Equity Valuation

Airbnb, Inc.

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Abstract

Title: Equity Valuation – Airbnb, Inc.

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This dissertation aims to determine the target fair-value price of Airbnb, a dynamic and fast-growing Online Travel Agency that has established itself as a leader in providing short-term rentals, and that has been a key part of changing consumer trends in what related to tourist accommodation, even benefiting from the devastating effects of the COVID-19 pandemic. To achieve this goal, two different valuation methodologies were used, the first being a Discounted Cash-flow valuation that was performed on three different growth scenarios, the second being a relative valuation using forward-multiples, that was used as a levelling tool to approximate the result to the current peer and industry levels. The valuation was based on a detailed analysis of the company, industry, and global market forces. The valuation resulted in a BUY recommendation with an average target price of USD 153.51, +46.3% of potential upside compared to the trading price at 25th of July 2022 of USD 104.95. Lastly, a comparison was performed between the dissertation and the May 4th, 2022, HSBC Global Research equity report on Airbnb.

Resumo

Título: Equity Valuation – Airbnb, Inc.

Autor: Luís Manuel Santos Oliveira

Esta dissertação procura determinar o preço justo da empresa Airbnb, Inc., uma Agência de Viagens Online dinâmica e em grande crescimento que se estabeleceu como líder a providenciar alugueres de curta duração e que tem sido uma peça chave nas recentes alterações de padrões de consumo relacionadas com alojamentos turísticos, beneficiando inclusivamente dos devastadores efeitos da recente pandemia de COVID-19. Para atingir este objetivo, duas metodologias de avaliação diferentes foram usadas. A primeira foi o método dos fluxos de caixa descontados que foi aplicada em três cenários de crescimento distintos. A segunda foi uma avaliação relativa usando múltiplos, que foi usada como nivelador do resultado em comparação com os pares e indústria da Airbnb. Esta avaliação foi baseada numa análise detalhada da empresa, da indústria e das forças de mercado mundiais. A avaliação resultou numa recomendação de compra com um preço alvo de 153.51 dólares, um equivalente a +46.3% de potencial valorização quando comparado com o preço original de 104.95 dólares a 25 de julho de 2022. Por último, foi efetuada uma comparação entre a dissertação e o relatório da HSBC Global Research de 4 de maio de 2022.

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1. Literature review
1.1. Introduction to valuation

What is value? This question has been the centre of discussion among several generations of economists and philosophers. It is a subjective concept deeply rooted in the human being since its inception, some even argue that it transcends an anthropogenic origin being inherently biological and widely present in nature (Rolston H 1994). Whichever is the philosophical origin of value, society has had a need to assess and compare the worth of goods, services, and assets. For this reason, monetary valuations became so ingrained in Economy that we can argue that they govern it (Rodrígues 2007).

For Finance, valuation is an analytical process to mathematize and quantify the worth of assets, either financial or real. Damodaran A. stated, - *"Any asset can be valued, but some assets are easier to value than others and the details of valuation will vary from case to case"* - (Damodaran, Investment valuation : tools and techniques for determining the value of any asset 2nd edition 2002). This is particularly true when it comes to stock and company valuations. Several valuation methodologies exist, and they can be grouped in two broad categories: Absolute Valuation Models and Relative Valuation Models (J. E. Pinto, et al. 2010).

1.2. Absolute valuation models

These models search for the intrinsic value of investments, in an equity valuation this means searching for the inherent value of a business on its own. This estimation can then be compared to the asset's market price to have a perception if the asset is under or over-valued. Absolute valuation methods are mostly based in present-value models, they relate the value of an asset to the present value of the future cashflows of that asset discounted at an appropriate discount rate, that is, the value of an asset must be equal to the value investors expect to receive if they hold said asset. We can then say that the foundation of all these models is in the Present Value (PV) formula:

Equation 1 - Present value

$$Present\ Value = \sum_{t=1}^{t=n} \frac{\mathrm{CF}_t}{(1+r)^t}$$

n = Life of the asset
CF_t = Cashflow in period t
r = Discount rate reflecting the riskiness of the estimated cashflows

Taking this into consideration, there are four main approaches to an absolute valuation model, the Discounted Cash Flow model, the Dividend Discount model (Appendix 1.1), Residual Income models (Appendix 1.2) and the Asset-based valuation model (Appendix 1.3) (J. E. Pinto, et al. 2010).

1.2.1. Discounted Cash Flow model (DCF)

Technically, and independently of the firm's dividend policy, common shareholders are entitled to all the cash flows generated by a company after all payments have been made to other senior claimants, i.e., bondholders and other creditors, the government through taxes and in the end preferred stockholders.

According to Aswath Damodaran, there are two paths to the discounted cash flow valuations – one where we value the entire firm, including equity and the other already referred claimants of the firm, and a second where we only value the equity stake in the business (Damodaran, Applied Corporate Finance, 4th Edition 2015); Both approaches are based in the discounting of expected cash flows, however, the cash flows and the discount rates will be different for each approach.

a. Free Cash Flow to the Firm (FCFF) model

This valuation approach estimates a company's value as the present value of future free cash flows to the firm discounted using the weighted average of cost of capital (WACC) as shown below.

Equation 2 - FCFF model

$$Value_0 = \sum_{t=1}^{n=t} \frac{(FCFF)_t}{(1 + WACC)^t} + \frac{Terminal\ Value}{(1 + WACC)^n}$$

FCFF = Free Cash Flow to the Firm
WACC = Weighted Average Cost of Capital
TV = Terminal value
n = life of the asset

The first step to build this equation is to find the FCFFs, these are the operational cash flows that are available for distribution after taking into consideration taxes, depreciation expenses, working capital and other investments. We can calculate them using the formula below.

Equation 3 - FCFF

$$FCFF = EBIT \times (1 - Tax\ rate) + Depreciations - Capex - \Delta\ NWC$$

Afterward, the second step is to calculate the discount rate to be used, as mentioned, we will use the Weighted Average Cost of Capital (WACC). The WACC is the after-tax average rate of return that investors, shareholders, and debtholders, expect to receive for investing in one business instead of others with equivalent risk (Koller, Goedhart and Wessels 2015). The same authors point out that – *"since a company's investors will earn the cost of capital if the company meets expectations, the cost of capital is used interchangeably with expected return"*. For a company exclusively financed with debt and equity the equation is defined as followed.

Equation 4 - Weighted Average Cost of Capital

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

D = Market value of Debt
E = Market value of Equity
T_m = Marginal tax rate
k_d = Rate of return for debt holders (Cost of Debt)
k_e = Rate of return for equity holders (Cost of Equity)
te of return for equity holders (Cost of Equity)

i.   Cost of Debt

The Cost of Debt is the pre-tax rate of return for debtholders, it is the effective interest rate a company pays on its debt. The typical way to estimate the required return on debt is using the expected Yield to Maturity (YTM) of the company's debt based on the market values (J. E. Pinto, et al. 2010). This, however, might not be possible for all companies, in those situations an average industry value could be used as a proxy for the company cost of debt.

ii.   Cost of Equity

Contrary to debt, the process to estimate the expected rate of return for equity-holders is not simple to calculate, so much so that financial professionals and academics have proposed a wide variety of models to estimate this variable, – for example, Fama-French three factor model, the arbitrage pricing theory – but none have been universally accepted (Koller, Goedhart and Wessels 2015). Nevertheless, the same authors go as far as saying that "*despite recent criticism, we believe that the CAPM remains the best model for estimating the cost of equity*". The CAPM formula is defined as follows.

Equation 5 - CAPM

$$k_e = r_f + \beta_e(r_m - r_f)$$

β_e = security's sensitivity to the market
r_m = expected return of the market
r_f = risk free rate

iii.   Beta

The problem in estimating the cost of equity is estimating its risk related to the market. The security's beta measures the market and systematic risk, in theory it is the sensitivity of its returns to the returns on the market portfolio of risky assets (J. E. Pinto, et al. 2010). More concretely, the risk of a security is the risk said security adds to a market portfolio. Intrinsically, the Beta of a company is then calculated as the covariance of the security divided by the variance of market portfolio (Damodaran, Applied Corporate Finance, 4th Edition 2015). However, since the purpose is not to precisely measure the security historical beta, and instead searching for future betas, a purely mechanical approach might not be the best, as McKinsey & Company consultants Tim Koller, et al. (2015) claim – *"We find that individual company betas can at any point in time be heavily influenced by nonrepeatable events, so we recommend using an industry peer median rather than the historically measured beta for the company in question"* (Koller, Goedhart and Wessels 2015) – for Airbnb this method will be preferred since we do not have sufficient historical data for a relevant company specific beta value.

To estimate an industry beta, the individual betas of each company in the defined peer set will be measured, this is done using the market model regression (Equation 6), (Koller, Goedhart and Wessels 2015). This regression places the stock's return (R_i), against the market return (R_m).

Equation 6 - Market model

$$R_i = \alpha + \beta(R_m) + \varepsilon$$

R_i = Stocks return
R_m = Market return

The same authors also advise that the following conditions must be followed for this approach to deliver relevant results:

- The data set must have at least 60 data points and rolling betas should be graphed to investigate systematic changes to stock risk.

- The regressions should be based on monthly returns. Using more frequent return periods can be problematic specially if the stock has few daily trades. An illiquid stock will have a downward bias on beta estimation and using monthly values will lessen this effect.
- The market return should be based on a value-weighted, well-diversified market portfolio. In this paper, the S&P 500 index will be used as the appropriate proxy.

After this process, we will need to compute the industry beta. However, a simple median of the raw-betas of the defined peer-group will not provide a correct estimation. The main problem arises from the financial risk difference amongst the peers, a company that has a higher debt to equity ratio gives greater risks for shareholders compared with companies that possess a lower one. To be left with a comparable operational beta, a deleveraging process will need to be applied to the raw beta.

Equation 7 - Unlevered beta

$$\beta_u = \frac{\beta_e}{\left(1 + (1 - t) \times \left(\frac{D}{E}\right)\right)}$$

β_u = *unlevered beta*
β_e = *levered beta / raw beta*
t = *tax rate*
D = *debt*
E = *equity*

After *un-levering* the beta for each company, it is time to assess the average unlevered beta of the peer group, which can be calculated based on a market-cap weighted basis (Rosenbaum and Pearl 2009). This value will then be *re-levered* using Airbnb target capital structure and marginal tax rate.

iv.   Terminal value

As previously referred, a DCF take on valuation is based on determining the present values of all future Free Cash Flows generated by a company. However, since companies and their stock are not time-bound securities, it is unrealistic to estimate year-on-year cashflows to

infinity. Analysts answer this setback by focusing on using terminal value equations that provide an estimation of the future value of a company after the explicit forecast period.

According to Rosenbaum and Pearl, the Terminal Value formula is used to capture the value of the company beyond the projection period and, in a certain way, represent the infinity, it is not shocking that this term of the valuation can sometimes account for three-quarters or more of the company value (Rosenbaum and Pearl 2009).

Since the Terminal Value has such a substantial impact on the valuation, it is important that the company's terminal year financial data represents a steady and matured state and that its operations will continue growing or shrinking at a specified rate over the following years. For DCF's (Koller, Goedhart and Wessels 2015) recommend the formula of the terminal value as outlined below.

Equation 8 - Terminal value / Key value driver

$$Terminal\ Value = \frac{NOPLAT_{t+1}\left(1 - \frac{g}{RONIC}\right)}{WACC - g}$$

$NOPLAT_{t+1}$ = *net operating profit less adjusted taxes (first year post explicit forecast period)*

g = growth rate

RONIC = expected rate of return on new invested capital

This terminal value formula models the investment required for growth to occur. Its terms can be defined as key value drivers because they are the fundamental drivers of economic value: growth, ROIC, RONIC and cost of capital.

- NOPLAT: Is the after-tax profit generated from core operations, disconnecting any income from non-operating assets or financing expenses. Subsequently, it is the profit available for all investors, including providers of debt, equity, and other types of financing.
- RONIC: This term is the return on new invested capital, the return a company will earn on each new dollar invested into the business, not to be confused with the return on invested capital (ROIC) which is not a forward-looking indicator, the return of existing investments is already included in the NOPLAT. Economic theory suggests that competition will ultimately eliminate any abnormal returns that companies might have, so, in competitive industries, RONIC should be equal to the WACC (Koller, Goedhart and Wessels 2015).

- Growth: Growth rates are a key input in any perpetual valuation, even though they are a product of assumptions; it is unrealistic to expect that there is a correct formula to predict all the probabilities of the future. Still, academics agree that the best measure of the quality of growth is the returns earned on investments (Damodaran, Investment valuation : tools and techniques for determining the value of any asset 2nd edition 2002). Growth and investment are linked, businesses that want to grow will need to reinvest to create growth. The formula of the growth rate can then be defined as followed.

Equation 9 - Growth formula according to the key value driver formula

$$g = ROIC \times IR$$

ROIC=Return on invested capital

IR=Investment rate (portion of NOPLAT invested back into the business)

b. Free Cash Flow to Equity (FCFE) model

This model is based on the cash flow that is available to holders of common equity after all the operational expenses, interest and principal payments have been paid and all investments have been made (J. E. Pinto, et al. 2010), as can be seen in (Equation 10).

Equation 10 - FCFE

$$FCFE = Net\ Income - (Capex - Depreciation) - \Delta\ Non\ cash\ Working\ Capital + (Debt\ issued - Debt\ repayments)$$

This valuation model processes quite similarly to the previous one presented (Equation 2), however, as previously stated, cash flow calculation and the discount rates will be different. In the FCFE model the cashflows to equity will need to be discounted at the estimated cost of Equity (k_e) instead of discounting it at the cost of Capital (WACC).

Mathematically this valuation method should provide an equal enterprise value when compared to the FCFF if the same assumptions are followed, however, it has some shortcomings which make it harder to correctly assess and prone to inconsistencies in comparison to the previous model. Since the starting point would be the Net Income there is a higher impact of accounting practices that will need to be corrected. Another shortcoming is

that the capital structure is embedded in the cashflow making it harder to estimate and easy to unwillingly change it, (Koller, Goedhart and Wessels 2015).

1.3. Relative valuation models

The relative valuation models estimate the value of an asset relative to the value of another asset. In its core, this model rests in the assumption that comparable assets should sell at similar prices. Relative valuations are done using multiples, single number indicators that summarize the link between any core quantity, for example, sales, book value or earnings, with the market value of the business. They can be divided in either Price multiples or Enterprise value multiples. According to Jerald Pinto, et al., Price multiples are ratios of a stock's market price to any sort of fundamental value per share, while enterprise multiples relate the total market value of a firm's capital to any measure of fundamental value of the entire company (J. E. Pinto, et al. 2010).

Tim Koller, et al. define 5 principles for a correct multiple valuation implementation (Koller, Goedhart and Wessels 2015):

- Multi-business companies should be valued as a sum of their parts. Multi-business firms usually compete in sub-industries or product areas with widely varying return on invested capital.

- Multiples should be based on forward estimates of earnings. The reasoning behind this principle is that multiples made using forward estimations of earnings typically have a lower variation across peers, which will then lead to a narrower range of uncertainty of value, alongside the fact that they will represent future expectations better than historical multiples.

- The valuation should be based on enterprise multiples like, e.g., net enterprise value to EBITA or net enterprise value to NOPLAT. Even if price multiples, like the price to earnings ratio (P/E), are widely used, they are distorted by capital structure and other non-operating gains and losses that will then lead to a less comparable multiple. Net enterprise value to NOPLAT should be the preferred multiple if companies are subject to different taxation laws. EBITA does not have the effect of taxes represented in its core, and since this affects the cashflow for shareholders, companies with different tax regulation will not provide good comparable multiples.

- The multiple should be adjusted for non-operating items that can be embedded in financial reporting, e.g. excess cash, or pensions; these items can distort the multiples.

- A good peer group classification is fundamental to achieve a correct valuation, and, contrary to what would be expected, this peer group does not necessarily need to be from the same business sector or industry as the company to be valued. A company can be considered a valid comparable if it has similar cashflows, growth potential and risk. Viebig, J., et. al. (2008) provide a good insight over this topic

  – *"Higher growth companies (…) should trade at higher multiples than lower growth companies in the same sector. Many analysts adjust for these differences qualitatively, making every relative valuation a story telling experience"* –

  (Viebig, Poddig and Varmaz 2008)

  However, comparable peers of the same industry can provide the model an extra layer of information about the sector or industry where the company operates.

In conclusion, while this valuation method does not provide a thorough valuation when compared to other absolute methodologies, it does help explain and add value to other more complex methods, it can serve as a second step validation for DCF forecasts, as well as help understand what drives value in a specific industry or peer group.

1.4. Chosen valuation methodologies

To attribute a value to Airbnb, a Discounted Cashflow Model (DCF) employing Free Cash Flows to the Firm (FCFF) will be used. Additionally, a relative valuation will be performed using comparable companies' multiples. These two approaches are the most appropriate to arrive at a fair-enterprise value taking into consideration Airbnb profile.

2. Company Overview

Airbnb was founded in 2008, it is an online home sharing platform. The business operates in a marketplace model serving as an intermediary platform connecting clients and hosts. The platform supports global payment capabilities, it provides multilingual real-time community safety and support and city-specific product requirements. It delivers business intelligence insights to manage its marketplace (Thomson Reuters Corporation 2021).

The company had a humble beginning, being born from an idea of two friends strapped for rent money that saw their loft's living room with their three air mattresses as a potentially good bed and breakfast for people in trouble to find accommodation in the city of San Francisco (Chesky, Blitzscaling 18: Brian Chesky on Launching Airbnb and the Challenges of Scale 2015). Despite the modest starting point, in the last decade Airbnb has risen to be a global powerhouse in the Accommodation industry, capturing a market that competition had not fully tapped yet.

As of December 2021, Airbnb counts 6 million listings from more than 4 million hosts, and it already helped guests find accommodations more than 1 billion times in over 220 countries and regions (Airbnb 2022).

2.1. Key Airbnb information

Headquarters
- San Francisco, CA, *USA*

Employees
- 6,132
  (31 Dec 2021)

Management

Brian Chesky
(Co-founder, Chairman of the board, CEO)

Nathan Blecharczyk
(Co-founder, Chairman of Airbnb China, CSO)

Joseph Gebbia
(Co-founder, Chairman of Samara and Airbnb.org)

Dave Stephenson
(CFO, joined in 2018)

Key Financials
(FY2021)
- Revenue: **$5.99bn**
- Adj. EBITDA: **$1.59bn**
- Net income: **($0.352 bn)**

Free float

(% of Capital)

41% 59% ■ Shares - Free float

2.1.1. Airbnb Business model

Airbnb business model can be described as a multi-sided accommodation marketplace, it serves as an intermediary between Hosts and Guests. Airbnb collects service fees at the time of each booking from both guests and hosts, the total booking value paid by the guest is displayed in the Gross Booking Value (GBV) during the quarter that said booking occurs, it is then recognized as a revenue at the time of a guest's check-in.

– *"GBV represents the dollar value of bookings in a period and is inclusive of host earnings, service fees, cleaning fees, and taxes, net of cancellations and alterations that occurred during that period". –* (Airbnb 2021).

Table 1 - Airbnb revenue model example

Host

Price per night set by the host	$100
Host fees*	($3)
Total paid to host	**$97**

Guest

Price per night set by the host	$100
Guest fees*	$12
Lodging taxes (remitted to local authorities) *	$4
Total collected from Guest (GBV)	**$116**

Airbnb

Service fee (collected at booking and recognized as revenue upon check-in)	$15

*Source: Airbnb, *illustrative*

In the example above, Airbnb receives the full $116 paid by the guest, it then logs the GBV net of the service fees ($101) as amounts held on behalf of customers in the balance sheet, these values do not impact the cash-flow statement except for interest received on the retained cash, and the remaining $15 in fees are recorded as Unearned Fees on the Balance Sheet and the cashflow statement, when the check-in occurs, the $101 are remitted to hosts and to the tax authority[1] and the service fees are recognized as revenue.

This form of revenue recognition results in Airbnb's quarterly revenue and EBITDA suffering from seasonality patterns. Guests usually plan for their bigger holidays to be during the third quarter of the year (i.e., summer season in the northern hemisphere), as a result the first quarters of the year record higher booking levels than the fourth quarter. In contrast, since the third quarter has the most nights booked, it is also the quarter where revenue volume is mostly concentrated.

Figure 1 - Quarterly distribution revenues and fees (Avg. 2018, 2019 & 2021)
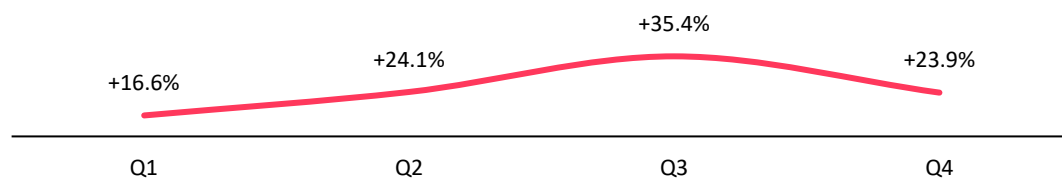
Source: Airbnb

2.2. Airbnb and the broad Accommodation industry
2.2.1. Accommodation industry dynamics

The COVID-19 pandemic rocked the foundations of this global industry. According to the World Tourism and Travel Council, in 2019 the global economic GDP contribution (including direct, indirect, and induced) of the Travel & Tourism was 9.2 trillion US dollars and it employed 334 million people globally, in 2020, the same value was estimated to have fallen by 49% - a loss close to 4.5 trillion US dollars - and a reduction in 62 million Travel & Tourism jobs (WTTC 2021).

The Accommodation industry is an important segment of the Travel & Tourism industry, it is divided between two major groups of accommodation providers: hotels and

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[1] Dependent on local legislation

other travel accommodation (private renting, camping, etc..), in 2021 this market was estimated to be worth close $645billion (The Business Research Company 2022).

Despite record breaking low levels in occupancy in 2020 the Accommodation industry went back to growth in 2021, this result came from the increasingly positive outlook regarding the control of the pandemic and due to companies rearranging their operations. The industry is expected to reach $784 billion in 2022 at a compound annual growth rate (CAGR) of +21.5% and is estimated to reach $1.35 trillion in value by 2026, at a +14.5% CAGR (The Business Research Company 2022).

Figure 2 - Accommodation industry expected growth trend ($bn)
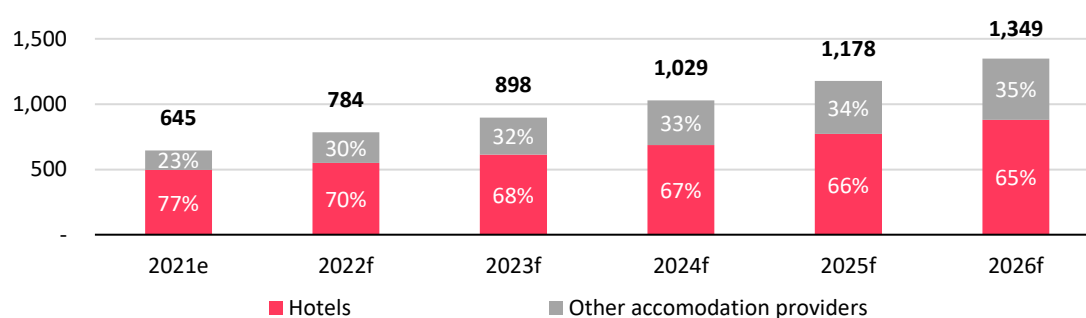
Source: RBC Capital Markets estimates, The Business Research Company estimates

According to Airbnb's Prospectus, the company is less conservative in their future estimates, and they assume a potential Total Addressable Market (TAM) of $3.4tn by 2030, and a more immediate Serviceable Addressable Market (SAM) of $1.5tn ($1.2tn short-term stays, and $0.2tn of Experiences & attractions market potential), 2 values that are based on pre-pandemic estimates and can be considered too high after how the pandemic rolled out for the industry. For this report we will use the more conservative estimates provided by RBC Capital Markets and from the Business Research Company (Figure 2).

2.2.2. Airbnb succeeding among peers

Even with industry wide difficulties, Airbnb has been a COVID-19 winner, their business model has significantly outperformed other major accommodation providers having a 2019 vs 2020 revenue reduction of only -30% when compared with industry peers (-45% to -72%).

Figure 3 - 2019-2020 revenue change of major players in Accommodation industry
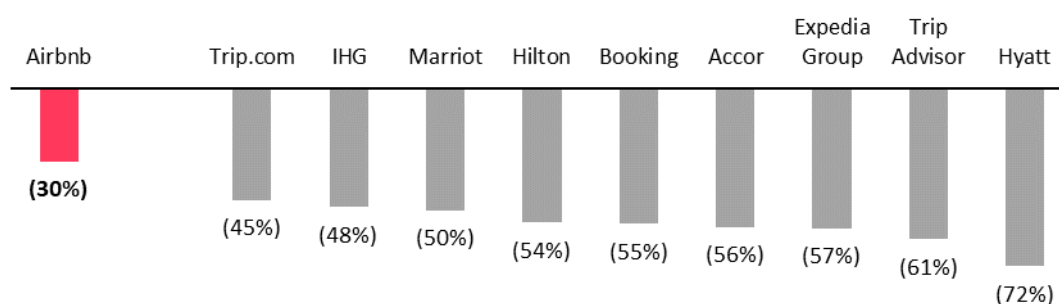
Sources: Annual reports, company information

This can also be observed in Airbnb's 2021 Gross Booking Value has rebound and even surpassed pre-pandemic values (+23% vs 2019).

The main drivers for the resilience that set Airbnb apart from its peers were, domestic travel, short distance travel, travel outside top cities and long-term trips (Airbnb Form S-1 Registration Statement 2020).

Figure 4 - Airbnb total gross booking growth compared to peers (YoY growth)
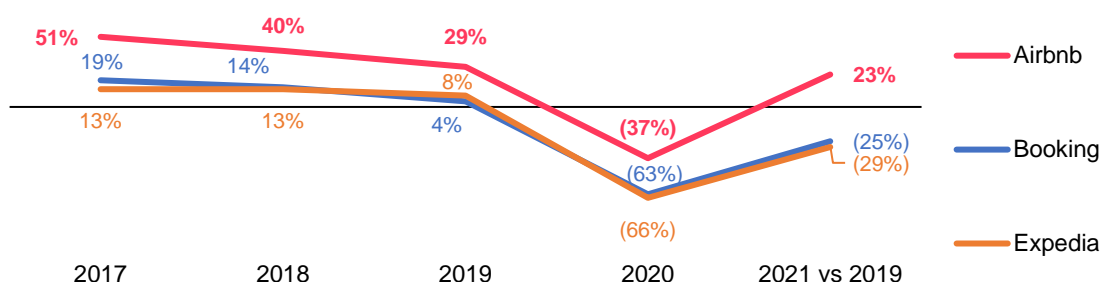
Sources: Company reports

- **Domestic travel** has been one of the main drivers of success for Airbnb, GBV from domestic travel in Q1 2022 was 65% higher than in Q1 2019 (Airbnb 2022) . Unlike its competitors, the company did not need to rely on the recovery of cross-border travel to recover lost volumes (Airbnb 2021).

- **Short distance travel** (within 50 miles of guest origin) was also highly resilient, even at the peak of business interruption in April (only -7% YoY). These short-distance stays were already one of the fastest categories prior to the pandemic, and, after April, growth was further accelerated (Airbnb Form S-1 Registration Statement 2020).

- **Travel outside top cities** increased as guests sought more remote destinations outside crowded urban centres. The pandemic has shown that Airbnb's business model and host portfolio is adaptable and capable of offering a wide array of solutions to potential

guests, in Q2 2019 top 10 cities represented 14% of revenue before any adjustments for incentives and refunds, a value that decreased to 7% in Q2 2021 (Airbnb 2021). However, in 2022 Airbnb expects returning closer to normality, as by Q1 2022 bookings in high-density urban destinations grew 80% compared to Q1 2021.

- **Long-term stays** (of 28 nights or more) was one of the fastest growing Airbnb segments in 2019, it represents a different use case than leisure travel, and as a result, was not as impacted as dramatically by COVID-19, while short-term stays (below 28 nights) were down 85% in April 2020, long-term stays where down only 13% year over year. By Q1 2022 this remains the fastest-growing category by trip length, having more than doubled when compared Q1 2019.

The resilience and adaptability of Airbnb's business model in face of this unprecedented adversity, has become one of the strongest arguments for Airbnb's long term growth prospects, it shown that it can win new customers and that current customers can additionally grow their use of the platform.

2.3. Key success factors
2.3.1. Listing and host growth

One of Airbnb's most important growth vectors has been its ability to capture new hosts, having reached the record 6 million active listings in 2021, more than the rooms of the six largest hotel groups combined in 2019 (Airbnb 2019). This shows that Airbnb's proposition to hosts is competitive, comprehensive and that it benefits from network economics, like payment security, insurance, trusted reviews. These reasons make Airbnb have strong and clinging hosts.

Management has defined its high-quality host community as its key strength, so far supply has managed to grow to meet demand, and even with high YoY listing growth, quality of the properties remained high. On average, c. 68% of guest leave reviews, a total of 410 million reviews were made as of September 2020, of which 82% were 5-star reviews (Airbnb Form S-1 Registration Statement 2020). These listings are being provided by more than 4 million hosts of which c. 90% are individual hosts with 72% only having a single listing, the remaining 10% are professional hosts/property management companies.

Airbnb has managed to achieve this by dedicating resources to provide training and tools to help hosts in several key hospitality aspects, including educating hosts on quality and engagement with guests, merchandising, Smart Pricing tools, scheduling assistance and facilitated payment processes. The company also tracks its listings to confirm if they are up to guest expectations, not shying away from removing listings from the platform if guests are consistently not satisfied or if the listings fail to meet standards or other factors detrimental to communities.

Convenience wise, the company's offer is competitive, hosts benefit from a continuously simplified registration process, 24/7 community support, access to a global market and insurance provided by, for example, the "AirCover" that provides free $1 million in damage protection for every listing, something that its largest competitors do not offer.

Table 2 - Host and guest protection vs. selected peers

	Airbnb	VRBO	Booking	Expedia
Host property protection	✔ **Free**	✔ Paid	×	×
Host liability protection	✔ **Free**	✔ **Free**	×	×
Guest protection	✔ **Free**	✔ Paid	×	×

Sources: Airbnb and Exane BNP Paribas

Another of the key selling points for hosts has been the economic opportunity that it provides. Host earnings have averaged $7,900 in 2020 having collectively earned more than $110 billion since Airbnb's inception. Airbnb communicates that *"For active listings in 2019 that were new to our platform, 50% received a booking within 4 days of becoming available, and 75% received a booking within 16 days of becoming available"* - (Airbnb Form S-1 Registration Statement 2020).

Figure 5 - Airbnb global active listings
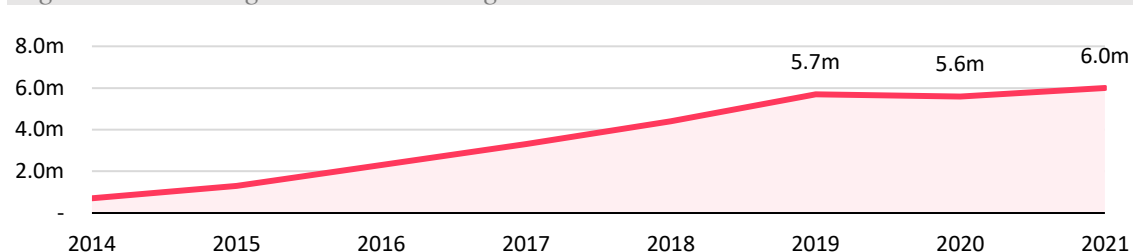
Source: Airbnb

Host recruitment remains the biggest risk for Airbnb's growth prospects as capturing its Serviceable Addressable Market is inherently dependent on listing growth.

Before the pandemic, host cohort[2] behaviour has been consistent, more than 90% of host revenue was retained after their first year using the platform. Something that proves hosts loyalty to the platform. In 2019, more than 84% of Airbnb's revenues resulted from stays with existing hosts that had completed at least one check-in before year-end 2018 (up from 82% in 2018). Nevertheless, this suggests that without new hosts, revenue in 2019 would have been limited to c.16% lower than it was. As estimated in the like-for-like growth (Appendix 3.2.), new hosts represented close to two thirds of 2019 additional revenue (21% for new hosts vs. 11% for existing hosts), this highlights the importance of host recruitment as Airbnb's main driver for revenue growth.

2.3.2. Grow pool of guests while increasing customer loyalty

Few companies can claim to be classed as a "verb"; Airbnb is one of them. The platform is already a natural destination for global holiday seekers, and this too was bolstered by the COVID-19 pandemic. In 2020 c.91% of traffic in the platform came organically through direct or unpaid channels (vs. 77% in 2019), the ensuing success, despite the unprecedented circumstances, made management turn away from spending on performance marketing and focus instead on brand marketing. In 2021 the company maintained its new policy and launched several brand focused campaigns, moving away from high spending marketing.

Airbnb lists a wide array of key motivations for guest usage, ranging from experiencing cities as locals, the possibility to stay in unique places, the feeling of being at home, the possibility to stay anywhere, and the fact that Airbnb review system and support provides confidence to guests.

How will Airbnb grow its guest pool? The company's marketing has been focusing on engaging existing guests to use Airbnb with more frequency, while also making them powerful brand advocates that will increase utilization organically through word-of-mouth. The pandemic also developed new guest behaviours that management sees as an opportunity to further develop the platform and create products that will capitalize new use cases (Appendix 3.3).

According to Ignition One's Q4 2018 Hospitality Industry Report, the average length of stays in hotels pre-pandemic were between 2 and 4.5 nights per guest (Ignition One

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[2] A group of hosts whose first guest check-in occurs in a specific calendar year (Appendix 3.1)

2018), however changes in consumer behaviour, and the acceleration of global trends pushed by the pandemic, have led to a widening of trip lengths as well as wider reasons for usage (Nomad living, Work from anywhere). This trend is already noticeable in the increased average length of stay of US Airbnb users (Figure 8), where an increase in average nights went from 4 in May 2019 to around 7 in 2020 a 75% increase YoY. This trend remained in Q1 2022 as 48% of gross nights booked came from stays of at least seven nights. Supplementing this thesis is also the fact that the Airbnb's fastest growing area occurred in the "28 nights or more" segment, giving credence to Brian Chesky's view that Airbnb customers are and will increasingly use the platform for new reasons (Chesky, Blurred Lines - Travel in a post-COVID world 2021).

Figure 6 - Airbnb average guest length of stay in the US
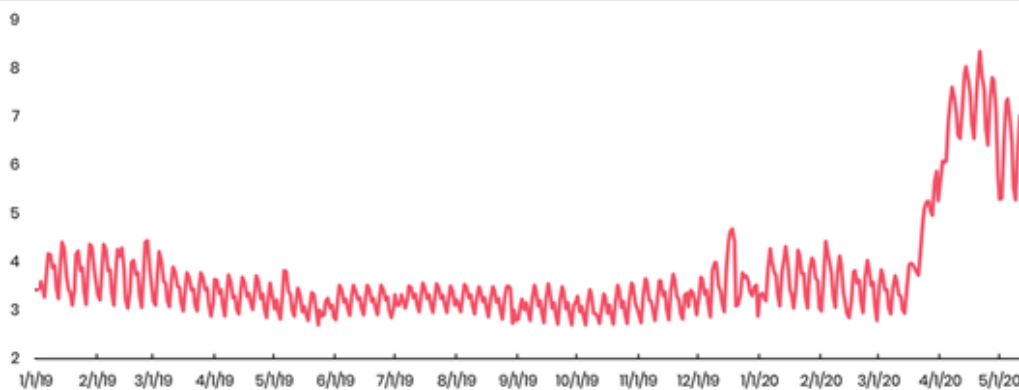
Sources: AllTheRooms.Analytics estimates as reported by PhocusWire (Menze 2020)

Airbnb's ease of use, reputation and flexibility put it in position to capture and even serve as a vessel for new trends.

Achieving these goals might not be as marketing intensive as it might seem. During the beginning months of the pandemic management was forced to cut marketing budgets to preserve cash (c. -54% vs 2019), this served as a global testing ground to assess their organic unpaid platform traffic volume, which rose from 77% in 2019 to 90% during the first half of 2022. Google Trends supports this result, since January 2018 to July 2021, "Airbnb" has been sought worldwide more often than other Online Travel Agencies (Google 2021).

These results led Airbnb management to assert that they would not return its guest marketing spend as a % of revenues to pre-pandemic values.
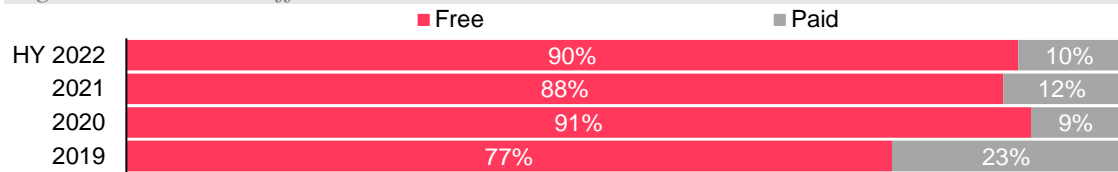
Even planning for post pandemic times when competition recovers, Airbnb believes that it will compete favourably for guests, as management states

–*"… we compete favourably based on multiple factors, including the differentiated breadth and depth of stays and experiences offered on Airbnb, our global scale and geographic reach, the strength and loyalty of our host and guest community, our brand, organic traffic, our platform functionality, including community support, payments, and host protections, and the extensibility of our platform."* – (Airbnb 2021).

2.3.3. Margin improvement

Airbnb had been close to adjusted EBITDA[3] breakeven during pre-pandemic years, even being positive in 2018. However, during 2019 increasing costs eclipsed the successful $4.8bn total revenue, which drove adj. EBITDA to be negative again. Post-pandemic values show positive signs with 2021 reaching 27% of the company defined adj. EBTIDA margin.

Table 3 - Airbnb reported Adjusted EBITDA growth

($m)	2016	2017	2018	2019	2020	2021	Q1 2022
Revenue	1,656	2,562	3,652	4,805	3,378	5,992	1,335
Adj. EBITDA	(94)	(53)	60	171	(251)	1,594	217

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[3] Airbnb defines adjusted EBITDA as, net income (loss) adjusted for (1): provision for income taxes; (2) interest income, interest expense, and other income; (3) depreciation and amortization; (4) stock-based compensation expense and stock-settlement obligations related to the IPO; (5) acquisition-related impacts consisting of gains (losses) recognized on changes in the fair value of contingent consideration arrangements; (6) net changes to net changes to the reserves for lodging taxes for which management believes it is probable that we may be held jointly liable with Hosts for collecting and remitting such taxes; and (7) restructuring charges.

Adj. EBITDA margin	(6%)	(2%)	2%	4%	(7%)	27%	**15%**
Dissertation EBITDA Margin	(7%)	(2%)	1%	(10%)	(104%)	9%	

Sources: Airbnb; Note: "Adj. EBITDA margin" as reported by company, dissertation EBITDA[4]: (see footnote)

The company's operational cost structure is based in 6 key items. The largest item in 2019 was Sales and Marketing that accounted to 33% of the pre-pandemic 2019 revenue. In 2021 the management's continued effort to increase the EBITDA margin resulted in an overall decrease in all costs except for Stock Based Compensation (Figure 8).

Figure 8 - Airbnb cost structure as % of revenues
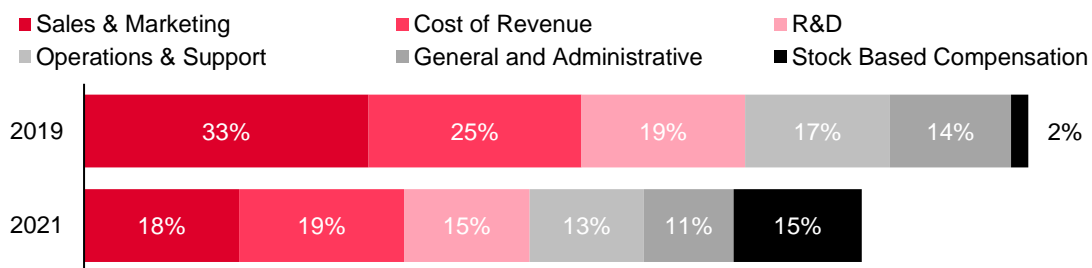
Sources: Airbnb

Management has defined their long-term adj. EBITDA objective to be 30% (Airbnb 2021), this is not unrealistic, it is even unambitious if we follow Airbnb's vision of Adjusted EBITDA[5], as they have almost reached this goal in 2021 alone. Airbnb cost structure made it possible to vastly reduce the costs over the last 2 years mostly because close to 50% of the 2019 costs were fixed, and because there were successful restructuring actions mostly on the sales and marketing areas, as mentioned previously. This cost structure makes it possible to reach the adj. EBITDA objective by operating leverage alone.

2.3.4. Overcoming regulatory risk

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[4] Dissertation EBITDA is defined as the net value of Revenues minus operational costs, (Cost of Revenues, Operational & Support, General and administrative, R&D, Sales & Marketing, Stock Based Compensation)

[5] Airbnb Management does not consider Stock-based compensation as an operational cost. However, since management has stated that stock-based compensation will continue to be a recurring expense in the business and a key part of Airbnb compensation strategy (Airbnb 2021), this report will consider it as an operational cost.

In the last few years Airbnb has been under scrutiny from local authorities of major travel destinations with some cities imposing hard regulatory measures to control short-term renting. Being the main global brand for this sort of business, the company has received damaging press reports and has even been the target of political campaigns. The main accusations have to do with the negative effect of Airbnb supply on local housing market (driving rent and housing prices up), other accusations have to do with the detrimental effect it can have on neighbourhood security and living conditions (e.g., noise, illegal dealings, and party houses).

So far this has been a limited risk, Airbnb is present on 100,000 cities in most countries and regions across the globe, while it is true that there is a concentration of listings on major tourist cities the fact remains that they are not a large part of Airbnb revenue and listing numbers. As of December 2020, no single city represented more than 1.1% of Airbnb's revenue and, 1.2% of listing numbers (vs. 2.5% and 1.5% in 2019). However, as of October 2019, c.70% of the top two hundred cities by net revenue had some form of regulation.

Despite the negative environment that Airbnb faces today, the company has been progressing in its efforts to engage with municipalities and mitigate this risk.

The main benefit Airbnb brings to municipalities is the economic stimulus it brings to cities and citizens. In a 2019 survey, 50% of the hosts said that the supplemental income helped them afford to stay in their homes, 82% said that they recommend business that are locally owned. The survey also showed that on average 43% of guest spent occurred in the neighbourhoods where they stayed, and that 52% of guests would not have visited the neighbourhood had they not booked there. Airbnb estimates that host earnings and guest spending in 2018 generated close to $117 billion in economic activity in the top 30 countries where it operates.

Airbnb also has been making efforts to provide transparency for city authorities, in 2015 it introduced the Airbnb Community Compact, to promote initiatives and partnerships. One initiative is the Airbnb City Portal that allows governments and tourism organizations to connect with the Airbnb platform and, among other things, access information about short-term rental market and remitted tourist tax revenues in places where tax agreements are established.

3. Financial analysis, forecasts, and assumptions

The valuation methodology used was the FCFF, the valuation data cut-off date is 25th of July 2022, as such, only the reported values until Q1 of 2022 were considered.

The defined explicit forecasting period was 20 years from 2022 to 2041, after which Airbnb should reach maturity and grow at a stable rate.

3.1. Operational revenues

The industry outlook continues to be positive with a fast return of world tourism, with the UNWTO organization forecasts overnight stays to reach pre-pandemic values in 2024 (8.2 billion overnight stays) and to continue normal historical growth in following years (4% growth in overnight stays – 25-year average) (World Tourism Organization 2022).

Table 4 - World overnight stays

In $bn	'19A	'20A	'21E	'22F	'23F	'24F	'25F	'30F	'41F
Domestic	4.3	2.3	2.7	3.1	3.7	4.3	4.5	5.4	8.1
Inbound	3.9	0.9	1.3	2.5	3.3	3.9	4.1	5.0	8.0
Total	**8.2**	**3.2**	**4.0**	**5.7**	**7.0**	**8.2**	**8.6**	**10.4**	**16.1**
% change (YoY)		*(61%)*	*25%*	*43%*	*23%*	*18%*	*4.0%*	*4.0%*	*4.0%*
Market share (by number of nights booked)									
Airbnb	*4%*	*6%*	*8%*	*6.8%*	*7.0%*	*7.4%*	*8.5%*	*11.3%*	*13.2%*
Expedia	*5%*	*5%*	*6%*						
Booking	*10%*	*11%*	*15%*						

Sources: UNWTO data and forecasts until 2024. 2025-2041 dissertation forecasts based in 20-year UNWTO growth average.

Airbnb revenue base grew at double-digit growth rate until 2020, after the first impact of the pandemic, Airbnb had a comeback during 2021 getting back to double digit growth. As displayed in (Appendix 5.1), for the remaining years, the great adaptability of Airbnb to the pandemic, justifies the revenue growth forecasts of a 2021-2025 CAGR of 21% corresponding to the recovery of pre-covid growth. Consensus estimates are in line with this CAGR assumption for the next 2 years, where 37 analysts estimated, on average, revenues to be $8.19bn in 2022 (+36.6% growth y-o-y) and $9.63bn in 2023 (+17.6% growth y-o-y) (Yahoo Finance 2022). From 2025 to 2030 a ~13% CAGR was assumed, an upside of 9% when compared to industry, and from 2030 to 2041 Airbnb was forecasted to have a 6% CAGR.

These assumptions will result in Airbnb continuing to capture market, grasping ~11% of the global overnight stay market by 2030, and to reach ~13.2% by 2041. These values may seem far to achieve; however, during 2021, Airbnb controlled 8% of the total global market share while having more than 50% of its revenues coming from the US alone (Airbnb 2022), this exhibits international growth potential. Favourable changes to consumer behaviour will also contribute to achieve this goal. As ambitious as this looks, it is not something unheard of, the main competitor of Airbnb – Booking Holdings – currently controls 15% of the market share as of 2021, and, Airbnb has already proved to have a more resilient business and adaptable model when compared to other regular accommodation providers.

Figure 9 - Airbnb revenue growth forecasts (€m)
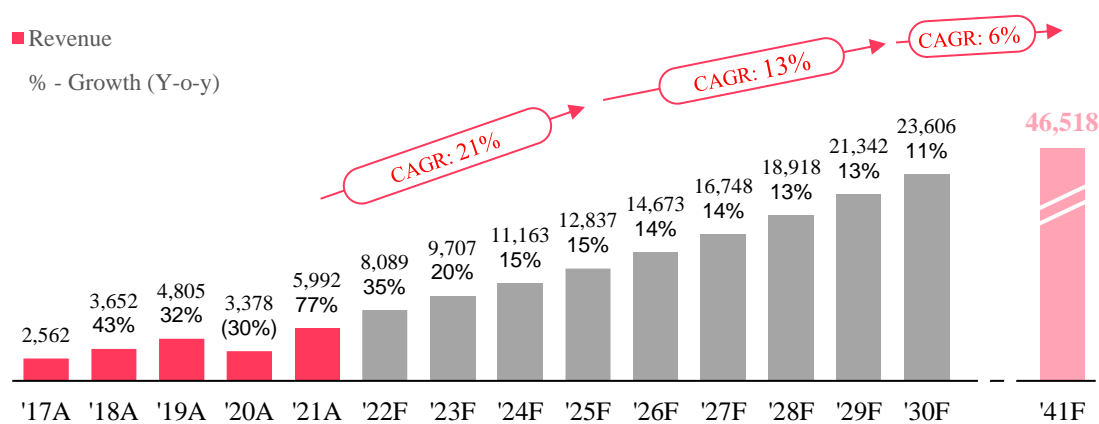
Sources: Airbnb, dissertation estimates & forecasts

3.2. Operational expenses and EBITDA focus

As previously stated, Airbnb groups its operational expenses in 6 broad groups: Cost of Revenues, Sales & Marketing, Stock based compensation, Operational & Support, General & Administrative, and Research & Development. Of these costs, the first three are variable and highly dependent on revenues or nights and experiences booked, while the latter are fixed costs or costs not dependant on revenues (Appendix 4.5.)

Table 5 - Operational expenses and EBITDA focus

% of revenue	'18A	'19ª	'20A	'21A	'22F	'23F	'24F	'25F	'30F	'41F
Cost of Revenues	24%	25%	26%	19%	16%	15%	15%	15%	13%	13%
Op. & Support	17%	17%	22%	13%	11%	10%	9%	9%	7%	5%
R&D	15%	19%	26%	15%	13%	12%	12%	12%	10%	9%
G&A	17%	19%	24%	13%	8%	8%	7%	7%	7%	5%
Sales & Marketing	30%	33%	22%	18%	16%	16%	16%	17%	13%	28%

Stock based compensation	1%	2%	89%	15%	15%	15%	15%	10%	10%	10%
Total costs as % of revenue	**104%**	**115%**	**208%**	**93%**	**79%**	**76%**	**75%**	**70%**	**60%**	**70%**
EBITDA margin	**(4%)**	**(15%)**	**(108%)**	**7%**	**21%**	**24%**	**25%**	**30%**	**40%**	**30%**
								CAGR 2021-2041		18%

Sources: Company actuals and dissertation forecasts.

Looking forward, Airbnb must continue to gain momentum and work to improving its EBITDA margin. As it can be seen in (Table 5), the chosen assumptions hypothesize that the company will achieve a 30% EBITDA margin by 2025 driven by continued margin optimization, made possible by reductions in cost of revenues (15% of revenues), Sales and Marketing (16% of revenues) and Stock Based Compensation (10% of revenues), together with the previously mentioned revenue growth that helped increase the gap in the other more static costs.

Despite management having targeted 30% Adj. EBITDA Margin for 2030, in this analysis, the cost assumptions point us to deliver a 40% margin, these gains will mostly come from revenue growth and variable cost optimization. This margin growth assumption is corroborated by sluggish competition that will allow Airbnb to continue to optimise its marketing spend, focusing mostly on word-of-mouth. The lack of global direct competition in the alternative accommodation market also points for the validity of this assumption. Finally, 40% is not an unreasonable margin for the industry with the main Airbnb competitor, Booking Holdings, holding an EBITDA margin of ~40% from 2014-2019, only lowering since the beginning of the pandemic.

In 2041, when Airbnb's reaches maturity, the EBITDA margin is expected to decrease when compared to 2030 (~30%). This assumption is explained by the expected increase in competition that will follow Airbnb success, direct competition that will probably appear towards the end of this decade and consolidate during the next one. A path similar to other market disruptive businesses like Uber or Netflix. The appearance of alternative accommodation providers and the re-adaption of the business model by the current competitors (eg: hotels chains increasing their apartment and housing offer) will force

Airbnb to vastly increase its Sales & Marketing budget to more industry comparable levels[6] (28% percent of revenues in 2041 vs. 13% in 2030).

3.3. Capex, Property, plant, and equipment (PP&E) and other investments

As of 2021 Airbnb is an asset light company in terms of non-current assets, relying mostly on operating leases[7]. This is not surprising taking into consideration that the company operates as an online marketplace. It does not need to rely heavily on physical assets like its traditional counterparts, this has meant that it has managed to have an historical capital expenditure (Capex) value of low business significance, on average 1% of revenues over the last 3 years. However, for the next years and as the company expands internationally, it was assumed that increasing investment in Capex will be needed, positioning Airbnb closer to its Online travel agency peers. In this assumption the 2022 to 2026 Capex investment as a percentage of revenues was predicted to increase at a steady rate until it reached the weighted average of the 4 major Online Travel Agencies (OTAs), – Booking Holdings, Expedia, Trip Advisor, Trip.com – average historical capex as a percentage of revenues in. These 4 OTAs, were weighted by likeness of business: 40% for Booking, 40% Expedia, and 10% for each of the latter, which resulted in an investment of 4.7% of revenues (Appendix 5.3.). From 2026-2041 Capex investment is due to increase to 7.4% of revenues, this assumption is based on the historical average Capex revenue ratios on a peer group comprised by 4 mature digital companies[8], Alphabet, Amazon, Booking and Expedia.

Historically, Airbnb intangibles have been negligible, being on average only ~1.5% of revenues over the last 4 years, the investment in intangibles follows the same logic, being on average 1% if we account for y-o-y changes in intangibles net of amortization. Taking this into consideration, the assumed hypothesis is that for the first two years 2022 and

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[6] Since 2017, Expedia spent on average 51% of its revenues in "Sales and marketing". Booking Holdings spent on average 34% in Brand and Marketing. Trip.com follows suite having spent on average 27% of their revenues in sales and marketing since 2017.

[7] On average, from 2019 to 2021, operating leases were ~60% of the gross fixed assets, i.e., without accounting for depreciation.

[8] With more than 20 years of financial reporting

2023, an equivalent to 2% of revenue will be invested each year in intangibles. After these dates it is assumed that the same rate will grow +0.15% p.a., reaching 2.3%, 3.1% and 4.7% of revenues in 2025, 2030 and 2041, respectively. This increase aims to represent the company's increased investment in R&D.

For depreciation and amortization the average values of 2019-2021 were taken as the discount rate assumption. For Depreciation this will be 2% of revenues, while Amortization will be 0.8% of revenues. The rate was not assumed to change over the years.

In this analysis, operational items have been segregated from the reported current liabilities. Customer advances, provisions for Sales and Marketing, gift card liabilities and provisions for compensation related benefits have been considered as operational provisions. In 2021 these items accounted to 26% of revenues, of which: 15% for customer advances which in theory should not lower significantly with the growing of the company, and 7% for compensation benefits which could change slightly as management alters employee pay scheme. The other costs are negligible and are forecasted to remain at the same percentage of revenues as the average of the last 4 years.

3.4. Working Capital needs

Airbnb's main working capital components are "Receivables" in the operating current assets and "Payables" on the operating current liabilities. This is normal taking into consideration the industry where it operates, where people book and pay for nights or events that will happen sometimes months in the future, and, that Airbnb works as a custodian until the final transaction between host and guest eventually happen. For these components, revenues proved to be a good predictor[9]. Taking this into consideration, the 2018-2021 average historical ratio between Receivables and revenues of 67% will be used to forecast future Receivable values. On the Payables side, the equivalent ratio of 66% of revenues will be used to forecast future annual values (Appendix 5.4).

On other operating current assets, a ratio of 5% of revenues was assumed as the annual operating cash needs, this decision comes from Airbnb business model being upfront cash intensive. The last item of the asset part of Working Capital, Pre-paid expenses which are

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[9] Payables: Significant correlation with r=.946 with p<0.05; Receivables: Significant correlation with r=.0.957 with p<0.05.

related to operational payments of services and instances of uncollected balances that can arise from the timing of payments and collections related to a dispute resolution between the guest and host or to certain alterations to stays. This item was assumed to remain at the constant average historical revenues proportion of ~4%.

On the operating current liabilities of Working Capital, the last component is Tax Payables, this component is close to negligible on the balance sheet, we will use revenues as the predictor for it, assuming a 0.3% ratio.

3.5. Debt structure and marginal tax rate

Airbnb does not have an history of loans, so far it has mostly been financed by equity. In 2020 it took its first reported loan, a first lien loan of $995m at 9.5% and a second lien loan of $1,000m at 15.1% effective interest rates. These costly loans were due to the liquidity shortage that came from massive guest cancelations in the early stages of the 2020 COVID-19 pandemic. In 2021 the company went through debt restructuring and issued $2,000m in 0-coupon convertible bonds and used it to pay off the previous debt. This convertible bond has an exercise price of $288.6, reaching maturity on the 16th of March 2026. The current market value of this bond (Table 6) was defined by summing the value of an equivalent zero-coupon bond with the call-option value taken from the Black-sholes model (Black and Scholes 1973).

In this analysis it was considered that the debt amount would remain equal at the maturity date of the Convertible bond. At that time a new revolving loan with the same value would be taken.

Operating leases were, in 2021, close to ~60% of PP&E. In the future this proportion is not expected to change and will remain at the same level throughout the forecasted period.

Regarding taxes, this report will use KPMG estimates of marginal tax rate for US companies. In the valuation and any forecast assumptions the applicable income tax rate was assumed as being 27% (KPMG and Damodaran A. 2021).

Table 6 - Debt Structure and convertible bond valuation

| | Outstanding debt | |
	Convertible bond	Operating leases
Classification	Sr. Unsecured	Asset-backed

Maturity	16/03/2026	-	
Maturity in years	3.6	7.1	
YTM	4.23%	3.5%	**Total:**
Book value in US$m	1,982.5	436.0	**2,418**
Market value in US$m	**1,720.0**	**436.0**	**2,156**
Valued at	Market value	Book value	

Convertible bond valuation			
Face value	$1,000.00	Current Stock Price*	$104.95
Maturity in years	3.6	Exercise Price	$288.64
Yield to Maturity without call option	4.23%	Risk-Free Interest Rate[10]	2.89%
Issued US$m	*$2,000m*	Volatility	16.9%
Market value: Eq. Zero-coupon bond ($)	**$859.96**	Call-option in ($)	**$0.04**

Market value of issued Debt ($m):	**$1,720.0m**
Market value of call-option ($m):	**$0.08m**

Sources: Company information, Dissertation analysis; Note: *Dated as of 25/07/2022

4. Valuation

This valuation of Airbnb has been performed as of July 25th, 2022. The report was made with data and by taking assumptions that have been based on information available until this point in time.

4.1. WACC calculations

4.1.1. Cost of Equity

Airbnb's Cost of Equity (Ke) was estimated using the CAPM method (Equation 5). Since the company currently only has debt with a maturity of close to five years, the US Treasury 5-year yield of 2.89% rate (25/07/2022) was used as the proxy for the "Risk Free Rate" component of the CAPM formula. On what accounts to the "Equity Risk Premium", an implied equity risk premium was calculated[11] based on the S&P500 1928-2021 historical premium, geometrically averaged over a proxy long-term rate (10-year treasury bond).

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[10] US Treasury Yield 5 years 25/07/2022

[11] Calculated using Professor A. Damodarans's implied equity risk premium calculator updated with recent S&P500 values and Reffinitv top-down growth estimates for the next three years. (Damodaran, Tools Webcasts 2022)

Since Airbnb has not been in the market for a significant amount of time, it was not possible to have a comfortable estimation of Beta[12] as defined in the literature review. Taking this into consideration, a peer group of eight direct competitors of Airbnb was used to estimate an industry Beta. Four of them are OTAs and the other are Traditional accommodation providers. Their individual betas were estimated by a market model a regression comparing the last 60 months of market value returns against the S&P index. Posteriorly, they were unlevered as per (Equation 7), and then, each peer group (OTAs and Traditional Accommodation providers) were averaged by Market Capitalization. The resulting values were averaged to reach the unlevered industry beta. After this step, Airbnb's Capital Structure ratio, joint with the marginal tax-rate was used to derive the company's levered beta. Finally, the blume method formula[13] was applied to Adjust the levered beta for forecasting (Appendix 4.6.).

Using the Adjusted Beta and the previously mentioned variables in the CAPM, the equation can be solved to Cost of Equity, resulting in Ke=5.40% value.

4.1.2. Cost of Debt

For the Cost of Debt (Kd), Airbnb's convertible bond YTM of 4.23% was used as the proxy rate. Assuming the 5-year US Treasury Bond[14] as a comparable risk-free investment for a similar maturity, we can derive an implied 1.34% spread.

4.1.3. WACC

The Weighted Average Cost of Capital was computed from the variables summarized in the table below.

Table 7 - WACC (as of 25/06/2022)

Cost of Equity (Ke)	5.40%	Cost of Debt (Kd)	4.23%
Capital structure (CS)			
Market cap incl. convertible equity	65,365	After-tax cost of operating leases	2.6%

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[12] Please see Appendix 4.6.2 to review an alternative Airbnb Beta, calculated from the regression of Airbnb stock returns vs. the S&P 500 index.
[13] "According to Blume, there is a tendency of betas to converge towards the mean of all betas. The formula describes the tendency by correcting historical betas to adjust the beta to revert to 1(…)"- (Corporate Finance Institute 22)
[14] YTM=2.89% as of 25/07/2022

Market value of Debt (D)	1,720	Marginal tax rate	27.0%
Operating leases (OL)	436		
Enterprise value (EV)	**$67,521m**		
Current Airbnb		**Gaming & hotel industry data[15]**	
E/EV	96.8%	All values from industry	
MV D /EV	2.5%	MV Debt / EV	32.9%
OL / EV	0.6%	MV Debt / MV Equity	49.0%
OL / Total debt*	20.2%	OL Debt / Total debt*	8.6%
WACC (Airbnb Current CS as target)	**5.32%**	**WACC (Industry average as CS target)**	**4.63%**

Note: MV = Market Value; Note: * Total debt = Operating leases + Market value of Debt

In the analysis, the resulting WACC from the current and target capital structure of Airbnb was equal 5.32%. At the same time, the average capital structure in the industry pointed to a 4.63% WACC rate. The resulting variance in both rates will be taken in consideration in a sensitivity analysis.

4.2. Discounted Cash Flows (DCF) valuation

In this section the DCF approach will be used to find the enterprise and equity value. On this valuation, 3 different growth scenarios have been considered, each with its own different forecast assumptions. The first, with 75% chance of occurring has been defined as the Base-case. Each of the following two have an estimated 12.5% chance of occurring. These scenarios were defined as the Upside-case scenario and the Downside-case scenario. The resulting enterprise value will be the result of the weighted average value of each of these scenarios. You can find them defined in the table and represented below.

Table 8 - Scenario Analysis (Downside, Base case, Upside scenarios)

CAGR (2021-2041)	Downside	Base	Upside
Nights and Experiences booked (N&E)	9.0%	10.3%	11.0%
Gross Booking Value (GBV)	8.3%	9.9%	10.9%
Avg. ADR (GBV/N&E) - US$	$138	$140	$145
Revenues	**9.2%**	**10.8%**	**11.8%**
EBITDA	**14.2%**	**17.9%**	**19.5.0%**
EBITDA Margin (as % of revenues)			
2025F	23%	30%	35%
2030F	30%	40%	45%
2041F	25%	30%	35%
Investments (as % of revenues)			
CAPEX (avg. 20y)	6.2%	5.0%	3.0%

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[15] "Global Capital Structure Ratios"; Updated as of January 2022; Global level (#firms=654) (Damodaran, Data: Current 2022)

Intangibles (avg. 20y)	3.4%	3.3%	3.1%
Other operating liabilities (avg. 20y)	26.1%	25.1%	25.1%
Assumed scenario probability	**12.5%**	**75.0%**	**12.5%**
Number of shares #	*622,820,001*	*622,820,001*	*622,820,001*

In the "Downside" scenario the company is expected to have slower growth when compared to the base case on both N&E and GBV, with slower growth on the latter, highlighting a higher decrease in ADR. This is hypothesised to be due to a slower market share growth when compared to the base case. In this scenario the firm will only achieve an EBITDA margin of 30% by 2030, this comes from higher competition and Airbnb not being able to cut enough costs on marketing. Revenues will grow at a 2021-2041 CAGR of 9.2%, while EBITDA will grow at 14.2% CAGR during the same period.

The "Upside" scenario hypothesizes that Airbnb manages to capture more market share, resulting from maintaining competition at bay by constantly offering to its hosts and guests one of the best value proposals in the market. By 2030 it will reach a 45% EBITDA margin, coming from increased revenue growth, as well as decrease in marketing and other fixed costs. Capex will grow slower as a percentage of revenues due to increased revenue growth when compared to the other scenarios, by 2041 Capex investment is expected to reach 4.9%. 2021-2041 CAGR for revenues will be 11.8%, while EBITDA will grow at a CAGR of 19.5%.

Despite the previous analysis, the Base-case is the likeliest theorized scenario. Its assumptions have been condensed below[16].

Table 9 - Airbnb Base-case scenario core-business forecasts

	'20A	'21A	'22F	'23F	'24F	'25F	'30F	'41F
Revenues	**3,378**	**5,992**	**8,089**	**9,707**	**11,163**	**12,837**	**23,606**	**46,518**
Cost of revenues	(876)	(1,156)	(1,313)	(1,492)	(1,695)	(1,926)	(3,069)	(6,047)
Gross profit	**2,502**	**4,836**	**6,776**	**8,215**	**9,468**	**10,911**	**20,537**	**40,471**
Gross profit margin	*74%*	*81%*	*84%*	*85%*	*85%*	*85%*	*87%*	*87%*
Operations and support	(734)	(799)	(876)	(961)	(1,053)	(1,155)	(1,652)	(2,326)
R&D expenses	(874)	(880)	(1,012)	(1,164)	(1,339)	(1,540)	(2,361)	(4,187)
G&A excl. lodging taxes	(671)	(627)	(686)	(751)	(821)	(899)	(1,652)	(2,326)
Sales & Marketing	(740)	(1,086)	(1,293)	(1,540)	(1,833)	(2,182)	(3,069)	(13,025)
Stock based compensation	(3,002)	(899)	(1,213)	(1,456)	(1,675)	(1,284)	(2,361)	(4,652)
1EBITDA	**(3,519)**	**545**	**1,695**	**2,343**	**2,746**	**3,851**	**9,442**	**13,956**
EBITDA margin	*(104%)*	*9%*	*21%*	*24%*	*25%*	*30%*	*40%*	*30%*
Depreciation	(90)	(115)	(161)	(194)	(223)	(256)	(471)	(928)
Amortization	(36)	(24)	(65)	(78)	(90)	(104)	(191)	(376)

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[16] Please revert to (Appendix 5.5) for more details on the assumptions of the extreme-event scenarios.

EBIT	**(3,645)**	**407**	**1,468**	**2,071**	**2,433**	**3,491**	**8,781**	**12,652**
EBIT margin	*(108%)*	*7%*	*18%*	*21%*	*22%*	*27%*	*37%*	*27%*
Taxes	(164)	(229)	(396)	(559)	(657)	(943)	(2,371)	(3,416)
NOPLAT	**(3,809)**	**178**	**1,072**	**1,512**	**1,776**	**2,549**	**6,410**	**9,236**
NOPLAT margin	*(113%)*	*3%*	*13%*	*16%*	*16%*	*20%*	*27%*	*20%*

Sources: Company reports, dissertation estimates & forecasts

The Operating cashflow was computed by adding back Depreciation and Amortization to NOPLAT. The resulting value was combined with investment cashflow to have the unlevered Free Cash Flow from Operations (Table 10).

The Terminal Value (TV) was calculated considering a terminal growth rate of 3.5% in perpetuity. This rate is based on the global weighted average estimated GDP current prices growth[17] (2.9%), averaged with the 25-year historical accommodation industry growth[18] (4.0%). Additionally, in the calculation of the Terminal Value, and as discussed in the literature review, RONIC was considered equal to WACC due to high competitivity in the accommodation industry. The TV was estimated to be $188,599m for WACC = 5.3% and $216,749m for WACC = 4.6%.

Table 10 - DCF Calculations (2022-2041)

	'19A	'20A	'21A	'22F[19]	'23F	'24F	'25F	'30F	'41F
NOPLAT	(829)	(3,809)	178	1,072	1,512	1,776	2,549	6,410	9,236
Depreciation & Amortization	114	126	138	227	272	313	360	662	1,304
Operating Cashflow	**(715)**	**(3,683)**	**316**	**1,298**	**1,784**	**2,089**	**2,908**	**7,072**	**10,540**
CAPEX PP&E	(445)	(57)	111	(81)	(97)	(216)	(368)	(1,287)	(3,371)
Inves. in intangibles	(120)	(9)	(0)	(162)	(194)	(240)	(295)	(720)	(2,186)
Inves. in NWC & others	(66)	28	(103)	(171)	(144)	(121)	(139)	(188)	(184)
Change in other operating liabilities	310	1	528	358	382	344	524	793	567
Change in other operating assets	(74)	27	24	(96)	(116)	(150)	(191)	(529)	(1,810)
Investing cash flow	**(396)**	**(10)**	**560**	**(152)**	**(169)**	**(383)**	**(470)**	**(1,931)**	**(6,984)**
Free cash flow from core business	**(1,111)**	**(3,693)**	**876**	**1,146**	**1,615**	**1,707**	**2,438**	**5,141**	**3,555**
DCF calculation									
Mid-year convention				N/A	1.5	2.5	3.5	8.5	19.5

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[17] Based on IMF GDP growth estimates (International Monetary Fund 2022).

[18] Based on the UNWTO 25-year historical values of Domestic and International overnight growth (World Tourism Organization 2022)

[19] 2022 DCF was calculated by estimating 2022 quarterly operating cashflows. Please see (Appendix 6.) for more information

				0.96	0.93	0.88	0.83	0.64	0.36
Discount Factor									
Unlevered free cash flow				1,146	1,615	1,707	2,438	5,141	3,555
DCF (WACC = 5.3%)				**1,085**	**1,494**	**1,499**	**2,034**	**3,309**	**1,294**
DCF (WACC industry CS = 4.6%)				**1,088**	**1,509**	**1,524**	**2,081**	**3,499**	**1,471**

	NOPLAT	WACC	RONIC	Growth	Terminal Value
Airbnb	10,035	5.3%	5.3%	3.5%	**188,599**
Using Industry WACC	10,035	4.6%	4.6%	3.5%	**216,749**

Downside Case*		Base Case*		Upside Case*	
Core Enterprise Value	64,938	Core Enterprise Value	115,757	Core Enterprise Value	174,560
Net Debt	(6,040)	Net Debt	(6,040)	Net Debt	(6,040)
Net non-operating assets	(248)	Net non-operating assets	(248)	Net non-operating assets	(248)
Other EV adj.	(470)	Other EV adj.	(470)	Other EV adj.	(470)
Implied share price	**112.76**	**Implied share price**	**194.35**	**Implied share price**	**288.76**
Scenario-weighted target price: **$195.96**					

Note: *Computed for WACC = 5.3%

Airbnb's cash inflows and outflows occur continuously year-round, as such, the mid-year convention was applied to better represent the business and deliver a fairer valuation.

After discounting and summing both the TV and the free cashflows from core operations, an Enterprise Value (EV), an Equity Value (EqV), and a target share price were calculated for each of the scenarios, providing a potential price target interval of $112.76 – $288.76. Through the previously mentioned probabilistic approach[20], an implied target share price of $195.96 was calculated, for an implied fair EV of $116,475m and an implied EqV of $122,045m.

4.2.1. Sensitivity analysis

A sensitivity analysis was developed to test WACC and Growth rate effect on the valuation.

For WACC, the main difference came from the Capital Structure used to calculate it. The mid-point is the Airbnb WACC computed using the current capital structure (5.3%), on the low-end we have the WACC computed using the average industry Capital Structure (4.6 %). The variation studied is around ±70bps from the midpoint.

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[20] Three scenarios, the Base with 75% chance to happen, Upside with 12.5% chance, and Downside with 12.5% chance.

For the growth rate, the low point is 50bps lower than the forecasted long term inflation growth value, while the limit is the historical industry overnight growth rate.

Table 11 - Sensitivity Analysis

Share Price ($)			WACC		
	4.63%	**5.0%**	**5.32%**	**5.67%**	**6.01%**
2.4%	233.75	212.83	194.88	179.36	165.83
2.6%	234.11	213.14	195.16	179.60	166.04
2.9%	234.47	213.46	195.44	179.85	166.26
3.2%	234.83	213.77	195.71	180.09	166.47
3.5%	235.19	214.09	195.99	180.34	166.69
3.8%	235.56	214.40	196.27	180.58	166.90
4.0%	235.92	214.72	196.55	180.82	167.12

EV ($m)					
	4.63%	**5.0%**	**5.32%**	**5.67%**	**6.01%**
2.4%	140,012	126,982	115,807	106,139	97,710
2.6%	140,237	127,179	115,980	106,291	97,844
2.9%	140,463	127,375	116,152	106,443	97,978
3.2%	140,688	127,572	116,325	106,595	98,113
3.5%	140,913	127,768	116,497	106,747	98,247
3.8%	141,138	127,965	116,670	106,899	98,382
4.0%	141,364	128,162	116,842	107,051	98,516

The above-mentioned sensitivity analysis was calculated from the individual sensitivity analysis of each scenario and then weighted through a probabilistic approach. This resulted in an implied range of $165.83 – $235.92 for an EV interval of $97.7bn – $141.4bn.

4.3. Relative Valuation

In the following section, the relative valuation of Airbnb will be presented. First, a group of comparable companies was determined, after which a multiple valuation, forecasting forward multiples were used to define a range for the valuation.

4.3.1. Comparable Companies

Since Airbnb's business model is innovative, defining comparable peers presents a reasonable challenge. To start this analysis, a twenty-six companies peer group defined by Refinitiv StarMine was used as a base. This basket was then trimmed to the comparable companies with more similarities to Airbnb. The criterions for trimming were the consensus[21] 2023 estimated EV/EBITDA and the 2023 estimated EBITDA margin. The resulting basket is composed of seventeen different companies from five different

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[21] Consensus estimates gathered by Refinitiv Eikon

sectors, "Accommodation, Hotels & Restaurants", "Interactive Media & Services", "Internet & Direct Marketing Retail", "Entertainment", and "Software". The detailed list with the reviewed companies can be found in (Appendix 7.1.).

4.3.2. Multiple valuation results

After the peer group definition, as discussed in the Literature Review, a forward multiple analysis was developed based on consensus estimates extracted from Refinitiv StarMine. The resulting multiples can be found in (Appendix 7.).

In this analysis, enterprise multiples, such as, net enterprise value to sales, net enterprise value to EBITDA, and, since the chosen peer group follows different tax policy regulation the net enterprise value to NOPLAT multiple, have been considered.

The EV/Sales peer median set at 3.2x against the Airbnb 6.2x multiple, the EV/EBITDA peer median set at 12.2x vs. 20.1x, and, lastly, EV/NOPLAT peer median set at 17.2x against Airbnb 37.2x. This implies that the company trades at a large premium when compared to its peers.

The resulting medians were used to assess Airbnb Equity Value, from that equity value we derive the share price. Our multiple valuation prices Airbnb at the average price of $74.07, within the range between $67.16 – $77.83.

Table 12 - Implied share price from relative valuation analysis

	Forward EV/Sales	Forward EV/EBITDA	Forward EV/NOPLAT	
Airbnb Inc	**6.2x**	**20.1x**	**37.2x**	
Multiple (mean)	3.9x	12.7x	19.5x	
Implied Enterprise Value ($m)	38,470	38,075	31,678	
Implied Equity Value ($m)	49,536	49,140	42,743	**Average**
Share price	**$77.83**	**$77.21**	**$67.16**	**= $74.07**

Source: Dissertation calculations.

4.4. Comparing valuation results

Different valuation methodologies produce different valuations values. Consequently, a Football Field analysis was drawn to visually display differences between approaches (Figure 10).

Tallying up the different valuation methodologies, the DCF valuation method delivered a target price of $195.96 (an 86% upside in comparison to the current share-price of $104.95), within a scenario-weighted range of $165.83 – $235.92. The relative valuation based on the EV to EBITDA multiple gave a $77.21 per share value for a range from $36.03 – $166.92. The EV to NOPLAT multiple provided a share price value of

$67.16, within a $34.79 – $141.20. Both multiple valuations assume a downside of close to 30% when compared to the current share-price of $104.95.

As stated previously, the difference between the DCF valuation and the multiple valuation, means that Airbnb is being traded at a premium, this displays the fact that investors see more future potential in Airbnb than what can be derived from a simple next twelve-month multiple analysis. In other words, even if the comparable company's basket is a good representative of how the market prices companies with similar growth and financial profile to Airbnb, the resulting multiples do not account for the inherent long-term potential Airbnb might have. A median was derived from the downsides and upsides scenarios in all valuations. The resulting value, **$153.51** (with an upside of 46%) was defined as the December 2022 target price.

Figure 10 - Airbnb valuation football field
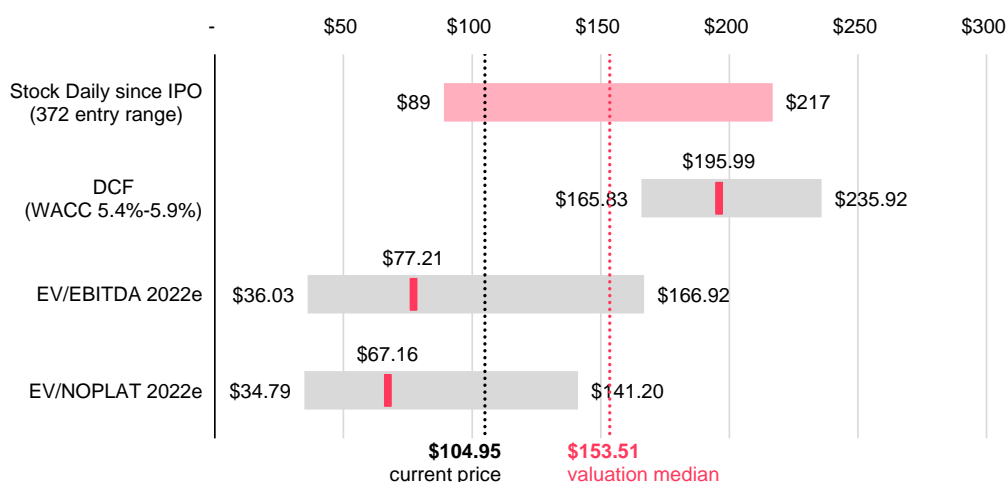
4.5. Equity Research comparison

In this segment of the dissertation, the present valuation will be compared to an equity report issued by HSBC investment bank analyst Raymond Liu, on May 4th, 2022, (HSBC Global Research 2022). This report is a revision on price target of 5 previous reports.

In this report HSBC exclusively applies the DCF valuation methodology, as according to their interpretation - "it best captures the company's long-term growth potential" (HSBC Global Research 2022).

The report provides a "BUY" (maintained) strategy recommendation and decreases the price target to $213 (from $233 in Feb) with an upside potential of 46.9%, when comparing to the $145 closing price at the day before the report issuance. The 8.6%

decrease in target price was attributed to an increase in the cost assumptions due to inflation pressure that will erode margin growth.

HSBC defined the main drivers for this valuation as being the growing demand for alternative accommodation business, and the expectation that the Asian market will pick-up after the sporadic outbreaks of COVID dry-out. The main downside risks include regulatory risks and Airbnb inability to retain and add new hosts and guests at the predicted rate.

Table 13 - Valuation comparison, HSBC vs. Dissertation

	HSBC	**Dissertation**
Underlying Valuation Date	May 4th, 2022	July 25th, 2022
Methodologies	DCF	DCF & Relative Val.
Share Price (market value)	$145.00	$104.95
Forecast period	**10 years (2022-2031)**	**20 years (2022-2041)**
Revenue CAGR		
CAGR 10y	+20.9%	+15.5%
CAGR 20y	-	+10.8%
EBITDA margin 2022e	13.5%	21.0%
EBITDA margin 2023e	27.6%	24.1%
EBITDA margin 2024e	27.3%	24.6%
Risk-free rate	2.0%	2.9%
Beta	1.0	0.6
Market risk premium	3.5%	3.9%
Cost of Debt	5.0%	4.23%
Cost of Equity	5.5%	5.40%
WACC	**5.3%**	**5.32%**
Perpetuity growth rate	3.0%	3.5%
Terminal Value	$174,307m	$188,635m
Equity Value	$135,283m	$129,365m
Target Price	**$213.00**	**$153.51**
Upside	*+46.9%*	*+46.3%*
Recommendation	**BUY**	**BUY**

Source: HSBC May 4th, 2022, Airbnb broker note (HSBC Global Research 2022), and dissertation assumptions.

Regarding the differences between both valuations, HSBC considered a smaller explicit period for Airbnb to reach steady state, 10 years of forecasts compared to 20 years in this dissertation.

One of the major differences between both analyses, has to do with the revenue growth assumption. HSBC revenue CAGR is significantly more optimistic than the assumption taken in this dissertation, having a CAGR of 20.9% for the first 10 years. This difference

will result in a revenue of $40bn in 2031 for the HSBC model, compared to $25bn if we follow the dissertation CAGR.

Regarding EBITDA, HSBC analysts forecast a faster growing EBITDA margin[22], however, the analysts expect Airbnb EBITDA margin to plateau by 2024, contrary to what was developed in the dissertation, where levelling only happens from 2030 onwards.

The weighted average cost of capital used also differs from the estimated in this report, being closer to the previously defined industry WACC. This disparity rises from different costs of equity and debt, as well as the use of a different optimal capital structure.

The last major difference among the Thesis and HSBC's broker note, relates to the inclusion in the dissertation of industry and technical peers' forward multiples as a sort of levelling ground for the DCF valuation.

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[22] 27.6% by 2023e vs. the 24.1% dissertation assumption for the same period.

5. Conclusion

Airbnb is a fast-growing, fascinating, and game-changing company that is poised for greatness. Its adaptability to trends, and resilience to global events has redefined the industry, re-shaped cities, and contributed to make the world feel smaller.

The company emerged stronger and more resilient from the 2020 COVID-19 crisis, despite the uncertainty, and despite an emergency IPO, Airbnb got out stronger, captured market-share, optimized costs, and consolidated itself among global consumers becoming a household name.

As markets stride through bearish tides, Airbnb poises itself to, once again, be a leader among peers. The estimated $153.51 per-share presents an upside of (+46.3%). This value was achieved by blending two valuation methodologies. Specifically, the Discounted Cashflow model and a multiple based Relative Valuation model. Several forward-looking assumptions allowed the creation of growth scenarios that provided a share-price range varying from $67.16 per share (downside of -36%) that assumes Airbnb will fail to outpace industry and will instead follow peer forward-multiples. And a high range of $195.99 per share (upside of +87%), calculated through a scenario weighted DCF model approach, that assumes a weighted average of 3 scenarios with different growth prospects, a WACC rate of 5.3% and a perpetuity growth rate of 3.5%.

Comparing the valuation results with the current $104.95 price (25/07/2022), and considering the +46.3% potential upside, the investment strategy recommendation for Airbnb is a "BUY".

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List of Abbreviations

ADR	Average daily rate
bps	Basis Points
c.	Circa
CAGR	Compounded Annual Growth Rate
CF	Cashflow
CPI	Consumer Price Index
CS	Capital Structure
DCF	Discounted Cashflow
EBIT	Equity before interest and taxes
EBITDA	Equity before interest taxes depreciation and amortization
EqV	Equity value
EV	Enterprise value
FCFE	Free Cashflow to Equity
FCFF	Free Cashflow to the Firm
G&A	General and Administrative costs
GBV	Gross booking value
GDP	Gross Domestic Product
HY	Half year
IPO	Initial Public Offering
Kd	Cost of debt
Ke	Cost of equity
N&E	Nights & Experiences Booked
NOPLAT	Net operating profit less adjusted taxes
NWC	Net working capital
OTA	Online Travel Agency
PP&E	Property, Plant & Equipment
Q1, Q2, Q3, Q4	First, second, third or forth quarter
R&D	Research and development
REVPAR	Revenue per available room
RONIC	Return on invested capital
SAM	Serviceable addressable market
TAM	Total Addressable market
TV	Terminal Value
UNWTO	United Nations World Tourism Organization
vs.	Versus
WACC	Weighted average cost of capital
WTTC	World Travel and Tourism Council
YoY	Year on Year
YTM	Yield to maturity

Appendix

1. Other Absolute Valuation Models

1.1. Dividend Discount model (DDM)

The Dividend Discount model is based on the two typical cashflows that a stockholder can expect to receive from a business – dividends during the holding period and the price after at the end of that holding period. The model claims that stock value and dividend are related, assuming that the price of a stock is inherently the present value of future dividends. According to Damodaran, A. this model is one of the most direct and conservative valuation models, since it only counts the cashflows that are paid out to stockholders (Damodaran, Applied Corporate Finance, 4th Edition 2015).

The process required to implement this valuation methodology, and similarly to other absolute valuation models, starts with the estimation of the future cashflows – in this case, dividends per share – during an explicit timeframe that will last until the company enters a mature state, and will, presumably, start distributing dividends in a constant growing rate. For this assumption, that simulates the terminal value in the free cash flow models, we use the Gordon Growth model.

Equation 11 - Dividend Discount model with Gordon Growth model

$$Stock\ Vale = \sum_{t=1}^{t=n} \frac{DPS_t}{(1 + k_e)^t} + \frac{P_n}{(1 + k_e)^n} \quad where\ P_n = \frac{DPS_{n+1}}{(k_e - g_n)}$$

DPS = Dividend per share

k_e *= Cost of equity*

P_n *= Terminal value of the stock (Gordon Growth model)*

g_n *= Growth rate*

As previously mentioned, the Gordon Growth model assumes that a business will deliver dividends in perpetuity in a constant growth rate. This makes its applicability only viable for firms that are already matured and seeing stable growth, if this criterion is not followed it is possible that $g_n > k_e$, which will result in the model yielding a negative value. If the company in question is a high-growth firm, this model should not be applied to it.

Since Airbnb is still far from being considered a matured company and taking into consideration that it does not have any dividend program planned, this methodology will not be followed for the valuation process.

1.2. Asset-based valuations

This sort of valuation methodology aims to determine a business worth from the net asset value. It is a valuation method usually applied to natural resource companies, e.g., a company that produces wood boards, could be valued by the proven board meters it controls minus the estimated future extraction and production costs. Since this is not applicable for Airbnb this methodology will not be used.

1.3. Residual income valuation

Theoretically, residual income is the business net income minus a deduction for common shareholders opportunity cost. In short, it is the remaining income after accounting for all costs of capital of the firm used to generate income (J. E. Pinto, et al. 2010).

The Residual Income model presumes that companies that earn more than the cost of capital will sell for more than book value, and companies that do the inverse will sell for less than book value. It states that the intrinsic value of equity is the sum of the current book value of equity and the present value of expected future residual income.

Equation 12 - Residual Income model with Residual Income equivalents

$$V_0 = B_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1+r)^t} = B_0 + \sum_{t=1}^{\infty} \frac{E_t - (r \times B_{t-1})}{(1+r)^t} = B_0 + \sum_{t=1}^{\infty} \frac{(ROE_t - r)B_{t-1}}{(1+r)^t}$$

V_0 = *Value of a stock today (t = 0)*

B_0 = *Current book value of equity per-share*

RI_t = *Residential income in t period*

B_t = *Expected per-share book value of equity at any t period*

r = *Required rate of return on equity investment (cost of equity)*

E_t = *Expected EPS for period t*

Essentially, the model is based in the relationship among earnings, dividends, and book value. The relationship is called the *clean surplus relation*, it claims that the ending book value is equal to the beginning book value plus earnings minus dividends.

Equation 13 - Clean surplus relation

$$B_t = B_{t-1} + E_t - D_t$$

B_t = Book value

E_t = Expected earnings

D_t = Expected divided

According to (J. E. Pinto, et al. 2010), the Residual Income valuation model has some advantages when comparing with the previously mentioned models, e.g., terminal values do not take such a large portion of value when compared to other models, the model uses readily available accounting data, it can be used in the absence of dividends and near-term positive free cash flows, and lastly, it can be used when cashflows are unpredictable. However, it does have some limitations, for example, since the model is purely based on accounting data, it can be subject to manipulation by management, at the same time, the data will probably need significant adjustments to be used, and primarily, the model requires the non-violation of the clean surplus relation, which might happen if there are changes in equity that are not reported in the income statement.

2. Macro-economic and regulatory trends

2.1. Relevant Macroeconomic trends poise the industry for growth

The post COVID-19 world brings opportunity to the broad Accommodation industry. After the hard year that was 2020, the industry seems to have regained growth and macroeconomic trends seem to validate this premise. According to ICHRIE research, hotel market performance indicators (Average daily rate - ADR, Revenue per available room - REVPAR, Expenses per available room, and Profit per available room) have a strong relationship with major economic indicators – GDP, unemployment, and the Consumer Price Index (Singh, et al. 2016). The authors advise that analysts may use GDP and Unemployment to safely forecast changes in performance indicators. The results on the Consumer price Index (CPI) supported the idea that the Accommodation industry can be seen as an inflation hedge, mostly because there is a strong[23] and zero lag correlation between ADR and inflation

These strong correlations allow a positive recovery forecast for the industry. According to the OECD. As we can see in (Figure 11), global GDP is planned to grow, and unemployment is planned to decrease consequently.

Figure 11 - GDP and unemployment OECD forecast
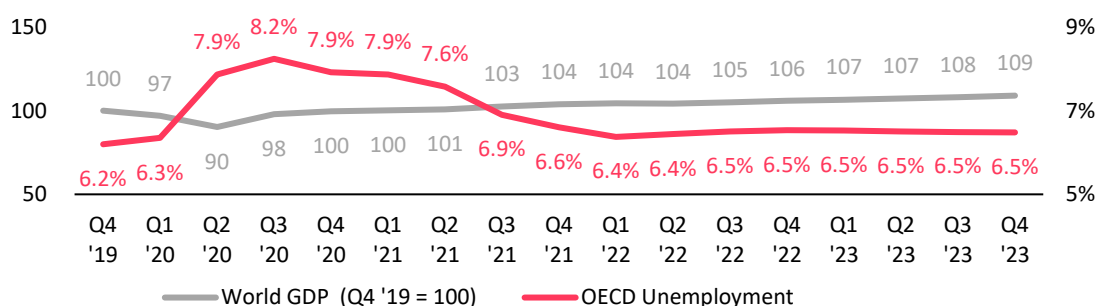
Source: OECD

Looking ahead there are further post-COVID opportunities for Airbnb, saving rates have spiked during 2020 and most of 2021, US citizens never, in recorded times, had such a high percentage of yearly disposable income being applied to savings (34% personal saving rate in April 2020). This has meant an increase in demand and an increase in available disposable income to use on holidays. In 2021 the average amount spent per trip

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[23] CPI and ADR correlation: r =.831, statistically significant with p<0.05

increased by 40% when compared to 2019, ($1,000 in 2019 vs. $1400 in 2021). This led to an increase of the ADR as part of Airbnb's dynamic pricing model.

Figure 12 - US Citizen Personal Saving Rate (PSAVERT)
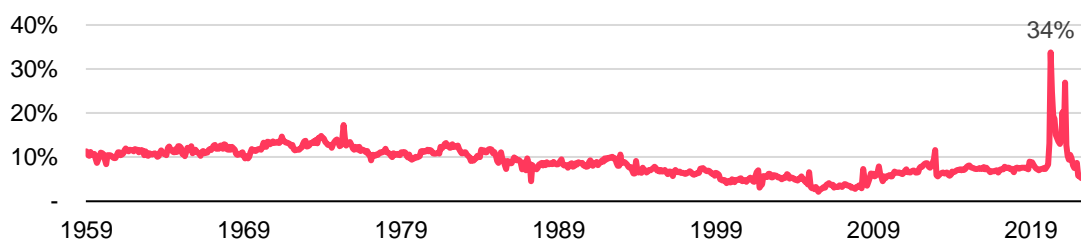
Source: U.S. Bureau of Economic Analysis, retrieved from FRED, Federal Reserve Bank of St. Louis

2.2. Russo-Ukraine war analysis

Since mid-February 2022 and the beginning of the Russo-Ukrainian war, new doubts start to form about the future of the industry. So far, the effects of this war have been limited to the directly participating countries. However, it's effects are already being felt throughout the world, mainly in market instability, the rising of oil and commodity prices that will eventually cause transportation and food prices to raise which will lead to travel & tourism costs to escalate accordingly (Tourism Economics - An Oxford Economics Company 2022). Regardless, these risks are not expected to impact Airbnb in the short-term as Airbnb's debt percentage is low, and its exposure to Ukrainian and Russian market is limited.

2.3. Regulatory considerations in top 10 cities

London	Short-term rentals, without need to have a commercial license, are permitted for up to 90 nights p.a. Airbnb also publicly backed the mayor's proposal to introduce a host registration system to control this limit.
New York	Settlement reached with city officials in 2020, which agrees that Airbnb must share host data with the city on a quarterly basis to include all listings that book 5 or more nights per quarter, providing that the listing offers an entire home or allows 3 or more guests to stay at one time.
Paris	France has national legislation on short-term rentals with a limit of 120 days p.a. on primary residences, but that limit does not apply to rooms in a home. Short-term rentals of investment properties in Paris, a "change of use" permit is required if they were not previously rented out as a commercial activity (decision currently being challenged by property owners). In 2017 Paris also introduced requirements for short-term platforms to exclude listings without registration number (currently under challenge by Airbnb).
Los Angeles	City requires permits for short-term rentals of primary residences and short-term rental owners are required to obtain a home sharing permit to host more than 120 days p.a. Airbnb is actively engaged with the city to develop a Vacation Rental Ordinance that would for short-term rental of non-primary residences on the basis that they would be subject to registration and night cap restrictions. City regulations also require short-rental platforms to ensure that listings are compliant.
Rome	In 2017, Rome introduced online registration requirements for short-term rentals, with no distinction between primary and secondary homes and no caps or zoning restrictions. In 2020 Airbnb signed a voluntary tax collection agreement with the Municipality to collect and remit local tourist tax. Nationally the government has been seeking to introduce further registration and host income tax, requiring platforms to display listing registration numbers.

Barcelona	In 2002, Barcelona introduced regulations requiring lessors renting out entire homes for under 31 days to file a responsibility statement with the municipality prior to listing their home, and to display the registration number on their listing page. Zoning law limits total listings to just over 9,000 after a recent rescission of licenses by the Barcelona City Hall, working to support this decision, Airbnb has voluntarily introduced a requirement on new hosts to include a registration number or claim an exemption
Tokyo	Short-term rentals of primary and secondary residences are permitted up to 180 nights p.a. Hosts are required to register their listing the local government and Airbnb is also required to register with the Japanese Tourism Agency as an intermediary. Airbnb is required to remove listings that do not post a valid registration or license number in the listing.
Toronto	Hosts must register with the city, the listing must be the host's primary residence, they can rent up to 3 rooms or their entire home however there is a 180-night cap p.a. for entire-home listings. Additionally short-term rental platforms are required to obtain a license and ensure that all listings have valid registration numbers.
San Diego	Currently no restrictions on short-term rentals other than a prohibition on the short-term rental of accessory companion units.
Lisbon	Hosts must obtain a registration number and display it on their listing page.

Source: Airbnb

3. Other complementary Airbnb analysis

3.1. Host Cohort Revenue Retention

	Year 1	Year 2	Year 3	Year 4	Year 5
2014 Cohort	100%	93%	95%	98%	100%
2015 Cohort	100%	95%	93%	93%	
2016 Cohort	100%	90%	88%		
2017 Cohort	100%	90%			
2018 Cohort	100%				

Note: Airbnb calculates the revenue associated with hosts in Year 1 based on revenue recognized during the subsequent one-year period. Then they calculate revenue associated with those hosts based on revenue generated in each subsequent one-year period to compare against Year 1.
Source: Airbnb

3.2. Estimated like-for-like revenue growth breakdown

	2017	2018	2019
% Attributable to existing hosts	*77%*	*82%*	*84%*
% Attributable to new hosts	*23%*	*18%*	*16%*
Revenue	2,562	3,652	4,805
Growth	*+55%*	*+43%*	*+32%*
Additional revenue (YoY)	906	1,090	1,153
• from existing hosts	317	433	384
• from new hosts	589	657	769
Existing host revenue growth	**+19%**	**+17%**	**+11%**
New host revenue growth	**+36%**	**+26%**	**+21%**

Notes: (1) Ignoring foreign exchange rate implications on revenue; (2) Airbnb did not provide any update on host breakdown or host growth after 2019

Source: Estimates based on Airbnb data

3.3. Additional use cases identified by Airbnb

			Work from everywhere	Longer vacations	Live Nomadically

Work from everywhere	Longer vacations	Live Nomadically
Remote schooling	College from anywhere	Escape to the country
Office Short-term renting	Try before you buy	Take a transitional year

Sources: Selected quotes from Airbnb Materials

4. Historical & financial reporting

4.1. Income statement

		2018	2019	2020	2021
Revenues	*USDm*	**3,652**	**4,805**	**3,378**	**5,992**
Cost of revenue		*(864)*	*(1,196)*	*(876)*	*(1,156)*
Gross Profit	*USDm*	**2,788**	**3,609**	**2,502**	**4,836**
Operations and support		*(607)*	*(814)*	*(734)*	*(799)*
R&D expenses		*(545)*	*(920)*	*(874)*	*(880)*
General & Administrative		*(474)*	*(681)*	*(591)*	*(630)*
Sales & Marketing		*(1,089)*	*(1,598)*	*(740)*	*(1,086)*
Stock based compensation		(54)	(98)	(3,002)	(899)
Restructuring charges		-	-	*(151)*	*(113)*
Operating revenue	*USDm*	**19**	**(502)**	**(3,590)**	**429**
Interest income		*67*	*86*	*27*	*13*
Interest (expense)		*(26)*	*(10)*	*(172)*	*(438)*
Other income (expense)		*(12)*	*13.91*	*(947)*	*(305)*
Equity method investments		*(3.2)*	*(6)*	*(8)*	*-*
Equity method Impairment charges		*0*	*(10)*	*(29)*	*-*
Equity Investment income		*0*	*(13)*	*(22)*	*-*
Sale of participation in a third party		*0*	*(25)*	*0*	*-*
Other income / Expense		*(9)*	*(8)*	*(888)*	*(305)*
Income before taxes	*USDm*	**47**	**(412)**	**(4,682)**	**(300)**
Provision for income taxes		*(64)*	*(263)*	*97*	*(52)*
Net Income	*USDm*	**(17)**	**(674)**	**(4,585)**	**(352)**
Comprehensive income / loss (reported)					
Net loss	*USDm*	*(17)*	*(674)*	*(4,585)*	*(352)*
Net unrealized gain (loss) on available-for-sale marketable securities, net of tax		*(3)*	*1*	*0*	*(4)*
Foreign currency translation adjustments		*(7)*	*2*	*7*	*(6)*
Other comprehensive income (loss)	*USDm*	**(10)**	**4**	**7**	**(10)**
Comprehensive loss	*USDm*	**(27)**	**(671)**	**(4,578)**	**(362)**

Source: (Airbnb 2022), (Airbnb 2021), (Airbnb Form S-1 Registration Statement 2020)

4.2. Balance Sheet

Assets		2018	2019	2020	2021
Current assets	*USDm*	**5,875**	**6,561**	**8,916**	**12,386**
Cash and Cash equivalents		2,141	2,014	5,481	6,067
Marketable securities		1,188	1,061	911	2,255
Restricted cash		-	0	34	15
Funds receivable and amounts held on behalf of customers		2,305	3,145	2,181	3,715
Prepaids and other current assets		240	342	310	334
Non-current Assets	*USDm*	**739**	**1,749**	**1,575**	**1,322**
Property and equipment, net		309	301	270	157
Operating lease right-of-use assets		-	386	384	272
Intangible assets, net		29	103	76	52
Goodwill		290	652	656	653
Other assets, noncurrent		111	307	189	189
Total Assets	*USDm*	**6,613**	**8,310**	**10,491.5**	**13,708.5**
Liabilities					
Current Liabilities	*USDm*	**3,736**	**5,234**	**5,140**	**6,359**
Accounts payable		71	151	80	118
Operating lease liabilities, current		0	38	57	63
Accrued expenses and other current liabilities		864	1,224	2,414	1,558
Funds payable and amounts payable to customers		2,305	3,145	2,181	3,715
Unearned fees		496	675	408	904
Non-current Liabilities	*USDm*	**163**	**653**	**2,450**	**2,573**
Long-term debt, net of current portion		-	-	1,816	1,983
Operating lease liabilities, noncurrent		-	381	431	372
Other liabilities, noncurrent		163	271	203	218
Total Liabilities	*USDm*	**3,899**	**5,886**	**7,590**	**8,933**
Equity					
Redeemable Preferred Stock		3,232	3,232	-	-
Common Stock		0	0	0	0
Additional paid in capital		259.47	618	8,905	11,140
Other comprehensive Income		*(8)*	*(4)*	*3*	*(7)*
(Accumulated deficit)		*(769)*	*(1,421)*	*(6,006)*	*(6,358)*
Total Equity	*USDm*	**2,714**	**2,424**	**2,902**	**4,776**

Source: (Airbnb 2022), (Airbnb 2021), (Airbnb Form S-1 Registration Statement 2020)

4.3. Cashflow statement

Cash Flow-Operating Activities ($ Millions)		2018	2019	2020	2021
Net Income/Starting Line	*USDm*	**(17)**	**(674)**	**(4,585)**	**(352)**
Depreciation and Amortization	**USDm**	**82**	**114**	**126**	**138**
Depreciation		*82*	*114*	*126*	*138*
Deferred Taxes	**USDm**	**(5)**	**(6)**	**(20)**	**11**
Non-Cash Items	**USDm**	**114**	**168**	**4133**	**1755**
Unusual Items		*3*	*(11)*	*1,018*	*777*
Other Non-Cash Items		*111*	*179*	*3115*	*978*
Changes in Working Capital	**USDm**	**421**	**620**	**(285)**	**638**
Prepaid Expenses		*(103)*	*(186)*	*(16)*	*(54)*
Other Assets (Operating lease right-of-use assets)		*-*	*49*	*(33)*	*25*
Accounts Payable		*30*	*76*	*(73)*	*40*
Accrued Expenses		*348*	*548*	*44*	*165*
Unearned fees		*146*	*176*	*(267)*	*496*
Operating lease liabilities		*-*	*(42)*	*61*	*(34)*
Other Assets & Liabilities, Net		*-*	*-*	*-*	*-*
Cash from Operating Activities	**USDm**	**596**	**223**	**(630)**	**2,190**
Cash flows from investing activities					
Purchase of property and equipment	*USDm*	**(91)**	**(125)**	**(37)**	**(25)**
Other investing cashflow items	**USDm**	**(578)**	**(222)**	**117**	**(1,327)**
Acquisition of business		*(31)*	*(192)*	*-*	*-*
Purchase of marketable securities		*(1,271)*	*(1,016)*	*(3,033)*	*(4,938)*
Sales of marketable securities		*555*	*609*	*1,348*	*1,584*
Maturities of marketable securities		*201*	*552*	*1,810*	*2,027*
Purchase of investments		*(29)*	*(208)*	*-*	*-*
Other investing activities, net		*(3)*	*34*	*(9)*	*1*
Cash flows from investing activities	**USDm**	**(668)**	**(347)**	**80**	**(1,352)**
Cash Flow-Financing Activities ($ Millions)					
Other Financing Cash Flow	**USDm**	**124**	**849**	**(2,649)**	**1,259**
Taxes paid for net share settlement of equity awards		*-*	*-*	*(1,650)*	*-*
Change in funds payable & amounts payable to customers		*118*	*849*	*(1,012)*	*-*
Other financing activities, net		*7*	*-*	*14*	*1,259*
Issuance (retirement) of stock	**USDm**	**16**	**6**	**3,666**	**188**
Sale/Issuance of Common		*-*	*-*	*3,651*	*51*
Sale/Issuance of Preferred		*16*	*6*	*15*	*-*
Options Exercised		*-*	*-*	*-*	*138*
Issuance (retirement) of debt	**USDm**	**-**	**-**	**1,924**	**(16)**
Long term debt issued		*-*	*-*	*1,929*	*1,979*
Principal repayment of long-term debt		*-*	*-*	*(5)*	*(1,995)*
Cash Flow from financing activities	**USDm**	**141**	**855**	**2,941**	**1,431**
Effect of exchange rate changes on cash, cash equivalents, and restricted cash		*(159)*	*(25)*	*134*	*(210)*
Net change in cash	**USDm**	**(91)**	**705**	**2,525**	**2,059**
Cash, cash equivalents, & restricted cash, begin. of year		*4,530*	*4,439*	*5,143*	*7,668*
Cash, cash equivalents, and restricted cash, end of year	**USDm**	**4,439**	**5,143**	**7,669**	**9,727**
Cash interest paid		*21*	*5*	*130*	*50*
Cash taxes paid		*21*	*28*	*15*	*17*
Net changes in working capital		421	620	(285)	638

Source: (Airbnb 2022), (Airbnb 2021), (Airbnb Form S-1 Registration Statement 2020), (Refinitiv n.d.)

4.4. Airbnb share price historical growth vs. S&P 500 index
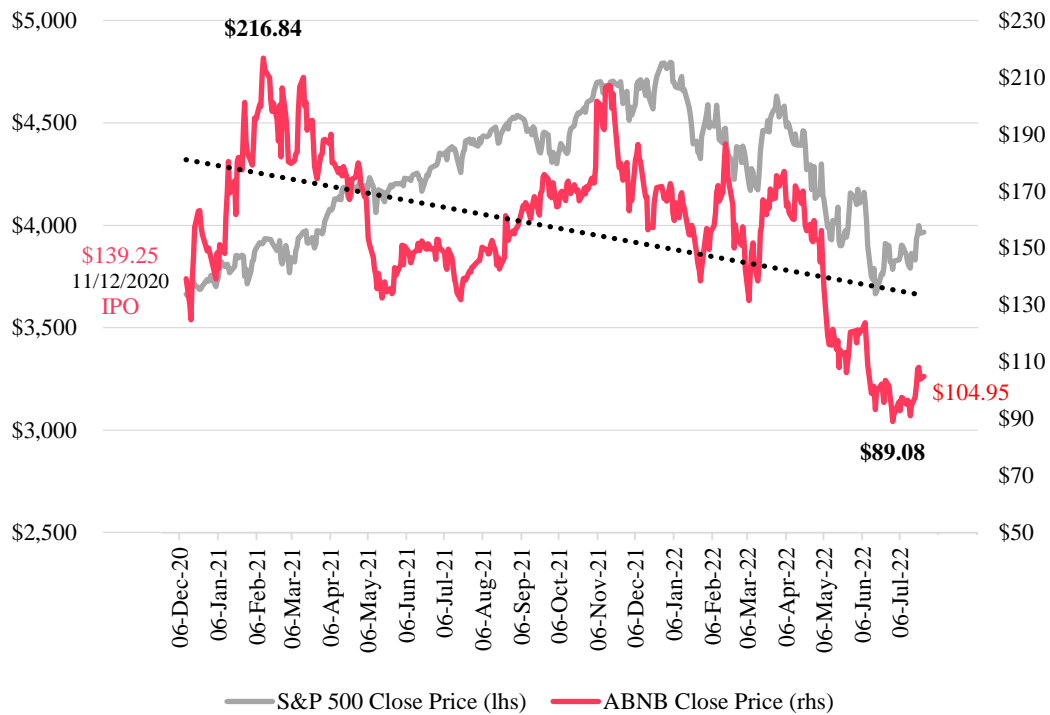
4.5. Cost test – Fixed or Variable

Historical analysis 2018-2021

Variable costs

Fixed costs

General and administrative

$y = 0.4854x + 115.99$
$R^2 = 0.0382$
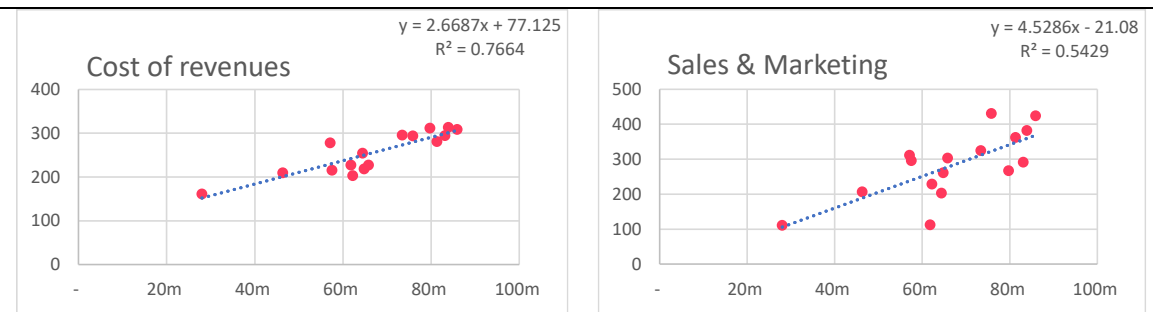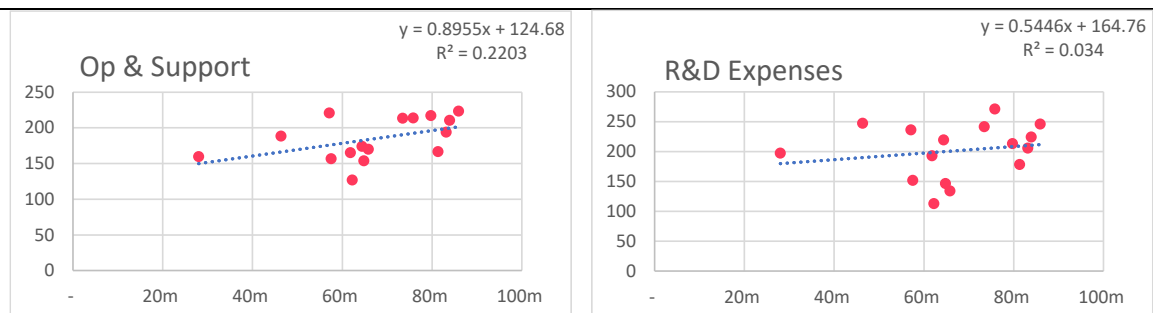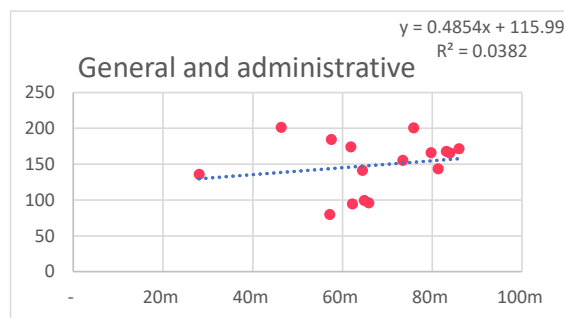
These results were concluded from a linear regression analysis between Nights and Experiences Booked and each variable individually. Significant correlation in the: Cost of Revenues variable with $r = .766$, statistically significant with $p<0.05$; and in the Sales & Marketing variable with $r = .543$, statistically significant with $p<0.05$.

On the Stock Based Compensation variable a positive correlation was found with revenues with $r=.859$, statistically significant with $p<0.05$. However, the correlation only started after the IPO, coinciding with the decision to have stock as a recurrent compensation strategy.

4.6.   Implied Beta and Costs of Capital

	Unlevered beta 5Y	Market Cap	Weighted averages
BOOKING	0.509	$95,355m	
Expedia	0.384	$20,949m	**0.518**
Tripadvisor	0.738	$3,472m	
Trip.com	0.721	$13,914m	
Accor	0.583	$8,545m	
Marriot	0.250	$58,131m	**0.175**
Hilton	-0.173	$40,197m	
Hyatt	0.761	$10,492m	
Unlevered industry beta*			**0.346**
Marginal tax rate			27%
Debt 2021 (D)			2,418
Equity 2021 (E)			4,776
D/E			0.506
re-Levered Beta			**0.475**
Adjusted Beta			**0.650**
Risk-free rate (US 5-Year Treasury Bond Yield)			2.89%
Equity risk premium			3.86%
Levered beta (adj.)			0.650
Cost of equity (Ke)			**5.40%**
Risk-free rate			2.89%
Implied Market risk premium			1.34%
Cost of debt (Kd)			**4.23%**

Sources: Dissertation analysis; Note: *Simple average of traditional accommodation providers and OTAs

4.6.1. Graphical representation of peer betas

Online Travel Agencies (OTA's) – 5 years monthly stock price

BOOKING	Expedia
Beta = 1.17	Beta = 1.54
D/E = 1.77 Unlevered Beta = 0.51	D/E = 4.11 Unlevered Beta = 0.38

$y = 1.1664x - 0.0053$

$y = 1.5365x - 0.0093$

Tripadvisor	Trip.com
Beta = 1.36	Beta = 0.92
D/E = 1.15 Unlevered Beta = 0.74	D/E = 0.36 Unlevered Beta = 0.72

$y = 1.3551x - 0.0088$

$y = 0.9161x - 0.0196$

Conventional Hotel Chain – 5 years monthly stock price

Accor	Marriot
Beta = 0.93	Beta = 1.56
D/E = 0.82 Unlevered Beta = 0.58	D/E = 7.17 Unlevered Beta = 0.25

$y = 0.9277x - 0.0084$

$y = 1.5615x + 3E-05$

Hilton	Hyatt
Beta = 1.17	Beta = 1.38
D/E = -10.61 Unlevered Beta = -0.17	D/E = 1.12 Unlevered Beta = 0.76

$y = 1.1652x + 0.0064$

$y = 1.1652x + 0.0064$
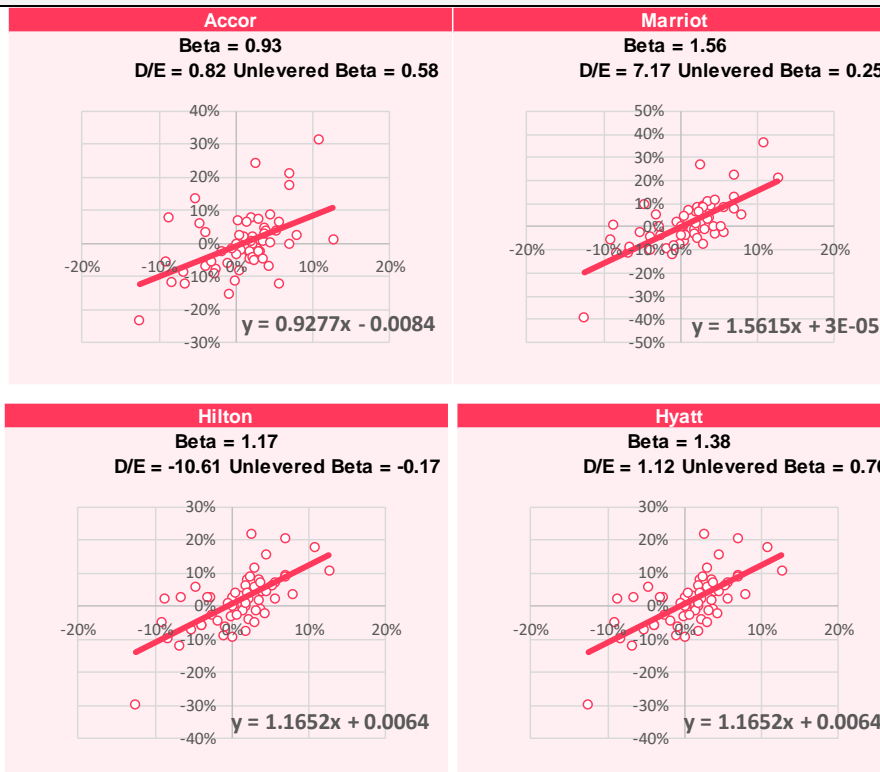
4.6.2. Alternative implied Beta from regressing Airbnb to the S&P 500 index

From 11/12/2020 to 25/07/2022

Monthly	Weekly	Daily
Number of entries: 18	Number of entries: 85	Number of entries: 405
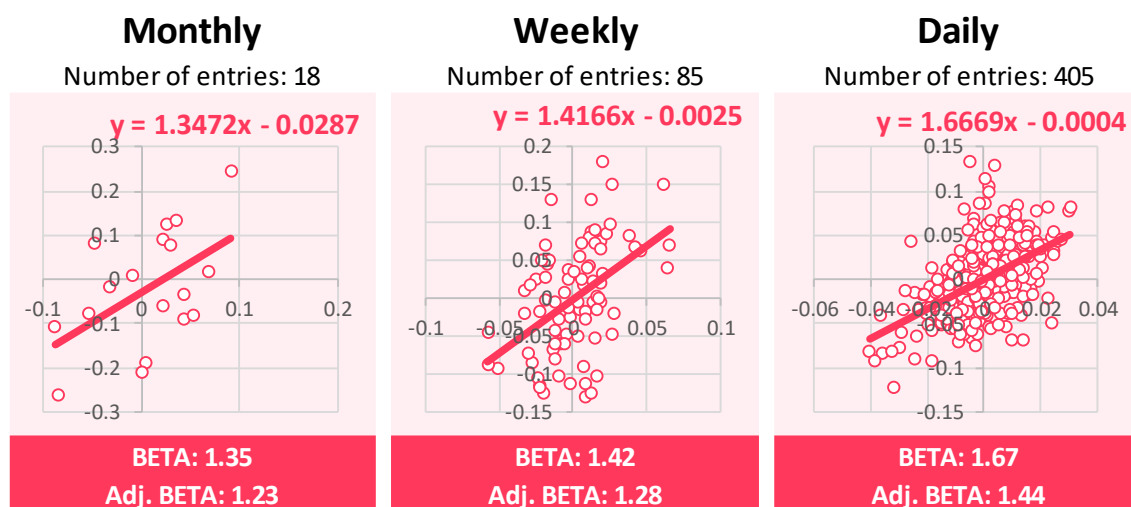
Stock value sensitivity analysis using the alternative implied beta

		Adjusted Betas		
		Peer Beta	**Monthly**	**Weekly**	**Daily**
	Price target (Airbnb Alternative beta)	**0.65**	**0.98**	**1.28**	**1.44**
Perpetuity growth rate	3.0%	194.4	156.3	139.5	133.0
	3.2%	194.4	153.3	136.3	129.9
	3.5%	194.4	149.9	132.7	126.4
	3.7%	194.4	145.8	128.6	122.5
	4.0%	194.4	140.9	123.9	118.1

5. Assumptions

5.1. Revenue growth projections

Revenues have been growing at high rates since Airbnb's inception reducing only in during the first year of the pandemic. In this report it was assumed that the business revenues would grow at a 10.8% CAGR over the next 20 years. This value is a result of y-o-y gross booking assumptions that took in consideration, analyst growth prospects, peer growth, market and consumer trends, take rate changes, and historic growth.

The main potential problem for Airbnb comes from its lack of control on the listing supply side. As discussed in the report, Airbnb depends on listing growth to continue to grow at the forecasted values.

In 2021, Airbnb had close to 6 million listings worldwide, most of them in the US and Europe. This number is close to 1% of the OECD existing houses (641 million in 2020) (OECD 2022). Another positive trend is that it is estimated that on average 15% of people in Europe, 13% in US and, 20% in China own secondary homes (Wind, Dewilde and Doling 2019). Since secondary homes are the main houses listed on Airbnb, this displays great growth potential – an estimated 64 million market if we average second home ownership at 10% of OECD values.

Global Construction of residential buildings is also experiencing positive prospects, being expected to reach US$6.092tn by 2025 (6.0% CAGR 2020-2025) (MarketLine 2021). A positive trend that will potentially mean more houses for future hosts.

It was also assumed that Airbnb fee would increase as the company gets more established in its position as a leader of alternative accommodation. Increasing from an historical average of 12.8%, to 15%. This push for increase in fee has already started to be implemented in some smaller geographies. In this report it was assumed that the change would happen softly between 2025 and 2030. Still there is a chance that it might increase further to reach the average values (18-20%) of some of the other "marketplace" giants like Uber, Booking, Bolt, etc.

Additionally, as can be seen below, several analyst growth prospects were taken into consideration to test the validity of this report assumptions. The dissertation estimates are in line with 2022 and 2023 growth forecasts. For the short to medium term (2023-2025), this dissertation forecasts a slower growth rate of -8% when compared to the values advanced by Deutsche Bank and HSBC. For the medium-long term (2025-2030) the dissertation forecasts continue to be more conservative than the two investment banks prediction.

	2022f	2023f	2025f	2030f
	Y-o-Y	Y-o-Y	CAGR 23-25	CAGR 25-30
Consensus Estimates[24]	36.60%	17.60%	23.00%	16.69%
Dissertation	**35.00%**	**20.00%**	**15.00%**	**12.96%**
Dissertation vs consensus	*-1.6%*	*+2.4%*	*-8.0%*	*-3.7%*

[24] 2022 and 2023 Consensus estimates based on Yahoo Finance growth consensus of 37 and 38 analysts respectfully (20/07/2022). 2023-2025 and 2025-2030 CAGR based on average between HSBC and Deutsche Bank estimates (HSBC Global Research 2022), (Deutsche Bank Research 2021).

To what accounts the 2041 revenue objective there are multiple paths that will allow Airbnb to reach it. The assumption taken assumes a 6.3% CAGR between 2030-2041, this is 2.1% above the estimated industry growth (4.2%) and represents the continued market-share capture that Airbnb will have during the next decade, aiming to reach ~11.0% of the global accommodation market in value. To test this hypothesis, several sensitivity analyses were developed.

Multiple paths to growth

	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
N&E (days booked)	301m	387m	489m	605m	730m	1,175m	2,358m
Market share (N&E)	8%	6.8%	7.0%	7.4%	8.5%	11.3%	13.2%
Gross bookings ($m)	46,877	63,284	75,941	87,332	100,432	157,375	350,005
Market share (GBV)	6.1%	7.0%	7.4%	7.5%	7.5%	8.8%	11.0%
ADR ($)	156	164	155	144	138	134	146
Take rate	12.8%	12.8%	12.8%	12.8%	12.8%	15.0%	15.0%
Revenues (€m)	5,992	8,089	9,707	11,163	12,837	23,606	46,518
Implied average spend per booker	1,092	1,146	1,086	1,011	964	938	1,021
Implied average number of unique bookers	43m	55m	70m	86m	104m	168m	304m

Sensitivity analysis: Gross Booking ($m)			Implied number of unique bookers per different CAGR				
			175m	253m	304m	364m	520m
			Implied number of unique bookers CAGR 21-41				
			7.3%	**9.3%**	**10.3%**	**11.3%**	**13.3%**
Implied average spending per booker[25]	834	**-1.3%**	165,290	238,697	286,129	342,428	488,104
	923	**-0.8%**	182,858	264,067	316,540	378,822	539,981
	1,021	**-0.3%**	202,190	291,985	350,005	418,873	597,070
	1,128	**0.2%**	223,454	322,693	386,815	462,924	659,862
	1,246	**0.7%**	246,831	356,452	427,282	511,355	728,896

(Middle column label: **Implied average spending by booker CAGR 21-41**)

Sensitivity analysis: Revenues ($m)		Gross booking value CAGR 2021-2041				
		6.9%	**8.9%**	**9.9%**	**10.9%**	**12.9%**
Take Rate (Average fee)	**12.0%**	21,365	30,953	37,162	44,542	63,682
	13.5%	24,035	34,822	41,807	50,110	71,643
	15.0%	26,706	38,691	46,452	55,678	79,603
	16.5%	29,376	42,560	51,097	61,246	87,563
	18.0%	32,047	46,429	55,742	66,813	95,524

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[25] Calculated from the average nights spent at Airbnb per user (7 days)

5.2. Airbnb cost forecasts

Cost of Revenues

CAGR: 14% 10% 8%

'21A 1.16 | '22F 1.31 | '23F 1.49 | '24F 1.69 | '25F 1.93 | '30F 3.07 | '41F 6.83

Op. & Support

CAGR: 10% 7% 4%

'21A 0.80 | '22F 0.88 | '23F 0.96 | '24F 1.05 | '25F 1.16 | '30F 1.65 | '41F 2.63

Sales & Marketing

CAGR: 19% 7% 15%

'21A 1.09 | '22F 1.29 | '23F 1.54 | '24F 1.83 | '25F 2.18 | '30F 3.07 | '41F 14.70

R&D

CAGR: 15% 9% 7%

'21A 0.88 | '22F 1.01 | '23F 1.16 | '24F 1.34 | '25F 1.54 | '30F 2.36 | '41F 4.73

Stock based compensation

CAGR: 9% 11% 9%

'21A 0.90 | '22F 1.21 | '23F 1.46 | '24F 1.67 | '25F 1.28 | '30F 2.36 | '41F 5.25

G&A

CAGR: 9% 13% 4%

'21A 0.63 | '22F 0.69 | '23F 0.75 | '24F 0.82 | '25F 0.90 | '30F 1.65 | '41F 2.63

Note: Values in Billions of USD

Sources: Company reports, dissertation estimates & forecasts

5.3. Capex forecast rationale

Capex as % of Revenues	Avg. '10-'21 excl. 2020	Weight	CAPEX '26	CAPEX '41
Booking	1.9%	40%		
Expedia	6.5%	40%		
Trip Advisor	5.0%	10%	**4.7%**	
Trip.com	8.7%	10%		
Alphabet	11.4%	25%.		
Amazon	9.9%	25%		
Booking	1.9%	25%		**7.4%**
Expedia	6.5%	25%		

Sources: Company reports; Note: Please find the full forecasted values in appendix 5.5.

5.4.   Invested capital forecasts

	'19A	'20A	'21A	'22F	'23F	'24F	'25F	'30F	'41F
Operating current assets	**3,727**	**2,660**	**4,349**	**5,871**	**7,045**	**8,102**	**9,317**	**17,133**	**33,762**
Operating cash	240	169	300	404	485	558	642	1,180	2,326
as % of revenues	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Receivables	3,275	2,371	3,858	5,208	6,250	7,187	8,266	15,200	29,952
as % of revenues	*68%*	*70%*	*64%*	*67%*	*67%*	*67%*	*67%*	*67%*	*67%*
Prepaid expenses	212	120	191	258	310	356	410	753	1,484
as % of revenues	*4%*	*4%*	*3%*	*4%*	*4%*	*4%*	*4%*	*4%*	*4%*
Operating Current Liabilities	**(3,312)**	**(2,273)**	**(3,859)**	**(5,210)**	**(6,240)**	**(7,175)**	**(8,252)**	**(15,174)**	**(29,902)**
Payables	(3,297)	(2,261)	(3,834)	(5,176)	(6,211)	(7,142)	(8,214)	(15,104)	(29,765)
as % of revenues	*(69%)*	*(67%)*	*(64%)*	*(66%)*	*(66%)*	*(66%)*	*(66%)*	*(66%)*	*(66%)*
Income tax payables	(15)	(12)	(25)	(34)	(29)	(33)	(38)	(70)	(138)
as % of revenues	*(0%)*	*(0%)*	*(0%)*	*(0.3%)*	*(0.3%)*	*(0.3%)*	*(0.3%)*	*(0.3%)*	*(0.3%)*
Operating Working Capital	**415**	**387**	**490**	**661**	**805**	**926**	**1,065**	**1,959**	**3,860**
Fixed Assets	**687**	**654**	**429**	**348**	**252**	**245**	**357**	**3,109**	**20,606**
Other long-term operating assets*	**103**	**76**	**52**	**149**	**264**	**414**	**606**	**2,490**	**15,132**
as % of revenues	*2%*	*2%*	*1%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
Other Current operational liabilities	**(1,022)**	**(1,023)**	**(1,551)**	**(1,910)**	**(2,291)**	**(2,635)**	**(3,159)**	**(6,045)**	**(11,912)**
as % of revenues	*(21%)*	*(30%)*	*(26%)*	*(24%)*	*(24%)*	*(24%)*	*(25%)*	*(26%)*	*(26%)*
Invested capital		**182**	**94**	**(581)**	**(752)**	**(970)**	**(1,050)**	**(1,131)**	**1,512**	**31,836**

Sources: Company actuals and dissertation forecasts. Note: *Net Intangibles excl. Goodwill

5.5. Scenario's cheat-sheet

5.5.1. Cost & revenue scenarios, graphical overview

Revenues

Nights & experiences booked
- 2,988m
- 2,358m
- 1,853m

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

Revenues
- $69,862m
- $52,501m
- $35,982m

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

EBITDA
- $24,452m
- $15,750m
- $9,057m

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

NOPLAT
- $14,472m
- $8,492m
- $5,316m

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

— Downside — Base — Upside

Costs

Cost of Revenues
- 15%
- 15%
- 13%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

Operations and Support
- 10%
- 8%
- 6%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

R&D
- 15%
- 13%
- 11%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

G&A
- 10%
- 8%
- 6%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

Sales & Marketing
- 19%
- 16%
- 14%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

Stock based compensation
- 15%
- 10%
- 5%

'19a '21a '23f '25f '27f '29f '31f '33f '35f '37f '39f '41f

5.5.2. Downside scenario

Downside	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
N&E Booked	301m	378m	467m	563m	662m	973m	1,671m
GBV	$46,877m	$61,409m	$71,848m	$79,752m	$88,524m	$129,887m	$231,521m
Average daily rate	$156	$163	$154	$142	$134	$134	$139
						CAGR ('25-30)	CAGR ('30-41)
Revenue % growth	*77%*	*31%*	*17%*	*11%*	*11%*	**11.5%**	**5.4%**

EBITDA Margin	*9%*	*12%*	*14%*	*15%*	*23%*	*29%*	*22%*
Cost of revenue (% of rev)	*19%*	19%	19%	19%	19%	16%	15%
Op&S (% of rev)	*13%*	11%	10%	9%	9%	7%	5%
R&D (% of rev)	*15%*	15%	14%	14%	14%	13%	12%
G&A (% of rev)	*13%*	11%	11%	10%	10%	10%	8%
Sales & Marketing (% of rev)	*18%*	18%	18%	18%	18%	18%	31%
Stock Based Comps (% of rev)	*15%*	12%	12%	12%	5%	5%	5%
Depreciation (% of rev)	*2%*	2%	2%	2%	2%	2%	2%
Amortization (% of rev)	*0%*	1%	1%	1%	1%	1%	1%

Investments	*% of rev*	2022f	2023f	2024f	2025f	...2030f	...2041f
Operating cash		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Receivables		64.4%	64.4%	64.4%	64.4%	64.4%	64.4%
Prepayments		3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Payables		-64.0%	-64.0%	-64.0%	-64.0%	-64.0%	-64.0%
Income tax payables		-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%
Intangibles		2.1%	2.1%	2.3%	2.4%	3.2%	4.8%
Other operating liabilities		-24.6%	-24.6%	-24.6%	-25.6%	-26.6%	-26.6%
CAPEX PP&E		-1.2%	-2.3%	-3.4%	-4.4%	-6.3%	-8.5%

Income, core business	Downside	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
Revenues	*USDm*	5,992	7,849	9,184	10,194	11,315	19,483	34,728
Cost of revenue		(1,156)	(1,514)	(1,772)	(1,966)	(2,183)	(3,117)	(5,209)
OP&S		(799)	(850)	(909)	(962)	(1,018)	(1,364)	(1,736)
Gross Profit	*USDm*	4,037	5,485	6,503	7,265	8,114	15,002	27,782
R&D		(880)	(1,139)	(1,285)	(1,427)	(1,584)	(2,452)	(4,093)
G&A		(627)	(901)	(986)	(1,056)	(1,132)	(1,868)	(2,704)
S&M		(1,086)	(1,423)	(1,665)	(1,848)	(2,052)	(3,507)	(10,766)
Stock based comp		(899)	(942)	(1,102)	(1,223)	(566)	(974)	(1,736)
EBITDA	*USDm*	545	1,080	1,465	1,711	2,781	6,201	8,483
Depreciation		(115)	(157)	(183)	(203)	(226)	(389)	(693)
Amortization		(24)	(63)	(74)	(82)	(91)	(157)	(281)
EBIT	*USDm*	407	860	1,208	1,425	2,464	5,655	7,509
Taxes		(229)	(232)	(326)	(385)	(665)	(1,527)	(2,028)
NOPLAT	*USDm*	178	627	882	1,040	1,799	4,128	5,482
Development	*%*	*104.7%*	*252.6%*	*40.5%*	*18.0%*	*72.9%*	*12.2%*	*-4.8%*

Non-core business	*USDm*							
Restructuring charges		(113)	(113)	(113)	(113)	(113)	(113)	(113)
Other income (expense)		(305)	(305)	(305)	(305)	(305)	(305)	(305)
Non-core tax		88	88	88	88	88	88	88
Net changes in lodging tax		(3)	(3)	(3)	(3)	(3)	(3)	(3)
Result		**(333)**	**(333)**	**(333)**	**(333)**	**(333)**	**(333)**	**(333)**

Financial	*USDm*							
Interest net		(425)	29.3	34.1	41.6	50.3	170.0	904.6
Tax shield		89	(6)	(7)	(9)	(11)	(36)	(190)
Comprehensive income		(10)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)
Total		**(345)**	**14**	**17**	**23**	**30**	**125**	**705**

5.5.3. Base-case scenario

Base	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
N&E Booked	301m	387m	489m	605m	730m	1,175m	2,212m
GBV	$46,877m	$63,284m	$75,941m	$87,332m	$100,432m	$157,375m	$310,123m
Average daily rate	$156	$164	$155	$144	$138	$134	$146
						CAGR ('25-30)	CAGR ('30-41)
Revenue growth	77%	35%	20%	15%	15%	13%	6%
EBITDA Margin	9%	21%	24%	25%	30%	40%	30%
Cost of revenue (% of rev)	19%	16%	15%	15%	15%	13%	13%
Op&S (% of rev)	13%	11%	10%	9%	9%	7%	5%
R&D (% of rev)	15%	13%	12%	12%	12%	10%	9%
G&A (% of rev)	13%	8%	8%	7%	7%	7%	5%
Sales & Marketing (% of rev)	18%	16%	16%	16%	17%	13%	28%
Stock Based Comps (% of rev)	15%	15%	15%	15%	10%	10%	10%
Depreciation (% of rev)	2%	2%	2%	2%	2%	2%	2%
Amortization (% of rev)	0%	1%	1%	1%	1%	1%	1%

Investments	% of rev	2022f	2023f	2024f	2025f	...2030f	...2041f
Operating cash		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Receivables		64.4%	64.4%	64.4%	64.4%	64.4%	64.4%
Prepayments		3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Payables		-64.0%	-64.0%	-64.0%	-64.0%	-64.0%	-64.0%
Income tax payables		-0.4%	-0.3%	-0.3%	-0.3%	-0.3%	-0.3%
Intangibles		2.0%	2.0%	2.2%	2.3%	3.1%	4.7%
Other operating liabilities		-23.6%	-23.6%	-23.6%	-24.6%	-25.6%	-25.6%
CAPEX PP&E		-1.0%	-1.0%	-1.9%	-2.9%	-5.5%	-7.2%

Income, Core business	Base case	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
Revenues	USDm	5,992	8,089	9,707	11,163	12,837	23,606	46,518
Cost of revenue		(1,156)	(1,313)	(1,492)	(1,695)	(1,926)	(3,069)	(6,047)
OP&S		(799)	(876)	(961)	(1,053)	(1,155)	(1,652)	(2,326)
Gross Profit	USDm	4,037	5,900	7,254	8,414	9,756	18,885	38,145
R&D		(880)	(1,012)	(1,164)	(1,339)	(1,540)	(2,361)	(4,187)
G&A		(627)	(686)	(751)	(821)	(899)	(1,652)	(2,326)
S&M		(1,086)	(1,293)	(1,540)	(1,833)	(2,182)	(3,069)	(13,025)
Stock based comp		(899)	(1,213)	(1,456)	(1,675)	(1,284)	(2,361)	(4,652)
EBITDA	USDm	545	1,695	2,343	2,746	3,851	9,442	13,956
Depreciation		(115)	(161)	(194)	(223)	(256)	(471)	(928)
Amortization		(24)	(65)	(78)	(90)	(104)	(191)	(376)
EBIT	USDm	407	1,468	2,071	2,433	3,491	8,781	12,652
Taxes		(229)	(396)	(559)	(657)	(943)	(2,371)	(3,416)
NOPLAT	USDm	178	1,072	1,512	1,776	2,549	6,410	9,236
Development	%	104.7%	502.2%	41.1%	17.5%	43.5%	12.9%	-3.0%
Non-core business								
Restructuring charges	USDm	(113)	(113)	(113)	(113)	(113)	(113)	(113)
Other income (expense)	USDm	(305)	(305)	(305)	(305)	(305)	(305)	(305)
Non-core tax	USDm	88	88	88	88	88	88	88
Net changes in lodging tax	USDm	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Result	USDm	(333)	(333)	(333)	(333)	(333)	(333)	(333)
Financial								
Interest net	USDm	(425)	29.4	40.3	56.3	75.3	289.3	1,479.2
Tax shield	USDm	89	(6)	(8)	(12)	(16)	(61)	(311)
Comprehensive income	USDm	(10)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)
Total		(345)	14	22	35	50	219	1,159

5.5.4. Upside scenario

Upside		2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
N&E Booked		301m	396m	513m	649m	802m	1,414m	2,429m
GBV		$46,877m	$65,159m	$80,146m	$95,373m	$112,540m	$195,252m	$368,677m
Average daily rate		$156	$165	$156	$147	$140	$138	$152
							CAGR ('25-30)	CAGR ('30-41)
Revenue growth		77%	39%	23%	19%	18%	15%	6%
EBITDA Margin		9%	26%	29%	30%	35%	45%	35%
Cost of revenue (% of rev)		19%	14%	13%	13%	12%	10%	11%
Op&S (% of rev)		13%	10%	9%	8%	8%	5%	3%
R&D (% of rev)		15%	10%	9%	9%	9%	8%	7%
G&A (% of rev)		13%	6%	6%	5%	6%	6%	3%
Sales & Marketing (% of rev)		18%	14%	14%	14%	15%	11%	26%
Stock Based Comps (% of rev)		15%	20%	20%	20%	15%	15%	15%
Depreciation (% of PPE)		18%	2%	2%	2%	2%	2%	2%
Amortization (% of LY intangibles)		3%	1%	1%	1%	1%	1%	1%

Investments	% of rev	2022f	2023f	2024f	2025f	...2030f	...2041f
Operating cash		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Receivables		64.4%	64.4%	64.4%	64.4%	64.4%	64.4%
Prepayments		3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Payables		-64.0%	-64.0%	-64.0%	-64.0%	-64.0%	-64.0%
Income tax payables		-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%
Intangibles		1.9%	1.9%	2.0%	2.2%	2.9%	4.6%
Other operating liabilities		-23.6%	-23.6%	-23.6%	-24.6%	-25.6%	-25.6%
CAPEX PP&E		-1.0%	-1.2%	-1.4%	-1.7%	-2.7%	-4.9%

Income, Core business	Upside	2021a	2022f	2023f	2024f	2025f	...2030f	...2041f
Revenues	USDm	5,992	8,329	10,244	12,190	14,385	29,288	55,302
Cost of revenue		(1,156)	(1,185)	(1,370)	(1,607)	(1,726)	(2,929)	(6,083)
OP&S		(799)	(818)	(911)	(1,029)	(1,151)	(1,464)	(1,659)
Gross Profit	USDm	4,037	6,325	7,963	9,555	11,508	24,895	47,559
R&D		(880)	(792)	(921)	(1,097)	(1,295)	(2,343)	(3,871)
G&A		(627)	(540)	(587)	(653)	(863)	(1,757)	(1,659)
S&M		(1,086)	(1,165)	(1,420)	(1,758)	(2,158)	(3,222)	(14,378)
Stock based comp		(899)	(1,666)	(2,049)	(2,438)	(2,158)	(4,393)	(8,295)
EBITDA	USDm	545	2,161	2,985	3,609	5,035	13,180	19,356
Depreciation		(115)	(166)	(204)	(243)	(287)	(584)	(1,103)
Amortization		(24)	(67)	(83)	(99)	(116)	(237)	(447)
EBIT	USDm	407	1,928	2,698	3,267	4,631	12,358	17,805
Taxes		(229)	(521)	(729)	(882)	(1,250)	(3,337)	(4,807)
NOPLAT	USDm	178	1,407	1,970	2,385	3,381	9,022	12,998
Development	%	104.7%	690.8%	40.0%	21.1%	41.8%	16.0%	-1.8%
Non-core business								
Restructuring charges	USDm	(113)	(113)	(113)	(113)	(113)	(113)	(113)
Other income (expense)	USDm	(305)	(305)	(305)	(305)	(305)	(305)	(305)
Non-core tax	USDm	88	88	88	88	88	88	88
Net changes in lodging tax	USDm	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Result	USDm	(333)	(333)	(333)	(333)	(333)	(333)	(333)
Financial								
Interest net	USDm	(425)	29.4	44.3	66.3	93.8	411.7	2,181.8
Tax shield	USDm	89	(6)	(9)	(14)	(20)	(86)	(458)
Comprehensive income	USDm	(10)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)	(9.5)
Total		(345)	14	25	43	65	316	1,714

6. DCF - 2022 Quarterly forecast breakdown and DCF calculations

Base case	Q1 2022a	Q2 2022f	Q3 2022f	Q4 2022f	FY 2022
NOPLAT	(44)	319	475	321	**1,072**
Depreciation & Amortization	(29)	(49)	(49)	(49)	**(227)**
Operating cash flow (a)	(15)	**368**	**525**	**371**	**1,298**
CAPEX PP&E					**(81)**
Investment in intangibles					**(162)**
Investment in NWC & others					**(171)**
Change in other operating liabilities					**358**
Change in other operating assets					(96)
Investing cash flow (b)					**(152)**
Period		0.25	0.50	0.75	**0.75**
WACC	1.3%	*5.3%*	*5.3%*	*5.3%*	*5.3%*
Discount factor (c)		**0.99**	**0.97**	**0.96**	**0.96**
DCF – Free cash-flow from core business					FY 2022
Discounted operating cashflow (a) x (c) *		368	518	357	**1,243**
Discounted investing cashflow (b) x (c) **					**(147)**

Downside case	Q1 2022a	Q2 2022f	Q3 2022f	Q4 2022f	FY 2022
NOPLAT	(44)	192	286	193	**627**
Depreciation & Amortization	(29)	(48)	(48)	(48)	**(220)**
Operating cash flow (a)	(15)	**240**	**334**	**241**	**847**
Investing cash flow (b)					**(132)**
Period		0.25	0.50	0.75	**0.75**
WACC	1.3%	*5.3%*	*5.3%*	*5.3%*	*5.3%*
Discount factor (c)		**0.99**	**0.97**	**0.96**	**0.96**
DCF – Free cash-flow from core business					FY 2022
Discounted operating cashflow (a) x (c) *		236	325	232	**1,243**
Discounted investing cashflow (b) x (c) **					**(147)**

Upside case	Q1 2022a	Q2 2022f	Q3 2022f	Q4 2022f	FY 2022
NOPLAT	(44)	415	619	418	**1,407**
Depreciation & Amortization	(29)	(51)	(51)	(51)	**(233)**
Operating cash flow (a)	(15)	**466**	**670**	**469**	**1,641**
Investing cash flow (b)					**(100)**
Period		0.25	0.5	0.75	**0.75**
WACC	1.3%	*5.3%*	*5.3%*	*5.3%*	*5.3%*
Discount factor (c)		**0.99**	**0.97**	**0.96**	**0.96**
DCF – Free cash-flow from core business					FY 2022
Discounted operating cashflow (a) x (c) *		460	652	451	**1,563**
Discounted investing cashflow (b) x (c) **					**(97)**

Notes: * Excluding 2022 - this value was calculated as the result of the sum of the 2022 Discounted operational cashflows of Q2, Q3 and Q4; ** Investing cashflows are computed at the end of the year to avoid double counting. As such, the forecasted value for year-end of 2022 is used.

7. Comparable multiples

Table 14 – Condensed multiples from chosen peers

Company Name	Price (as of 25/07/22)	EV ($m)	Forward EV/Sales	Forward EV/EBITDA	Forward EV/NOPLAT
Airbnb Inc	**104.95**	**60,457**	**6.2x**	**20.1x**	**37.2x**
Booking Holdings Inc	1,834.67	74,304	3.7x	10.9x	14.4x
Hilton Worldwide Holdings Inc	121.31	41,103	4.2x	14.6x	21.4x
Expedia Group Inc	100.75	19,967	1.5x	6.4x	10.8x
Tripadvisor Inc	18.83	2,810	1.7x	6.6x	11.0x
InterContinental Hotels Group PLC	58.16	12,514	4.6x	12.0x	16.5x
Marriott International Inc	152.99	58,398	2.6x	13.9x	20.8x
Alphabet Inc	108.21	541,855	1.6x	4.0x	6.8x
Match Group Inc	71.35	23,475	5.8x	15.9x	23.9x
Pinterest Inc	18.06	9,502	2.6x	12.0x	15.4x
ETSY Inc	96.47	13,667	4.6x	16.7x	29.9x
Tongcheng Travel Holdings Ltd	1.91	3,416	2.4x	10.2x	24.3x
Netflix Inc	197.14	96,949	2.7x	12.4x	15.6x
Electronic Arts Inc	140.35	38,017	4.4x	12.5x	17.9x
Take-Two Interactive Software Inc	126.99	18,036	2.5x	9.3x	14.2x
Trade Desk Inc	52.66	24,651	12.4x	31.7x	48.5x
Activision Blizzard Inc	77.79	53,878	5.7x	13.9x	20.4x
Median			**3.2x**	**12.2x**	**17.2x**
Mean			**3.9x**	**12.7x**	**19.5x**

Source: Refinitiv StarMine forward estimates, dissertation calculations.

7.1. Market and Company data

#	Company Name	GICS Industry Name	Country	Tax	Stock price (2022/07/25, US$)	# Shares Outstanding	Equity Value	Net Debt (US$m)	Enterprise value
1	**Airbnb Inc**	Hotels, Restaurants & Leisure	USA	21%	104.95	636,463,190	66,797	-6,340	60,457
2	Booking Holdings Inc	Hotels, Restaurants & Leisure	USA	21%	1,834.67	40,623,256	74,530	-226	74,304
3	Hilton Worldwide Holdings Inc	Hotels, Restaurants & Leisure	USA	21%	121.31	278,331,690	33,764	7,339	41,103
4	Expedia Group Inc	Hotels, Restaurants & Leisure	USA	21%	100.75	157,097,831	15,828	4,139	19,967
5	Tripadvisor Inc	Interactive Media & Services	USA	21%	18.83	139,619,416	2,629	181	2,810
6	InterContinental Hotels Group PLC	Hotels, Restaurants & Leisure	UK	19%	58.16	184,016,312	10,702	1,812	12,514
7	Marriott International Inc	Hotels, Restaurants & Leisure	USA	21%	152.99	324,550,000	49,653	8,745	58,398
8	Alphabet Inc	Interactive Media & Services	USA	21%	108.21	6,160,000,000	666,574	-124,719	541,855
9	Match Group Inc	Interactive Media & Services	USA	21%	71.35	285,531,696	20,373	3,102	23,475
10	Pinterest Inc	Interactive Media & Services	USA	21%	18.06	663,484,949	11,983	-2,480	9,502
11	ETSY Inc	Internet & Direct Marketing Retail	USA	21%	96.47	127,119,018	12,263	1,404	13,667
12	Tongcheng Travel Holdings Ltd	Hotels, Restaurants & Leisure	China	25%	1.91	2,218,397,533	4,242	-826	3,416
13	Netflix Inc	Entertainment	USA	21%	197.14	444,273,850	87,584	9,365	96,949
14	Electronic Arts Inc	Entertainment	USA	21%	140.35	279,306,146	39,201	-1,184	38,017
15	Take-Two Interactive Software Inc	Entertainment	USA	21%	126.99	162,119,914	20,588	-2,552	18,036
16	Trade Desk Inc	Software	USA	21%	52.66	486,325,791	25,610	-959	24,651
17	Activision Blizzard Inc	Entertainment	USA	21%	77.79	781,881,472	60,823	-6,945	53,878
18	Amazon.com Inc	Internet & Direct Marketing Retail	USA	21%	121.14	10,174,409,620	1,232,528	-23,748	1,208,780

#									
19	Mercadolibre Inc	Internet & Direct Marketing Retail	Uruguay	25%	762.78	50,377,981	38,427	125	38,552
20	Trip.com Group Ltd	Hotels, Restaurants & Leisure	China	25%	22.77	637,456,412	14,515	248	14,763
21	Accor SA	Hotels, Restaurants & Leisure	France	27%	32.77	262,996,214	8,617	2,063	10,681
22	Hyatt Hotels Corp	Hotels, Restaurants & Leisure	USA	21%	95.12	110,307,188	10,492	2,791	13,283
23	Wyndham Hotels & Resorts Inc	Hotels, Restaurants & Leisure	USA	21%	81.47	92,099,851	7,503	1,913	9,416
24	MakeMyTrip Ltd	Hotels, Restaurants & Leisure	India	22%	27.96	104,732,986	2,928	-261	2,667
25	Snap Inc	Interactive Media & Services	USA	21%	15.15	1,640,828,313	24,859	-1,440	23,419
26	Edreams Odigeo SA	Hotels, Restaurants & Leisure	Spain	25%	7.53	127,605,059	963	387	1,349

7.2. Analyst growth forecasts

#	Revenue (usd, Millions)			EBITDA (usd, Millions)			EBIT (usd, Millions)			Net Income (usd, Millions)			NOPLAT (usd, Millions)		
	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e
1	5,992	8,207	9,766	733	2,442	3,001	383	1,587	2,059	(385)	1,332	1,650	302	1,253	1,626
2	10,958	17,418	20,219	2,930	5,271	6,790	2,436	5,360	6,536	1,739	4,099	5,246	1,924	4,234	5,163
3	5,788	8,235	9,762	1,223	2,320	2,820	1,205	1,936	2,436	586	1,138	1,529	952	1,530	1,925
4	8,598	11,788	13,447	1,076	2,543	3,114	607	1,786	2,349	223	1,194	1,572	479	1,411	1,856
5	902	1,427	1,700	(29)	287	425	(19)	180	322	(26)	112	224	(15)	142	255
6	2,907	2,256	2,714	723	887	1,045	500	790	939	241	474	599	405	640	760
7	13,857	19,871	22,556	2,012	3,595	4,216	1,591	2,958	3,561	948	1,995	2,423	1,257	2,337	2,813
8	257,637	296,705	341,093	91,144	120,887	137,060	77,862	86,910	100,727	73,921	74,668	87,231	61,511	68,659	79,574
9	2,983	3,440	4,042	922	1,215	1,473	860	985	1,245	599	760	911	680	778	984
10	2,578	2,982	3,599	399	638	789	735	642	780	763	632	768	581	507	616
11	2,329	2,525	2,970	577	671	819	455	361	578	455	350	474	359	285	457
12	1,187	1,043	1,421	228	188	334	160	112	232	192	150	247	120	84	174
13	29,698	32,362	35,295	20,056	7,059	7,815	6,139	6,344	7,113	4,869	4,896	5,393	4,849	5,012	5,619
14	6,991	8,047	8,585	1,615	2,850	3,042	2,495	2,565	2,771	2,004	2,036	2,240	1,971	2,026	2,189
15	3,505	5,691	7,267	824	1,359	1,943	687	1,281	1,835	613	1,002	1,318	543	1,012	1,450
16	1,196	1,583	1,993	167	609	777	374	559	669	396	502	614	295	442	529
17	8,803	7,877	9,394	3,793	3,008	3,880	3,665	2,865	3,772	2,957	2,239	2,992	2,895	2,264	2,980
18	469,822	524,255	611,944	48,291	74,613	99,628	24,086	17,761	34,777	21,049	7,511	27,680	19,028	14,031	27,474
19	7,069	10,473	13,542	653	951	1,412	482	610	953	178	333	552	361	458	715
20	3,152	2,969	4,467	(61)	228	1,080	(22)	58	753	113	194	787	(16)	43	565
21	2,506	3,550	4,083	24	569	828	(318)	312	577	(528)	133	334	(234)	230	424
22	3,028	5,346	6,000	59	748	937	(170)	159	362	(290)	(41)	155	(135)	126	286
23	1,565	1,423	1,471	550	626	676	463	527	560	282	331	362	365	416	443
24	304	693	914	14	69	123	(10)	29	75	(48)	(5)	44	(8)	23	59
25	4,117	5,015	6,585	(583)	446	1,042	381	408	901	601	195	978	301	322	712
26	441	569	686	(12)	63	102	(24)	20	53	(64)	(8)	20	(18)	15	40

7.3. Calculated multiples

#	EV / Revenue			EV / EBITDA			EV / EBIT			P / E			EV / NOPLAT		
	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e	2021a	2022e	2023e
1	10.1x	7.4x	6.2x	82.5x	24.8x	20.1x	158.0x	38.1x	29.4x	NM	50.1x	40.5x	200.0x	48.2x	37.2x
2	6.8x	4.3x	3.7x	25.4x	14.1x	10.9x	30.5x	13.9x	11.4x	42.7x	18.1x	14.2x	38.6x	17.5x	14.4x
3	7.1x	5.0x	4.2x	33.6x	17.7x	14.6x	34.1x	21.2x	16.9x	70.2x	36.1x	26.9x	43.2x	26.9x	21.4x
4	2.3x	1.7x	1.5x	18.6x	7.9x	6.4x	32.9x	11.2x	8.5x	89.6x	16.7x	12.7x	41.7x	14.1x	10.8x
5	3.1x	2.0x	1.7x	NM	9.8x	6.6x	NM	15.6x	8.7x	NM	25.1x	12.6x	NM	19.8x	11.0x
6	4.3x	5.5x	4.6x	17.3x	14.1x	12.0x	25.0x	15.8x	13.3x	51.8x	26.4x	20.9x	30.9x	19.6x	16.5x
7	4.2x	2.9x	2.6x	29.0x	16.2x	13.9x	36.7x	19.7x	16.4x	61.6x	29.3x	24.1x	46.4x	25.0x	20.8x
8	2.1x	1.8x	1.6x	5.9x	4.5x	4.0x	7.0x	6.2x	5.4x	7.3x	7.3x	6.2x	8.8x	7.9x	6.8x
9	7.9x	6.8x	5.8x	25.5x	19.3x	15.9x	27.3x	23.8x	18.9x	39.2x	30.9x	25.8x	34.5x	30.2x	23.9x
10	3.7x	3.2x	2.6x	23.8x	14.9x	12.0x	12.9x	14.8x	12.2x	12.5x	15.0x	12.4x	16.4x	18.7x	15.4x
11	5.9x	5.4x	4.6x	23.7x	20.4x	16.7x	30.0x	37.9x	23.6x	30.0x	39.1x	28.8x	38.0x	48.0x	29.9x
12	2.9x	3.3x	2.4x	15.0x	18.2x	10.2x	21.4x	30.5x	14.7x	22.1x	28.3x	17.2x	35.4x	50.6x	24.3x
13	3.3x	3.0x	2.7x	4.8x	13.7x	12.4x	15.8x	15.3x	13.6x	18.0x	17.9x	16.2x	18.1x	17.5x	15.6x
14	5.4x	4.7x	4.4x	23.5x	13.3x	12.5x	15.2x	14.8x	13.7x	19.6x	19.3x	17.5x	19.9x	19.3x	17.9x
15	5.1x	3.2x	2.5x	21.9x	13.3x	9.3x	26.2x	14.1x	9.8x	33.6x	20.5x	15.6x	37.9x	20.3x	14.2x
16	20.6x	15.6x	12.4x	147.6x	40.4x	31.7x	65.9x	44.1x	36.8x	64.6x	51.0x	41.7x	86.7x	58.0x	48.5x
17	6.1x	6.8x	5.7x	14.2x	17.9x	13.9x	14.7x	18.8x	14.3x	20.6x	27.2x	20.3x	21.0x	26.9x	20.4x
18	2.6x	2.3x	2.0x	25.0x	16.2x	12.1x	50.2x	68.1x	34.8x	57.4x	160.9x	43.7x	63.5x	86.1x	44.0x
19	5.5x	3.7x	2.8x	59.0x	40.5x	27.3x	80.0x	63.2x	40.5x	216.5x	115.7x	69.8x	106.7x	84.3x	53.9x
20	4.7x	5.0x	3.3x	NM	64.8x	13.7x	NM	256.3x	19.6x	128.2x	74.9x	18.4x	NM	NM	25.7x
21	4.3x	3.0x	2.6x	447.4x	18.8x	12.9x	NM	34.2x	18.5x	NM	64.7x	25.8x	NM	37.5x	20.3x
22	4.4x	2.5x	2.2x	225.1x	17.8x	14.2x	NM	83.5x	36.7x	NM	NM	67.6x	NM	83.5x	36.7x
23	6.0x	6.6x	6.4x	17.1x	15.1x	13.9x	20.4x	17.9x	16.8x	26.6x	22.7x	20.7x	20.5x	18.0x	17.0x
24	8.8x	3.8x	2.9x	196.4x	38.6x	21.7x	NM	91.4x	35.3x	NM	NM	66.3x	NM	128.7x	49.7x
25	5.7x	4.7x	3.6x	NM	52.5x	22.5x	61.4x	57.4x	26.0x	41.4x	127.4x	25.4x	82.5x	77.1x	34.9x
26	3.1x	2.4x	2.0x	NM	21.6x	13.2x	NM	69.1x	25.3x	NM	NM	47.8x	NM	65.7x	24.1x

7.4. Chosen Peers