other services. Table 9 summarizes TAP's revenue from 2009 to 2014.

TAP Group Revenue	2009	2010	2011	2012	2013	2014	Average
Sales and services rendered	**2.075.010**	**2.315.521**	**2.438.880**	**2.618.049**	**2.669.027**	**2.698.321**	
Air Transport Revenue	1.839.516	2.054.592	2.121.907	2.253.307	2.344.056	2.342.627	
Other Services Revenue	235.494	260.929	316.973	364.742	324.971	355.694	
% Air Transport Revenue in Total Revenue	*88,65%*	*88,73%*	*87,00%*	*86,07%*	*87,82%*	*86,82%*	*87,52%*

Values in Thousands of Euros

Table 9 – TAP Group Historical Revenue
Source: TAP Group Annual Reports

Secondly, we need to take into account some key figures:

- On December of 2014 it was noticed that the number of passengers travelling in TAP increased 7% comparing to the number of passengers that traveled in all the year of 2013. This is not the revenue growth value but is an indicator that sales are increasing.

- Damodaran Research concludes that in Europe the air transport industry grew 8.78% annually in the last 5 years. TAP annual revenue growth from 2009 to 2014 was 5.39%, slightly below the industry.

TAP Group Annual Revenue Growth	2009	2010	2011	2012	2013	2014	Annually Growth (2009-2014)
Annual Growth Sales and services rendered	-	**11,59%**	**5,33%**	**7,35%**	**1,95%**	**1,10%**	**5,39%**
Air Transport Growth	-	11,69%	3,28%	6,19%	4,03%	-0,06%	4,95%
Other Services Growth	-	10,80%	21,48%	15,07%	-10,90%	9,45%	8,60%

Table 10 – TAP Group Historical Revenue Growth

Source: TAP Group Annual Reports

- It is important to look at IATA statistics related to historical period but also at the prediction this association makes for the future of the industry.

System-wide Global commercial airlines	2010	2011	2012	2013	2014	Average	F2015
Revenue Growth	18,40%	14,00%	9,80%	1,70%	4,70%	9,72%	4,20%

Table 11 – System-wide Global commercial airlines revenue growth

Source: IATA Fact Sheet: Industry Statistics

System-wide Global commercial airlines	2016	2017	2018	2019
Revenue Passenger Kilometers (RPK) Growth - Forecast	6,80%	6,20%	5,80%	5,70%

Table 12 – System-wide Global commercial airlines RPK growth - Forecast

Source: IATA Global Traffic Forecasts

- Finally, concerning the historical period, it is essential to make a comparison between the industry and TAP Group growth revenue.

Annual Revenue Growth	2010	2011	2012	2013	2014	Average Annually Growth (2010-2014)	Average Annually Growth (2012-2014)
TAP Group	11,59%	5,33%	7,35%	1,95%	1,10%	5,46%	3,46%
System-wide Global commercial airlines	18,40%	14,00%	9,80%	1,70%	4,70%	9,72%	5,40%
Differential	**-6,81%**	**-8,67%**	**-2,45%**	**0,25%**	**-3,60%**	**-4,26%**	**-1,94%**

Table 13 – TAP Group vs System-wide Global commercial airlines – Annual Revenue Growth

Thus, in order to forecast TAP Group revenue for the next years, we will assume a mix of the key figures results, using historical performance of the company and estimates predicted by IATA for the next years. Table 11 and 12 summarizes the revenue forecasted for the airline industry in the next years by IATA. The revenue forecasted for TAP Group is based in these IATA previsions. However, we assume some assumptions in order to adapt to TAP's reality:

- As explained before, TAP's forecasted revenue is subdivided in two groups. In table 9, we see that air transport revenue/total revenue ratio has shown a similar trend, with an average of 87.52%. Therefore, we assume that this ratio will maintain for the future.

- According to the consolidated income statements illustrated in table 10, the Group's revenues increased from 2009 to 2014. However, the revenue growth per year showed an undefined trend, with a high increase in 2010 and 2012 and a moderate growth in 2011, 2013 and 2014, which contributes to an annual revenue growth in the period under analysis of 5.39%. In the specific case of other services revenue, due the undefined trend register in the past, we assume that in the future the growth rate of this group revenue will be equal to the annual growth record from 2009 to 2014 (8.60%).

- About the most important revenue group of TAP's activity, the air transport revenue, the foundation used to estimate the evolution of sales of this group was the predictions made by IATA for the period 2014-2019. Analyzing table 13, we conclude that, in general terms, from 2010 to 2014 the industry annually registered a revenue growth higher than TAP on the amount of 4.26%. However, we see that in the last 3 years this difference decreased to 1.94%. As a result, and for conservative purposes, we are going to assume that TAP's air transport revenue growth per year will maintain this difference of 1.94% recorded from 2012-2014 to the industry' revenues prediction.

- Since the forecast information available for the period 2016-2018 by IATA (table 12) is the RPK Growth we need to be careful when computing the calculations. RPK is a measure of sales volume of passenger traffic and is

obtained by multiplying the number of revenue passengers on each flight by the total number of kilometers of that flight. Therefore, we only apply this information to air transport revenue group. This was the main reason why we subdivided TAP's revenue into two groups, since we cannot apply this growth rates to the other services group, which has associated the maintenance services to third parties, duty free shop, catering, holdings and other services.

Using the assumptions explained previously and the recursive method throughout the estimation of sales, the next table summarizes TAP's forecasted sales for the period 2015-2019:

$$Revenue_{n+1} = Revenue_{n} \times (1 + Estimated\ growth\ revenue_{n+1}) \quad (10)$$

TAP Group Estimated Revenues	2015	2016	2017	2018	2019
Annual Growth Sales and services rendered	**3,05%**	**5,33%**	**4,80%**	**4,45%**	**4,37%**
Air Transport Growth	2,26%	4,86%	4,26%	3,86%	3,76%
Other Services Growth	8,60%	8,60%	8,60%	8,60%	8,60%
Sales and services rendered ('000 €)	**2.750.550**	**2.897.149**	**3.036.348**	**3.171.607**	**3.310.115**

Table 14 – TAP Group estimated Revenues
Source: Author

- ***Earnings Before Interest and Taxes (EBIT)***

EBIT is a very important metric of a company's operational performance. It measures the business' results without taking into consideration the taxes paid and the financing strategy plus the inherent interests associated with it.

It is important to understand that future investments and operational results are likely to grow in accordance with the evolution of revenues. Moreover, in order to get a more precise value of future EBIT values we need to estimate first Earnings before interest taxes depreciation and amortization (EBITDA) and, secondly, the other operational costs. The other operational costs are related to depreciation and amortization costs and impairment of assets subject to depreciation/amortization which are reflected in the profit and loss statement.

$EBIT_n = EBITDA_n - Other\ operational\ Costs$ (11)

The next table displays the historical ratios of EBITDA/Revenue and Other Costs/Revenue:

TAP Group historical operational ratios	2010	2011	2012	2013	2014
EBITDA/Total Revenue	5,99%	4,37%	6,13%	5,99%	3,34%
Other operational costs /Total Revenue	6,01%	5,11%	4,58%	4,34%	3,24%

Table 15 – TAP Group historical operational ratios

Source: TAP Group Annual Reports

Looking at EBITDA/Total Revenue trend we conclude that per year this ratio showed an undefined trend, decreasing in 2011 and increasing in 2012 before decreasing again in 2013 and 2014. As explained before TAP's earnings in 2014 were extremely affected by extraordinary costs reason why this ratio suffered a slightly decrease from 2013 to 2014. These are costs that are supposed not to happen in the future. Therefore, we intend that ratio recorded in 2013 is a better reflection of this TAP's operational ratio, reason why we assume for the future the same ratio of 5.99%. Moreover, in the Government proposal delivered to the investors interested in TAP's privatization process is enumerated a sort of conditions that will difficult a quick improvement of the TAP Group efficiency, such as, keeping all the employees that are now working at TAP. For the other operational costs ratio we assume the same assumption, which is that this ratio for the future will be equal to 4.34%, value recorded in 2013.

Using the assumptions explained above we estimate TAP's EBIT values for the period 2015-2019:

TAP Group operational ratios - Forecast	2015	2016	2017	2018	2019
EBITDA	164.693	173.471	181.806	189.905	198.198
Other operational costs	119.286	125.644	131.681	137.547	143.554
EBIT	**45.407**	**47.827**	**50.125**	**52.358**	**54.644**

Values in Thousands of Euros

Table 16 – TAP Group operational ratios – Forecast

Source: Author

However, according to formula 2, for the Cash Flow calculation we need the EBIT × (1-implied tax rate) value and not the EBIT only. The historical implied tax rate of TAP group has revealed an indeterminate trend.

TAP Group historical implied Tax Rate	2010	2011	2012	2013	2014
EBIT ('000 €)	-421	-18.067	40.763	44.061	2.572
Implied Tax Rate	19%	12%	84%	108%	3%

Table 17 – TAP Group historical implied Tax Rate
Source: TAP Group Annual Reports

The average tax rate of the last five years was 45% with an undefined trend. KPMG concludes that corporate tax rate for Portuguese companies is currently 23%. Hence, we will assume that TAP's corporate tax rate will be 23% for the future years.

Assuming this corporate tax rate we estimate the EBIT × (1-implied tax rate) of TAP for period 2015-2019:

TAP Group EBIT× (1-T) - Forecast	2015	2016	2017	2018	2019
EBIT	45.407	47.827	50.125	52.358	54.644
EBIT × (1-T)	**34.963**	**36.827**	**38.596**	**40.315**	**42.076**

Values in Thousands of Euros

Table 18 – TAP Group EBIT × (1-T) – Forecast
Source: Author

- ***Net Working Capital Needs (NWCN) and Net Fixed Assets***

NWCN represents the operating liquidity available to a company and reflects a part of operational capital along with fixed assets. Working Capital is calculated as follows:

$$NWCN_n = Operating\ Current\ Assets_n - Operating\ Current\ Liabilities_n \quad (12)$$

Accordingly to this formula and taking into account the balance sheet information of TAP Group, the next table contains TAP's NWCN of last 5 years:

TAP Group Net Working Capital Needs	2010	2011	2012	2013	2014
Net Working Capital Needs	**-181.701**	**-90.716**	**-89.321**	**-220.214**	**-253.649**
Operating Current Assets	403.408	433.557	389.500	350.523	281.880
Inventories	148.590	142.429	125.115	108.899	97.172
Customers	223.212	250.482	231.574	205.690	146.991
Advances to suppliers	3.465	11.221	5.378	8.895	6.745
State and other public entities	15.833	18.620	17.836	14.403	13.878
Deferrals	12.308	10.805	9.597	12.636	17.094
Operating Current Liabilities	585.109	524.273	478.821	570.737	535.529
Suppliers	142.619	165.081	116.029	118.286	141.082
Advances from customers	3.574	1.202	1.047	1.358	820
State and other public entities	147.062	29.087	29.727	29.505	22.021
Advances from customers - tickets to be used	239.237	263.510	278.658	364.507	303.889
Deferrals	52.617	65.393	53.360	57.081	67.717

Values in Thousands of Euros

Table 19 – TAP Group NWCN

Source: TAP Group Annual Reports

Related to this subject, note that net working capital is defined as non-cash current operating assets minus non-debt current operating liabilities. Therefore, we do not consider Cash, Short-Term Debt and Long-Term Debt in NWCN calculation as they are related to financing and not to operational activity.

Taking into account the information in TAP's balance sheet we do not consider cash and banks deposits and other accounts receivables in Operating Current Assets calculation. On the other hand, for the Operating Current Liabilities computation we exclude the following items recorded in the balance sheet as current liabilities: shareholders, loans received and other accounts payable.

Net fixed assets are assets that are supposed to be part of the balance sheet for the long run, namely tangible or intangible fixed assets and long term financial investments. In TAP's case, net fixed assets are mainly composed by tangible fixed assets (basic equipment, buildings and other constructions).

TAP Group - Net Fixed Assets	2010	2011	2012	2013	2014
Net Fixed Assets	1.336.069	1.224.427	1.119.280	1.007.696	974.175

Values in Thousands of Euros

Table 20 – TAP Group Net Fixed Assets

Source: TAP Group Annual Reports

As explained before, the future investments and operational results are likely to grow in accordance with the evolution of TAP's revenues. Therefore, table 21 illustrates the Net Fixed Assets/Revenue and NWCN/Revenue ratios.

TAP Group	2010	2011	2012	2013	2014
Net Fixed Assets/Revenue	58%	50%	43%	38%	36%
Net Working Capital Needs/Revenue	-8%	-4%	-3%	-8%	-9%

Table 21 – TAP Group Net Fixed Assets/Revenue and NWCN/Revenue ratios

Source: Author

Analyzing the trend we see that the Net Fixed Assets/Revenue ratio over the years has been decreasing (2010 to 2011:-8%; 2011 to 2012:-7%; 2012 to 2013: -5%; 2013 to 2014: -2%). This ratio has been decreasing at a lower rate through the years. For conservative purposes, we will assume that this ratio in the future, year by year, will decrease at the same rate recorded from 2013 to 2014, 2%, because we believe that in the future is more difficult to TAP Group continuing to decrease this ratio at rates recorded, for instance, from 2010 to 2011 or 2011 to 2012.

In other hand, when we analyze the NWCN/Revenue we conclude that this ratio has shown an indeterminate trend. So, due the undefined trend in the period under analysis and since in last two years this ratio was similar it will be used the average ratio of last two historical years for our future predictions (-9%).

Using these assumptions, we estimate the future Net Fixed Assets and NWCN of TAP Group as follows:

TAP Group - Forecasted Net Fixed Assets and NWCN	2015	2016	2017	2018	2019
Net Fixed Assets	947.587	950.226	945.716	935.443	921.607
NWCN	-242.749	-255.687	-267.973	-279.910	-292.134
Δ Net Fixed Assets	**-60.109**	**2.639**	**-4.510**	**-10.272**	**-13.837**
Δ Net Working Capital Needs	**-22.535**	**-12.938**	**-12.285**	**-11.937**	**-12.224**

Values in Thousands of Euros

Table 22 – TAP Group Forecasted Net Fixed Assets and NWCN

Source: Author

- ***Discount Rate***

The value of a company in DCF valuation is related with the present value of future expected cash flows generated by the company. The company value does not depend on its historical and actual situation, even if it was and is extremely positive, but for its capacity to generate positive cash flows in the future. Consequently, in order to measure today the value of the company we need to discount future cash flows generated for the actual period. So, the next step is to get the appropriate discounting rate, which will vary according to the DCF approach used to calculate the fair value of the company: for the case of FCFF has to be a rate that reflects the overall company's cost of capital and for FCFE should reflect only the risk of equity, which is the rate of return required by the equity investors.

At this point and looking, firstly, at the FCFF approach we need to determine what will be the appropriate company's cost of capital and the way we will use to get this value. Bierman (1993) surveyed 74 companies listed on "Fortune 100 companies" and 93% of them said that they use the weighted-average cost of capital (WACC) as a discounting rate for capital budgeting purposes. As consequence and as explained before, for the case of FCFF, this will be the rate used to discount future cash flows since it reflects the overall company's cost of capital. WACC reflects the average return expected by all investors in the enterprise, such as debt creditors and stockholders. The formula to calculate WACC's value is:

$$WACC = \frac{Equity}{Equity+Debt} \times Cost\ of\ Equity + \frac{Debt}{Equity+Debt} \times Cost\ of\ Debt \times (1 - Tax\ rate) \quad (4)$$

At this point we have to subdivide the WACC's formula in several components.

Firstly, let us look at the Cost of Equity. It can be assumed that the Cost of Equity is the most complicated component to estimate in WACC's formula since it depends on some assumptions and there are many ways of calculating it. According to Bruner, Eades, Harris and Higgins (1998) research, 81% of corporations, 80% of financial advisers and 100% of best sellers interviewed used the capital asset pricing model (CAPM) to estimate the Cost of Equity. So, we will use CAPM model to compute

TAP's Cost of Equity. CAPM defends that people in order to invest in a specific asset have to be compensated in time value, which is represented by the risk free rate and for the additional risk that they take in this investment that is reflected in the beta and market premium.

$$CAPM:\ Cost\ of\ Equity = R_f + \beta \times (R_m - R_f) \qquad (13)$$

Where:

R_f - risk-free interest rate of return

β - relative risk of a particular asset

R_m - required investors return to hold the market portfolio of risky assets

The first driver in the CAPM formula is the risk free interest rate of return. The R_f reflects the rate of return for an investment without no risk. The choice of the risk free to apply in asset or company valuation is a subjective process since, as we know, there are in the market a sort of risk free rates. Hence, looking to TAP's valuation the first topic to answer is which risk free rate we will use? Once again, to answer this question we will take into account Bruner et al (1998) research:

	Corporations	Financial Advisers	Textbooks/Trade Books
What do you use for the risk-free rate?	4% - 90 day T-Bill 7% - 3 to 7 year Treasuries 33% - 10 year Treasuries 4% - 20 year Treasuries 33% - 10 to 30 year Treasuries 4% - 10 year or 90 days; Depends 15% - N/A	10% - 90 day T-Bill 10% - 5 to 10 year Treasuries 30% - 10 to 30 year Treasuries 40% - 30 year Treasuries 10% - N/A	43% - T-Bill 29% - LT Treasuries 14% - Match tenor of investment Treasuries 14% - Don't say

Table 23 – Research: What do you use for the risk-free rate?
Source: Bruner, Eades, Harris and Higgins (1998) Research, Best Practices in Estimating the Cost of Capital: Survey and Synthesis

As we can see in table 23, the three groups mainly choose Treasuries to use for the risk-free rate. For that reason, we will assume the same assumption in TAP's valuation. Given that TAP is a Portuguese company, it makes sense to use a European

risk free rate. The common practice is to pick the interest rate on a German government bond with almost no default risk since, according to Fitch, Germany has triple A rating. Now, the second step is choosing the maturity of the interest rate Treasuries. Since the goal is to perform a long term TAP's valuation it makes sense to get a long term interest rate. Looking again at table we see that 33% of the corporations use 10 year Treasuries maturity and other 33% corporations 10 to 30 year Treasuries maturity. Therefore, we will assume for TAP Group valuation a 10 year interest rate.

Taking into account the Bloomberg market data, the 10-year maturity on German Government Bonds, on December 29th of 2014, had a yield of 0.54%.

Now, after concluding the calculation process of risk-free interest rate, we have to estimate the market risk premium. The market risk premium is the difference between the Expected Return on the Market and the risk free rate of return.

Fernandez, Linares and Acín (2014) developed a research where they asked to finance and economics professors, analysts and managers of companies about the market risk premium that they used in its valuations. This study contains statistics of market risk premium used in 2014 for 88 countries. According to their research the average market risk premium used in Portugal is 8.5%. Thus, we will assume this risk premium to measure TAP's cost of equity.

Finally, we have to estimate the beta of TAP. Beta measures the security's volatility relative to the market in which it is traded. If an asset has a higher beta this means that this asset has higher risk and, therefore, investors will require a higher rate of return to hold it.

According to Damodaran (2006), one way to get a company's beta is to estimate the unlevered beta, determine the debt to equity ratio and the tax rate of the industry.

The beta's formula is illustrated below:

$$\beta_L \text{ (Levered)} = \beta_U \text{ (unlevered)} \times \left(1 + (1 - t) \times \frac{Debt}{Equity}\right) \qquad (14)$$

The unlevered beta measures the systematic risk of company's equity by making a comparison with the market. For the investor, this comparison of unlevered betas is extremely useful because gives a better idea of the risk that they will assume when

holding that asset since the unlevered beta removes any firm's positive effect gained by adding debt to its capital structure. Damodaran usually publishes a list where he estimates the unlevered betas adjusted for cash for all industry sectors in the economy and regions.

Since TAP Group is established in Europe, as well as the three comparable companies chosen, we look for the unlevered beta estimated by Damodaran for the air transport industry in Europe (0.71).

The Market Debt/Equity ratio is easy to achieve for a traded company. However, this is more difficult to measure in the case of a public company. According to financial professionals, for public companies, it is common to use the accounting debt as a proxy for the market debt, since those values are approximately the same. Thus, we will assume the TAP's last year accounting debt value (2,068, 493 thousands of Euros).

The market equity of a company listed in the stock market results by multiplying the current price per share by the number of outstanding shares. But, in the case of state-owned companies, this procedure is impossible to use. Damodaran publishes every year a list with the market D/E for all the industries. As a result, it will be used the air transport D/E ratio contained in that list in order to estimate the market value of equity.

KPMG concludes that corporate tax rate for Portuguese Companies is 23%.

Unlevered Beta	0,71
t	23%
Market D/E	112%
D ('000 €)	2.068.493
E ('000 €)	1.840.706

Table 24 – Beta's Inputs

Source: Damodaran Public List and TAP Group Annual Report

Note that the Equity value presented above is just a theoretical value assuming that the company had the same capital structure as the industry average.

Thus, applying formula 13, TAP Group cost of equity is:

R_f	0,54%
R_m-R_f	8,50%
β	1,32
Cost of Equity	**11,73%**

Table 25 – TAP Group Cost of Equity

Source: Author

Now that we already estimated TAP's cost of equity, the next step in WACC's calculation is to measure TAP's cost of debt. It is important to enhance that here we are focused in financial debt. Some debt does not have financial characteristics, it does not generate interests. Thus, items in TAP's balance sheet such as, provisions, liabilities related to post-employment benefits, deferred tax, state and other public entities, other accounts payable, suppliers and advances from customers will not be considered to financial debt values used to estimate the cost of debt.

$$Cost\ of\ Debt = \frac{Interest\ Expense}{Financial\ Debt} \qquad (15)$$

The next table shows TAP's cost of debt calculations.

TAP Group Cost of Debt	2010	2011	2012	2013	2014	Average last 3 years
Interest Expense ('000 €)	**50.893**	**55.032**	**57.371**	**50.656**	**84.509**	
Non-current liabilities						
Loans received	1.028.060	985.709	775.390	660.131	427.969	
Current liabilities						
Loans received	248.995	245.209	258.674	390.512	633.682	
Financial Debt ('000 €)	**1.277.055**	**1.230.918**	**1.034.064**	**1.050.643**	**1.061.651**	
Cost of Debt	**3,99%**	**4,47%**	**5,55%**	**4,82%**	**7,96%**	**6,11%**

Table 26 – TAP Group Cost of Debt

Source: TAP Group Annuals Reports

We consider that TAP's cost of debt in 2014 was high regarding the financial problems that TAP faced especially in this last year. We believe that TAP's cost of debt after this privatization process and after solving the capital's reinforcement

situation will be lower than 7.96%. Therefore, due to the undefined trend of last 5 years and, for conservative purposes, it was assumed that TAP's cost of debt for the future will be equal to the average cost of debt of last 3 years.

At this time, we already have TAP's cost of equity, cost of debt and the corporate tax rate. So, we just need the $\frac{Equity}{Equity+Debt}$ and $\frac{Debt}{Equity+Debt}$ to estimate TAP's WACC. Here, is important to refer that the weights cannot be accounting values, but market or target values. However, since we do not have available information concerning target weights we are going to utilize those used in market debt/equity ratio calculations. Therefore, applying formula number 4 we estimate that TAP's WACC is 8.01 %, as is illustrated in the following table.

Cost of Equity	**11,73%**
E/(E+D)	**0,47**
D/(E+D)	**0,53**
Cost of Debt	**6,11%**
T	**23,00%**
WACC	**8,01%**

Table 27 – TAP Group WACC
Source: Author

5.2.1 Free Cash Flow for the Firm Approach

At this moment, we already estimated for the future TAP's revenues, EBIT, NWCN, Net Fixed Assets and the discount rate (WACC). Thus, to achieve our purpose and calculate TAP's fair value using the DCF method by the FCFF approach we just need to perform two more steps: compute the cash-flows and estimate the Terminal Value.

For the first step, the estimation of TAP's cash-flows for the period under analysis, we already have the information needed to apply formula nr. 2 and compute them.
The subsequently table summarizes this information:

$$FCFF_n = EBIT_n \times (1-Tax\ rate) - \Delta\ Net\ Working\ Capital\ Needs_n - Net\ Capex_n \quad (2)$$

TAP Group FCFF	2015	2016	2017	2018	2019
FCFF	**117.607**	**47.126**	**55.391**	**62.525**	**68.137**
EBIT(1-T)	34.963	36.827	38.596	40.315	42.076
Δ Net Fixed Assets	-60.109	2.639	-4.510	-10.272	-13.837
Δ Net Working Capital Needs	-22.535	-12.938	-12.285	-11.937	-12.224

Values in Thousands of Euros

Table 28 – TAP Group FCFF
Source: Author

In order to assume that the company will operate in the future we need to calculate the Terminal Value, which will be the value of the company after the period under analysis, in this case after 2019. Terminal Value is one of the main indicators when applying DCF because the impact it has in the final value of company valuation is extremely high.

There are two ways to calculate the Terminal Value: the Exit Multiple Model and the Gordon Growth Model.
Exit Multiple Model uses a multiplier of some income measure, such EV/EBITDA, of comparable companies valued by the market. Because it can be difficult to justify the multiple and the comparable company, this method usually is not used. On the other hand, the Gordon Growth Model assumes that the last cash flow projected will grow at a specific rate.
According to Bruner et al (1998) research 71% of the best seller's textbooks answer that the method used to estimate Terminal Value is the Perpetuity DCF model or Gordon Growth model. So, we will assume the same procedure too in order to estimate TAP's Terminal Value.

$$TV_n \text{ FCFF approach} = \frac{FCFF\ n+1}{WACC - g} \quad (5)$$

The long term growth rate considered was 1.57%. For conservative purposes, we will assume that terminal growth rate will be the average of the yearly inflation rate in the last 5 years. When in May of 2010, United Airlines and Continental Airlines merged,

this was the procedure followed to value the new company by the students Cheema, Surilova and Wang (2013) of Professor Allen Michel, a Finance Professor at Boston University's School of Management, who is considered an expert in the airline matter. We believe this is a good procedure to adopt in TAP's case.

	2010	2011	2012	2013	2014	Average
Average Yearly Inflation rate	1,40%	3,65%	2,78%	0,27%	-0,27%	1,57%

Table 29 – Average Yearly Inflation rate
Source: Worldwide Inflation Data

Applying formula 5 we obtain TAP's Terminal Value:

$FCFF_{2019}$	**68.137**
WACC	**8,01%**
g	**1,57%**
Terminal Value ('000 €)	**1.073.713**

Table 30 – TAP Group Terminal Value (FCFF approach)

- ***TAP's fair value by FCFF approach***

All the inputs needed to calculate TAP's fair value, using the FCFF approach, are already computed. Therefore, applying the formula number 16 we estimate TAP's enterprise value.

$$Company's\ Enterprise\ Value = \frac{FCFF\ 1}{(1+WACC)^1} + \frac{FCFF\ 2}{(1+WACC)^2} + \dots + \frac{FCFF\ 5}{(1+WACC)^5} + \frac{\frac{FCFF\ 6}{WACC-g}}{(1+WACC)^5} \quad (16)$$

$$Firm\ Value = Company's\ Enterprise\ Value + Non\text{-}operating\ assets \quad (17)$$

$$Equity\ Value = Firm\ Value - Market\ Value\ of\ Debt \quad (18)$$

However, to compute the overall's company's value we need to add Non-operating assets. Finally, to calculate TAP's fair value, it is necessary to subtract the market

value of debt that, as explained before, is equal to its accounting value. Therefore, we conclude that TAP's fair value, using the FCFF approach, is -109,516 thousands of Euros.

TAP Group Equity Value		2015	2016	2017	2018	2019
Free Cash Flow to the Firm		117.607	47.126	55.391	62.525	68.137
WACC		8,01%	8,01%	8,01%	8,01%	8,01%
Discounted FCFF		108.884	40.395	43.958	45.938	46.349
Terminal Value		-	-	-	-	1.073.713
Discounted Terminal Value		-	-	-	-	730.369
Enterprise Value	**1.015.892**					
Non-Operating Assets	**411.320**					
Firm Value	**1.427.212**					
Debt	**1.536.728**					
Equity Value	**-109.516**					

Values in Thousands of Euros

Table 31 – TAP Group Equity Value (FCFF approach)
Source: Author

5.2.2 Free Cash Flow for the Equity Approach

When we are evaluating the equity stake in the business, we focus our attention on the amount of cash available to be distributed to the shareholders, after paying all expenses, tax, reinvestment needs and net debt payments (interest, principal payments and new debt issuance). So, we need to estimate the FCFE for the future period under analysis:

$$FCFE_n = FCFF_n + (Debt_n - Debt_{n-1}) - Interest\ Expense_n \times (1\text{-}Tax\ rate) \quad (3)$$

As we can see in formula number 3, we already have the first input, the FCFF. Hence, the first step is to estimate the amount of debt for each period. Debt is likely to grow in accordance with the revenues' evolution.
It is important to refer that in order to estimate the value of debt we need to subtract to the total liabilities the total operating current liabilities included in NWCN to not be counted twice.

Historical Debt	2011	2012	2013	2014
Sales and services rendered	2.438.880	2.618.049	2.669.027	2.698.321
Total Liabilities	2.325.209	2.031.510	2.068.493	2.072.257
Total Operating Current Liabilities included in NWCN	524.273	478.821	570.737	535.529
Debt	**1.800.936**	**1.552.689**	**1.497.756**	**1.536.728**

Values in Thousands of Euros

Table 32 – TAP Group Historical Debt

Source: TAP Group Annuals Reports

Debt/Sales Ratio	2011	2012	2013	2014
Debt/Sales Ratio	***73,84%***	***59,31%***	***56,12%***	***56,95%***
% Annual Decrease of Debt/Sales Ratio (2011- 2014)	*-8,29%*			
% Annual Decrease of Debt/Sales Ratio (2011- 2013)	*-12,83%*			

Table 33 – TAP Group Debt/Sales Ratio

Source: TAP Group Annuals Reports

Analyzing table 33 we conclude that Debt/Sales ratio decreases during the period under analysis, with a slight recovery in last year. The annual decrease of Debt/Sales ratio, if we consider the period 2011-2014 was 8.29% and 12.83% if we exclude the last year. Since TAP Group faces, in 2014, some extraordinary events that contributed to less revenues and other costs that may have influenced the Debt amount, we will not take into account the Debt/Sales ratio of 2014. We believe that this ratio, considering it revealed a decreasing trend throughout the period under analysis, will continue to decrease in the future.

However, because we want to adopt a conservative perspective, we will assume that the annual decrease of this ratio will not be at the same rate of the annual decrease recorded from 2011 to 2013 and not lower than 2011 to 2014. We will assume that will be nearly the average of this two rates, so a 10% annual decrease of Debt/sales ratio from 2015 to 2019.

The next table summarizes the forecast of TAP Group Debt for the period 2015-2019:

TAP Group Debt - Forecast	2015	2016	2017	2018	2019
Sales and services rendered Forecast	2.750.550	2.897.149	3.036.348	3.171.607	3.310.115
Estimated Debt/Sales Ratio	51,40%	46,39%	41,86%	37,78%	34,10%
Estimated Debt	1.413.742	1.343.905	1.271.149	1.198.317	1.128.711
Δ Estimated Debt	**-84.014**	**-69.837**	**-72.756**	**-72.833**	**-69.606**

Values in Thousands of Euros

Table 34 – TAP Group Debt - Forecast

Source: Author

Now, we need to calculate the second input of the equation: the interest expense for each period in the future. The estimated interest expense can be calculated by multiplying the estimated debt by its financing cost, which will be the same that was used to calculate TAP's WACC (6.11%). As explained before the corporate tax rate is 23%. TAP's interest expense for the future is:

TAP Group Interest Expense - Forecast	2015	2016	2017	2018	2019
Estimated Debt	1.413.742	1.343.905	1.271.149	1.198.317	1.128.711
Cost of Debt	6,11%	6,11%	6,11%	6,11%	6,11%
Interest Expense	**86.378**	**82.111**	**77.666**	**73.216**	**68.963**
T	23%	23%	23%	23%	23%
Interest Expense (1-T)	**66.511**	**63.226**	**59.803**	**56.376**	**53.102**

Values in Thousands of Euros

Table 35 – TAP Group Interest Expense - Forecast

Source: Author

Consequently, applying formula number 3 we get TAP's FCFE:

TAP Group FCFE	2015	2016	2017	2018	2019
Free Cash Flow for the Firm	117.607	47.126	55.391	62.525	68.137
Δ Estimated Debt	-84.014	-69.837	-72.756	-72.833	-69.606
Interest Expense (1-T)	66.511	63.226	59.803	56.376	53.102
FCFE	**-32.918**	**-85.936**	**-77.167**	**-66.684**	**-54.571**

Values in Thousands of Euros

Table 36 – TAP Group estimated FCFE

Source: Author

Note that the negative FCFE would mean that the shareholders have to inject additional equity capital in the company.

In order to assume that the company will operate in the future we need to calculate the Terminal Value. It will be used the same procedure used in the FCFF approach. The only difference is that, in this case, the discount rate to apply will be the cost of equity and not the WACC.

$$TV_n \text{ FCFE approach} = \frac{FCFE\ n+1}{Cost\ of\ Equity - g} \quad (6)$$

So, using the Gordon Growth model, the TAP's Terminal Value in FCFE approach is - 545,461 thousands of Euros:

$FCFE_{2019}$	**- 54.571**
Cost of Equity	**11,73%**
g	**1,57%**
Terminal Value ('000 €)	**- 545.461**

Table 37 – TAP Group Terminal Value (FCFE approach)

Source: Author

- ***TAP's fair value by FCFE approach***

Consequently, applying formula 19 and adding TAP's non-operating assets, we conclude that TAP's fair value, using the FCFE approach, is -129,761 thousands of Euros, as illustrated in table 38.

$$Company's\ Enterprise\ Value = \frac{FCFE\ 1}{(1+\text{Cost of Equity})^1} + \frac{FCFE\ 2}{(1+\text{Cost of Equity})^2} + \ldots + \frac{FCFE\ 5}{(1+\text{Cost of Equity})^5} + \frac{\frac{\text{FCFE } 6}{\text{WACC}-g}}{(1+\text{Cost of Equity})^5} \quad (19)$$

TAP Group Equity Value		2015	2016	2017	2018	2019
Free Cash Flow for the Equity		**-32.918**	**-85.936**	**-77.167**	**-66.684**	**-54.571**
Cost of Equity		**11,73%**	**11,73%**	**11,73%**	**11,73%**	**11,73%**
Discounted FCFF		**-29.463**	**-68.843**	**-55.329**	**-42.794**	**-31.345**
Terminal Value		**-**	**-**	**-**	**-**	**-545.461**
Discounted Terminal Value		**-**	**-**	**-**	**-**	**-313.307**
Enterprise Value	**-541.081**					
Non-Operating Assets	**411.320**					
Equity Value	**-129.761**					

Values in Thousands of Euros

Table 38 – TAP Group Equity Value (FCFE approach)

Source: Author

Note that the negative values that were obtained in this case are not very realistic. The shareholders would not be interested in investing additional money in the company. The required rate of return should be lower due to the reduction of debt, but as we would get a negative equity value we would not be able to determine a suitable D/E ratio, that is why we decided to keep the cost of equity constant. This is just a way of showing that the equity value of the company under this set of assumptions is negative!

5.3 Valuation of Firms with negative earnings

As explained before, a company with negative earnings is more difficult to value than companies with positive earnings because: there is the real possibility that these companies will go bankrupt if earnings continue negative, the taxes prediction becomes more difficult to obtain and estimating the earnings growth rate is difficult because when current earnings are negative, applying a growth rate will just make it even worse.

Typically in most valuation methods we have looked for companies that have positive earnings. It cannot be said that these methods cannot be applied to firms that have negative earnings. However, they need to be applied carefully in order to adapt and reflect the underlying reasons that generate these negative earnings.

Damodaran (2004) explores the alternatives that he considers available to value companies with negative earnings. In the case of TAP Group, a company with long negative financial record, which is facing a privatization process, Damodaran (2004) defends that there is a valuation method that can be extremely useful to apply when valuing companies in this situation. Therefore, in order to get a better understanding of what can be TAP's fair value we will perform this valuation method too, as is illustrated below:

$$\textit{Value of the Firm} = \frac{EBIT\times(1-T)\times(1+g)\times(1-Reinvestment\ Rate)}{Cost\ of\ Capital-g} \quad (7)$$

Where,

$$\textit{Reinvestment Rate} = \frac{g}{ROIC} \quad (8)$$

At this moment, we already have almost inputs needed to estimate TAP's fair value, since they were calculated in the DCF valuation method. Yet, we need to perform another step, which is estimate what can be TAP's ROIC.

$$ROIC = \frac{EBIT}{Invested\ Capital} \quad (20)$$

Where,

Invested Capital = Net Fixed Assets + NWCN (21)

TAP Group historical ROIC	2010	2011	2012	2013	2014
Net Fixed Assets	1.336.069	1.224.427	1.119.280	1.007.696	974.175
Net Working Capital Needs	-181.701	-90.716	-89.321	-220.214	-253.649
Invested Capital	1.154.368	1.133.711	1.029.959	787.482	720.526
EBIT	-421	-18.067	40.763	44.061	2.572
Return on Invested Capital (ROIC)	-0,04%	-1,59%	3,96%	5,60%	0,36%

Values in Thousands of Euros

Table 39 – TAP Group Historical ROIC

Source: TAP Group Annuals Reports

Given the implied tax rate of approximately 2.67%, TAP's EBIT × (1-T) in 2014 was 2,503 thousands of Euros. Expected growth rate (g), like was calculated before, is 1.57%, consequent of the average yearly inflation rate of the last 5 years, and the cost of capital corresponds to TAP Group WACC's value (8.01%).

About the estimation of the reinvestment rate, due the undefined trend of TAP's historical ROIC, we will assume that the last historical ROIC value will maintain for the future.

Thus, applying formula 8 we get that TAP's reinvestment rate is 438.7%. Finally, applying formula 7 we estimate that TAP's value is -133,615 thousands of Euros.

EBIT× (1-T) ('000 €)	2.503
Expected Growth Rate	1,57%
Reinvestment Rate	438,7%
WACC	8,01%
Value of the Firm ('000 €)	**-133.615**

Table 40 - TAP Group fair value (Valuing companies with negative earnings method)

Source: Author

6. So, why Investors want TAP Group?

In the previously section, through a sort of corporate valuation methods, we developed the calculations to achieve the main purpose of this project: what is the fair value of TAP Group. We perform a Multiples Analysis, DCF valuation, using the FCFF and the FCFE approaches, and a valuation that is used to valuing firms with regular negative earnings.

As explained before, valuation is not only an objective process. The models used can be quantitative, but some of the inputs necessary to implement the model are based in subjective judgments. So, the majority of valuations will have bias and we cannot say that we estimate a precise company's fair value. However, besides we cannot argue that the fair value of the company is that exact value performed by our calculations, with valuation we can get a better understanding of what can be an estimate of the fair value of the company under analysis. Therefore, next table summarizes TAP's fair value obtained in each valuation method:

TAP Group Fair Value	
Method	**Fair Value ('000 €)**
Multiples Analysis	
EV/EBITDA	**-797.534**
EV/EBITDAR	**-102.287**
DCF Valuation	
FCFF Approach	**-109.516**
FCFE Approach	**-129.761**
Valuing Companies with negative earnings method	**-133.615**

Table 41 – Summary: TAP Group Fair Value

Source: Author

Analyzing table 41 we conclude that, under each valuation method, the fair value of TAP Group was different. In some cases the difference of TAP's fair value was minimal, in others it was considerable. But one conclusion can be taken: the company's fair value was negative in all valuation methods. However, at this moment,

we will not focus our attention in what is the approximately TAP's fair value. This will be a reflection for the Conclusions' section. Instead, and taking into account the first and general conclusion (TAP's fair value was negative in all methods) we will try to answer the following questions: Since TAP Group fair value is negative, why are there investors interested in the company? Moreover, they know that actually TAP Group is facing several financial problems and yet they want to invest? Are they unconscious?

In order to answer these questions we will develop a sensitivity analysis to TAP's valuation because we believe that in the end it is the company's fair value that influences the investment decision. If the investor believes a company has value then we will invest on it.

In the actual group's financial situation we believe that the value of the company is negative since it has negative equity, a high level of debt and consistently generates negative net incomes. There is no sense to apply a sensitivity analysis to valuation methods that look only at the historical performance. Basically, the concept is that TAP can create value if it becomes a better company in the future. Therefore, we will perform a sensitivity analysis using only DCF valuation since the value of a company is related with the present value of expected future cash flows generated by the company. The sensitivity analysis will focus in the key factors that influence, in general, all the companies in the world: Revenues and Efficiency.

Analyzing the income part, we will perform two scenarios against the standard valuation. Firstly, we will assume a worst scenario, assuming that the annual growth rate for revenues will be lower 2% against the standard valuation. There is this possibility since it depends on many factors, some of them related with economic conditions that can influence a company's income. On the other hand, it will be performed a better scenario, assuming that in the future revenues will grow in line with the industry. Remember that, for conservative purposes, in our valuation we assumed TAP's air transport revenues would be in the future 1.94% lower than the industry behavior, exactly the average difference recorded from 2011 to 2014. The following tables summarize the results obtained:

Standard Valuation					
TAP Group Estimated Revenues	2015	2016	2017	2018	2019
Annual Growth Sales and services rendered	3,05%	5,33%	4,80%	4,45%	4,37%

1. Annual Growth of Sales decrease -2% against the Standard Valuation					
-2% Annual Growth Sales					
TAP Group Estimated Revenues	2015	2016	2017	2018	2019
Annual Growth Sales and services rendered	1,05%	3,33%	2,80%	2,45%	2,37%

TAP Group Fair Value	
Method	Fair Value ('000 €)
DCF Valuation	
FCFF Approach	-13.616
FCFE Approach	-187.633

2. Revenue Growth in line with industry estimation					
In line with Industry estimation					
TAP Group Estimated Revenues	2015	2016	2017	2018	2019
Annual Growth Sales and services rendered	4,20%	6,80%	6,20%	5,80%	5,70%

TAP Group Fair Value	
Method	Fair Value ('000 €)
DCF Valuation	
FCFF Approach	-183.385
FCFE Approach	-86.256

Table 42 – Sensitivity Analysis: Revenues
Source: Author

Looking at table 42 we conclude that in two scenarios TAP's fair value continued to be negative. In the first scenario the fair value of TAP is -13,616 thousands of Euros in the FCFF approach and -187,633 thousands of Euros in the other approach. It is interesting compare these values obtained with the standard scenario, especially the FCFF approach. We observe that, in the FCFF approach, the fair value of TAP in the standard scenario was – 109,516 thousands of Euros and in this scenario of revenues decrease it improves to -13,616 thousands of Euros. The justification for this improvement results mainly from the Δ net fixed assets decrease that is an input of the FCFF (see formula number 2). It is important to state that future capital expenditures and operational results are likely to grow in accordance with the evolution of TAP's revenues. In the second scenario it was the inverse, with a Δ net fixed assets increase generating a lower FCFF and, therefore, a lower TAP's fair value.

Regarding the efficiency scenarios, two scenarios are also considered. Particularly, we focus our attention in an efficiency ratio that is extremely important and useful to

analyze: EBITDA/Revenues. We think that there is no sense to perform a worst scenario for this ratio than the actual that was developed in the standard valuation because TAP's valuation in the standard valuation is already negative. Assuming that efficiency will decrease in the future is basically saying that TAP's fair value will automatically be lower than the value calculated. The only solution for TAP is the improvement way, especially with an increase of its efficiency. So we will develop two scenarios: (i) improve EBITDA/Revenues by 0.10% per year; (ii) improve EBITDA/Revenues by 0.20% per year. The next table illustrates the main conclusions:

Standard Valuation					
TAP Group EBITDA/ Total Revenue	2015	2016	2017	2018	2019
EBITDA/Total Revenue	5,99%	5,99%	5,99%	5,99%	5,99%

1. Improve the EBITDA/Revenue by 0.10% each year					
+0,10% EBITDA/Revenue					
TAP Group EBITDA/ Total Revenue	2015	2016	2017	2018	2019
EBITDA/Total Revenue	6,09%	6,19%	6,29%	6,39%	6,49%

TAP Group Fair Value	
Method	Fair Value ('000 €)
DCF Valuation	
FCFF Approach	54.285
FCFE Approach	-32.506

2. Improve the EBITDA/Revenue by 0.20% each year					
+0,20% EBITDA/Revenue					
TAP Group EBITDA/ Total Revenue	2015	2016	2017	2018	2019
EBITDA/Total Revenue	6,19%	6,39%	6,59%	6,79%	6,99%

TAP Group Fair Value	
Method	Fair Value ('000 €)
DCF Valuation	
FCFF Approach	218.087
FCFE Approach	64.748

Table 43 – Sensitivity Analysis: EBITDA/Revenues
Source: Author

Analyzing the first scenario of table 43, we see that in the FCFE approach TAP's fair value continues to be negative. This value is slightly lower than the value obtained in the standard valuation. However, when we analyze the FCFF approach we conclude that TAP's fair value becomes positive, around 54,285 thousands of Euros. Moreover,

taking into account the second scenario, we conclude that if TAP improves its EBITDA/Revenue by 0.20% per year its fair value can be positive in both approaches, around 218,087 thousands of Euros in FCFF and 64,748 thousands of Euros in the FCFE.

These efficiency scenarios are extremely important in several ways: (i) to understand what TAP's fair value is; (ii) the way TAP needs to embrace in order to become a valuable company; (iii) what can be the Government position in this privatization scenario; (iv) why investors may be interested in acquiring TAP Group.

Firstly, and taking into account the valuation performed in the previous section, we conclude that TAP Group in the actual context is not valuable and sustainable. However, there are investors interested in TAP Group. And if TAP Group is not valuable, why they are investing on that? Are they crazy? The answer to these questions can be given by looking at conclusions of the efficiency scenarios. The investors know that TAP Group is valuable if it becomes more efficient. This is the main reason why investors want TAP. In the following table we can see that when we compare TAP Group with other comparable companies TAP's efficiency is slightly below the comparables.

Comparables Efficiency

Comparable Company	2013 EBITDA/Revenues
IAG	9,51%
Deutsche Lufthansa AG	8,71%
Air France-KLM	7,27%
Average	8,50%

Comparable Company	2014 EBITDA/Revenues
IAG	12,82%
Deutsche Lufthansa AG	6,63%
Air France-KLM	6,38%
Average	8,61%

Table 44 – Operating Margin of Comparable Companies
Source: Comparables Annual Reports

Thus, there is margin to improve TAP Group and this is the main expectation behind the investor's decision. This is an idea that Portuguese Government needs to be aware. As explained before TAP Group was a state-owned company. The power that

Governments continue to have on how they are run and the sheer size of these companies makes change slow. Thus, generally, it is expected that adjustments are much quicker if a company becomes private and therefore, becomes more efficient.
In other hand, the power of unions to preserve existing jobs is extremely higher, especially in public companies. We assist in last year's to several staff strikes that cost thousands of Euros to TAP. In a privatization scenario it is expected that this extraordinary costs will decrease.

Finally, it is important to look at the actual structure of the Group, and analyze if it can be more profitable and if make sense maintain some assets. For instance, when we analyze TAP's annual reports we conclude that companies such Portugália, S.A. or TAPGER were profitable in the past. On the other hand, when we look for TAP – Maintenance and Engineering Brazil we conclude that this company has consistently negative net incomes, besides the entity continued its process of development, aimed at improving its operating performance, in what was the third of a five years restructuring plan. Analyzing the segmental reporting of TAP's 2014 annual report we see that the operating maintenance in Brazil generates a loss of - 22,603 thousands of Euros during the year and in 2013 was - 40,351 thousands of Euros. In spite of the improvement occurred for the third consecutive year, the results still extremely negative and we assume that is not expected to change too much and become positive until the end of the restructuring plan. Currently, TAP Group is facing several financial problems: the recurrent lack of profitability, a level of debt extremely high which contributes to a high financing cost, and the need to reinforce its capital through a recapitalization process. Therefore, we realize that TAP – Maintenance and Engineering Brazil is not a valuable asset at this moment and the Group should think in selling this asset. The main problem here is finding someone who wants to buy it.

7. Conclusions

Concerning the impact that TAP has in the Portuguese economy and in the life of Portuguese people and, since in the last three years the privatization of TAP has been discussed frequently, the aim of this Master Project was to calculate TAP's fair value, in order to estimate the company value and to sell it at the right price, a price that can be beneficial to all the stakeholders involved.

To reach our purpose we used three of the most known corporate valuation methods: Multiples (or Relative) Analysis, Discounted Cash Flow method, using the Free Cash Flow for the Firm approach and the Free Cash Flow for the Equity approach, and a valuation method used for valuing companies with regular negative earnings. The next table summarizes TAP's fair value obtained in each valuation method:

TAP Group Fair Value	
Method	**Fair Value ('000 €)**
Multiples Analysis	
EV/EBITDA	**-797.534**
EV/EBITDAR	**-102.287**
DCF Valuation	
FCFF Approach	**-109.516**
FCFE Approach	**-129.761**
Valuing Companies with negative earnings method	**-133.615**

Table 45 - TAP Group Fair Value

Source: Author

The procedures and assumptions applied in each method are different. Therefore, depending on the valuation technique used, the estimated fair value is slightly different.

In Multiples valuation, we see that TAP's fair value estimated is quite different according to the multiple applied. However, we believe that TAP's fair value is better reflected by EV/EBITDAR multiple than EV/EBITDA because the first gives to

evaluator a more accurate perspective of the company and is able to represent some specific characteristics of the airline industry (company owns vs. leases the aircraft).
On the DCF valuation, besides the differences between the two approaches, we get an approximate company's fair value. TAP's fair value estimated on the third method was slightly higher than DCF valuation and EV/EBITDAR multiple.

The more consistent and reliable method is a subjective process. Some analysts prefer one method and other prefer others. For instance, DCF looks at the company's behavior in the past in order to predict its intrinsic growth in the future and relative valuation looks to similar companies traded in financial markets. Valuation is not only an objective process and the majority of valuations will have bias, so we cannot say that we estimate a precise company's fair value.
We believe and conclude that TAP's fair value should be somewhere between -102,287 thousands of Euros, value estimated using the EV/EBITDAR multiple, and -133,615 thousands of Euros, value obtained by using the valuation method used to valuing companies with regular negative earnings.

The values estimated in our valuation were slightly different from the independent valuation. According to Sérgio Monteiro, the Secretary of State for Transports, the independent evaluations pointed to a TAP's value between -274 million Euros and -512 million Euros and, even with the reinforcement of TAP's capital required in the offer, TAP Group would have a negative economic value between -36 million Euros and -140 million Euros.
Here, we consider that it is not relevant to understand who is right or wrong. Once again, it is essential to point out that valuation is a subjective process, and depending on the assumptions assumed by the different evaluators (where sometimes a small change in a specific input can produce a big change in the final result) and the methods used to value the company the final values can be different.
However, it is important to refer that, besides the differences in TAP's fair value, the main conclusions obtained by the different evaluators were similar: in the actual context TAP Group fair value is negative.

Considering the range of negative TAP's fair value estimated and transposing this to the privatization process of 66 % of company's capital, we consider that it is

reasonable for the Portuguese Government to transfer its capital and the inherent obligations to the investors without receiving any money for the transaction.

Still, it is extremely important to keep in mind that TAP Group is valuable, if it becomes more efficiently. It is expected that a private company could perform adjustments much quicker than a state-owned company. Moreover, it is important to remember one limitation of this project: the value of the indirect exports wealth generated by TAP for the country. This value is extremely difficult to measure, reason why it was not assumed in the valuation. But, Portuguese Government should also take this into account.
However, we cannot be unrealistic and we assume this is a position that is extremely difficult to implement considering the long negative financial record that TAP evidenced in the past.

7.1 The Proposals:

In 2012, Synergy Aerospace, owned by German Efromovich, formally proposal the acquisition of Portuguese Government stake in TAP, which was refused. The proposal consists in:

- Pay to Portuguese Government 35 million Euros;
- Recapitalization of TAP Group in two phases: the first in the amount of 166 million Euros and the second phase, 18 months after acquiring TAP, in the amount of 150 million Euros;
- Assume all the liabilities of TAP Group.

There is a difference of time valuation between our valuation and the Synergy Aerospace proposal. But, given the results obtained in our valuation and since TAP Group in 2013 and 2014 continued to have negative net income's we can assume that Synergy Aerospace proposal, in financial terms, was a good proposal for Portuguese Government. According to Secretary of Portuguese State this proposal was refused due the failure of appropriate bank guarantees by the acquirer part.

At the end of the first semester of 2015, the Portuguese Government selected two group investors to submit binding offers for the acquisition of 61% TAP Group's share capital: the Synergy Group and the Gateway consortium, owned by the Portuguese Humberto Pedrosa and David Neeleman, founder of airline companies such as Azul and JetBlue.

Below are presented the two proposals made to Portuguese Government:

1) **Synergy Group**

- Capital injection of 350 million Euros in TAP Group: 250 million Euros are in Cash and 100 million Euros are in 50 new aircrafts, which would be delivered in different periods of time since the privatization conclusion until 2017;
- Reinforcement of the airline connections to Latin America and North America;
- Distribute by all the employees between 10% to 20% of the dividends;
- Maintenance of headquarters and board in Portugal, maintenance of the key airlines connections and the fulfillment of the public service for a minimum of 10 years after the privatization;
- Keep the Hub in Portugal for a period minimum of 30 years;
- Collective redundancies are not possible during the first 36 months after the privatization process;
- Creation of a cargo Hub in Beja for TAP and Avianca operations across Europe.

2) **Gateway Consortium**

- Portuguese Government receive 10 million Euros for transfer 61% of TAP Group's share capital and 6 million Euros for transferring the remaining stake in the future;
- Capital injection of 338 million Euros in the Group: 269 million Euros are injected immediately after the conclusion of the process and the remaining is delivered during the year of 2016, on the amount of 17 million Euros per quarter;

- Depending on the financial performance and hypothetical initial public offer in the future, the Portuguese Government may receive up to 140 million Euros;
- Debt remains in TAP Group's balance sheet;
- Fleet Renewal with 53 new aircraft;
- Maintenance of headquarters and board in Portugal, maintenance of the key airlines connections and the fulfillment of the public service for a minimum of 10 years after the privatization;
- Keep the Hub in Portugal for a period minimum of 30 years;
- Collective redundancies are not possible during the first 36 months after the privatization process;
- Reinforcement of the airline connections to Latin America and United States of America;
- Distribute by all the employees 10% of the dividends.

The Portuguese Government has decided in favor of the Gateway consortium proposal.

Considering a financial perspective only, given also that it is difficult to quantify other non-monetary aspects regarding the conditions presented by the two proposals, and finally, assuming that the amount of debt in Synergy Group proposal also remain on the balance sheet of the TAP Group, we believe that, effectively, the proposal presented by Gateway consortium, in financial terms, was better than the competing. The current financial situation and treasury requirements of TAP Group were the key factors for our choice. Gateway offers a greater amount of money to recapitalize TAP Group. On the other hand, the fact that Gateway proposal consider a payment of 10 million Euros to Portuguese Government for the transfer of Group's capital is seen as positive for us, given the values obtained in our valuation, where the excessive amount of debt is a major problem for TAP Group and, taking into account that, the long negative TAP's financial record does not allow an increase in the negotiable power.

Therefore, taking into account the value estimated for the current context of TAP Group and the fact that Gateway considers a payment of 10 million Euros to

Portuguese Government for share's capital acquisition, a capital injection of 338 million Euros until the end of 2016 and, above all, since it becomes the main shareholder of a company, assuming an integral part of the Group's debt that remains in the balance sheet, we believe that, in a financial perspective, the Gateway proposal meets the requirements for the Portuguese Government to accept the deal. Finally, the acceptable proposal contains a positive point by including a clause, that was one of the conclusions obtained with this thesis project, i.e., that TAP Group has value in the future if it transforms in a more competitive group. Depending on the future TAP's financial performance Portuguese Government can receive up to 140 million Euros.

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9. Annexes

9.1. TAP Group Balance Sheet

Consolidated Statement of the Financial Position

Values in Thousands of Euros

ASSETS	2010	2011	2012	2013	2014
Non-current assets					
Tangible fixed assets	1.066.344	952.332	838.250	735.110	673.718
Investment properties	2.607	2.862	4.274	3.864	2.139
Goodwill	211.015	206.395	200.895	193.039	193.479
Other intangible assets	1.447	1.424	1.313	774	738
Other financial assets	2.966	3.258	2.848	2.220	2.122
Deferred tax assets	24.459	23.758	24.109	32.008	53.410
Other accounts receivable	27.231	34.398	47.591	40.681	48.569
Total Non-current assets	**1.336.069**	**1.224.427**	**1.119.280**	**1.007.696**	**974.175**
Current assets					
Inventories	148.590	142.429	125.115	108.899	97.172
Customers	223.212	250.482	231.574	205.690	146.991
Advances to suppliers	3.465	11.221	5.378	8.895	6.745
State and other public entities	15.833	18.620	17.836	14.403	13.878
Other accounts receivable	124.669	156.615	56.572	66.351	63.061
Deferrals	12.308	10.805	9.597	12.636	17.094
Cash and bank deposits	222.677	167.365	85.353	270.611	241.281
Total Current assets	**750.754**	**757.537**	**531.425**	**687.485**	**586.222**
TOTAL ASSETS	**2.086.823**	**1.981.964**	**1.650.705**	**1.695.181**	**1.560.397**
EQUITY AND LIABILITIES					
EQUITY					
Share capital	15.000	15.000	15.000	15.000	15.000
Legal reserves	3.000	3.000	3.000	3.000	3.000
Currency conversion reserves	-5.024	-6.867	-13.579	-20.145	-19.503
Fair value reserves	-1.006	-1.236	-1.680	4.541	-36.727
Adjustment of holdings	-2.260	-2.260	-2.260	-2.260	-2.260
Retained earnings	-224.773	-281.876	-364.398	-376.088	-394.209
Net income for the year	-57.103	-76.807	-25.487	-5.868	-85.096
TOTAL EQUITY OF THE GROUP	**-272.166**	**-351.046**	**-389.404**	**-381.820**	**-519.795**
Non-controlling interests	7.355	7.801	8.599	8.508	7.935
TOTAL EQUITY	**-264.811**	**-343.245**	**-380.805**	**-373.312**	**-511.860**

Non-current liabilities					
Provisions	159.575	158.086	30.838	25.287	29.723
Loans received	1.028.060	985.709	775.390	660.131	427.969
Liabilities related to post-employment benefits	88.393	78.540	71.026	47.593	56.626
Deferred tax liabilities	24.683	23.933	24.239	25.821	21.035
State and other public entities	0	84.868	76.557	59.898	0
Other accounts payable	1.032	1.958	2.380	1.546	1.492
Total Non-current liabilities	**1.301.743**	**1.333.094**	**980.430**	**820.276**	**536.845**
Current liabilities					
Suppliers	142.619	165.081	116.029	118.286	141.082
Advances from customers	3.574	1.202	1.047	1.358	820
State and other public entities	147.062	29.087	29.727	29.505	22.021
Shareholders	0	0	50.000	0	0
Loans received	248.995	245.209	258.674	390.512	633.682
Other accounts payable	215.787	222.633	263.585	286.968	366.201
Advances from customers - tickets to be used	239.237	263.510	278.658	364.507	303.889
Deferrals	52.617	65.393	53.360	57.081	67.717
Total Current liabilities	**1.049.891**	**992.115**	**1.051.080**	**1.248.217**	**1.535.412**
TOTAL LIABILITIES	**2.351.634**	**2.325.209**	**2.031.510**	**2.068.493**	**2.072.257**
TOTAL EQUITY AND LIABILITIES	**2.086.823**	**1.981.964**	**1.650.705**	**1.695.181**	**1.560.397**

Table 46 - TAP Group Balance Sheet

Source: TAP Group Annual Reports

9.2. TAP Group Profit and Loss Statement

Consolidated Profit and Loss Statement

Values in Thousands of Euros

	2010	2011	2012	2013	2014
Sales and services rendered	2.315.521	2.438.880	2.618.049	2.669.027	2.698.321
Operating grants	4.565	3.253	4.312	3.852	1.151
Gains and losses in associates	-44.066	-11.124	4.110	706	1.611
Variation in production inventories	-838	10.512	-7.887	-5.072	8.894
Own work capitalized	2.406	950	1.144	1.593	791
Cost of goods sold and materials consumed	-175.829	-188.272	-205.028	-214.811	-276.583
External supplies and services	-1.444.939	-1.647.060	-1.768.063	-1.705.328	-1.816.262
Staff costs	-559.721	-523.970	-506.883	-571.855	-578.880
Inventory adjustments (losses/reversals)	3.966	-2.448	-1.964	-5.908	-105

Impairment of debts receivable (losses/reversals)	4.307	588	3.323	-366	-14.044
Provisions (increases/decreases)	3.701	12.603	3.687	3.623	-5.706
Impairment of assets not subject to depreciation/amortization (losses/reversals)	-500	-3.400	0	0	0
Fair value increases/reductions	0	255	2.210	-410	104
Other income and gains	75.108	47.638	55.972	49.359	103.958
Other costs and losses	-45.040	-31.932	-42.443	-64.598	-33.257
Earnings before interest, taxes, depreciation and amortization	**138.641**	**106.473**	**160.539**	**159.812**	**89.993**
Depreciation and amortization costs/reversals	-138.622	-122.190	-119.776	-115.751	-85.437
Impairment of assets subject to depreciation/amortization (losses/reversals)	-440	-2.350	0	0	-1.984
Net operating income (earnings before interest and taxes)	**-421**	**-18.067**	**40.763**	**44.061**	**2.572**
Interest and similar revenue	6.896	8.596	5.696	6.155	3.091
Interest and similar costs	-50.893	-55.032	-57.371	-50.656	-84.509
Pre-tax earnings	**-44.418**	**-64.503**	**-10.912**	**-440**	**-78.846**
Corporate income tax for the year	-8.497	-7.700	-9.196	-475	-2.103
Net income for the year	**-52.915**	**-72.203**	**-20.108**	**-915**	**-80.949**
Net income of shareholders of the parent company	**-57.103**	**-76.807**	**-25.487**	**-5.868**	**-85.096**
Net income of non-controlling interests	4.188	4.604	5.379	4.953	4.147
Basic and diluted earnings per share (euros)	-38	-51	-17	-4	-57

Table 47 - TAP Group Profit and Loss Statement

Source: TAP Group Annual Reports

9.3. Historical Growth Rates - Air Transport Industry

Industry Name	Number of Firms	Growth in Net Income- Last 5 years	Growth in Revenues- Last 5 years
Air Transport	**36**	**6,94%**	**8,78%**

Table 48 – Historical Growth Rates – Air Transport industry

Source: Damodaran Public List

9.4. Europe unlevered beta - Air Transport Industry

Industry Name	Unlevered beta
Air Transport	**0,71**

Table 49 – Unlevered beta in Europe – Air Transport industry

Source: Damodaran Public List

9.5. Market debt to equity - Air Transport Industry

Industry Name	Market D/E (adjusted for leases)
Air Transport	112%

Table 50 – Market debt to equity – Air Transport industry

Source: Damodaran Public List

9.6. Risk-free Interest Rate

Figure 6 – Germany Generic Government 10 year yield (print screen)

Source: Bloomberg website

9.7. EUR-USD exchange rate at December, 29th 2014

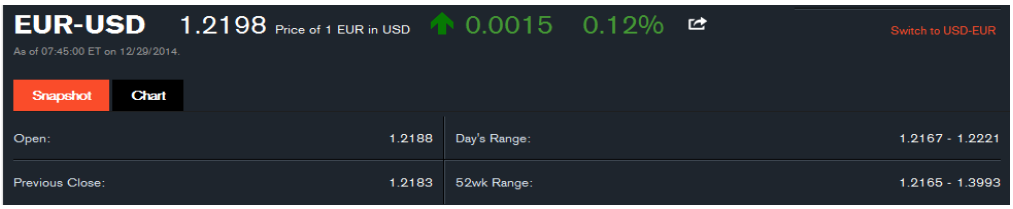

Figure 7 – EUR-USD exchange rate (print screen)

Source: Bloomberg website

9.8. Inflation rate - Portugal

Table: average inflation Portugal (CPI) - by year

average inflation	inflation	average inflation	inflation
CPI Portugal 2014	-0.27 %	CPI Portugal 2004	2.36 %
CPI Portugal 2013	0.27 %	CPI Portugal 2003	3.23 %
CPI Portugal 2012	2.78 %	CPI Portugal 2002	3.60 %
CPI Portugal 2011	3.65 %	CPI Portugal 2001	4.37 %
CPI Portugal 2010	1.40 %	CPI Portugal 2000	2.85 %
CPI Portugal 2009	-0.83 %	CPI Portugal 1999	2.34 %
CPI Portugal 2008	2.59 %	CPI Portugal 1998	2.57 %
CPI Portugal 2007	2.45 %	CPI Portugal 1997	2.34 %
CPI Portugal 2006	3.11 %	CPI Portugal 1996	3.07 %
CPI Portugal 2005	2.28 %	CPI Portugal 1995	4.23 %

Figure 8 – Inflation rate – Portugal (print screen)

Source: Worldwide Inflation data

9.9. Comparables EV/EBITDA

International Consolidated Airli...Peer group:

International Consolidated Airli... Peer group	Enterprise Value (in thousands USD)	EV/EBITDA 2015	EV/EBITDA next 12 mth	Relevance Score
International Consol...	17 542 992	4.53	4.54	
Singapore Airlines Ltd	7 449 828	4.23	4.41	100%
Deutsche Lufthansa AG	10 251 981	2.78	2.78	100%
Air France-KLM	10 349 003	3.61	3.61	100%
Grupo Aeromexico SAB...	1 339 027	3.85	3.86	98%
AirAsia Bhd	4 860 355	8.59	8.60	92%
Alaska Air Group Inc.	7 368 940	5.17	5.17	86%

Ratios based on Mon, 29 Dec 2014.

International Consolidated... Benchmark		EV/EBITDA next 12 mth
Company	International Consol...	4.54
Peer group	International Consol... excluded	3.93
	International Consol... included	4.10
Sector	Airlines	9.03
S&P 500		9.73
STOXX Europe 600		8.15
Country	ESP	8.48

Easyjet PLCPeer group:

Easyjet PLC Peer group	Enterprise Value (in thousands USD)	EV/EBITDA 2015	EV/EBITDA next 12 mth	Relevance Score
Easyjet PLC	9 646 628	7.92	7.72	
Ryanair Holdings PLC	15 959 677	8.61	8.83	100%
Air France-KLM	10 349 003	3.61	3.61	90%
Air Arabia PJSC	2 221 370	7.38	7.39	78%
Jet Airways Ltd.	2 159 227	10.76	12.15	75%
AMR Corporation	43 778 451	5.32	5.33	72%
Southwest Airlines Co	28 114 161	6.87	6.88	72%

Ratios based on Mon, 29 Dec 2014.

Easyjet PLC Benchmark		EV/EBITDA next 12 mth
Company	Easyjet PLC	7.72
Peer group	Easyjet PLC excluded	5.88
	Easyjet PLC included	6.00
Sector	Airlines	9.03
S&P 500		9.73
STOXX Europe 600		8.15
Country	GBR	8.06

Figure 9 – Comparables EV/EBITDA (print screen)

Source: Infinancials website

9.10. Historical evolution of TAP's EBITDAR

	2010	2011	2012	2013	2014
TAP's EBITDAR	**192.412**	**158.237**	**214.505**	**225.434**	**147.308**

Values in Thousands of Euros

Table 51 – Historical evolution of TAP's EBITDAR

Source: TAP Group Annual Reports