INSTITUTO
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Equity Valuation of Marriott International

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Master's in Finance

Supervisor:
PhD Pedro Manuel de Sousa Leite Inácio, Assistant Professor
ISCTE Business School

May, 2021

BUSINESS
SCHOOL

Department of Finance

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Agradecimentos

Em primeiro lugar gostaria de agradecer aos meus pais, Mário Rui Simões e Isaura Simões, por todo o apoio que me deram ao longo do meu percurso académico. Agradeço todo o vosso esforço para me darem a melhor educação possível e por acreditarem sempre em mim e nas minhas capacidades. Quero deixar um agradecimento especial ao meu pai por ter estado sempre presente e por ter posto a minha educação sempre em primeiro lugar. Deixo também um agradecimento especial a todos os meus amigos que me apoiaram e que comigo viveram estes últimos 5 anos.

Deixo um agradecimento especial ao professor Pedro Leite Inácio que me orientou durante este projeto. Obrigada por toda a sua disponibilidade e por todas as suas recomendações que enriqueceram este trabalho. Agradeço também ao professor António Freitas Miguel por todo o apoio dado ao longo do meu percurso no mestrado nas mais diversas ocasiões. Gostaria também de agradecer ao professor António Barbosa pois foi graças a si que descobri este interesse pelo mundo financeiro que me levou a prosseguir o mestrado em Finanças. Agradeço também de uma forma geral a todo o corpo docente do ISCTE com que me cruzei durante os últimos 5 anos e que de alguma forma contribui-o para o cumprimento dos meus objetivos.

Resumo

A Marriott Internacional é uma referência na indústria hoteleira. A empresa foi fundada em 1927 pela família Marriott e ao longo dos anos tem ganho a confiança e fidelidade dos seus clientes. A Marriott também é reconhecida pelas suas excelentes capacidades de gestão, tendo estas sido destacadas durante a crise de 2008 onde a empresa mostrou um bom desempenho. Estas capacidades de gestão estão agora a ser testadas pela pandemia do coronavírus que está a ter um severo impacto nas finanças da empresa.

O objetivo deste projeto de mestrado é determinar o valor justo das ações da Marriott de forma a providenciar uma recomendação de investimento a possíveis investidores. O resultado final será uma afirmação sobre se os investidores devem comprar, manter ou vender as ações da empresa com base na potencial valorização ou desvalorização em relação ao mercado.

Após uma revisão do que tem sido desenvolvido na área de finanças sobre avaliação de empresas, duas metodologias diferentes serão aplicadas à Marriott Internacional. O Free Cash Flow to the Firm será o primeiro modelo a ser aplicado seguido de uma Avaliação Relativa que nos ajudará a alcançar resultados mais precisos.

A Marriott é uma empresa listada na Nasdaq e a 31 de dezembro de 2019 as ações da empresa valiam $ 150.83, sendo que mais à frente considerámos este preço como sobrevalorizado no decorrer da discussão dos resultados obtidos. A nossa recomendação final é que os investidores devem vender as ações da Marriott International.

Palavras-chave: Marriott International; Avaliação de empresas; Indústria Hoteleira; Cash Flow Descontados; Múltiplos

JEL Classification: G300 – Corporate Finance; G32 – Value of Firms

Abstract

Marriott International is a reference in the hotel industry. The company was founded in 1927 by the Marriott family and over the years has gained the trust and loyalty of its customers. Marriott is also recognized for its excellent management skills, having these been highlighted during the 2008 crisis where the company showed a good performance. This management skills are now being tested by the coronavirus pandemic that is having a severe impact on the company's financials.

The goal of this master's project is to determine the fair value of Marriott's shares in order to provide an investment recommendation to possible investors. The ultimate result will be a statement of whether investors should buy, hold or sell the company's shares based on the potential appreciation or depreciation in relation to the market.

After a revision of what has been developed in the finance field about company's valuation, two different methodologies will be applied to Marriott International. The Free Cash Flow to the Firm will be the first model to be applied followed by a Relative Valuation that will help us to reach more accurate results.

Marriott is a listed company on Nasdaq and on the 31st of December of 2019 the company's stock was worth $150.83, being that we further considered this price as overvalued in the course of the discuss of the valuation results. Our final recommendation stands that investors should sell the shares of Marriott International.

Keywords: Marriott International; Company Valuation; Lodging Industry; Discounted Cash Flow; Multiples

JEL Classification: G300 – Corporate Finance; G32 – Value of Firms

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Glossary

ADR - Average Daily Rate

CAPEX - Capital Expenditure

CAPM - Capital Asset Pricing Model

CEO - Chief Executive Officer

CRP - Country Risk Premium

D&A - Depreciation and Amortization

DCF - Discounted Cash Flow

EBIT - Earnings Before Interest and Taxes

EBITDA - Earnings Before Interest, Taxes, Depreciations and Amortizations

EG - EBITDA Growth

EV - Enterprise Value

EVA - Economic Value Added

FCF - Free Cash Flow

FCFE - Free Cash Flow to the Equity

FCFF - Free Cash Flow to the Firm

GDP - Gross Domestic Product

MRP - Market Risk Premium

MV - Market Value

NOPLAT - Net Operating Profit Less Adjusted Taxes

NPV - Net Present Value

PEG - Price Earnings to Growth

PER - Price Earnings Ratio

RevPAR - Revenue Per Available Room

S&P - Standard and Poor's

T&T - Travel and Tourism

TGR - Terminal Growth Rate

UAE - United Arab Emirates

UK - United Kingdom

USA - United States of American

WACC - Weighted Average Cost of Capital

WC - Working Capital

WHO - World Health Organization

WTTC - World Travel & Tourism Council

Introduction

The aim of this master's project is the determination of the equity value of Marriott International. In a world with so many investment opportunities it is important that investors know where they can best invest their money. The purpose of this project is to help investors decide whether they should invest or not in Marriott International and in order to do that, we will determine the target price of the company's shares at the end of 2019.

Marriott International is a publicly quoted company listed on Nasdaq and based on United States of America (USA). The company belongs to the hotel industry with very strong brands around the world that employ more than 174,000 workers. Marriott's business model is divided into 3 main segments: operational, franchise and licensor. The franchise segment is the one which most contributes to the company's revenues. In 2019 Marriott had a turnover of $21 billion having shown a consistent growth in recent years.

Unfortunately, the company is currently struggling with the coronavirus pandemic that is severely affecting the company's brands. Therefore, the pandemic's effects need to be reflected in our valuation.

The project begins with a literature review where we explore different methodologies which have been studied by notorious authors in the course of the years. The understanding of the different methods and their fundamentals is an essential step, that will allow us to wisely choose the most appropriate models for Marriott's valuation.

Secondly, we will make an overview of the company's business with an analysis of the recent performance being this complemented with an overview of the lodging industry. The coronavirus pandemic and the respective impact on the lodging industry will also be addressed. After this point, we will proceed to Marriott's valuation that will begin with the establishment of all the necessary assumptions followed by the application of the chosen models. Finally, we will present our results and recommendations as mentioned in the beginning.

We believe the models chosen and all the assumptions behind them are going to provide us interesting and accurate results that will truly reflect the price of Marriott's shares.

1. Literature Review: Valuation Models

The ability of knowing how to value a company is a key skill to dominate in the corporate finance world. When valuing a firm there are many models that can be applied and it is important to understand the assumptions, details, advantages and disadvantages behind each of them. Nevertheless, regarding the model being used, a valuation is always a function of three factors: cash, timing and risk (Luehrman, T.,1997).

Fernandez (2007) highlights the importance of not confusing the value of a company with its price. He defines the price of a company as the amount agreed between the seller and the buyer when selling a company, but value has a much broader definition. As Goedhart et al. (2010) say, value considers the long-term interests of all the stakeholders in a company and not just the shareholders. He also mentioned that companies who focus in maximizing value to their shareholders are going to indirectly create more employment, treat their employees better and give more satisfaction to their clients.

A company's value can, therefore, have some subjectivity since different buyers can have different values for the same company, but knowing how to value a company is key and the valuation can be executed for several purposes. Fernandez (2007) listed some of these purposes like comparing the value obtained from the valuation with the share's price in the stock market in order to decide whether to sell, buy or hold shares, which is in line with the purpose of this project.

Besides all the studies that have been developed, Damodaran (2006) says that there are still some points in a valuation that have not been deeply analyzed like the estimation of cash flows and the different ways of applying the same model. Nevertheless, great studies have been developed from notorious authors such as Fernández (2007) and Damodaran (2002).

Damodaran (2002) identifies three general approaches to valuation: Discounted Cash Flow Valuation, Relative Valuation and Contingent Claim Valuation. The following pages will focus on explaining more deeply the first two approaches since it will be the ones applied to Marriott International.

1.1. Discounted Cash Flow Valuation

The Discounted Cash Flow (DCF) Valuation has been considered the best practice when valuing a firm since 1970 according to Luehrman (1997). Fernández (2007, p:17) also agrees with this point by highlighting that, nowadays, this is “the only conceptually correct valuation method”.

Damodaran (2002) supports this idea by mentioning that this approach to valuation is the foundation for all the other approaches and, therefore, the understanding of its fundamentals is essential. DCF Valuation shares a common definition between many authors. Damodaran (2006, p:4) defines the value of an asset as “the present value of the expected cashflows on the asset, discounted back at a rate that reflects the riskiness of these cashflows”.

In essence, this approach focuses on the present value rule and the challenge is on the correct projection of future cash flows and on the correct choice of the discount rate, that needs to reflect the risk of the estimated cash-flows, with higher rates for riskier assets and lower rates for safer assets.

One of the assumptions behind this approach is that markets make mistakes and, therefore, our estimations will probably give different results from the market prices, but Damodaran (2002) mentioned that we also assume that at the end the two values will end up to converge.

From the four versions that Damodaran (2006) recognizes in DCF Valuation, we will only focus in two of them in the next pages. In the first, we will arrive at the firm value by discounting the future cash flows at the risk-adjusted discount rate by applying the Free Cash Flow to the Firm (FCFF) model and the Free Cash Flow to the Equity (FCFE) model. In the second, we will determine the firm's value based on the excess returns that are expected from present and future investments by applying the Economic Value Added (EVA) model.

1.1.1. Free Cash Flow to the Firm model

The Free Cash Flow to the Firm model is considered as the standard one in DCFs analysis according to Luehrman (1997). Damodaran (2006) explains that in this model the value of the firm can be obtained by discounting the FCFF at the weighted average cost of capital (WACC).

FCFF is an operating cash flow and, therefore, represents the cash flow that is available to the firm after netting all the fixed asset investments and working capital requirements while assuming no financial debt as it is shown in the following formula:

$$FCFF = EBIT \times (1 - t) + Depreciation\ and\ Amortization\ costs - \Delta Net\ Working\ Capital\ Needs - Capex \quad (1)$$

In order to arrive at the firm's value Damodaran (2002) draws our attention to one more point, being that, besides discounting the FCFF at the WACC we must take in consideration the Terminal Value in perpetuity in accordance with the following formula:

$$Value\ of\ firm = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1 + WACC)^t} + \frac{Terminal\ Value_n}{(1 + WACC)^n} \quad (2)$$

Where,

$FCFF_t$ = Free Cash Flow of the Firm in year t

$Terminal\ Value_n$= $FCFF_{N+1}$ /(WACC-g)

WACC = Weighted Average Cost of Capital

g = growth rate

Terminal Value is the closure of the cash flow valuation process. It represents the value of the firm assuming that cash flows will be produce until perpetuity at a constant growth rate as it is shown in the following formula (FCFF of the following year):

$$Terminal\ Value = \frac{FCFF_t}{WACC - g} \quad (3)$$

The discount rate and constant growth rate present in the formula are determined using the information currently available. It is important to notice that it is not realistic for a firm to grow at a very high rate forever. Damodaran (2002, p:431) explores this issue and states that "since no firm can grow forever at a rate higher than the growth rate of the economy in which it operates, the constant growth rate cannot be greater than the overall growth rate of the economy". It is also important to notice that the major part of the company's value will come from the Terminal Value, reason why a correct establishment of the growth rate is fundamental to accurately determine the company's value.

The choice of the tax rate is also an important decision in the valuation process. As a tax rate we can have the *effective tax rate*, that can be obtained by dividing taxes due by taxable income, and the *marginal tax rate*, that corresponds to the rate at which additional income will be taxed. In our valuation we will use the *effective tax rate* to estimate cash flows, and then we will increase it up to the *marginal tax rate* to compute the firm's Terminal Value as Damodaran (2002) suggests.

The FCFF model will be applied in Marriott's valuation, since this is the most used model among analysts when valuing companies in the hotel industry (DeRoos, 2006).

1.1.1.1. Weighted Average Cost of Capital

WACC is the discount rate used in valuation models where firms have equity and debt in their capital structure. According to Luehrman (1997)[1] it can be defined as a "tax-adjusted discount rate, intended to pick up the value of interest tax shields that come from using an operation's debt capacity".

WACC's computation can be easily executed by weighting the cost of equity and the cost of debt, while taking in consideration the company's capital structure as is exemplified in the following formula (Fernandez, 2007):

$$WACC = K_E \times \frac{E}{D+E} + K_D \times \frac{D}{D+E} \times (1-t) \quad (4)$$

Where,

K_E = cost of equity;

E = market value of equity;

E/(D+E) = equity-to-value ratio;

K_D = cost of debt;

[1] The article of Luehrman (1997) was consulted in a website, reason why we couldn´t mention the respective page of the citation. Website: https://hbr.org/1997/05/whats-it-worth-a-general-managers-guide-to-valuation

D = market value of debt;

D/(D+E) = debt-to-value ratio;

t = corporate income tax rate.

One of the disadvantages of WACC, evidenced by Luehrman (1997), is that this approach will work well for companies with simple capital structures, whereas more complex ones will need further adjustments in order to truly reflect the cost of capital.

Some may question why we use market values instead of book values in the computation of the weights for equity and debt. Damodaran (2002, p:295) gave us the answer to this by explaining that, we use market values "because the cost of capital measures the cost of issuing securities – stocks as well as bonds – to finance projects and these securities are issued at market value, not at book value".

Regarding the debt considered in the WACC's computation, we will only consider interest bearing debt (both long-term and short-term debt) and we will also consider operating leases as financing expenses as it is explained by Damodaran (2002). This is what we call as gross debt.

It is also important to decide if we will use the concept of gross debt or net debt. Net debt corresponds to the difference between gross debt and the cash owned by the firm. Damodaran (2002, p:560) recommends the use of gross debt when valuing a company since "the net debt can be a negative number" and "maintaining a stable net debt ratio in a growing firm will require that cash balances increase as the firm value increases".

In order to finalize WACC's computation we need to compute the cost of equity and the cost of debt, being both explained in the following pages.

1.1.1.2. Cost of equity

Cost of equity corresponds to the expected return that equity investors expect to receive and includes a premium that reflects the equity risk in an investment. There are several models that can be applied in cost of equity's computation, being the Capital Asset Pricing Model (CAPM) the more common one as Goedhart et al. (2010) refers.

According to CAPM, cost of equity will depend of the risk-free rate, the market risk premium, and the beta (which measures the stock's sensitivity to the market return) as shown in the following formula (Goedhart et al., 2010):

$$E(R) = R_f + \beta \times (R_m - R_f) \qquad (5)$$

Where:

R_f = risk free rate;

R_m = expected return of the market;

β = stock's sensitivity to the market return.

In the next pages we will explore each component of the formula above, but first it is important to remind ourselves of the assumptions behind CAPM. Briefly, we are assuming no transaction costs, no asymmetry of information (investors cannot find under or overvalued assets in the market) and that the market is efficient (Damodaran, 2002).

Risk free rate

We can define an asset as risk free when we know its expected return with certainty and, for that to happen, two conditions need to be fulfilled. According to Damodaran (2002) the asset cannot have neither default risk nor reinvestment risk.

The only assets which do not have default risk are government bonds since governments control the printing of money. In order to avoid reinvestment risk, Damodaran (2002, p:215) says that we should use a "duration matching strategy", that is, we should match the duration of the risk free asset with the duration of the cash flows being analyzed. Another point that he highlighted is that, we need to be consistent with the government bond that we choose as risk free asset and the currency in which the cash flows are being valued. Given that Marriott International is an American company, we will use the US 10-year treasury rate as the risk-free rate in our valuation.

Market Risk Premium

Market Risk Premium (MRP) corresponds to the difference between the expected return of the market and the risk-free rate. From all the methods that can be applied when computing MRP, the historical average realized returns is the most common method according to Schill (2013). The expected market return will correspond to the return of a stock market that accurately reflects the scope of the firm's business.

Beta

According to CAPM, Beta captures all the market risk of a security or portfolio (systematic risk) and measures the relationship between the stock and the entire market. Damodaran (2002, p.100) shows that Beta can be computed "by dividing the covariance of each asset with the market portfolio by the variance of the market portfolio" as we can see in the following formula:

$$Beta\ of\ asset\ x = \frac{Cov_{x,m}}{\sigma_m^2} \qquad (6)$$

Where,

$Cov_{x,m}$ = covariance between the asset and the market;

σ_m^2 = variance of the market portfolio.

Damodaran (2002) also help us to understand the meaning of the different values that we can obtain for Beta. A Beta of zero will correspond to a risk-free asset meaning that the asset is uncorrelated with the market return. Whereas, if we obtain a value for Beta close to one will mean that the asset in strongly correlated with the market return.

In Beta's computation it is also important to be aware of the financing structure of the company since different structures will lead to different Betas. For a company that is only financed by equity we will compute the Unlevered Beta, whereas if a company is financed by both, debt and equity, we will compute the Levered Beta which can be obtained by applying the following formula (assuming the Beta of Debt is zero):

$$\beta_L = \beta_U \times [1 + \frac{D}{E} \times (1 - t)] \quad (7)$$

Where,

β_L = Beta Levered;

β_U = Beta Unlevered;

t = Corporate tax income;

$\frac{D}{E}$ = Debt to Equity ratio.

1.1.1.3. Cost of Debt

Cost of debt is one of the WACC's components and corresponds to the effective cost that a company bears by financing their projects with debt. Since interest expenses are tax deductible, we normally use the after-tax cost of debt concept in order to capture the benefit of paying interests.

After-tax cost of debt can be obtained, according to Damodaran (2002), by multiplying the pre-tax cost of debt by one minus the tax rate, as we can see in the formula below:

$$After\ tax\ cost\ of\ debt = Pre\ tax\ cost\ of\ debt\ \times (1 - tax\ rate) \quad (8)$$

The Pre-tax cost of debt will correspond to the sum of the risk-free rate, already explained, with the default spread. For listed companies, which is the case that will be analyzed, we can obtain the default component through the company's credit rating and associated default spread. For unlisted companies it is more difficult to obtain the default component but Damodaran (2002) suggests that we estimate a synthetic rating or that we analyze the company's recent borrowing history.

Regarding the tax rate, and according to the works of Damodaran (2002) and Goedhart et al. (2010), the marginal tax rate is the one that should be used in cost of debt's computation. It is important to highlight that we are going to have this tax benefit only if the income generated is enough to cover interest expenses (Damodaran, 2002).

1.1.2. Free Cash Flow to Equity model

Free Cash Flow to Equity (FCFE) represents the amount that will be available to shareholders and, therefore, will be used to pay out dividends or stock buybacks. According to Fernández (2007, p.21), we can obtain the FCFE from the FCFF by subtracting "the interest and principal payments (after tax) made in each period to the debt holders and adding the new debt provided" as is shown in the following formula:

$$FCFE = FCFF - Interest\ Expenses\ \times (1 - t) + \Delta Debt \qquad (9)$$

Behind the FCFE model we are implicitly assuming that the firm will not accumulate cash in the future, since that all cash available after debt payments and reinvestment needs will be paid out to shareholders (Damodaran, 2002).

After the FCFE's computation, we just need to follow the same steps that we did in the FCFF model in order to obtain the company's equity value. The only difference is on the discounting rate that should be used since in the FCFE model we should use the cost of equity as the discounting rate instead of the WACC. In the end, if we intend to find out the firm's total value, we just need to add the value of the existing debt to the value obtained through the FCFE model.

1.1.3. Economic Value Added model

After analyzing the traditional DCF models, we will now focus on another form of valuation entitled as Excess Return Models.

In Excess Return Models, we split cash flows into normal return cash flows and excess return cash flows, and the last ones can be either positive or negative (Damodaran, 2006). We will now focus on a specific Excess Return Model, the Economic Value Added (EVA) model.

EVA model is defined by Damodaran (2002, p:1225) as a measure of "the dollar surplus value created by a firm on its existing investment" and, according to the model, we will increase the firm's value only by investing in projects with a positive net present value (NPV) and where the return on invested capital exceeds the cost of capital. EVA can be obtained by applying the following formula:

$$EVA = NOPLAT - (WACC\ \times Invested\ Capital) \qquad (10)$$

EVA's computation depends on the three main components shown in the formula above, where NOPLAT corresponds to the Net Operating Profit Less Adjusted Taxes.

It would be logical to compute the invested capital using the market value of assets but, as Damodaran (2002) refers, this would be too difficult to estimate and, therefore, we should use book values when computing invested capital. Nevertheless, it is important to highlight that there is no contradiction between using book values when estimating the invested capital and using market values when

estimating the WACC, since, as Damodaran (2002, p:1226) explains, "a firm has to earn more than its market value cost of capital to generate value".

According to Damodaran (2006), EVA can be seen as an extension of the NPV rule and, as he explains in his work, the value of a firm can be obtained by summing the capital invested in assets in place with the present value of the EVA generated by these assets and with the expected present value of the EVA by future investments as we can see in the following formula:

$$Firm\ Value = Capital\ Invested_{Assets\ in\ Place} + \sum_{t=1}^{t=\infty} \frac{EVA_{t,Assets\ in\ Place}}{(1+WACC)^t} + \sum_{t=1}^{t=\infty} \frac{EVA_{t,Future\ Projets}}{(1+WACC)^t} \quad (11)$$

Finally, if we are consistent regarding our assumptions about growth and reinvestment, the value of the firm obtained with EVA model will be same as the one obtained with traditional DCF models.

1.2. Relative Valuation (Multiples)

In DCF valuation we were focused on determining the intrinsic value of a company. Now, in Relative Valuation, we will try to judge the value of an asset by analyzing what the market is willing to pay for similar assets (Damodaran, 2006). Further on his work, Damodaran (2006, p:59) reinforces this idea by saying that in this approach, "we have given up on estimating intrinsic value and essentially put our trust in markets getting it right, at least on average".

Valuing a firm with the use of multiples has been increasingly popular in more recent years and also, "highly debatable" as Fernandez (2001, p:2) says. According to Damodaran (2002) this approach uses less assumptions and is quicker to execute when compared to DCF Valuation. He reinforces this idea by saying that it is also simpler to explain and understand and it leads to a better reflection of the current market.

However, Damodaran (2002) also alerts us to some of the disadvantages of the use of multiples. The fact that multiples are so easy to use can lead to forgetfulness of key variables, such as risk, growth or cash flow potential leading to an incorrect estimation of the company's value. The author also mentioned that the use of less assumptions leads to a problem of lack of transparency in the valuation process, increasing the vulnerability of the multiples used to manipulation acts.

Apart from disadvantages, this approach can be a successful way of valuing a company if done correctly, especially after valuing the company with a different methodology (Fernandez, 2001). The use of multiples as a complement in the valuation can help us to understand how well we performed the other approaches and where our company stands in the market.

According to Damodaran (2002) there are mainly four steps in relative valuation. Firstly, we need to be consistent with the multiples we choose and we must apply them consistently among comparable firms.

Secondly, we need to understand the cross-sectional distribution of the multiple. In addition, we need to understand the fundamentals behind the multiple and how the multiple is impacted by possible changes in those fundamentals. Finally, we need to be careful about the companies that we choose as comparable firms, being this a point deeply explored by Bhorjraj and Lee (2001) on his work.

The concept of a comparable firm was also studied by Damodaran (2006, p:65) and he defines it as a firm "with cash flows, growth potential, and risk similar to the firm being valued". We will assume that companies in the same industry will share the same characteristics but, in the case of that not being verified, we should try to find similar firms regarding to valuation fundamentals as Damodaran (2006) suggests.

The choice of the correct multiples to apply will vary across the company's nature and its industry but there is an agreement regarding the main groups of multiples. In the table below, we present the main groups of multiples according to Fernandez (2001) work:

Equity Value Multiples	Price-to-Earnings (PER)
	Price-to-Cash Flow
	Price to Book Value
Enterprise Value Multiples	Enterprise value/EBITDA
	Enterprise Value/Sales
	Enterprise Value/FCF
Growth-references Multiples	PEG (Price/Earnings to growth ratio)
	EV/EG (Enterprise value to EBITDA Growth)

Table 1: Three main groups of Multiples
Source: Fernandez (2001)

Fernandez (2001) shows in his work that PER is the most used multiple among analysts. The popularity of PER multiple is also highlighted by Damodaran (2002, p:662) since he considers it "the most widely used and misused of all multiples".

PER multiple can be obtained by dividing the market price per share by the earnings per share as demonstrated in the formula below:

$$PER = \frac{Market\ Price\ per\ share}{Earnings\ per\ share} \qquad (12)$$

As a final note, it is important to bear in mind that, the firm's value obtained with Relative Valuation is very likely to be different from the one obtained with DCF valuation. The reason for this difference is related to the fact that these two approaches have different market views. In DCF Valuation we assume markets make mistakes, but we believe that those mistakes will be corrected in the future, whereas in the Relative Valuation we assume that markets are correct at least on average. This different views of

the market may lead, as Damodaran (2006, p:74) explains, to a situation where "a stock may be overvalued on a discounted cash flow basis but undervalued on a relative basis, if the firms used in the relative valuation are all overpriced by the market. The reverse would occur, if an entire sector or market were underpriced".

1.3. Conclusions

In the literature review, several models were explained as possible tools when valuing a firm. Nevertheless, many more models were developed during the past years and this is a small vision of the wide range of possibilities that exist in the company valuation world.

Based on the studies developed from the notorious authors mentioned previously, we have decided to value Marriott International by applying the Free Cash Flow to the Firm model being this complemented with a Relative Valuation. In the Relative Valuation, we will use PER and Enterprise value/EBITDA as multiples since, according to Fernandez (2001) work, these multiples are the most widely used when valuing a firm.

2. Company Overview

2.1. Marriott History

Marriott International was founded in 1927 by J. Willard Marriott and his wife, Alice Marriott, with the name A&W root beer. Marriott family opened their first restaurant in Washington, D.C. and, after introducing hot food into their menu, they changed the restaurant's name to Hot Shoppes. The company continued to expand its business in the following years and in 1953, Hot Shoppes, Inc. became a public traded company having sold its shares in only two hours at $10.25/share.

It was only in 1957 that Marriott entered the hotel business, by founding the world's first motor hotel in Arlington, Virginia under the management of Bill Marriott, son of Marriott's founders. Over the next years, Marriott expanded all over the world having transformed the hospitality industry. Bill Marriott was officially named as Marriott's CEO in 1972, having been elected Chairman of the Board in 1985 after J. Willard Marriott passed away.

In 1986, Marriott started to transform its business by creating an innovative business model where one company incorporates many brands. In 1987, Marriott was the first lodging company to offer a portfolio of brands, being considered the number one hospitality company in the world. In the following years, the company acquired many more brands having rapidly grown its international position. In 2016, the company acquired Starwood Hotels & Resorts making Marriott the largest and most global lodging company in the world. The last acquisition was done in 2019, by acquiring Elegant Hotels Group.

Today, Marriott pretends to continue expanding its portfolio of brands but now, is more focused on improving guests experience by offering innovative and technological solutions. Marriott International has 30 brands with a total of 7,349 hotels around 134 countries and employs approximately 174,000 employees.

2.2. Business Model

Marriott's business model is divided into 3 main segments: operational, franchise and licensor. In a strategic way, the company owns few lodging properties and focus mainly on management, franchising and licensing. This strategy allows the company to smartly control its operational costs, to generate more stable earnings in periods of economic distress and to grow its hotels portfolio with small investment costs.

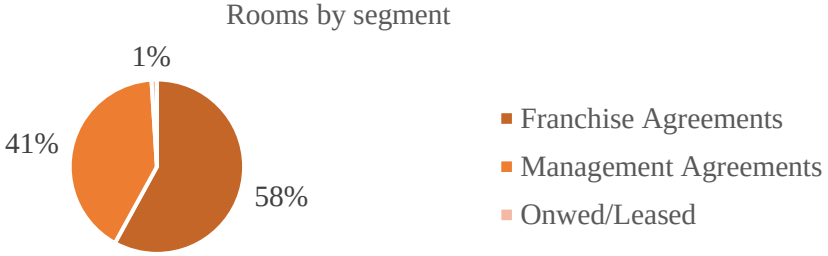

Figure 1: Rooms by segment
Source: Marriott International annual report of 2019

As we can see in the figure above, the franchise segment is the one that most represents Marriott's business and the company owns only 1% of its entire portfolio of lodging properties rooms.

Marriott has 2,144 company-operated properties which include long-term management or lease agreements with property owners (called operating agreements), own properties, and home and condominium communities managed by Marriott. Under *management agreements*, Marriott earns a *base management fee* (percentage of hotel's revenues) and an *incentive management fee* (percentage of hotel's profit). These agreements are made for periods of 20 to 30 years with an option for renewal and they typically include reimbursement of operational costs (both direct and indirect). Under *lease agreements*, Marriott typically earns a *fix annual rental* plus *additional rentals* (as a percentage of hotel's revenues, if revenues exceed a certain amount). These operating agreements allow owners to terminate contracts if certain metrics are not met, also having the possibility to convert their company-operated properties into franchised properties.

The company also has 5,205 franchised and licensed properties which allow hotel owners to use Marriott's lodging brand names and systems. Under *franchising programs*, Marriott earns an *initial application fee* and continuing *royalty fees* (4%-7% of room revenues plus 2%-3% of food and beverage revenues). Normally, fees related to marketing and advertising programs and to usage of centralized reservation systems are also charged. Under *license agreements*, Marriott earns a *fixed annual fee*, adjusted for inflation, plus variable fees based on sales volumes.

2.3. Brand Portfolio

Marriott has a remarkable portfolio of brands that are characterized by two main styles: the classic and the distinctive. The classic style focus on the modern traveler whereas the distinctive style focus on providing a unique experience.

Marriott's portfolio has a total of 30 brands that are distributed into three main segments: luxury, premium and select. Each segment incorporates different hotel's brands according to the amenities and services offered by each brand.

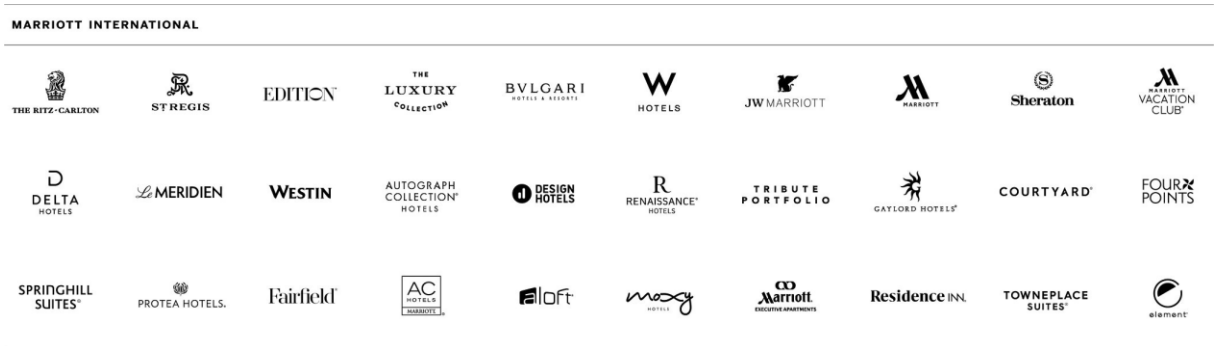

Figure 2: Marriott's brand portfolio
Source: Marriott International annual report of 2019

2.4. Business by Region

Marriott has lodging properties all over the world but formally reports three main segments: North American Full-Service, North American Limited-Service, and Asia Pacific. The Europe, Middle East and Africa, and Caribbean and Latin America operating segments do not individually meet the criteria for separate disclosure as reportable segments and are referred as "Other International". The main difference between the North American segments is that the North American Full-Service incorporates Luxury and Premium properties whereas the North American Limited-Service only incorporates Select properties.

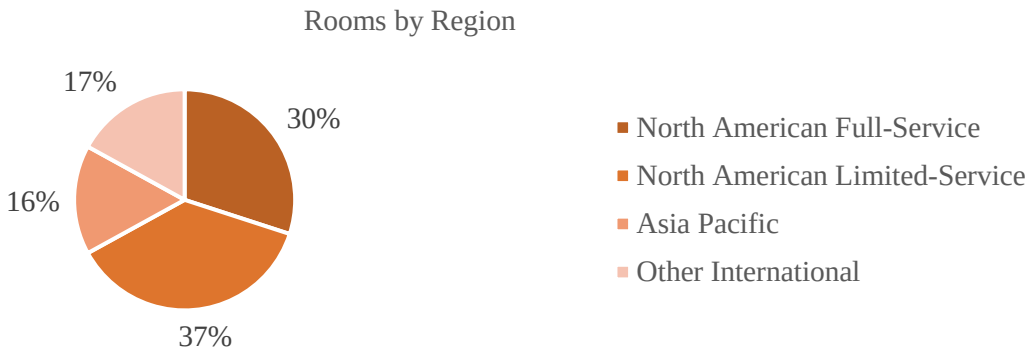

Figure 3: Rooms by Region
Source: Marriott International annual report of 2019

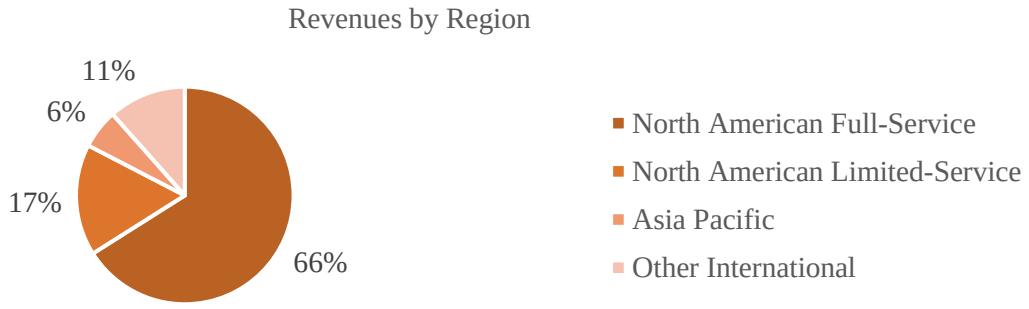

Figure 4: Revenues by region
Source: Marriott International annual report of 2019

In figure 3, we can see that the majority of Marriott's rooms belongs to North American Limited-Service segment which represents 37% of room's portfolio. However, in figure 4 we can see that the North American Full-Service segment is the one with more impact in revenues. This last segment has a bigger impact because incorporates lodging properties with higher room's prices.

In 2019, all regions registered an increase in their revenues. However, the Asia Pacific segment had a 19% decrease in profitability and the North American Full-Service segment also had a slight decrease in profitability but not that significant.

2.5. Marriott's performance

In last 5 five years Marriott has shown a consistent revenue growth. From 2015 to 2017 we can see a big jump in revenues whereas if we look to more recent years, revenues growth is not that expressive. In the figure below we can see the exact value of Marriott's revenues for the last five years.

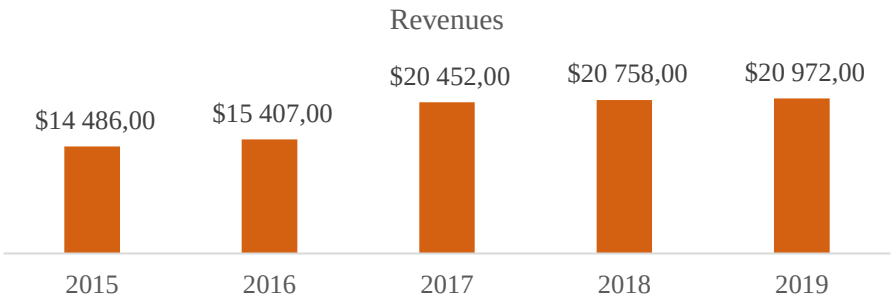

Figure 5: Marriott's revenues
Source: Marriott International annual report of 2019

Marriott's revenues come from three main sources: net fees, cost of reimbursement, and owned, leased and other sources.

Revenues (in millions)	2017	2018	2019
Net fee revenues	$ 3 245,00	$ 3 580,00	$ 3 761,00
Owned, leased, and other revenue	$ 1 752,00	$ 1 635,00	$ 1 612,00
Cost reimbursement revenue	$15 455,00	$15 543,00	$15 599,00
Total	$20 452,00	$20 758,00	$20 972,00

Table 2: Marriott's revenues description
Source: Marriott International annual report of 2019

From the table above we can see that, in 2019, “Cost reimbursement revenue” represents 74% of total revenues whereas “Net fee revenues” represents only 18%, being these rates similar to the past years. These cost reimbursements are related to certain costs that Marriott's incurs on behalf of the managed, franchised, and licensed properties like payrolls, operational and administrative costs. However, “Cost reimbursement revenue” is compensated by “Reimbursed expenses” that represents 86% of all operating costs and are related to the same costs explained previously.

At the end, “Net fee revenues” is the most relevant and significant revenue for Marriott having increased 5% when compared to 2018 (previous year increased 10%). All “Net fee revenues” are properly explained in the business model section.

The figure below illustrates Marriott's operating income and net income in the last five years. From 2016 to 2018, Marriott reported a consistent growth in net income whereas operating income demonstrated an oscillating path. From 2018 to 2019 Marriott's operating income decreased 24% and net income decreased 33%.

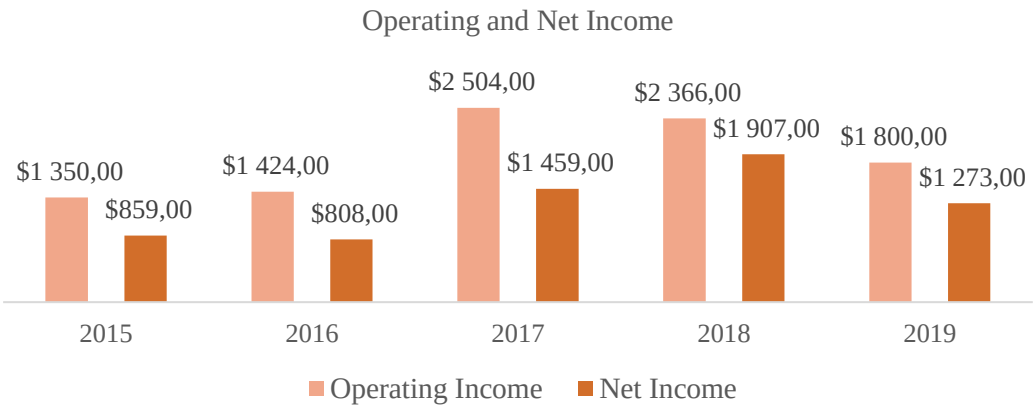

Figure 6: Marriott's operating income and net income
Source: Marriott International annual report of 2019

In Marriott's annual report is mentioned that in 2018 the company had adopted ASU 2014-09, which impacts the recognition of revenues and certain expenses. The company had adopted this new accounting standard after recognizing a material weakness in internal control related to the accounting of their loyalty program. Years before 2016 were not adjusted for the new accounting standard. Marriott recognizes that this ineffective internal control over financial reporting led to errors in financial statements, reduced investor's confidence and consecutively impacted stock price. Nevertheless, the company is focused in remediating these mistakes in order to prevent them from reoccurring.

In the lodging industry, performance measures are an accurate way of understanding the evaluation of a lodging business. The more common performance measures are revenue per available room (RevPAR), average daily rate (ADR) and occupancy rate. RevPAR is computed by dividing room sales for comparable properties by room nights available in that period being this a crucial indicator since, it measures the period-over-period change in room revenues for comparable properties. ADR is obtained by dividing property room revenue by total rooms sold, so it measures the average room prices. Occupancy rate is calculated by dividing occupied rooms by total rooms available, so it measures the utilization of a property's available capacity.

In Marriott's annual report of 2019 we have access to all these measures and comparing with 2018, RevPAR increased 1.3% to $117.30, ADR increased 0.8% to $160.55 and occupancy rate increased 0.4% pts. to 73.1%. Even though all performance measures have grown from 2018 to 2019, from 2017 to 2018 the respective increases were more significant.

2.5. Stock Performance

Marriott International is a public quoted company since 1953, having started with a price of $10.25/share. Marriott's stock trades on Nasdaq Global Select Market ("Nasdaq") and on Chicago Stock Exchange under the trading symbol MAR.

From the end of 2016 until the beginning of 2018, Marriott's stock price registered a consistent positive trend. During this period the lowest price was reached on 30/12/2016 at $79.21/share and the highest price was reached on 29/01/2018 at $143.57/share. From the beginning of 2018 until the end of 2019, Marriott's stock prices have fluctuated. However, the lowest stock price was only $99.17/share being registered on 24/12/2018 and during this period, Marriott reached the highest stock price that had registered until today on 26/12/2019 at $152.52/share.

In 2019, the highest price was already mentioned, and the lowest stock prices were reached on 14/03/2019 and on 8/10/2019 at $117.84/share and at $116.78/share, respectively. After the lowest price registered in October, Marriott's stock price had a positive trend until the end of the year. Marriott ended 2019 with a stock price of $150.83/share each represents an increase of 41% when compared to the end of 2018.

The figure below was taken from Finance.Yahoo and illustrates the trends of Marriott's stock prices during 2019.

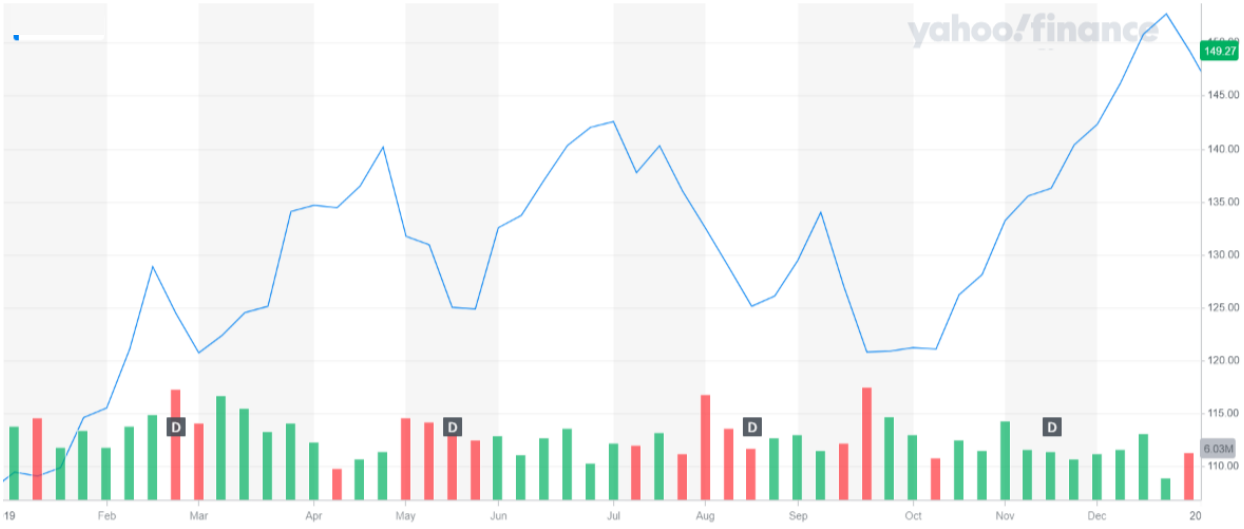

Figure 7: Marriott's stock price trend in 2019
Source: Finance.Yahoo

2.6. Shareholders structure and dividend policy

At the end of 2019, Marriott had 324 million shares outstanding (common stock) held by around 35 thousand shareholders and no preferred stock. The three main shareholders are Mr. David Marriott, Ms. Deborah Marriott-Harrison and Mr. John Willard Marriott having a stake of 9.26%, 8.14% and 7.85%, respectively. The three main shareholders also have a management role within the company. Also, is

important to notice that the top 6 shareholders own 47.9% of Marriott, which demonstrates a solid ownership structure. Shareholders information was obtained through Orbis.

Regarding to dividends Marriott pays quarterly cash dividends. In 2019, the first dividend was paid on March 29 with a value of $0.41/share. The remaining dividends were paid in the following quarters, all at $0.48/share. In figure 7 is illustrated when each dividend was announced with the letter “D” and it is possible to see the impact that those announcements had on stock prices (positive trend after each announcement).

2.7. Marriott's Rating

In the table below we can see Marriott's rating and respective outlook, according to Moody's, Fitch and Standard and Poor's (S&P).

	Moody´s	Fitch	S&P
Rating	Baa2	BBB	BBB
Outlook	stable		

Table 3: Marriott's rating in 2019
Source: Moody's, Fitch, S&P

Moody's classifies Marriott's rating as Baa2 whereas Fitch and S&P classifies it as BBB, all of them with a stable outlook. These are long-term ratings, meaning that they reflect the likelihood of default on issuers or obligations with a maturity of one year or more. These ratings also reflect the expected financial loss in case of default. The three agencies are aligned with the ratings assigned, being that they reflect a medium/low default risk and an adequate repayment capacity regarding financial obligations. However, according to Fitch, the business is considered sensitive to adverse economic conditions that might fragilize repayment capacity. The stable outlook means that the probability of a rating change over the next one to two years is low, being this an important information since it gives us a direction regarding the future company's risk profile.

3. Lodging Industry Overview

Marriott International belongs to the lodging industry being part of the Travel and Tourism (T&T) sector. Therefore, is important to understand how the sector has been developing and how did it perform during 2019. The World Travel & Tourism Council (WTTC) develops an annual report about the sector's performance each year, so the following information is provided in line with the results presented in the "Global Economic Impact & Trends 2020" report.

In 2019, the Travel and Tourism gross domestic product (GDP) contributed with 10.3% to global economy GDP, that is $ 8.9 trillion. Also, T&T GDP grew 3.5% in 2019, whereas the global GDP growth was of 2.5%, meaning that the T&T GDP growth was 40% higher than the overall global GDP growth. An interesting fact is that, 2019 was the nineth year where the T&T GDP growth outpaced the overall economy GDP growth, which highlights the importance that this sector has in world's economy. The following figure illustrates the mentioned fact and was taken from WTTC report.

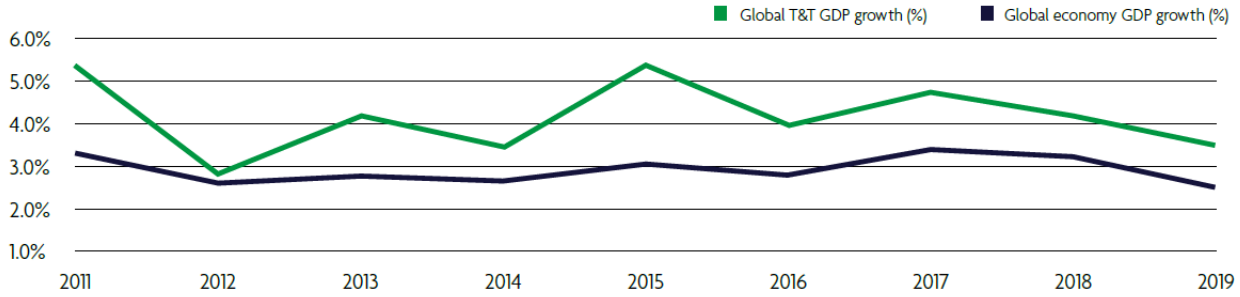

Figure 8: Global T&T GDP growth vs. Global Economy GDP growth
Source: Global Economic Impact & Trends 2020 report

There were only two sectors whose GDP growth was higher than the T&T GDP growth and they were financial services and information and communication. The top five countries that most contributed to T&T GDP were: United States, China, Japan, Germany and Italy.

Regarding to jobs creation, the T&T sector incorporates 330 million jobs representing a tenth of all jobs in the world. This sector is also known for its diversity, being that nearly half of all T&T employments are occupied by women's. It is also curious that this sector employs generally more young workers than the overall economy especially in Canada, USA and UK where young workers represent around 30% of the sector's employment.

Marriott's lodging business is present all over the world, reason why we will analyze more deeply the performance of each world's main regions regarding to the T&T sector's performance. This is an important analysis since the performance of each region is linked with Marriott's performance in those same regions.

Americas

In 2019, America, considering all the regions included in it, contributed with $ 2.5 trillion to T&T GDP which represents an increase of 2.2% comparing to 2018.

In *North America*, USA is the world's largest T&T economy representing 86% of North America's T&T GDP and 21% of global T&T GDP. USA's T&T GDP growth was of 2.3% mainly due to the domestic market that represents most of tourism spending (84%). México had a T&T GDP growth of 1.9% what is good given that the overall economy contracted by -0.1%. México is highly dependent of the domestic market which represents 85% of total tourism spending.

Caribbean had a T&T GDP growth of 3.4%, even though the region is still recovering from the hurricane suffered in 2017. The countries that most contributed to this growth were Dominica and Anguilla having registered a growth of 43.6% and 19%, respectively. This is one of the most valuable regions for the T&T sector given its resilience to surpass different crises.

In *Latin America's*, Brazil's T&T GDP growth was of 3% whereas the overall economy growth was of only 1.2%. Brazil is the most dependent country of the domestic market which represents 94% of total tourism spending in the country, being this a risk factor given the high dependence on the country's own economy. Colombia had a remarkable T&T GDP growth of 7.1% which reflects the government's efforts in changing the country's image into a safer and welcoming place. Colombia also made a big investment in new infrastructures for T&T and applied new policies among the society.

Africa

In 2019, *Africa* contributed with $ 168.5 billion to T&T GDP which represents an increase of 2.2% comparing to 2018. Egypt, South Africa and Nigeria were the African economies that most impacted T&T GDP, having contributed with $29.5 billion, $ 24.6 billion and $ 18.1 billion, respectively.

Tunisia had the fastest T&T GDP growth in Africa, sixth in the world, having grown 12.9%. This is a remarkable growth taking in consideration that the overall economy only grew 1.3%. The government's efforts in order to increase security in resorts and to rapidly combat any threats are having a positive impact in the T&T sector. Rwanda also had a significant T&T GDP growth of 10%, mainly due to the priority given to a sustainable tourism growth with a special focus on communities' development and involvement. Kenya had a T&T GDP growth of 4.9%, being this driven by the strong investment of the private sector in tourism related projects.

Middle East

In 2019, *Middle East* contributed with $ 245.5 billion to T&T GDP which represents an increase of 5.3% comparing to 2018, being the second fastest growing region of 2019. This growth is even more significant considering that the region overall economy contracted by -0.6%.

Saudi Arabia is the country that most contributes to the region's T&T GDP ($ 73.1 billion) and it was the one with the fastest growth not only in the Middle East but around the world, having a T&T GDP growth of 14%. Saudi Arabia's growth is mainly driven by the ambitious strategy “Vision 2030” that focus on facilitating visa policies enabling the country to welcome international tourism more easily.

UAE's region contributed with $ 48.5 billion to T&T GDP in 2019, having grown 5% which outpaces the overall economy growth for the fifth consecutive year. Dubai, Abu Dhabi, Ras Al Khaimah and Sharjah are the more popular destinations. UAE's region depends mainly on the international market that represents 77% of all spending in the country, meaning that the region's tourism does not dependent much on the local economy.

Oman had a T&T GDP growth of 5.2% in 2019, outpacing the overall economy that only grew 1.3%. This is the most balanced country in terms of international and domestic spending (58% vs. 42%.).

Asia-Pacific

In 2019, *Asia-Pacific* contributed with $ 3 trillion to T&T GDP which represents an increase of 5.5% comparing to 2018, being the fastest growing region of 2019 globally. Asia-Pacific T&T GDP represents 34% of the world's T&T GDP and the region's remarkable growth is mainly due to visa facilitations, improvements in connectivity and to the priority given by governments to the T&T sector.

The region is also responsible for 55% of all T&T's jobs in the world being the world's leader in job creation with 21.5 million jobs created by the T&T sector. The countries that most contributed to job creation were India, China and Philippines.

China had a T&T GDP growth of 9.3% mainly due to the domestic market. T&T GDP growth in India was of 4.9%, being this a reflection of the increase in middle's class income. Japan registered a T&T GDP growth of 1.6% mainly due to the increase in international spending (5.9%). Tourism was one of the top priorities of the Japanese government, in addition to receiving Rugby World Cup which draw the attention of the international market.

Philippines represents 25.3% of *Asia-Pacific's* T&T GDP and, in 2019, its T&T GDP grew 8.6% outpacing the overall economy growth for the fifth consecutive year. Sustainable tourism is a top priority for the Philippine government having increase the investment in this concept during 2019. Vietnam and Malaysia also stood out regarding to T&T GDP growth, having grown by 7.7% and 6.6%, respectively.

Europe

In 2019, *Europe* contributed with $ 2 trillion to T&T GDP which represents an increase of 2.4% comparing to 2018, being the largest region in the world in terms of international spending ($ 619 billion). Germany, Italy and UK were the European economies that most impacted the European T&T GDP, having contributed with $ 347 billion, $ 260 billion and $ 198 billion, respectively.

Greece registered the highest T&T GDP growth, having grown 12.1% which outpaces the overall economy growth for the sixth time. The Greek government has been developing strategies to increase the sector's performance, which represents 20.8% of all Greek economy.

Turkey also had a great performance having grown 10.1% in 2019, while the overall economy only grew 0.1%. Antalya and Istanbul are the most popular cities among tourist. Turkey's good performance comes mainly from improvements in terms of security and infrastructure, besides the currency depreciation that made the country more attractive to foreigners.

UK had a T&T GDP growth of 1.3% in 2019, mainly supported by the international market that grew 7%. Spain had T&T GDP growth of 1.9% in 2019, being the European country with the higher international visitor spending ($ 86.8 billion). Nevertheless, the country has a remarkable balance in terms of international and domestic spending (56% vs. 44%).

Portugal had T&T GDP growth of 4.2% in 2019, which is almost three times higher than the overall economy GDP growth. T&T GDP represents 16.5% of Portugal's total economy being this a crucial sector for the country. The sector's growth is driven by the governments' focus in developing ambitious tourism strategies that capture the attention of nontraditional markets like the USA, Canada, China and Brazil. A sustainable and balanced tourism is also a priority, reason why new projects with that purpose were developed during 2019.

3.1. Covid-19

In 2020, the world had to face a mysterious virus, something that no one was expecting. On January 9, 2020 China announced a new virus with similar effects to a pneumonia which was named as coronavirus disease 2019, being known worldwide as Covid-19. The virus is caused by the SARS-CoV-2 coronavirus, which is a virus that had never been identified in humans before. Until this time the effects were unknown and the worst has yet to come. On March 11, 2020, WHO (World Health Organization) labeled Covid-19 as a pandemic mainly due to the alarming levels at which the virus was spreading with countries worldwide not doing much to stop it.

After this, the world experienced a lockdown where borders were closed, airports were empty, and restaurants as well as general trade had to close doors. Everyone had to stay at home in order to stop the virus from spreading. Each country took different measures and had their lockdown at different times, but almost all countries had to do it. During this lockdown a lot of people died, no one knew what to expect and markets went crazy with prices dropping abruptly. In the beginning of the summer, and after that severe lockdown, things started to get better with the number of infected people decreasing. The economy started to recover with the reopening of borders and general trade. However, the possibility of a second wave was in the air and the virus had not disappeared.

In October the dreaded second wave arrived and it was even worse than the first time. All over the world new records were reached regarding to the number of infected and deaths. The world did not learn its

lesson in the first time and was not better prepared to face Covid-19. At this time a second lockdown had to be made but it could not be as severe as the first one, because markets and the general economy would not make it. Nevertheless, the consequences of the second lockdown were still very impactful.

Covid-19 had a huge impact in many sectors and the T&T sector was one of those that suffered the most, since people all over the world were advised not to travel (even when possible). In June 2020, the WTTC projected that T&T job losses for 2020 will be 121.1 million for the base scenario and 197.5 million for the worst scenario. In addition, T&T GDP losses were projected at $ 3.4 trillion for the base scenario and $ 5.5 trillion for the worst scenario.

During all these lockdowns, it was evident that businesses would not survive without the cooperation of governments and private organizations. This pandemic taught the world that needs to exist a balance between the health of economies and the health of individuals. WHO said that, 90% of economic losses during any pandemic crisis comes mainly from the panic effect where the public has an irrational behavior. Another lesson learned is that from now on, the T&T sector needs to be crisis ready ensuring the safety of people and destinations. In order to recover from the sector crisis, WTTC recommends that countries implement several policies to improve travel facilitation, removing barriers, easing fiscal policies, creating incentives and supporting local destinations.

A lot still has to be done in order to rebuild the confidence among travelers but WTTC highlights that the sector will recover from this and it will be stronger than ever.

3.2. Travel & Tourism sector after Covid-19

2021 will start with hope. On December 8, 2020 UK was the first country that started vaccinating its population against Covid-19. During 2021, the goal is to vaccine the entire population of the world in order to stop the virus from spreading as much as possible. Covid-19 vaccine was the fastest vaccine ever made as the result of the cooperation of several organizations and scientists. However, due to the speed with which it was made, the vaccine effects and its effectiveness are still somewhat uncertain.

The future will continue uncertain until more time has passed, but the vaccine will bring hope to people, to markets and to the general economy. The T&T sector hopes that in summer of 2021, people will be able to travel with more confidence and that the sector will start to strongly recover.

Moving forward, experts alert the T&T sector to the climate crisis. The sector needs to react and to take rapid actions to tackle the climate change subject, in order to prevent a sustainability-related crisis in the future. Therefore, the focus will be on a sustainable sector growth, with a positive impact on communities and ecosystems. On September 2020, WTTC had their first Climate and Environmental Action Forum and one of the sector goals is to hit net zero emissions by 2050 to limit global warming to survivable rates. Reaching this goal will require a great effort from all sector's stakeholders.

Besides sustainability, improvements on infrastructures, processes and systems will have to be made in order to keep up with the forecasted demand. From 2009 to 2018 air travelers increased from 2.4 billion to 4.4 billion and it is expected that this number continues to increase.

Technological advances and the use of digital identity are promising solutions to improve travelers experience while supporting the sector's recovery. WTTC's research shows that 4 out of 5 travelers would be willing to share their photographs before travelling if that would speed up their journey.

The sector is focused on providing a fast and safe experience to travelers with sustainability as a top priority at all travelling stages.

3.3. Competitors

In the lodging industry, both in the operator and franchiser segment, it is possible to see a diversified market with many competitors that do not have a significant market share. In Marriott's annual report is mentioned that the company has a 16% market share on the US hotel market (based on the number of rooms) but less than 4% of market share outside the US market.

On Marriott's report is also referred that alone in US, there are over 1,800 lodging management companies, with 18 of those companies operating more than 100 properties. Besides direct competition, Marriott also has to face other business models that offer guests the possibility to book short term rentals of homes and apartments as an alternative to hotel rooms. Airbnb, HomeAway and even Google and Bing are some of the companies that provide this type of online service.

There is a direct competition in terms of brand recognition and reputation, hotel's location, guest satisfaction, room's revenues and customers loyalty. This industry requires an aggressive and smart approach to customers in order to stand out among all existing offer. Marriott recognizes, in 2019 annual report, that their strongest competitors with relevant brand awareness around the world are Hilton, Intercontinental Hotels Group, Hyatt, Wyndham, Accor, Choice, Radisson among others.

Outside the US market, the lodging industry is mainly characterized by independent operators, although there is a tendency as other economies grow up for an increase of chain affiliations, which is Marriott's case, where hotel owners have the possibility of benefiting from being part of a bigger brand.

Marriott is able to generate a higher RevPAR than their main direct competitors which makes their partnerships more advantageous for hotels owners. This premium performance comes from the company's efforts, made in the course of the years, to maintain a strong guest preference. All properties related to Marriott's brands need to be regularly updated in order to stay current and competitive, being this mentioned in Marriott's contracts. Besides this, all properties that want to join to one of Marriott's brands will have to make the necessary renovations according to Marriott's standards.

In this business, especially in the luxury segment, image is everything and guests expect the best of the best, reason why all lodging businesses do their best to stand out and Marriott is not as exception.

4. Marriott International Valuation

As mentioned previously we will start by valuing Marriott with the FCFF model, where cash flows will be projected considering a horizon of five years (2020-2024) being these discounted at the WACC. After this period, a terminal growth rate is assumed in line with the growth rate of the economy. After obtaining the price of Marriott's shares a sensitivity analysis will be carried out to understand the impact that the assumed TGR and WACC had in the results obtained.

The Relative Valuation will be the last model to be applied and we will use PER and Enterprise value/EBITDA multiples. We will start by defining the Peer Group that will be constituted by companies belonging to the same industry and sharing similar characteristics as the company under analysis. The respective multiples will be then computed being the results subsequently compared with those from the previous model.

4.1. Valuation Assumptions

Before applying both models, we need to define several assumptions coherent with the reality worldwide and with the industry in which Marriott operates. Establishing these assumptions is a challenging and fundamental part of the valuation process, since these assumptions are the base of the model and are going to directly affect the results obtained. In the following pages we will explain each assumption and its rationality.

4.1.1. Revenues

The first assumption we had to make was regarding the projection of Marriott's revenues, since this will have a significant impact in the following assumptions that are dependent of this item. Before decided what growth rate we would use to project Marriott's revenues, we knew that it needed to reflect the impact of Covid-19, which until now is quite uncertain. In the explanation of Marriott's business, it was clear the dependence that the company has on the hotels it represents. Considering that the performance of these hotels is being severely impacted by Covid-19, there will be a direct impact on Marriott's revenues. It is also important to notice that Marriott's revenues are mainly dependent of North America's region and that Covid-19 is having a huge impact there. Therefore, the measures imposed by the US government regarding tourism and circulation will also impact Marriott's revenues recovery.

In June 2020, the WTTC published a report ("Travel & Tourism Recovery Scenarios 2020 and Economic Impact from Covid-19") presenting the impact that Covid-19 will have on the sector's revenues based on three scenarios (upside, baseline and downside). In the report we can find the expected decrease in the sector's revenues per region, when compared to 2019 (GDP variation vs. 2019). Taking in consideration the information that we know today we choose the baseline scenario to project the revenues of 2020 and since, the expected growth rate is expressed by each world's region, we also had in consideration the weight of Marriott's revenues per each region of the world. We were able to

conclude that, according to the WTTC report, Marriott's revenues would decrease 45,08% in 2020 reaching a value of $ 11,51bn (appendix A).

The WTTC only contained information regarding the impact for 2020. After some research, we found that the Statista website had projected the expected revenue growth for the hotel industry taking in consideration the impact of Covid-19, until 2024. According to Statista website and assuming that Marriott will suffer the same impact as the hotel industry, Marriott's revenues would decrease 46.10% and not 45,08% as we predicted before. For coherent reasons and given the small difference, we used all growth rates provided by Statista to project Marriott's revenues.

	2020	2021	2022	2023	2024
Revenue growth	-46,10%	43,40%	20,30%	13,80%	10,50%

Table 4: Revenue growth projections for the hotel industry
Source: Statista website

In addition to Statista's projections being a reliable source, Adam Sacks, president of Tourism Economics, predicted that in 2021 we will be able to recoup around 81,00% of 2019's demand levels and that only in 2022 we will reach again values close to ones of 2019. Adam Sachs predictions are in line with Statista predictions what supports our choice for projecting Marriott's revenues which can be found in the table below.

(in millions of $)	2019	2020	2021	2022	2023	2024
Marriott's Revenues	$ 20 972,00	$ 11 303,91	$ 16 209,80	$ 19 500,39	$ 22 191,45	$ 24 521,55

Table 5: Marriott's Revenues projections
Source: Statista website, Marriott's Annual Report of 2019, Own Estimates

4.1.2. EBITDA Margin

In order to project EBITDA (Earnings Before Interest, Taxes, Depreciations and Amortizations), we used the average of the EBITDA margin's historical performance. By using EBITDA margin as the projection driver, we are implicitly assuming that the cost of sales will increase proportionally with the revenues increase and this is actually what we observed when we analyzed Marriott's past financials. The average of EBITDA margin was computed taking in consideration Marriott's financials from 2015 until 2019 and we obtained an EBITDA margin's average of 11.27% (appendix B). However, we only used the EBITDA margin as the projection driver from 2022 to 2024. For 2020 and 2021, we had in consideration the severe impact of Covid-19 which led us to assume a lower EBITDA for 2020 (equal to 2019) of 10,21% and an EBITDA of 10,76% for 2021. In this way, we projected a more realistic EBITDA margin by taking in consideration that in 2020 Marriott will not probably increase its margin,

due to the pandemic, and in 2021 will start a smooth transaction to the previously computed EBITDA margin's average.

In the following table we can see the projection of Marriott's EBITDA by applying the EBITDA margin's rates mentioned to the revenues projected previously.

(in millions of $)	2020	2021	2022	2023	2024
Revenues	$ 11 303,91	$ 16 209,80	$ 19 500,39	$ 22 191,45	$ 24 521,55
EBITDA Margin	10,21%	10,76%	11,27%	11,27%	11,27%
EBITDA	$ 1 154,00	$ 1 743,99	$ 2 197,79	$ 2 501,08	$ 2 763,70

Table 6: Marriott's EBITDA projections
Source: Marriott's Annual Reports from 2015 to 2019, Own Estimates

4.1.3. Depreciation and Amortization

For the projection of Marriott's Depreciation and Amortization (D&A) we took a similar approach to the one used in EBITDA's projection. We computed the ratio of Depreciation and Amortization over Revenues from 2015 until 2019. After this we computed the average of the previous ratios and we obtained an average of 1,11% meaning that on average D&A represents 1,11% of Marriott's Revenues (appendix C). Then, we applied this average to the revenues projected but only to the ones from 2022 to 2024. Given that D&A are correlated with fixed assets, it is not something that will be directly affected by Covid-19. Therefore, it would not make sense to consider here the impact of the pandemic and to decrease immediately D&A costs, since the company will have to continue to depreciate its current fixed assets. This is the reason why we assumed D&A costs amounting to $ 242m for 2020 (D&A value of 2019 minus an asset impairment cost of $ 99m) and a ratio of 1,40% for 2021 (to smooth the D&A decreased). We do believe that with time Marriott will decrease the proportion of D&A/Revenues since the company has historically low D&A costs. These lower values can be explained by Marriott's business model because, as mentioned in the respective chapter, only 1% of the rooms that Marriott represents are owned or leased meaning that the company owns a few amounts of properties.

In the table below we can see the projection of Marriott's Depreciation and Amortization costs by assuming a concrete value for 2020 and by applying the ratios mentioned to the revenues projected.

(in millions of $)	2020	2021	2022	2023	2024
Revenues	$ 11 303,91	$ 16 209,80	$ 19 500,39	$ 22 191,45	$ 24 521,55
Depreciation & Amortization/Revenues	-	1,40%	1,11%	1,11%	1,11%
Depreciation & Amortization	$ 242,00	$ 226,94	$ 217,09	$ 247,05	$ 272,99

Table 7: Marriott's Depreciation & Amortization projections
Source: Marriott's Annual Reports from 2015 to 2019, Own Estimates

4.1.4. Earnings Before Interest and Taxes (EBIT)

EBIT is one of the elements used in the Free Cash Flow to the Firm model and even though we will not make any assumption about it, we have now all the necessary information for its computation. EBIT simply corresponds to the difference between EBITDA and D&A costs. In the table below we can see EBIT computation by taking in consideration the projections made for EBITDA and D&A.

(in millions of $)	2020	2021	2022	2023	2024
EBITDA	$ 1 154,00	$ 1 743,99	$ 2 197,79	$ 2 501,08	$ 2 763,70
Depreciation & Amortization	$ 242,00	$ 226,94	$ 217,09	$ 247,05	$ 272,99
EBIT	$ 912,00	$ 1 517,05	$ 1 980,70	$ 2 254,03	$ 2 490,71

Table 8: Marriott's EBIT computation
Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

4.1.5. Effective and Marginal Tax rate

On December 22, 2017 was released the U.S. Tax Cuts and Jobs Act of 2017 (“2017 Tax Act”) that basically resulted in a decrease of the taxes that US companies have to pay. Marriott's effective tax rate of 2018 and 2019 was very different from the tax rates of previous years due to the “2017 Tax Act”. Many adjustments had to be made in 2018 and 2019 financials, which is why we considered the effective tax rate average of both years as the projection driver for the upcoming years. From 2020 to 2024 we considered an average effective tax rate of 19,55%. In perpetuity, we used the marginal tax rate instead of the effective tax rate, as Damodaran (2002) suggests, being that instead of the 19,55% we used a tax rate of 21,00%.

	2018	2019	2020	2021	2022	2023	2024	Perpetuity
Effective tax rate	18,70%	20,40%	19,55%	19,55%	19,55%	19,55%	19,55%	-
Marginal tax rate	-	-	-	-	-	-	-	21,00%

Table 9: Marriott's Effective and Marginal Tax Rate
Source: Marriott's Annual Reports from 2018 and 2019, Tax Policy Center, Own Estimates

4.1.6. Capital Expenditures

Capital Expenditures (CAPEX) are mainly related to funds that Marriott spends when it acquires new properties or upgrades and maintains the current ones. On Marriott's annual report of 2019 is mentioned that the company pretends to spend around $ 700m to $ 800m in CAPEX, in 2020, where $ 200m will correspond to maintenance capital spending. Taking in consideration that when these predictions were made no one could imagine the dimension that Covid-19 would have, we assumed that for 2020 Marriott would spend half of the lower predicted amount, meaning a spending of $ 350m. From this $ 350m, we

assumed that $ 200m are related to maintenance capital spending and the others $ 150m are a buffer for investments that could not be postponed.

Given that, on Marriott's annual report, we could not find more information regarding future investments, we projected the CAPEX from 2021 to 2024 by applying the average of CAPEX / Revenues ratio between 2015 and 2019 to the revenues already projected (appendix D). We obtained an average of 2,07% and in the following table we can see the projection of Marriott's CAPEX in line with the assumptions explained.

(in millions of $)	2020	2021	2022	2023	2024
Revenues	$ 11 303,91	$ 16 209,80	$ 19 500,39	$ 22 191,45	$ 24 521,55
CAPEX/Revenues	-	2,07%	2,07%	2,07%	2,07%
CAPEX	$ 350,00	$ 335,96	$ 404,16	$ 459,93	$ 508,22

Table 10: Marriott's Capex projections
Source: Marriott's Annual Reports from 2015 to 2019, Own Estimates

As expected, Capex spending will increase as revenues increase since the company will have more funds available to invest. In 2021 we still see a lower CAPEX spending, since we are assuming that the company will take a conservative view in its investments as a consequence of the pandemic.

4.1.7. Net Working Capital

On Marriott's annual report we did not find information regarding accounts payables and receivables. We only had information about working capital (WC) changes and so we used these net working capital values to project the variation of Marriott's WC. As the projection driver, we computed the average of the Net Working Capital/ Revenues ratio between 2015 and 2019 and then, we applied this average to the revenues already projected (appendix E). In the table below we can see the projection of Marriott's working capital variation (ΔWC**)** by applying the projection driver obtained of -0,56% to the revenues mentioned.

(in millions of $)	2020	2021	2022	2023	2024
Revenues	$ 11 303,91	$ 16 209,80	$ 19 500,39	$ 22 191,45	$ 24 521,55
ΔWC/Revenues	-0,56%	-0,56%	-0,56%	-0,56%	-0,56%
ΔWC	$ -62,98	$ -90,31	$ -108,64	$ -123,63	$ -136,61

Table 11: Projections of Marriott's working capital variation
Source: Marriott's Annual Reports from 2015 to 2019, Own Estimates

Even though we did not have much information about the WC's items, on the annual report is mentioned that accounts receivables are paid within 30 days whereas accounts payables are paid over 30 days. This is the reason why the ΔWC is negative, meaning that Marriott is able to finance itself with its operating activities. As revenues grow it is expected that this negative variation increases which also highlights

the strong correlation between Marriott's revenues and the WC flow. The negative ΔWC is common in the lodging industry since the services provided are paid almost at the same time they happened, whereas suppliers normally have to wait some time to receive their payment.

4.1.8. Terminal Growth Rate (TGR)

In Marriott's valuation, when applying the FCFF model, we assumed that cash flows will be produced until perpetuity at a constant growth rate. This constant growth rate is the terminal growth rate that can be obtained by applying the following formula, where the expected inflation rate and the expected GDP growth rate are the two main variables.

$$TGR = (1 + \text{Expected Inflation rate}) * (1 + \text{Expected GDP growth rate}) - 1 \quad (13)$$

Given that Marriott operates in all regions of the world, we selected the regions that have more impact in Marriott's revenues (North America and Asia Pacific) and we only considered the expected inflation rate and GDP growth rate of these regions. For the North America region, we were able to find both rates directly from the source Trading Economics. However, for the Asian Pacific region we had to find the individual rates of the more relevant countries for Marriott's revenues and we weighted them based on the number of Marriott's hotel per country (appendix F).

In the table below, we can see how the TGR was obtained by taking in consideration the expected inflation rate and GDP growth rate of North America and Asia Pacific and also, the weight that both regions have on Marriott's revenues.

	Revenues of 2019 (millions)	Revenues Weight	Expected Inflation Rate	Expected GDP growth Rate	Inflation Rate weighted	GDP growth Rate weighted
North American	$ 16 833,00	93,40%	1,60%	1,90%	1,49%	1,77%
Asia Pacific	$ 1 189,00	6,60%	2,35%	1,18%	0,16%	0,08%
Total	$ 18 022,00	100%	-	-	**1,65%**	**1,85%**
TGR						**3,53%**

Table 12: Terminal Growth Rate
Source: Trading Economics, Own Calculations

When computing the perpetuity values of Revenues, EBITDA, D&A, Capex and ΔWC we applied the TGR obtained of 3,53% to the respective projected amounts for 2024. In this way we were able to compute the FCFF in perpetuity that allow us to determine the Terminal Value further used in the FCFF model.

4.2. Discounted Cash Flow of Marriott International

4.2.1. Free Cash Flow to the Firm

After establishing all the assumption mentioned, we were able to compute the FCFF that was detailly explained in the literature review. In the table below, we can see the computation of the FCFF for each year forecasted (from 2020 to 2024) and also in perpetuity, by applying formula 1.

(in millions of $)	2020	2021	2022	2023	2024	Perpetuity
EBIT	$ 912,00	$ 1 517,05	$ 1 980,70	$ 2 254,03	$ 2 490,71	$ 2 578,70
EBIT*(1-tax rate)	$ 733,70	$1 220,47	$ 1 593,47	$1 813,37	$ 2 003,77	$ 2 037,17
(+) Depreciation & Amortization	$ 242,00	$ 226,94	$ 217,09	$ 247,05	$ 272,99	$ 282,63
(-) Capex	$ 350,00	$ 335,96	$ 404,16	$ 459,93	$ 508,22	$ 526,18
(-) ΔWC	$ -62,98	$ -90,31	$ -108,64	$ -123,63	$ -136,61	$ -141,44
FCFF	**$ 688,68**	**$ 1 201,76**	**$ 1 515,05**	**$ 1 724,12**	**$ 1 905,16**	**$ 1 935,07**

Table 13: Free Cash Flow to the Firm (2020 – Perpetuity)
Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

4.2.2. Cost of Capital

4.2.2.1. Cost of Debt

Marriott's cost of debt was directly taken from the annual report of 2019, where is mention that the average interest rate of long-term debt is 2.90%, being this rate constant over the past years. This is the average rate at which the company has been financed through its investors and bank loans. Due to the lack of information it was assumed that this cost of debt is before taxes.

4.2.2.2. Market Value of Equity and Debt

The market value of Equity can be obtained by multiplying the number of Marriott's shares outstanding by the respective stock price. Marriott's annual report states that at the end of 2019 the company had 324m of common stock outstanding and no preferred stock. Knowing that, according to Finance.Yahoo, on the 31st of December of 2019 Marriott's stock was worth $ 150.83 we computed the market value of Equity and a value of $ 48 868,92m was obtained.

Marriott's book value of debt was directly taken from the annual report of 2019, being that Marriott's long-term debt amounted to $ 10 940,00m. On the annual report is also mentioned that this debt has a weighted average maturity of approximately 5 years and that, in 2019, Marriott registered $ 394,00m as interest expenses. After collecting all information related to Marriott's debt, we were able to compute Marriott's market value of debt by applying the following formula.

$$Market\ Value\ of\ Debt\ = I_E \times \frac{1 - (\frac{1}{(1+K_D)^t})}{K_D} + \frac{BV_D}{(1+K_D)^t} \quad (14)$$

Where,

I_E =Interest Expenses;

K_D = Cost of Debt;

BV_D = Book Value of Debt;

t = Weighted Average Maturity of Long-Term Debt

A market value of debt of $ 11 292,45m was obtained to which we added the present value of Marriott's operating leases amounting to $ 1 012,00m, leading to a final market value of debt of $ 12 304,45m. The present value of Marriott's operating leases is specified on the company's annual report of 2019. In further computations we used the gross value of debt computed, as Damodaran (2002) suggests.

4.2.2.3. Cost of Equity

To determine the cost of equity we needed several inputs like it was explained in the literature review. Regarding the risk-free rate, we accessed the US government website and we used the US 10 years treasury rate of 1.92% dated to 31st of December of 2019. Given that Marriott is a quoted company, for its levered beta we used Zacks website and at 31st of December of 2019 Marriott's levered beta was standing at 1.31. Taking in consideration that Marriott is a US company, Marriott's market risk premium is reflected in the MRP of the United States. According to Statista website, the average MRP in the US during 2019 was of 5.60%. To the MRP we added the country risk premium (CRP) since Marriott is an international company present in 131 countries. For the CRP computation we considered the average CRP of each region where Marriott operates and the weight of each region's revenues of 2019 (appendix G). A CRP of 0,56% was obtained leading to a final market risk premium of 6.16%.

After having established all the necessary inputs we computed the cost of equity, and by applying formula 5 a cost of 9.96% was obtained. In the table below we can see a compilation of all the inputs and the value obtained for the cost of equity.

Risk free rate	1,92%
Marriott's Levered Beta	1,31
MRP with CRP	6,16%
Cost of equity	**9,96%**

Table 14: Cost of Equity

Source: US Government website, Zacks website, Statista website, Damodaran website, Own Estimates

4.2.2.4. Weighted Average Cost of Capital

The WACC was obtained after the computation of all its elements (cost of equity, cost of debt, Marriott's capital structure) and by applying formula 4 a WACC of 8.41% was obtained. As mentioned in the literature review, we used the marginal tax rate of 21,00% in WACC's computation. In the table below we can see a compilation of all the inputs and the value obtained for the WACC.

Tax Rate	21,00%
Cost of Debt	2,90%
Cost of Equity	9,96%
MV Equity (in millions)	$ 48 868,92
MV of Debt (in millions)	$ 12 304,45
E/(D+E)	79,89%
D/(D+E)	20,11%
WACC	**8,41%**

Table 15: Weighted Average Cost of Capital
Source: Own Estimates

4.2.3. FCFF Model – Valuation Results

After having computed the TGR, the FCFF for each year forecast and the WACC we were able to determine Marriott's Enterprise Value by summing up all FCFF's present values (formula 2) being that an Enterprise Value of $ 31 837,81m was obtained. It is important to notice that we had to take a middle step in the computation of the present value of the FCFF regarding perpetuity, since we had to compute the Terminal Value through the application of formula 3. For Marriott's Equity Value computation, to the Enterprise Value we subtracted the value of Debt and we added the value of Cash and of Non-Operating Assets. Marriott's Non-Operating Assets are constituted by Equity method investments and by Assets held for sale (appendix H). To obtain Marriott's shares price we just divided Marriott's Equity Value of $ 20 590,36m by the 324m common shares outstanding and a final share price of $ 63,55 was obtained.

(in millions of $)	2019	2020	2021	2022	2023	2024	Perpetuity
FCFF	$ 1 393,80	$ 688,68	$ 1 201,76	$ 1 515,05	$ 1 724,12	$ 1 905,16	$ 1 935,07
WACC							8,41%
TGR							3,53%
Terminal Value							$ 39 645,42
Present Value		**$ 635,23**	**$ 1 022,46**	**$ 1 188,98**	**$ 1 248,05**	**$ 1 272,06**	**$ 26 471,03**
Enterprise Value	**$ 31 837,81**						
(-) Gross Debt	$ 12 304,45						
(+) Cash	$ 225,00						
(+) Non-Operating Assets	$ 832,00						
Equity Value	**$ 20 590,36**						
Shares outstanding	324						
Price target	**$ 63,55**						

Table 16: FCFF Model with the estimation of Marriott's shares price
Source: Annual Report of 2019, Own Estimates

4.2.4. Sensitivity Analysis

In the Free Cash Flow to Firm model presented different assumptions were made that impacted crucial variables. We selected two of these variables, the WACC and the TGR, and we performed a sensitivity analysis to understand the impact that both variables have on Marriott's share price. In our model we estimated a TGR of 3,53% and a WACC of 8,41% what led to a share price of $ 63,55. In the table below we can see the impact that a deviation of ±0.50% in the WACC and a deviation of ± 0.20% in the TGR has in the final price obtained for Marriott's shares.

		WACC				
		7,41%	7,91%	**8,41%**	8,91%	9,41%
TGR	3,13%	79,93	67,46	57,36	49,01	42,00
	3,33%	84,71	71,19	60,33	51,43	44,00
	3,53%	89,99	75,26	**63,55**	54,03	46,13
	3,73%	95,84	79,71	67,04	56,82	48,41
	3,93%	102,35	84,62	70,84	59,84	50,85

Table 17: Sensitivity Analysis with TGR and WACC
Source: Own Estimates

Even though we performed small deviations, we can immediately see how small changes in the WACC and/or in the TGR have a big impact in Marriott's shares price. It is also possible to see how the two variables chosen have opposite behaviors, since as the TGR increases the price of Marriott's shares increases (ceteris paribus), whereas if the WACC increases the price of Marriott's shares actually decreases (ceteris paribus). This allow us to conclude that Marriott's shares price will hit its maximum as the TGR increases and the WACC decreases. This analysis also allows us to understand how difficult it is to correctly predict Marriott's shares price, since the assumptions made along this work have a significant impact in several variables that will directly impact the final price estimated.

4.3. Relative Valuation

A Relative Valuation was performed as a way to compare and complement the previous valuation executed with the FCFF model. During the literature review we already mentioned the multiples we selected for this valuation, the PER (formula 12) and the EV/EBITDA. The goal is to determine Marriott's shares price based on multiples of similar companies belonging to the same industry as Marriott (Peer Group).

Therefore, our first step was to establish the Peer Group for our valuation. For the Peer Group we selected the biggest 5 hotels chains that alongside with Marriott are operating worldwide. These companies besides sharing the same industry are all public quoted with a big brand recognition.

Peer Group	**PER**	EV (in millions)	EBITDA (in millions)	**EV/EBITDA**
Hilton Worldwide Holding	36,43	$ 38 160,00	$ 2 048,00	18,63
Choice hotels international	25,89	$ 6 579,00	$ 366,00	17,98
InterContinental Hotels	32,83	$ 14 470,00	$ 800,00	18,09
Wyndham Destinations	9,03	$ 7 920,00	$ 993,00	7,98
Hyatt hotels corporation	12,41	$ 9 779,00	$ 618,00	15,82
Comparable Average	26,89	-	-	17,63
Marriott International				
earnings per share	$ 3,80	-	-	-
EBITDA	-	-	$ 2 141,00	-
Enterprise Value	-	-	-	**$ 37 745,48**
(-) Gross Debt	-	-	-	$ 12 284,70
(+) Cash	-	-	-	$ 225,00
(+) Non-Operating Assets	-	-	-	$ 802,00
Equity Value	-	-	-	$ 26 487,78
Shares outstanding	324	-	-	324
Target Price	**$ 102,18**	-	-	**$ 81,75**

Table 18: Peer Group and Relative Valuation
Source: Macrotrends website, Ycharts website, Marriott Annual Report of 2019, Own Calculations

In the table above we can see the 5 companies selected and the respective value for each multiple. PER's values were taken from Macrotrends website except for the PER of InterContinental Hotels which was taken from Ycharts website. EV's were all taken from Ycharts website whereas EBITDA's values were all taken from Macrotrends website. It is important to notice that all these values date to the 31st of December of 2019 given that we are determining Marriott's shares price relating to that date as well. Wyndham Destinations is highlighted because after collecting all PER's values we classified this company as an outlier. Even though this company shares similarities with Marriott's business, the values of each multiple are very different from the rest of the Peer Group and so we decided to exclude this company not to bias our final results.

Marriott's shares price determined by the application of the average of the PER multiple to Marriott's earnings per share led to a share price of $ 102,18. By applying the average of the EV/EBITDA multiple and considering Marriott's EBITDA of 2019 we obtained Marriott's Enterprise Value of $ 37 745,48m. Then, we just applied the same logic as we did in the FCFF model in order to obtain Marriott's Equity Value and the respective target price of $ 81,75. Therefore, according to the Relative Valuation, Marriott's shares price should stand between $ 81,75 and $ 102,18, well above our DCF valuation.

4.4. Discussion of the Valuation Results

In the table below we can see a compilation of the results obtained for Marriott's shares price by applying the FCFF model and the Relative Valuation. At the end of the table we have the market value of Marriott's shares at the 31st of December of 2019 to establish a comparison with our results.

Share Price	31/12/2019
FCFF model	$ 63,55
PER	$ 102,18
EV/EBITDA	$ 81,75
Market Value	$ 150,83

Table 19: Compilation of all Valuation Results
Source: Finance.Yahoo, Own Calculations

The price obtained through the FCFF model of $ 63,55 reflects a potential devaluation of 57,87% relatively to the market value of $ 150,83. We know that this is a significant discrepancy mainly justified by all the assumptions made related with Covid-19 that severely impacted Marriott's financials projections. It is important to bear in mind that Marriott's shares price presented is valid for the purpose of this thesis considering the models chosen and the assumptions behind them. Based on the results obtained with the FCFF model we recommend investors to sell Marriott's shares since its price is overvalued, meaning that investors will make money by selling the shares at $ 150,83 when they are worth just $ 63,55.

The prices obtained through the Relative Valuation of $ 102,18, with the PER's multiple, and of $ 81,7,5 with the EV/EBITDA multiple, led to the same final recommendation as presented before. However, is important to notice that these prices do not reflect the impact of Covid-19, as they only contemplate information until the 31/12/2019, and led to the same conclusion that the market value of Marriott's shares is overvalued. This means that even if our assumptions may have jeopardized the result obtained with the FCFF model, the final recommendation remains and is supported by the Relative Valuation results.

5. Conclusion

The goal of this project was to determine the fair value of Marriott's shares and we manage to do it by applying the FCFF model and a Relative Valuation. However, in the literature review we saw that many more models could have been applied and it is a challenge to choose what can be potentially the best model. Even though we are confident with our choice, we recognize that more models could have been applied in order to have a more interesting confrontation of results.

The FCFF model focus mainly on future cash flow generation and that, of course, implies the projection of cash flows. So, behind this model many assumptions had to be developed and justified in order to project cash flows in the best way possible. Establishing these assumptions was the more challenging part of this project given that we had to take in consideration the impact of Covid-19. There is still a lot of uncertainty regarding this subject, but we did an intensive research to find different sources that pointed into the same direction regarding the recovery from this pandemic. It is also important to highlight that we built our assumptions during the end of 2020 and taking in consideration the information available back then. By the time this project is delivered new reports might have been developed that could support different assumptions leading to different results.

The Relative Valuation is based on a comparison logic between the company under analysis and a well-defined Peer Group. Before defining the Peer Group, we choose the multiples, PER and EV/EBITDA, to perform our valuation. Again, we could have chosen different multiples that could have generated different results. The Peer Group is a key factor in this model, given that the more similar the companies chosen are with the company under analysis, more accurate the results obtained will be. The main goal with Relative Valuation is to confront the results obtained with the previous model as a way to support our final recommendation.

In the discussion of the valuation results it was mentioned that both models led to the same conclusion that Marriott's shares price is overvalued. Therefore, our final recommendation is that investors should sell Marriott's shares, since the prices obtained are both below the market value registered on the 31st of December of 2019 ($ 150.83). This result is not a surprise as at that date no one was expecting the pandemic effect, which negatively impacted our valuation of the company.

Finally, we recommend that new assessments are made as more information regarding to the future of the Lodging industry is studied and made available.

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7. Appendixes

Appendix A - Projection of Marriott's revenues according to the WTTC's report for 2020

(in millions of $)	Revenues in 2019	GDP Variation vs. 2019	Projection of Revenues 2020
North American	$ 16 833,00	-45,00%	$ 9 258,15
Asia Pacific	$ 1 189,00	-38,00%	$ 737,18
Other International	$ 2 355,00	-48,00%	$ 1 224,60
Unallocated corporate [2]	$ 595,00	-50,00%	$ 297,50
Total	**$ 20 972,00**		**$ 11 517,43**

Source: Marriott's Annual Report of 2019, WTTC's report, Own Calculations

Appendix B - Computation of the historical EBITDA margin's average

(in millions of $)	2015	2016	2017	2018	2019
Revenues	$ 14 486,00	$ 15 407,00	$ 20 452,00	$ 20 758,00	$ 20 972,00
EBITDA	$ 1 489,00	$ 1 543,00	$ 2 733,00	$ 2 592,00	$ 2 141,00
EBITDA Margin	10,28%	10,01%	13,36%	12,49%	10,21%
Average of EBITDA Margin					**11,27%**

Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

Appendix C - Computation of the historical ratio average of D&A over Revenues

(in millions of $)	2015	2016	2017	2018	2019
Revenues	$ 14 486,00	$ 15 407,00	$ 20 452,00	$ 20 758,00	$ 20 972,00
Depreciation & Amortization	$ 139,00	$ 119,00	$ 229,00	$ 226,00	$ 341,00
Depreciation & Amortization/Revenues	0,96%	0,77%	1,12%	1,09%	1,63%
Average of D&A/Revenues					**1,11%**

Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

[2] Unallocated corporate are revenues related to the general business and not allocated to a specific region.

Appendix D - Computation of the historical ratio average of CAPEX over Revenues

(in millions of $)	2015	2016	2017	2018	2019
Revenues	$ 14 486,00	$ 15 407,00	$ 20 452,00	$ 20 758,00	$ 20 972,00
CAPEX	$ 305,00	$ 199,00	$ 240,00	$ 556,00	$ 653,00
CAPEX/Revenues	2,11%	1,29%	1,17%	2,68%	3,11%
Average of CAPEX/Revenues					**2,07%**

Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

Appendix E - Computation of the historical ratio average of ΔWC over Revenues

(in millions of $)	2015	2016	2017	2018	2019
Revenues	$ 14 486,00	$ 15 407,00	$ 20 452,00	$ 20 758,00	$ 20 972,00
ΔWC	$ -41,00	$ -106,00	$ -30,00	$ -76,00	$ -273,00
ΔWC/Revenues	-0,28%	-0,69%	-0,15%	-0,37%	-1,30%
Average of ΔWC/Revenues					**-0,56%**

Source: Marriott's Annual Reports from 2015 to 2019, Own Calculations

Appendix F - Asian Pacific's GDP Growth Rate and Inflation Rate

Asia Pacific	Number of hotels	Hotels Weight	Inflation Rate	GDP growth Rate
Greater China	425	53,93%	1,90%	1,30%
India	124	15,74%	4,10%	1,00%
Indonesia	63	7,99%	3,80%	1,50%
Japan	65	8,25%	0,70%	0,50%
Malaysia	35	4,44%	1,90%	1,00%
Thailand	49	6,22%	2,60%	1,50%
Australia	27	3,43%	2,10%	0,80%
Total	788	100%	**2,35%**	**1,18%**

Source: Trading Economics, Own Calculations

Appendix G - Country Risk Premium of 2019

	Revenues of 2019 (millions)	Revenues Weight	Average of CRP by region	Weighted Revenues * CRP
North American	$ 16 833,00	80,26%	0,00%	0,00%
Asia Pacific	$ 1 189,00	5,67%	2,80%	0,16%
Other International	$ 2 355,00	11,23%	3,55%	0,40%
Unallocated corporate	$ 595,00	2,84%	0,00%	0,00%
Total	$ 20 972,00	100%	-	**0,56%**

Source: Marriott Annual Report of 2019, Damodaran, Own Estimates

Appendix H - Marriott's Non-Operating Assets

Non- operating assets	
Equity method investments	$ 577,00
Assets held for sale	$ 255,00
Total	**$ 832,00**

Source: Marriott Annual Report of 2019