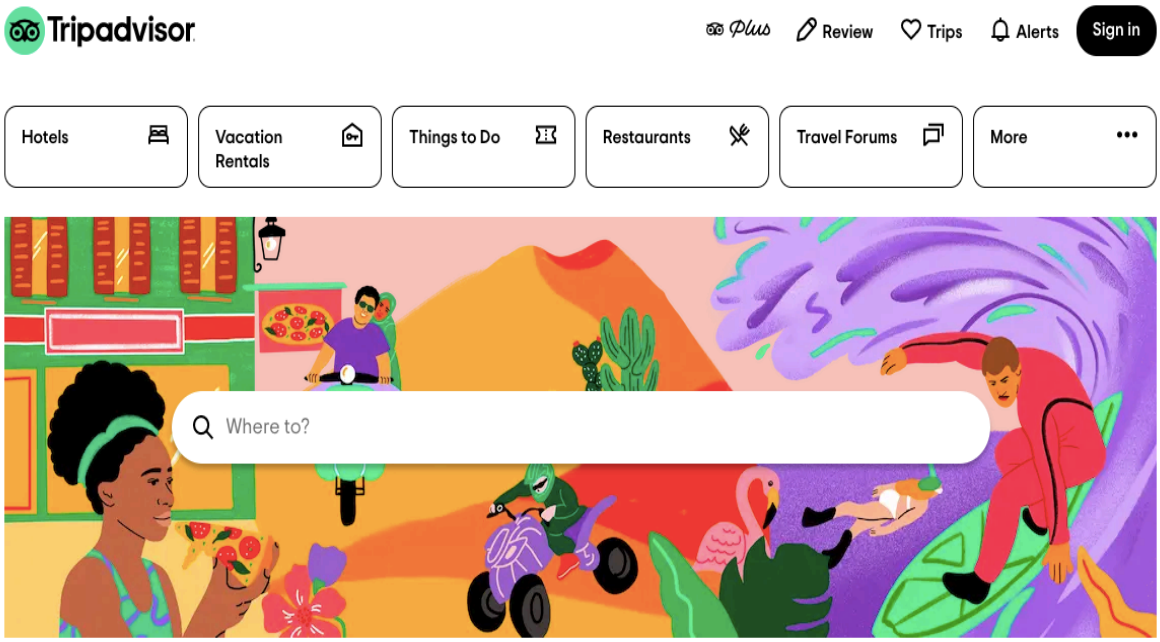
Tripadvisor



EMT 638 Project by Team 1

By Ajanya Sharma and Gabriel Fonteles

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The Travel Industry

Travel e-commerce sites and review sites make up most of the internet travel sector. Travel e-commerce companies concentrate in selling travel products like flights, hotels, and auto rentals. These can be bought straight from a travel company's website or from an online travel agency (OTA).

Travel review websites like TripAdvisor, on the other hand, allow passengers to share their hotel, restaurant, and other hospitality experiences online. Advertisements on these companies' websites are frequently used to generate cash.

Key Features

Using the internet to research new places, organize trips, and review them has become a necessary aspect of the online travel market. According to a July 2020 survey, looking online for vacation ideas was more popular than chatting to friends and family.

According to the same study, this was especially true in Taiwan, South Korea, and India, where more than 60% of questioned tourists found their trip inspiration through browsing online. When it comes to the most popular travel products ordered online in the United States, hotels came out on top, followed by flight tickets and vehicle rentals.

The Market

Consumers are increasingly booking trips independently, notably through online travel agencies (OTAs). These internet businesses provide the convenience of booking from the comfort of their own homes, and they frequently entice customers with package discounts and cost-cutting possibilities. As a result, many passengers have abandoned traditional brick-and-mortar travel companies in favor of booking their vacations through internet platforms.

By 2020, internet sales channels will account for 65 percent of worldwide travel and tourism income. In that year, the global online travel agent business was valued at around 432 billion dollars, with forecasts of over 833 billion dollars by 2025.

Booking Holdings and Expedia were the world's largest online travel agents by revenue in 2020, collecting about seven billion and over five billion dollars, respectively. However, because of the coronavirus (COVID-19) pandemic, both companies' revenues decreased by more than half in comparison to 2019.

Airbnb, a vacation rental internet marketplace that mostly offers homestays, is another online travel company that has risen rapidly in recent years. Due to the epidemic,

the gross booking value of Airbnb bookings worldwide reached about 18 billion dollars in 2020, a significant decrease from the previous year.

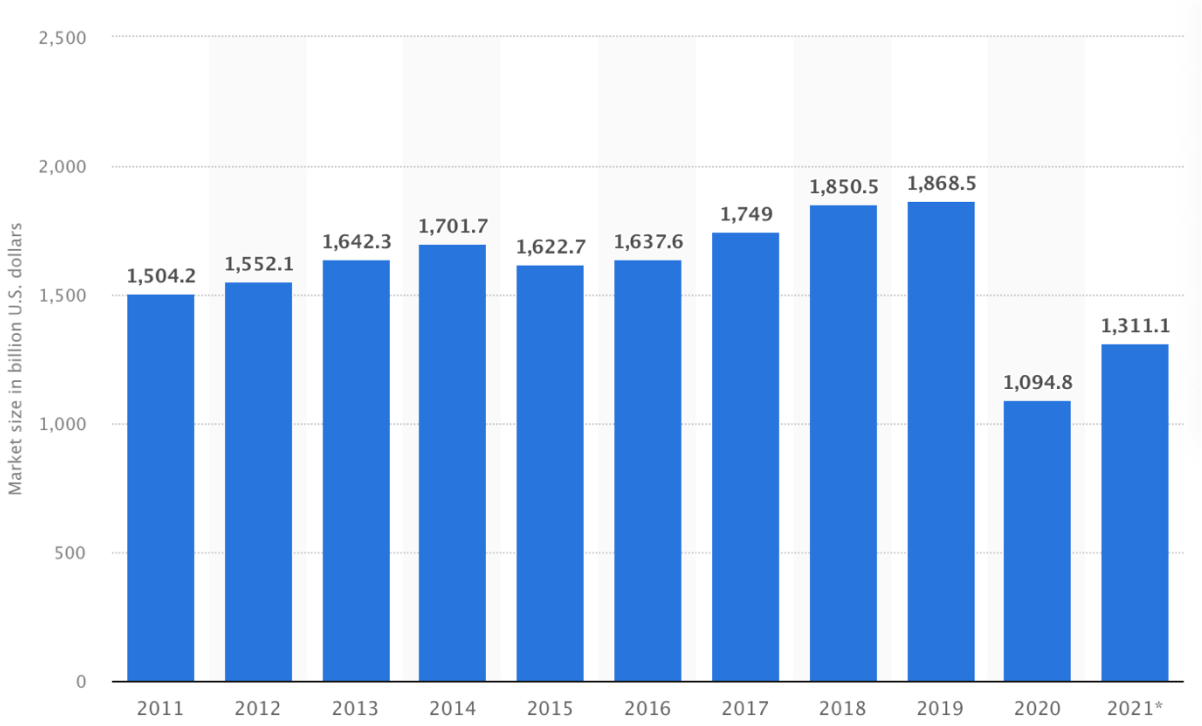


Figure 1: Market size of the tourism sector worldwide from 2011 to 2021

Key Metrics of the Industry

From 2022 to 2031, the global internet travel industry is expected to grow at a CAGR of 14.8 percent, from $354.2 billion in 2020 to $1,835.6 billion in 2031. The COVID-19 pandemic has had a substantial influence on the online travel sector as a result of global travel restrictions aimed at preventing the pandemic from spreading. Due to limits on interstate and local travel, hotel visits, trade shows, and cultural event visits, online travel has suffered.

According to online travel industry trends, the travel accommodation segment was the largest contributor to the market in 2020, with $123.7 billion, and is expected to grow at a CAGR of 16.0 percent to $719.5 billion by 2031. Market companies are increasingly providing travelers with a varied selection of hotel options at affordable prices. Customers evaluate hotel options across multiple websites to choose the most cost-effective option.

Figure 2: Market Size Compilations

The demand analysis of Global Online Travel Booking was released in a market research report by Facts and Factors. The market size and share revenue was estimated to be around USD 782 million in 2020 and is expected to increase to around USD 2000 million by 2028, with a CAGR of 12.2% between 2021 and 2028.

Figure 3: Revenue of Key Players

Ctrip.com, Priceline.com LLC, MakeMyTrip Limited, Trivago, Expedia Group, Inc., International, Ltd., Hostelworld.com Limited, TripAdvisor LLC, Fareportal, Inc., Ibibogroup, Hays Travel, Thomas Cook, E-dragon Holdings Limited (eLong), TUI Group, Airbnb, Inc., and others are among the key market players.

Figure 4: Leading Companies

The Whole Industry

Travelers discuss their hotel, restaurant, and other hospitality experiences on travel review websites like TripAdvisor. Advertisements on the websites of these companies are regularly used to generate revenue. The use of the internet to explore new areas, plan vacations, and review them has become an essential element of the online travel sector, resulting in tremendous growth.

For the sake of the analysis, we will assume that the industry only comprises of TripAdvisor, Booking.com & Expedia.

Credit Rating of the Industry

Displayed below are the credit ratings of Moody's, Standard & Poor's and Fitch for our three companies. We will interpret them individually first, followed by interpreting their outlook as an industry as a whole.

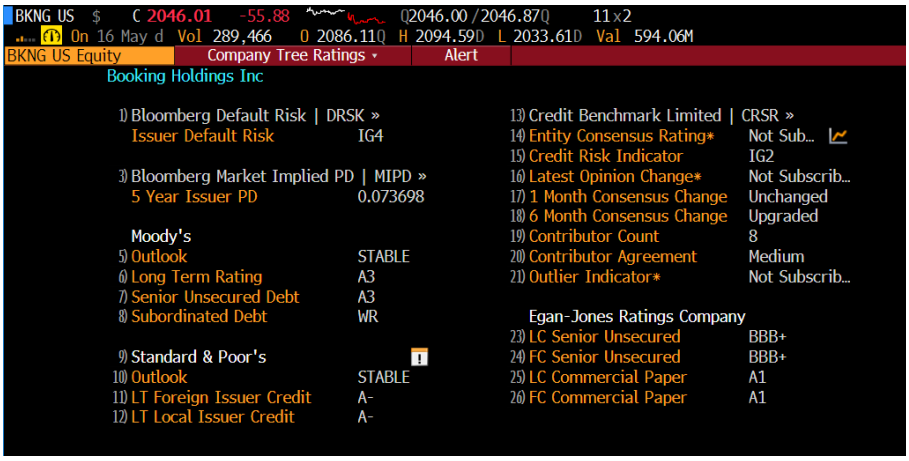


Figure 5: Credit Ratings for Bookings.com

The grades for Booking.com are all rated for A, putting their debt in the 'Investment-Grade' – 'Upper Medium Grade' category. This is always a good sign for the company issuing debt.

Figure 6: Credit Ratings for Expedia

Expedia's ratings, on the other hand are higher Bs, but its debt is still classified as 'Investment-Grade' albeit in the 'Lower Medium Grade' category. Though not ideal, this is a positive sign for the entity providing the debt.

Figure 7: Credit Ratings for TripAdvisor

Similar can be said about TripAdvisor ratings, though on the higher Bs, TripAdvisor has the least favorable ratings out of the three. Its debt again is classified as 'Investment-Grade' although in the 'Lower Medium Grade' category. Again, not very ideal, this is a slightly positive sign for the body offering the debt.

Together as an Industry, these ratings stack up in the following order. The credit ratings for Bookings.com show the highest health followed by Expedia and finally TripAdvisor. Bookings.com is rated in A's, followed by Expedia showing higher B's and TripAdvisor showing mid B's. All in all as an Industry, we can say that on an average, the industry shows a promising debt standing with a good 'Investment Grade' rating, perhaps in the 'Lower Medium Grade' category.

TripAdvisor

TripAdvisor, Inc. is a travel company that operates online. Hotels, Media & Platform, and Experiences & Dining are the company's two segments. TripAdvisor-branded websites, such as tripadvisor.com in the United States, as well as localized versions of the website in 40 markets and 20 languages, are operated by the firm. It also manages and operates other travel media brands such as bokun.io, cruisecritic.com, flipkey.com, thefork.com, helloreco.com, holidaylettings.co.uk, holidaywatchdog.com, housetrip.com, jetsetter.com, niumba.com, seatguru.com, singleplatform.com, vacationhomerentals.com, and viator.com, which provide users with comprehensive travel-planning and trip-taking resources in Furthermore, the company offers users information and services for researching and booking restaurant reservations in tourist destinations, as well as vacation and short-term rental properties, such as whole homes, condominiums, villas, beach rentals, cabins, and cottages.

It had 1 billion reviews and opinions on 1 billion hotels and other accommodations, restaurants, activities, airlines, and cruises as of December 31, 2020. TripAdvisor, Inc. is based in Needham, Massachusetts, and was formed in 2000.

On the sec.gov website, we gathered information on TripAdvisor using EDGAR. We gathered our data from the company's 10-K reports, which span the years 2012 to 2020. We

retrieved information such as balance sheets, income statements, and cash flow statements from these corporate filings.

Analysis of the Financial Statements

Use of Financial Statements

To conduct our analysis, we presented financial statements in a manner that would facilitate our work. We preserved the elements of interest for our future prediction and evaluation as per the balance sheet, income statement, and statement of cash flow.

First look at the Financial Statement

We were able to see that TRIPADVISOR's earnings increased before the pre-covid era from 2012 to 2018 and has been on decrease since then over the period. The compound growth of the profit after tax was equal to -5.98% and earnings per share had a compound growth of -5.87%. Despite an increase in earnings, TRIPADVISOR is still a company that does not pay dividends to its shareholders. The total payout to equity (total dividends – increase in common stock and paid-in capital + increase in treasury stock) had a compound growth of -3.28%. During the quarter ended December 31, 2020, they did not repurchase any shares of common stock and had $75 million remaining available to repurchase shares. Also, consolidated revenue for the year ended December 31, 2020, was approximately 40% of the prior year's comparable period. This downward trend is largely attributed to the Covid.

Financial Statement Ratios

After that, we looked at the profitability, liquidity, and working capital ratios for TripAdvisor in 2020.

Profitability Ratios

TripAdvisor has a negative operating margin (Operating Income/Sales) of 47.19 %. It had a Net Profit Margin of -47.85 percent (Net Income/Sales). It indicates the corporation was losing $0.4718 in operational loss and $0.4785 in net loss for every dollar of sales. This can be traced to the impact of the Covid-19 outbreak on the travel sector as a whole.

Liquidity Ratios

Working Capital Ratios

Because TripAdvisor does not keep inventory, it has the same Current Ratio, Quick Ratio, and Cash Ratio of 2.29x and 1.67x, respectively. As a result, TripAdvisor is a financially sound corporation. TripAdvisor, as previously said, does not hold inventory but does hold a significant quantity of cash.

Capital Structure and Leverage of TripAdvisor

TripAdvisor is a hybrid corporation with both equity and debt financing. The equity of TripAdvisor is made up of common shares. There are no preferred stock options available. We can see from the data that the pandemic is to blame for a rise in long-term debt. This makes sense because the drop in equity must have resulted in unmet capital needs.

TripAdvisor's total liabilities in 2020 were $1,144 million, with $634 million in debt bearing interest (all of which is long-term debt). It had $886 million in total equity and $1,969 million in total assets. Several ratios were calculated using the information from the balance sheet and income statement.

Receivables/Sales		22.02%
Inventories/Sales		0.00%
Other Current Assets/Sales		3.64%
Operating CA/Sales		94.87%
Property, Plant, Equipment, Gross/Sales		112.58%
Annual depreciation/PPE		63.91%
Property, Plant, Equipment, Net/Sales		48.68%
Other Assets/Sales		0.00%
Accounts Payable/Sales	2.98%	
Accrued Expense/Sales	10.26%	
Other Current Liabilities/Sales	28.15%	
Operating CL/Sales	41.39%	
Debt/equity	71.56%	
Debt/assets	32.20%	
Total Debt / Total Capital		53.41%
Other Liabilities/Sales	0.00%	

Balance Sheet Model Parameters

Receivables/Sales	14.56%
Inventories/Sales	0.00%
Other Current Assets/Sales	2.22%
Operating CA/Sales	64.58%
Property, Plant, Equipment, Net/Sales	48.68%
Accounts Payable/Sales	1.24%
Accrued Expense/Sales	6.44%
Other Current Liabilities/Sales	18.15%
Debt/Assets	32.20%

TripAdvisor has a debt bearing interest to equity ratio of 71.56 percent, as shown above. Its total capital is funded with 53.41% debt bearing interest. In the years since going public, TripAdvisor has had some of the highest debt/equity and debt/total capital ratios in 2020. In reality, the highest Debt/Equity ratio until 2020 was recorded in 2014, at 30%. In 2021, the ratio was even greater, at 117.49 percent. This appears to be another measure connected to the Covid-19 epidemic.

The Parameters used for Valuation

Sales

The sales of TripAdvisor were the subject of the first examination. From 2012 to 2015, TripAdvisor revenues significantly increased year over year, with the largest growth of 31.9 percent in 2014. After that, we see a 0.8 percent dip in sales in 2016, followed by two years of growth in 2017 and 2018. Following 2018, sales have been steadily declining, with the biggest loss of -61.28 percent in 2019 due to the consequences on travel and tourism because of travel bans imposed in response to the Covid-19 pandemic. The next increase in sales occurred in 2021, with a 49.34 percent increase, when the tourism industry was experiencing a boom due to the relaxation of travel restrictions. The illustration of this can be seen in the figure below.

Figure 8: Sales Growth

When we compare the sales of TripAdvisor with how it segments its revenue streams, we see that from 2013 until 2019, the revenue streams were segmented in two categories: Hotels and Non-hotels. From 2019, these segments were changed to the following three segments, 'Hotels, Media & Platform', 'Experiences & Dining', and 'Other'. Despite the change in segmentation, we observe that Hotels; Hotels, Media & Platform are the main sources of revenue for TripAdvisor. All other

segments are secondary revenue sources. The illustration of this can be seen in the graph below.

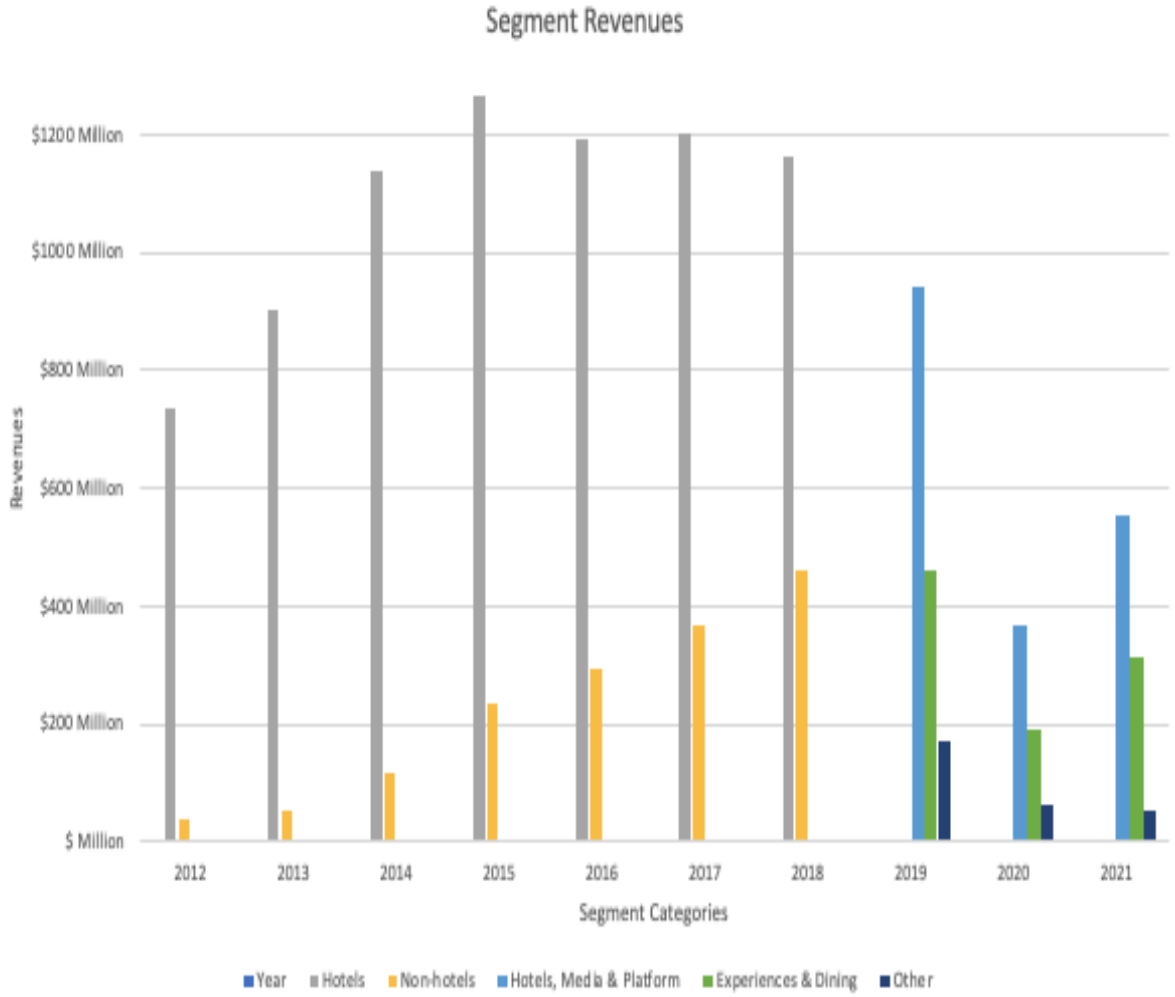


Figure 9 Revenue by segments

Earnings & Dividend Policy

When we have a look at TripAdvisor's earnings from a period of 2012 to 2020 Being the world's largest travel guidance platform and helping hundreds of millions of people each month, from planning to booking to taking a trip, the earnings are expected to be proportional to travel done by people.

TripAdvisor's earnings have been a bit irregular as it increased from 2012 to 2014, then reduced till 2017, the again increased till 2019 and has been on decrease since then till 2020 and 2021. The trend even though being irregular has sharp decrease in earnings during covid era which can be majorly attributed to the drop-in travel activity across the globe.

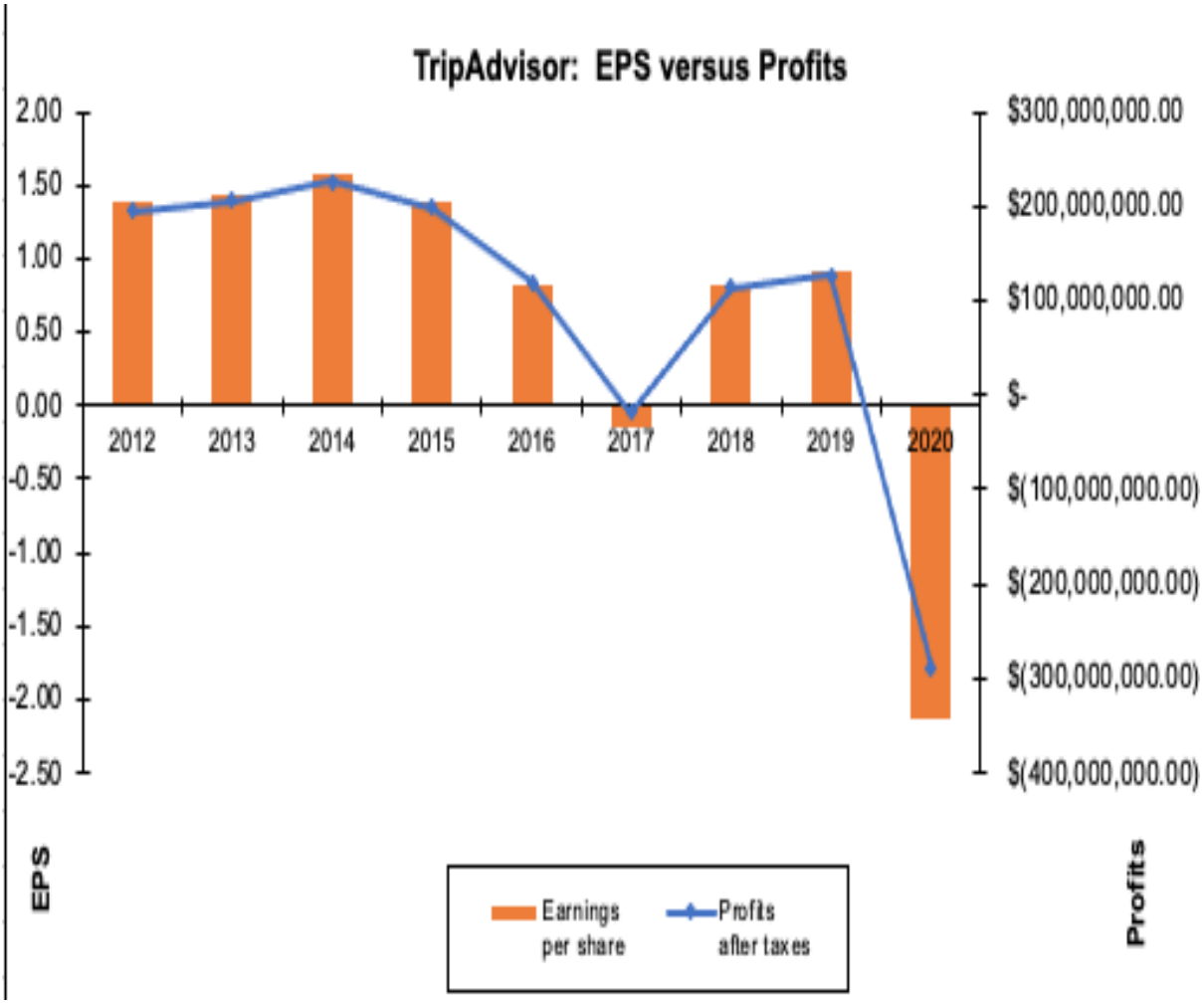


Figure 10 EPS versus Profits

On the other end, TripAdvisor's policy has been that they do not pay regular quarterly or annual cash dividends on their stock. Therefore, investors should not rely on regular quarterly or annual dividend income from shares of our common stock and investors should not rely on special dividends with any regularity or at all. However there has been one instance in 2019 where they have issued dividends. While the Company did pay a special cash dividend of $3.50 per share to stockholders, or approximately $488 million in the aggregate, on December 4, 2019, they did not declare or pay any dividends during the years ended December 31, 2020, or 2018.

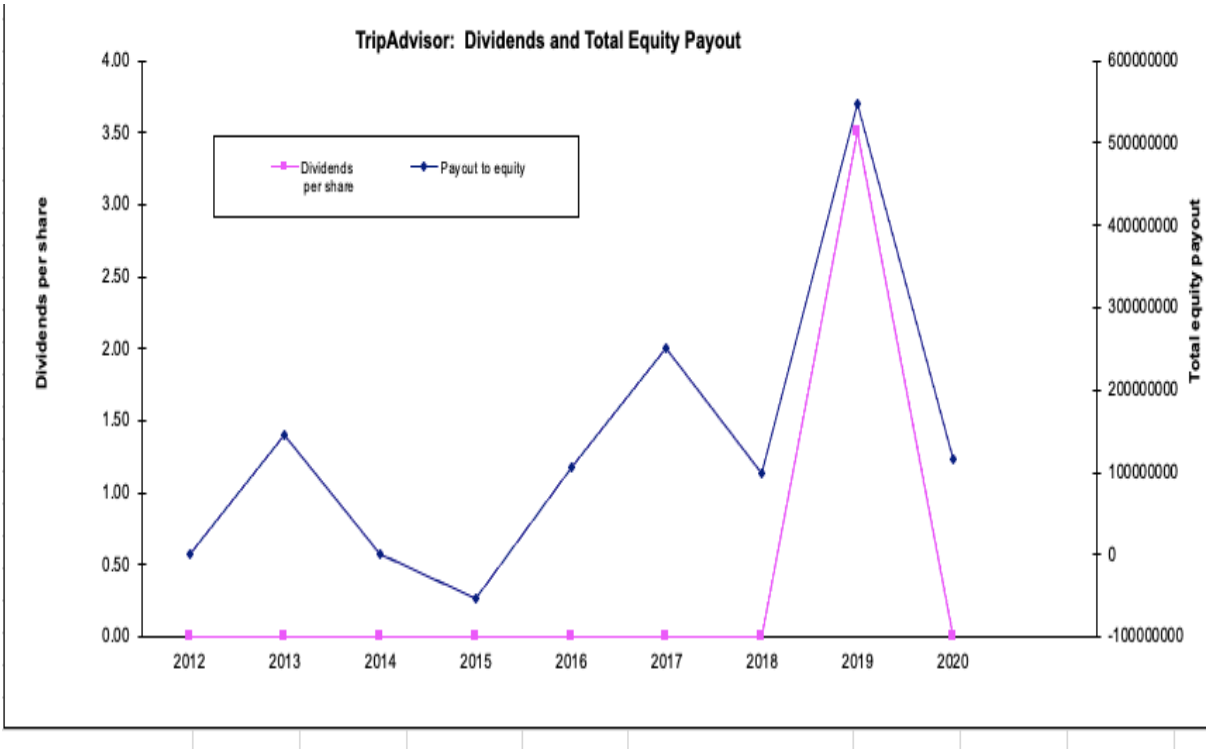


Figure 11 Dividends and Total Equity Payout

Therefore, in our calculations while calculating the compounding growth we can't consider dividend. When taking into consideration the total payout (increase in common stock and share repurchases), we have observed a compounded growth of -3.28%. Please note that in our analysis we have assumed that TripAdvisor's common stock and share repurchase policy will stay constant.

Historical Ratios

In pursuit of outlining the historical ratios for TripAdvisor, we computed the following ratios for the year 2020. As we can see, much of the ratios are based on sales. We also have other ratios calculated that are interpretations of parameters other than sales such as fixed assets, debt, income, and taxes. The following are ratio interpretations for the year 2020.

Profit and loss historical ratios	2020
COGS/Sales	9.11%
SG&A/Sales	117.38%
Total costs/Sales (sum of above items)	126.49%
Depreciation/Gross fixed assets	18%
Interest expense/Average debt	9%
Incomes Taxes/Pretax Income	21.68%
Minority Interest/(Pretax - Taxes)	0.00%

Dividends/Net Income	0.00%

For use of predictive modeling and forecasts, we have computed separate ratios that are the averages of all the years from 2012 to 2020. The model parameters are illustrated in the table as follows,

Profit and loss--model parameters	AVG 2012-2020
COGS/Sales	4.49%
SG&A/Sales	75.88%
Depreciation/Gross fixed assets	18.38%
Interest rate	8.74%
Tax rate	21.68%
Minority Interest/(Pretax - Taxes)	0.00%
Dividend growth	0.00%

The Beta

To measure the volatility of TripAdvisor stock compared to the market and for further cost of equity calculations, the stock Beta needs to be calculated. This is done by plotting the stocks returns against the S&P500 returns for the last three years and calculating the regression line.

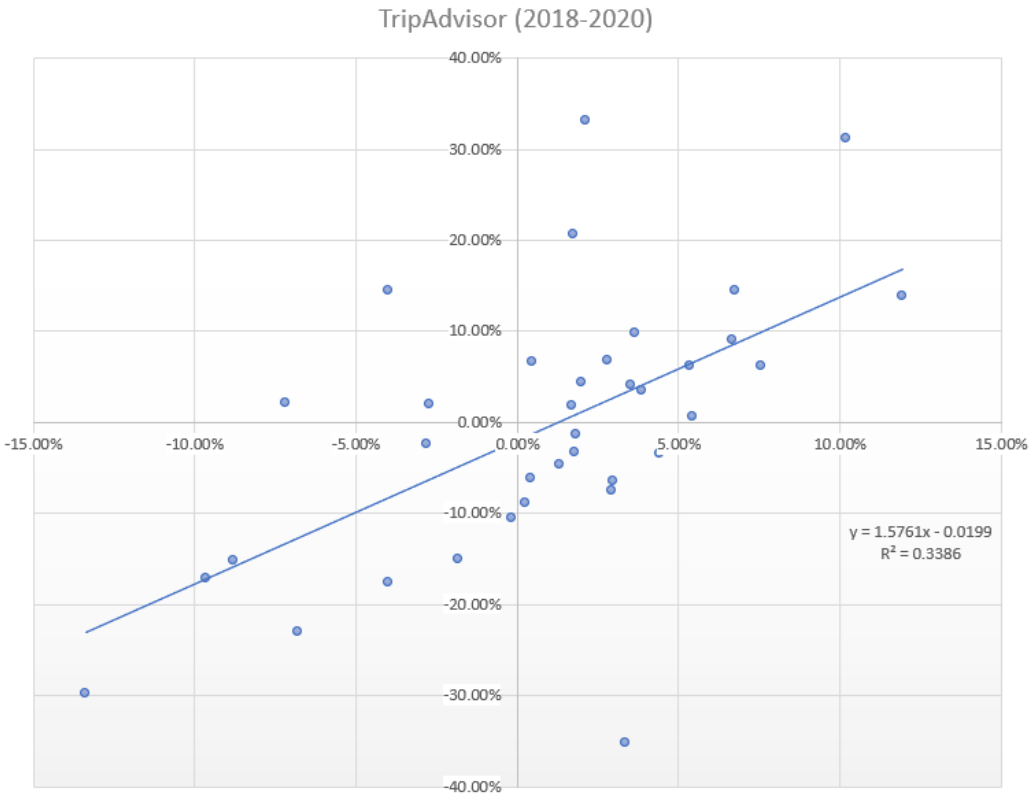


Figure 12 TripAdvisor Stock beta vs S&P500 Returns

The beta for this company is 1.58 with an R square of 0.3386, this means that 33.86% of the variation of TripAdvisor's stock can be explained by the market itself. Also, to have a better understanding of the elasticity of beta, it was calculated using a two- and one-year span of data. But these values are not used for calculations in this report, they only serve as a reference for beta variation.

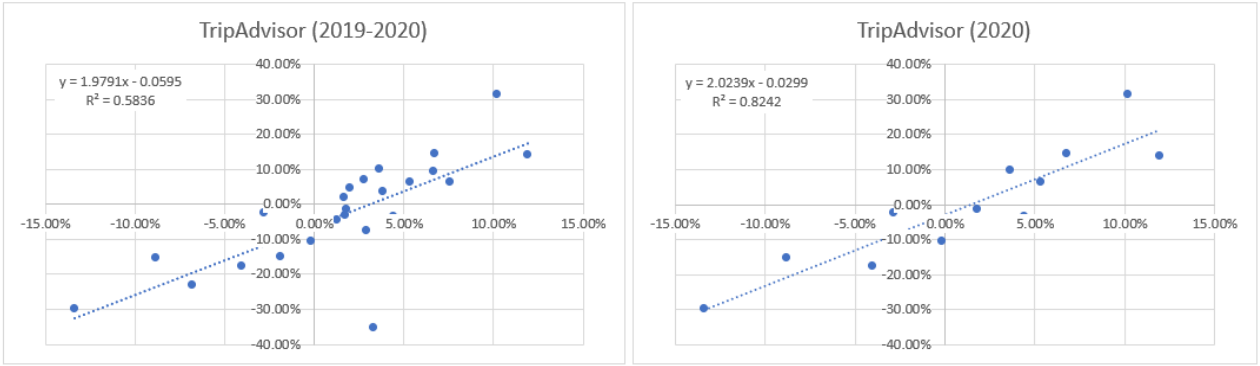


Figure 13 TripAdvisor beta variation for 2019 and 2020

Two-year span: Beta of 1.98 and R square 0.5836
One-year span: Beta of 2.03 and R square 0.8242

It is possible to see that the COVID-19 was an important factor in the stocks return as the R square is 82.42%, this means that the market variation is the biggest factor in this stock returns. Also, as the amount of data used to study the stock increases the effect of year 2020 dilutes.

The Cost of Equity

To compute the cost of equity for TRIPADVISOR, we needed several inputs. First, the Market risk used was the US Treasury Bill rate in December 2020 => 0.08% (US Department of the Treasury). Second, the expected return of the market in December 2017 => 18.94% The number of shares of TRIPADVISOR was equal to 1,350 million and we assumed a tax rate of 21.68%.
With all these inputs, we were able to compute to cost of equity under several methods for the following results:

a) Gordon Growth Model – Total Payout => -0.42%

b) Capital Asset Pricing Model => 29.80% and CAPM – Tax Adjusted => 29.81% calculated using equity beta of 1.57

The CAPM method seems to be the most appropriate and realistic to compute this company's cost of equity. However, in our computation of the Weighted Average Cost of Capital we will use all the average of different models.

The Cost of Debt

To find the Weighted Average Cost of Capital, we require the historical cost of debt for TripAdvisor. The historical debt is computed using total debt and interest expense. When computing the average total debt and interest expense in 2019 and 2020, we end up with a cost of debt of 5.24%.

The Weighted Average Cost of Capital

Now that we know our cost of equity and cost of debt, we can compute a weighted average cost of capital for TRIPADVISOR. This WACC will be used to discount the future cash flows of the company. The computation under the different models shows us different WACC that could be used:

a) Gordon Growth Model – Total Payout => -0.16%
b) Capital Asset Pricing Model => 18.12%
c) CAPM – Tax Adjusted => 20.35%

When taking an average of all these different costs of capital, we find a WACC of 12.76% and we will use a cost of capital of 9.68% to discount our Free Cash Flow in our forecasts.

Forecasts of TripAdvisor

A series of forecasts were made to analyze the future trend of TripAdvisor's stock. Including a sensitivity analysis on the stock price.

Income Statement & Balance Sheet

To forecast the income statement, numbers were calculated as a percentage of sales, the only special case is Depreciation and Amortization value that was calculated using two ratios that would be the Power, Plant and Equipment to Sales ratio and the Depreciation and Amortization to PPE ratio.

These ratios are as follows:

Sales	100.00%
Cost of Goods Sold	4.49%
SG&A	75.34%
Depreciation and Amortization	6.28%
Interest Expense	8.74%
Income Taxes	4.36%
Accrued (Retained Earnings)	64.40%

Also, for the sales growth, this metric was calculated excluding the COVID year of 2020, so the accumulated return would be 204.47% which yields a compounded rate of 12.66%.

Income Statement	2021	2022	2023	2024	2025
Sales	$ 680,466,643.38	$ 766,613,994.63	$ 863,667,635.26	$ 973,008,305.90	$ 1,096,191,549.50
Cost of Goods Sold	$ 30,573,045.70	$ 34,443,605.60	$ 38,804,179.95	$ 43,716,804.77	$ 49,251,369.87
Gross Profit	**$ 649,893,597.69**	**$ 732,170,389.03**	**$ 824,863,455.31**	**$ 929,291,501.13**	**$ 1,046,940,179.64**
SG&A	$ 512,657,270.17	$ 577,559,887.15	$ 650,679,201.59	$ 733,055,450.70	$ 825,860,566.15
R&D	$ -	$ -	$ -	$ -	$ -
EBITDA	**$ 137,236,327.52**	**$ 154,610,501.88**	**$ 174,184,253.72**	**$ 196,236,050.43**	**$ 221,079,613.49**
Depreciation and Amortization	$ 42,763,707.25	$ 48,177,609.82	$ 54,276,914.63	$ 61,148,393.90	$ 68,889,805.21
EBIT	**$ 94,472,620.27**	**$ 106,432,892.06**	**$ 119,907,339.09**	**$ 135,087,656.53**	**$ 152,189,808.28**
Interest Expense	$ 59,466,498.17	$ 66,994,980.80	$ 75,476,572.37	$ 85,031,936.85	$ 95,797,014.31
EBT	**$ 35,006,122.10**	**$ 39,437,911.26**	**$ 44,430,766.72**	**$ 50,055,719.69**	**$ 56,392,793.97**
Income Taxes	$ 29,661,366.51	$ 33,416,507.46	$ 37,647,050.77	$ 42,413,182.56	$ 47,782,708.57
Net Income	**$ 5,344,755.59**	**$ 6,021,403.80**	**$ 6,783,715.95**	**$ 7,642,537.12**	**$ 8,610,085.40**
Dividends	$ -	$ -	$ -	$ -	$ -
Accrued (Retained Earnings)	$ 438,247,556.75	$ 493,729,874.03	$ 556,236,275.03	$ 626,656,011.58	$ 705,990,915.16

Figure 14 Income Statement

For the Balance sheet an equivalent approach was taken:

Assets	2021	2022	2023	2024	2025
Cash and Short-Term Investments	$ 470,918,968.43	$ 530,537,499.60	$ 597,703,760.83	$ 673,373,297.79	$ 758,622,628.63
Receivables	$ 99,043,097.47	$ 111,581,993.52	$ 125,708,318.86	$ 141,623,042.69	$ 159,552,576.96
Other Current Assets	$ 123,478,551.90	$ 139,110,986.33	$ 156,722,493.26	$ 176,563,624.05	$ 198,916,650.00
Total Current Assets	$ 693,440,617.81	$ 781,230,479.45	$ 880,134,572.94	$ 991,559,964.53	$ 1,117,091,855.59
PPE Gross	$ 585,832,209.54	$ 659,998,803.32	$ 743,554,917.77	$ 837,689,269.98	$ 943,741,069.11
Depreciation, Depletion, and Amc	$ 254,611,691.07	$ 286,845,633.75	$ 323,160,406.57	$ 364,072,644.26	$ 410,164,387.73
PPE Net	$ 331,220,518.47	$ 373,153,169.57	$ 420,394,511.20	$ 473,616,625.72	$ 533,576,681.38
Total Assets	$ 2,558,545,654.69	$ 2,882,458,565.54	$ 3,247,378,981.43	$ 3,658,498,469.02	$ 4,121,665,849.40

Liabilities & SE	2021	2022	2023	2024	2025
Accounts Payable	$ 8,439,216.96	$ 9,507,625.22	$ 10,711,294.41	$ 12,067,348.60	$ 13,595,079.79
Accrued Expenses	$ 43,792,433.29	$ 49,336,572.99	$ 55,582,603.01	$ 62,619,382.95	$ 70,547,022.07
Other Current Liabilities	$ 123,478,551.90	$ 139,110,986.33	$ 156,722,493.26	$ 176,563,624.05	$ 198,916,650.00
Debt	$ 823,828,311.36	$ 928,125,307.54	$ 1,045,626,345.47	$ 1,178,003,062.14	$ 1,327,138,724.49
Other Liabilities	$ -	$ -	$ -	$ -	$ -
Total Liabilities	**$ 999,538,513.51**	**$ 1,126,080,492.09**	**$ 1,268,642,736.15**	**$ 1,429,253,417.75**	**$ 1,610,197,476.35**
Common Stock	$ -	$ -	$ -	$ -	$ -
Capital Surplus	$ -	$ 1.00	$ 2.00	$ 3.00	$ 4.00
Retained Earnings	$ 1,205,462,431.16	$ 1,358,074,460.69	$ 1,530,007,234.65	$ 1,723,706,767.07	$ 1,941,928,738.36
Accumulated Other Comprehensi	$ -	$ -	$ -	$ -	$ -
Total Stockholder's Equity	**$ 1,205,462,431.16**	**$ 1,358,074,461.69**	**$ 1,530,007,236.65**	**$ 1,723,706,770.07**	**$ 1,941,928,742.36**
Total Liabilities and Equity	**$ 2,205,000,944.67**	**$ 2,484,154,953.78**	**$ 2,798,649,972.80**	**$ 3,152,960,187.82**	**$ 3,552,126,218.71**

Figure 15 Balance Sheet

Free Cash-flow

Free Cash Flow	2021	2022	2023	2024	2025
EBIT	$ 94,472,620.27	$ 106,432,892.06	$ 119,907,339.09	$ 135,087,656.53	$ 152,189,808.28
Income Taxes	$ 29,661,366.51	$ 33,416,507.46	$ 37,647,050.77	$ 42,413,182.56	$ 47,782,708.57
Depreciation	$ 42,763,707.25	$ 48,177,609.82	$ 54,276,914.63	$ 61,148,393.90	$ 68,889,805.21
CapEX	$ (61,963,022.16)	$ (69,807,565.74)	$ (78,645,231.69)	$ (88,601,749.71)	$ (99,818,766.92)
ChangeNetworking	$ 262,497,893.89	$ 295,730,233.03	$ 333,169,799.69	$ 375,349,230.59	$ 422,868,594.43
Free Cash Flow	**$ 367,432,565.75**	**$ 413,949,676.63**	**$ 466,355,872.50**	**$ 525,396,713.87**	**$ 591,912,149.56**

Figure 16 Free Cash Flow Projections

The free cash flow was calculated using the number calculated in the balance sheet and income statement.

The Discounted Free Cashflow

To calculate the share price using the Discounted Free Cashflow method a few more details are needed aside from the Free Cash Flow: a cost of capital and steady growth is need.

For the Cost of Capital, the study used the WACC calculated with value of 12.77%, after this five-year period the study is assuming a steady growth of 1.26%. This number was calculated as an average of the historical growth of free cash flows reported by the company.

WACC	12.77%				
FCF growth	1.26%				
Sales Growth	12.66%				
Discount Factor	**1.13**	**1.27**	**1.43**	**1.62**	**1.82**
Terminal Value					$ 5,207,699,035.55
PV FCF	$ 325,826,093.86	$ 325,509,734.38	$ 325,193,682.07	$ 324,877,936.62	$ 324,562,497.75
PV Terminal Value					$ 2,855,531,530.77
NPV	$ 4,481,501,475.46				
Cash	$ 418,000,000.00				
Debt	$ 634,000,000.00				
Enterprise Value	$ 4,265,501,475.46				
Shares Outstanding	135,000,000				
Price per Share	$ 31.60				

Figure 17 Share Price calculation using Discounted Free Cashflow model

Our analysis indicate that the stock would be worth $31.60, this indicates that the stock is possibly undervalued in 2020 as it closed at $28.78 on December of 2020. This would be a reasonable result as at that time COVID restrictions were still in place and there was uncertainty of the future specially for the travel industry so an overall pessimism in this industry was expected.

Sensitivity Analysis

After calculating the stock price, it would be of good use to understand the sensitivity of the resulting price. This analysis is done by varying the sales growth ratio and free cash flow growth ratio and mapping the results.

Varying free cash flow growth:

WACC \ FCF g	$ 31.60	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%
	10%	$ 41.94	$ 43.89	$ 46.10	$ 48.59	$ 51.44	$ 54.73
	10.50%	$ 39.50	$ 41.22	$ 43.14	$ 45.31	$ 47.76	$ 50.56
	11%	$ 37.31	$ 38.83	$ 40.52	$ 42.41	$ 44.53	$ 46.94
	11.50%	$ 35.33	$ 36.69	$ 38.18	$ 39.84	$ 41.69	$ 43.78
	12%	$ 33.54	$ 34.74	$ 36.07	$ 37.54	$ 39.17	$ 40.99
	12.50%	$ 31.90	$ 32.98	$ 34.17	$ 35.47	$ 36.91	$ 38.51
	13%	$ 30.40	$ 31.37	$ 32.44	$ 33.60	$ 34.88	$ 36.30
	13.50%	$ 29.02	$ 29.90	$ 30.86	$ 31.90	$ 33.05	$ 34.31
	14%	$ 27.75	$ 28.55	$ 29.42	$ 30.36	$ 31.38	$ 32.51
	14.50%	$ 26.58	$ 27.30	$ 28.09	$ 28.94	$ 29.86	$ 30.87

Figure 18 Sensitivity Analysis FCF growth vs WACC

As expected, the share price is higher when the free cash flow growth increases and WACC decreases, but it is important to note that almost all combinations around the parameters calculated indicate an undervaluation of the company by the market.

Varying the sales growth:

WACC \ Sales g	$ 31.60	11.50%	12.00%	12.50%	13.00%	13.50%	14.00%
	10%	$ 40.93	$ 41.78	$ 42.65	$ 43.53	$ 44.42	$ 45.33
	10.50%	$ 38.51	$ 39.30	$ 40.11	$ 40.93	$ 41.77	$ 42.62
	11%	$ 36.33	$ 37.08	$ 37.84	$ 38.61	$ 39.40	$ 40.19
	11.50%	$ 34.37	$ 35.07	$ 35.79	$ 36.52	$ 37.26	$ 38.01
	12%	$ 32.59	$ 33.26	$ 33.93	$ 34.62	$ 35.32	$ 36.03
	12.50%	$ 30.98	$ 31.60	$ 32.24	$ 32.89	$ 33.55	$ 34.23
	13%	$ 29.50	$ 30.09	$ 30.70	$ 31.32	$ 31.94	$ 32.58
	13.50%	$ 28.14	$ 28.71	$ 29.29	$ 29.87	$ 30.47	$ 31.07
	14%	$ 26.89	$ 27.43	$ 27.98	$ 28.54	$ 29.11	$ 29.68
	14.50%	$ 25.74	$ 26.26	$ 26.78	$ 27.31	$ 27.85	$ 28.40

Figure 19 Sensitivity Analysis sales growth vs WACC

By varying the sales growth, it is possible to note a similar pattern as varying the free cashflow.

Simulation of Free Cash Flows (Free Cashflow – Best and Worst Scenarios)

Another study around the free cash flow was an evaluation of the best and worst scenarios for the company's performance. To achieve this, the free cash flow was recalculated ten thousand times varying each percentage used in the previous example by 3% up or down.

This analysis was done via Python code to generate random numbers for each of the items used in the free cash flow calculus. So, the maximum variation is guaranteed:

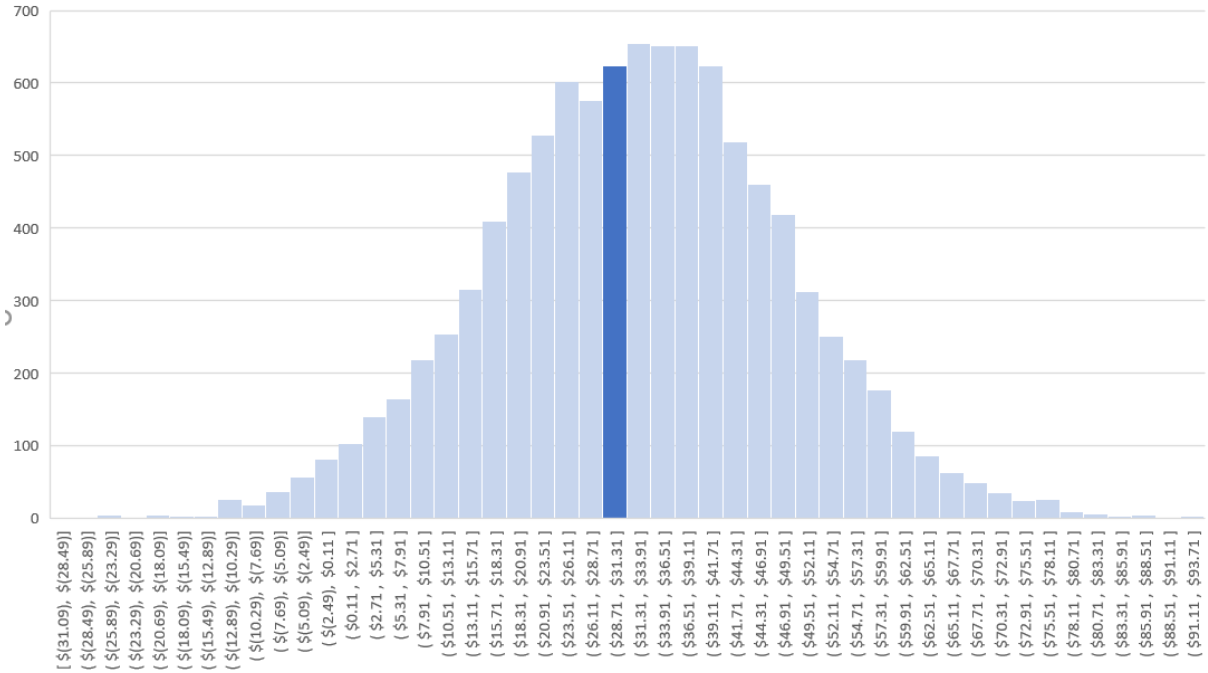


Figure 20 FCF maximum variation

From this analysis it is possible to conclude that, although above the share price in December of 2020 being lower than the estimate calculated through the discounted free cash flow model there is not a statistical significance to guarantee that these values are indeed different.

Valuation Summary

The share price for TripAdvisor was calculated under the different valuation models. From these analyses, we can see that the stock is slightly undervalued at $28.78. The Discounted Free Cash Flow analysis shows that the price should be $31.60. From sensitivity analysis, it is possible to conclude that most combinations yielded a higher share price than the actual one, although the simulation does not provide a statistical significance to determine if the stock is in fact undervalued it has a higher probability of being undervalued than overvalued since the actual stock price is less than the mean of this distribution.

Recommendation and Bottom line

When their share prices are undervalued, firms have a choice of **buying back stocks or disclosing critical information**. TripAdvisor pays no dividends and have been practicing stock repurchase. These choices represent a tradeoff between the interests of short-term investors and long-term investors.

Although the different models yielded higher stock prices than the actual stock price leading to believe that the stock is undervalued. The margins were too thin, and no statistical significance could be established through the simulation.

Given that Trip Advisor's stock has been consistently losing value since 2014, the effect of COVID in traveling is still ongoing and there is no clear sight of when operations would go back to normal, and that also, Trip Advisor has not been able to reinvent themselves during the pandemic this study concludes that the investor should not buy this stock.

A better option in December of 2020 would be to short this stock as there is no clear sight of the stock going up and multiple factors for its value to go down.

Appendix

1. https://www.alliedmarketresearch.com/online-travel-market

2. https://www.globenewswire.com/news-release/2022/03/01/2394355/0/en/At-12-2-CAGR-Global-Online-Travel-Booking-Market-Size-to-Surpass-USD-2000-Million-By-2028-Industry-Share-Trends-Forecast-by-Facts-Factors.html

3. https://www.statista.com/topics/2704/online-travel-market/#dossierKeyfigures

4. Python code for FCF maximum variation (worst case and best-case scenarios)

In [12]:

```python
import pandas as pd
from scipy.stats import norm
import random
import seaborn as sns
import numpy as np
```

COGS/Sales 4.88% SG&A/Sales 75.34% Depreciation/Gross fixed assets 15.48% Interest rate 5.77% Tax rate 20.00% Minority interest/(Pretax - Taxes) 0.00% Dividend growth 0.00%

Free Cash Flow =(Gross Sales - COGS -SG&A - R&D - Depreciation)*(1-t) + Depreciation - Capital Expenditure+Ch NWC

In [13]:

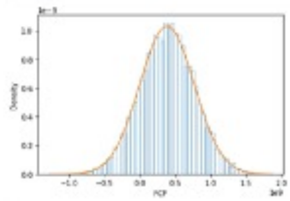
```python
params = dict()
params['COGS/Sales'] = 4.49/100
params['SG&A/Sales'] = 75.88/100
params['Gross Assets/Sales'] = 42.50/100
params['Depreciation/Assets'] = 18.58/100
params['Capex/Sales'] = 0/100
params['Ch NWC/Sales'] = 38.55/100
params['Taxes'] = 20/100

Sales= 680466643.38

Mean_Sales=680466643.38
Std_Dev_Sales=259432908.43
price = pd.DataFrame({'FCF1':[], 'FCF2':[], 'FCF3':[], 'FCF4':[], 'FCF5':[],'Ter':[],'Price':[]})
params
```

Out[13]:

```
{'COGS/Sales': 0.0449,
 'SG&A/Sales': 0.7587999999999999,
 'Gross Assets/Sales': 0.425,
 'Depreciation/Assets': 0.1858,
 'Capex/Sales': 0.0,
 'Ch NWC/Sales': 0.3855,
 'Taxes': 0.2}
```

In [14]:

```python
df = pd.DataFrame({"Sales":[], 'COGS':[], 'SG&A':[], 'Depreciation':[], 'CAPEX':[],'Ch NWC':[],'FCF':[]})
for x in range(10000):

    Sales1=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales2=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales3=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales4=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales5=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales6=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())

    COGS=norm(params['COGS/Sales'],1/100).ppf(random.random())
    SGnA=norm(params['SG&A/Sales'],1/100).ppf(random.random())
    Depreciation=norm(params['Gross Assets/Sales'],1/100).ppf(random.random())*norm(params['Depreciation/Assets'],1/100).ppf(random.random())
    CAPEX=norm(params['Capex/Sales'],1/100).ppf(random.random())
    CHNWC=norm(params['Ch NWC/Sales'],1/100).ppf(random.random())

    I={'Sales': Sales1,
       'COGS':COGS*Sales2,
       'SG&A':SGnA*Sales3,
       'Depreciation':Depreciation*Sales4,
       'CAPEX':CAPEX*Sales5,
       'Ch NWC':CHNWC*Sales6,
       'FCF':[]}

    I['FCF']=(I['Sales']-I['COGS']-I['SG&A']-I['Depreciation'])*(1-params['Taxes'])+I['Depreciation']-I['CAPEX']+I['Ch NWC']
    df2 = pd.DataFrame(I, index=[0])
    df=df.append(df2, ignore_index=True)

x=np.linspace(df.min(axis = 0).FCF,df.max(axis = 0).FCF,1000)
sns.histplot(data=df, x="FCF",stat='density', fill=False)
sns.lineplot(x=x, y=norm(df.mean(axis = 0).FCF,df.std(axis = 0).FCF).pdf(x),palette=['r'])
df.to_csv('out.csv', index=False,)
```



In [15]:

```python
Mean_Sales=Mean_Sales*(1+0.1266)

df = pd.DataFrame({"Sales":[], 'COGS':[], 'SG&A':[], 'Depreciation':[], 'CAPEX':[],'Ch NWC':[],'FCF':[]})
for x in range(10000):

    Sales1=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales2=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales3=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales4=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales5=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())
    Sales6=norm(Mean_Sales,Std_Dev_Sales).ppf(random.random())

    COGS=norm(params['COGS/Sales'],1/100).ppf(random.random())
    SGnA=norm(params['SG&A/Sales'],1/100).ppf(random.random())
    Depreciation=norm(params['Gross Assets/Sales'],1/100).ppf(random.random())*norm(params['Depreciation/Assets'],1/100).ppf(random.random())
    CAPEX=norm(params['Capex/Sales'],1/100).ppf(random.random())
    CHNWC=norm(params['Ch NWC/Sales'],1/100).ppf(random.random())

    I={'Sales': Sales1,
       'COGS':COGS*Sales2,
       'SG&A':SGnA*Sales3,
       'Depreciation':Depreciation*Sales4,
       'CAPEX':CAPEX*Sales5,
       'Ch NWC':CHNWC*Sales6,
       'FCF':[]}

    I['FCF']=(I['Sales']-I['COGS']-I['SG&A']-I['Depreciation'])*(1-params['Taxes'])+I['Depreciation']-I['CAPEX']+I['Ch NWC']
    df2 = pd.DataFrame(I, index=[0])
    df=df.append(df2, ignore_index=True)

x=np.linspace(df.min(axis = 0).FCF,df.max(axis = 0).FCF,1000)
sns.histplot(data=df, x="FCF",stat='density', fill=False)
sns.lineplot(x=x, y=norm(df.mean(axis = 0).FCF,df.std(axis = 0).FCF).pdf(x),palette=['r'])
df.to_csv("out2.csv", index=False,)
```