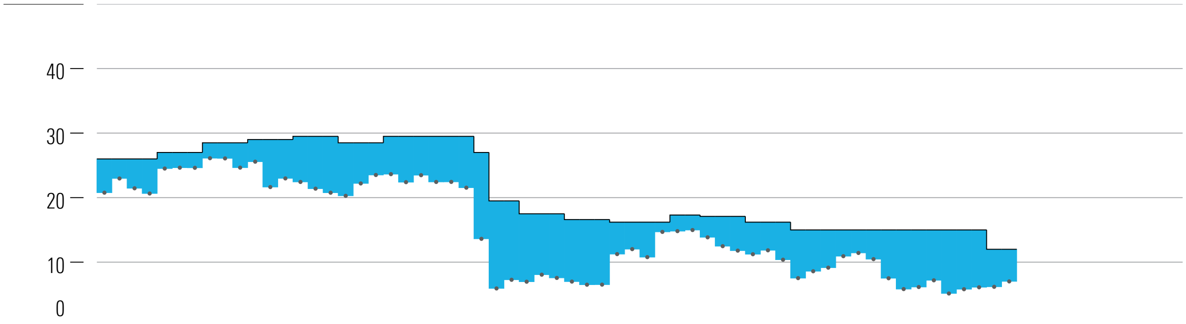
Morningstar Equity Analyst Report | Report as of 30 Jan 2023 10:12, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS Page 1 of 22

Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
7.02 USD 27 Jan 2023	12.00 USD 16 Dec 2022 21:13, UTC	0.59	2.31 USD Bil 27 Jan 2023	Narrow	Negative	Very High	Standard	4 Jan 2023 06:00, UTC

Price vs. Fair Value



Fair Value: 12.00
16 Dec 2022 21:13, UTC

Last Close: 7.02
Over Valued
Under Valued

	2018	2019	2020	2021	2022	YTD	
	0.75	0.76	0.74	0.57	0.52	0.59	Price/Fair Value
	8.29	6.28	-45.81	-28.54	-28.06	13.59	Total Return %

Morningstar Rating

Total Return % as of 27 Jan 2023. Last Close as of 27 Jan 2023. Fair Value as of 16 Dec 2022 21:13, UTC.

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The primary analyst covering this company does not own its stock.

[1]The ESG Risk Rating Assessment is a representation of Sustainalytics' ESG Risk Rating.

Sabre's Network, Switching Cost, and Efficient Scale Advantages Intact Amid Macro Headwinds

Business Strategy & Outlook Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

Despite material near-term travel demand headwinds driven by the coronavirus and inflation, we expect Sabre to maintain its position in global distribution systems over the next several years, driven by a leading network of airline content and travel agency customers as well as its solid position in technology solutions for these carriers and agents. Sabre's roughly 40% GDS transaction share is the second largest of the three companies (behind narrow-moat Amadeus and ahead of privately held Travelport) that together control nearly 100% of market volume. Sabre is also a leader in providing technology solutions to travel suppliers.

Sabre's GDS enjoys a network advantage, which is the source of its narrow moat rating. As more supplier content (predominantly airline content) is added, more travel agents use the platform, and as more travel agents use the platform, suppliers offer more content. This network advantage is solidified by technology that integrates GDS content with back-office operations of agents and IT solutions of suppliers, leading to more accurate information that is also easier to book. The company's platform reach should grow as Sabre continues to revitalize its technology and looks to expand with low-cost carriers and in countries where it previously had only minimal penetration, which are also markets with higher yields than the consolidated North American region.

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Sector	Industry
Consumer Cyclical	Travel Services

Business Description

Sabre holds the number-two share of global distribution system air bookings (40.9% as of the end of 2020 versus 38.8% in 2019; 2021 booking share was not provided). The travel solutions segment represented 89% of total 2021 revenue, split between distribution (two thirds of segment sales) and airline IT solutions (one third) revenue. The company also has a growing hotel IT solutions division (11% of revenue). Transaction fees, which are mostly tied to volume and not price, account for the bulk of sales and profits.

Replicating Sabre's GDS platform would entail aggregating and connecting content from several hundred airlines to a platform that is also connected to travel agents, which requires significant costs and time. Although we see GDS aggregation, processing, and back-office advantages as substantial, technology architectures like those of Etraveli enable end users to access not only GDS content but supply from competing platforms, which could take some volume from companies like Sabre. Also, GDS faces some risk of larger carriers making direct connections with larger agencies, although we expect these relationships to be the exception rather than the rule and for Sabre to still be the aggregating platform in either case.

Bulls Say Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

- The company's GDS network hosts content from all airlines and is used by many travel agents, resulting in a large industry share. Replicating this would involve meaningful time and costs.
- The network advantage is supported by Sabre's platform revitalization to next-generation cloud technology, which drives innovation, reliability, and cost efficiencies.
- The business model is predominantly driven by transaction volume and not pricing, leading to less cyclical volatility.

Bears Say Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

- The coronavirus and inflation present material headwinds to near-term demand and credit quality for Sabre's distribution network and IT solutions business.
- Long-term incentive costs continue to increase for Sabre's network business, as OTAs represent an increasing mix of GDS bookings, and these agents are lower-margin for the company. Also, near-term technology investment is shifting cost from capital to operating expense.
- Sabre is exposed to corporate travel, where volume could be hampered by some enduring use of video conferencing displacing internal and other meetings.

Economic Moat Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

We think Sabre will maintain its network, switching cost, and efficient scale advantages, driven by challenges in replicating its competitive position and the value that its offering provides suppliers, agents, and travelers. Further, we see these advantages supported by platform investments and a history of healthy travel demand that has recovered from past demand shocks, which we expect to be the case in the years following the pandemic. We believe Sabre's advantages will remain in place despite potential risks of financial strain tarnishing the company's ability to invest in its platform in the near term, the potential for structurally lower corporate travel demand that might have otherwise occurred without video conferencing, and competition from companies like Etraveli and direct airline connects. As a result, Sabre maintains a narrow moat, as we have confidence in its ability to earn long-term economic profits over the next 10 years, with estimated returns on invested capital including

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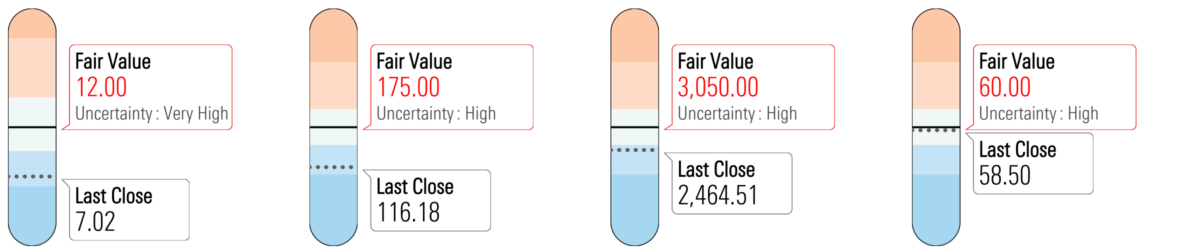
Competitors

Sabre Corp SABR | Expedia Group Inc EXPE | Booking Holdings Inc BKNG | Amadeus IT Group SA A AMS



	Sabre Corp SABR	Expedia Group Inc EXPE	Booking Holdings Inc BKNG	Amadeus IT Group SA A AMS
Economic Moat	Narrow	Narrow	Narrow	Narrow
Moat Trend	Negative	Stable	Positive	Negative
Currency	USD	USD	USD	EUR
Fair Value	12.00 16 Dec 2022 21:13, UTC	175.00 14 Feb 2022 15:10, UTC	3,050.00 7 Nov 2022 20:05, UTC	60.00 17 May 2022 19:48, UTC
1-Star Price	21.00	271.25	4,727.50	93.00
5-Star Price	6.00	105.00	1,830.00	36.00
Assessment	Under Valued 29 Jan 2023	Under Valued 29 Jan 2023	Under Valued 29 Jan 2023	Fairly Valued 29 Jan 2023
Morningstar Rating	★★★★27 Jan 2023 22:33, UTC	★★★★27 Jan 2023 22:33, UTC	★★★★27 Jan 2023 22:33, UTC	★★★27 Jan 2023 18:06, UTC
Analyst	Dan Wasiolek, Senior Equity Analyst	Dan Wasiolek, Senior Equity Analyst	Dan Wasiolek, Senior Equity Analyst	Dan Wasiolek, Senior Equity Analyst
Capital Allocation	Standard	Standard	Exemplary	Standard
Price/Fair Value	0.59	0.66	0.81	0.97
Price/Sales	0.95	1.64	6.26	6.59
Price/Book	145.10	8.00	26.05	5.71
Price/Earning	—	39.38	41.11	54.17
Dividend Yield	0.93%	0.19%	—	0.97%
Market Cap	2.31 Bil	18.13 Bil	95.60 Bil	26.33 Bil
52-Week Range	4.46—12.08	82.39—217.72	1,616.85—2,715.66	44.85—63.84
Investment Style	Small Value	Mid Core	Large Growth	Large Growth

goodwill returning to negative 2% and positive 7% in 2022 and 2023, respectively, versus its 8% weighted average cost of capital estimate, after COVID-19 led to an estimated 16% decline in 2020 and an estimated 12% shortfall in 2021. We estimate a healthy 28% ROIC including goodwill in 2031.

Dissecting the firm's competitive position, we continue to expect Sabre's distribution network (53% of 2021 revenue) will be hard to replicate and should remain a key distribution channel valued by airline suppliers, travel agents, and travelers, supporting a network effect competitive advantage. Sabre's travel network aggregates the content of hundreds of carriers and efficiently integrates that with travel agent back-office operations, which requires significant time and cost to build and operate.

For several reasons, we think Sabre's network is unlikely to be replicated in the next 10 years. In addition to the several hundred global airlines, there are tens of thousands of traditional travel agents in the United States alone and many online travel agents and travel management companies, which are integrated together into Sabre's travel network, and convincing these businesses to implement a new system would require time and cost for all parties. Also, because of Sabre's scale, the cost of using the company's travel network for airline operators is just a low-single-digit percentage of the total ticket, which ends up like the cost of a direct booking occurring on a carrier website after assuming marketing costs, making it hard for a new competitor to beat. Meanwhile, travel agents already get a 50% to 75% cut of an airline booking fee paid to them for using Sabre's or Amadeus' platform, which also strikes us as a high mark for others to surpass. Further, Sabre has the scale to quickly process the growing amount of travel content, which is difficult to replicate. The processing scale involved is gigantic, as Sabre interrogates this content (fare, inventory, schedule) and then sends back the results that best meet each person's needs in typically well under 1 second. And we expect processing needs to continue accelerating as airlines push customized offerings, especially as Sabre's platform conforms to the industry's new distribution capability, which strives to make it easier to display carriers' customized content on global distribution systems, supporting Sabre's long-term competitive positioning.

While Google has the means to replicate global distribution system networks, we think the challenges of reproducing Sabre's platform are shown in the lack of traction the search giant has seen in its air offering. Google's ITA software offers an alternative to Sabre's and Amadeus' distribution networks, but we see several hurdles to this competitive product being offered beyond Google's own travel platform, as is currently the case. To begin, Sabre's network advantage has remained in place, despite Google operating ITA since 2010. In 2018, Travelport told us that Google's platform had not seen global airline adoption because of high costs, which we think are compounded by anticompetitive and regulation concerns. Meanwhile, we believe Google faces challenges in getting traditional travel agents and travel management companies to switch from Sabre and Amadeus, as it would require time and cost, and because Google would also need to offer similar airline content, which we don't believe is currently the case. Also, Google would likely have trouble convincing online travel companies to use its platform to source air content versus Sabre, given the search giant poses a larger competitive threat than Sabre to these operators. Additionally, Google's DNA has historically been tied to not being a merchant but rather allowing information to flow as efficiently as possible, an approach we don't see changing, especially as anti-competitive regulation continues to act as a governor toward any such action. Further, we have not found evidence that Google is investing in the industry's New Distribution Capability protocol that is gradually starting to be adopted by suppliers, agents, and Sabre, which could continue to place it at a disadvantage to Sabre in the future. Finally, Google has partnered with Sabre to help develop cloud-based infrastructure and product innovation, which offers another sign that the search engine giant appears to have no plans to compete directly with GDS operators.

Not only do we believe that Sabre's network advantage is supported by the challenges in replicating its platform, it's also buoyed by the value we think its distribution channel will continue to provide suppliers, agents, and travelers. We don't believe airlines will steer from using Sabre's network, given the platform offers a global reach of travelers and can represent up to half of an airline operator's total bookings, all for just a low-single-digit percentage fee of the total airline booking amount.

We also don't think agents and travelers will devalue these aggregated travel platforms in the foreseeable future. Both agents and travelers benefit from having airline content provided on one platform versus having to do multiple searches across individual carrier websites or call centers. And agents also benefit from having Sabre's platform integrated into their back-office systems, which makes for a more efficient process and allows for technology updates as innovation improves. Evidence of this value is seen in Amadeus' revenue per booking trend, which was around a stable EUR 4.45 level during the financial crisis (Sabre was a private company during this time) and has gradually increased to EUR 4.84 in the prepandemic year of 2019 (Sabre's revenue per booking had also been increasing, reaching $5.09 in 2019 from $4.73 in 2012), as suppliers and agents (who book on behalf of the traveler) have been paying these aggregated platform providers more for upgraded offerings, such as improved user interfaces that increase agent productivity.

More evidence of the viability and value Sabre's travel network provides to airline operators is seen in the industry's stabilizing disintermediation (booking occurring on direct supplier channels versus indirect channels like Sabre's travel network) trend. This trend has been supported by the fact that low-cost carriers initially got all their bookings on direct channels, but as the routes of these airlines expanded globally over the past several years, they have increasingly turned to Sabre's distribution channel to reach a global corporate traveler. We don't expect airlines to incrementally push their own direct channels over the next several years, given similar costs with the stronger traveler reach provided by Sabre's platform, which is also increasingly offering suppliers the ability to showcase customized content in a user-friendly fashion on these platforms, which is aided by the industry's New Distribution Capability protocol.

Not only do we see Sabre's network advantage as difficult to replicate and continuing to add value, but also believe it is in the best interest of suppliers and travelers to have the company exist in the travel market long term. In our view, not having Sabre's travel network would be value-destructive for suppliers, agents, and travelers, as it would leave only two competitors (Amadeus and Travelport) offering global aggregated airline content distribution at low costs to airlines; a similar argument could be made for travel-exposed Boeing. Having only two operators would risk higher costs for suppliers, agents, and travelers.

Many of the drivers underlying network advantages for Sabre's core distribution business also foster an efficient scale moat, in our view. To begin, efficient scale is witnessed by Sabre, Amadeus, and Travelport controlling essentially 100% of the market. The efficient scale advantage is also evident by Sabre's travel network scale, allowing it to offer global distribution to airlines at costs that are typically only a low-single-digit percentage of the total airline ticket (similar to expenses incurred for airlines through their own direct website bookings), which we believe would be timely and costly to replicate and improve upon, and which is buoyed by the fact that large online operating companies like Booking and Expedia continue to source airline content from Sabre and its peers versus building it out.

While Sabre's distribution network holds network and efficient scale advantages, its airline IT solutions and hospitality solutions business (47% of 2021 revenue), provide a third switching cost advantage, which makes it costly and time consuming for carriers to move to another provider. This is illustrated by IT solution contract lengths of three to seven years, implementation times of one to two years with high costs, and renewal rates for Sabre that are comfortably above 90% (peer Amadeus has noted similar renewal rates). Given the consistently high renewal rates and length of contracts, it would be several years before the competitive advantages of this business materially waned.

Also, in our view, Sabre's network, switching cost, and efficient scale advantages are fortified by the company's recent investment into revitalizing its travel network by migrating functionality to the cloud and streamlining its technology offering, which should allow for improved product innovation at lower costs long term. Early signs from this in 2018-19 investment were encouraging, as shown by higher free cash flow to the firm (amounting to $929 million in the prepandemic years of 2018-19 combined versus $684 million in 2016-17 combined), offering support for a competitive network moat. We think Sabre will continue to invest behind its competitive advantages.

Financial strain, structurally lower corporate travel, and potential incremental competition are three factors that could create value destruction to Sabre's advantageous competitive position. We think Sabre has solidified its liquidity enough to continue many of its investments, thereby supporting its narrow moat rating. Sabre's monthly cash burn at near zero revenue is less than $80 million, providing it with enough liquidity to continue many investments at near-zero revenue into 2023. Another potential risk is lower long-term business travel demand after the coronavirus is contained. Here we expect corporate air volume on industry GDS platforms will recover to around 90% of 2019's level by the middle of this decade and then remain at those amounts in the back half of the 2020s, as videoconferencing displaces some business travel (mainly internal visits, which were around 20% of prepandemic corporate trips, according to AlixPartners). Advancements in technology architecture is another risk to Sabre and peers. Companies like Etraveli enable end users to access not only GDS content but supply from competing platforms, which could take some volume from companies like Sabre. Also, GDS faces some risk of larger carriers making direct connections with larger agencies, although we expect these relationships to be the exception rather than the rule and for Sabre to still be the aggregating platform in either case.

Sabre's competitive positioning should remain intact even if there is some reduction in business travel and incremental competition. We estimate that corporate travel was over 50% of Sabre's pre-COVID

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2019 total sales. Our out-year 2027-31 industry air volume forecast of 2% assumes relatively resilient mid-single-digit leisure travel growth, with corporate travel not growing. Under this assumption, our estimated ROIC including goodwill for Sabre during 2027-31 is for an average in the high 20s, comfortably above its 8% WACC.

Fair Value and Profit Drivers Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

After re-evaluating Sabre's cost of capital, we have lowered our fair value estimate to $12 per share from $15 as a result of lifting the company's cost of equity to 11% from 9%. The increased cost of equity better reflects our recent Uncertainty Rating change to Very High from High, which can fluctuate with market and idiosyncratic conditions, and also surpasses our unchanged 10% pretax cost of debt for the company, which seems intuitive, given the capital structure priority. Our financial forecast is unchanged. Our fair value estimate implies a 2024 enterprise value/EBITDA multiple of 10.5 times.

We don’t expect Sabre's sales to return to 2019 levels until 2025, aided by the loss of Expedia's North American business in 2020, which we estimate was around midteens of 2019 air volume but only a low-single-digit percentage of EBITDA. Within our Sabre forecast is the assumption that industry global air traffic does not return to 2019 levels until 2026. This is due to our view that global corporate air travel volume will not rebound fully to 2019's level, remaining around 90% of prepandemic amounts by 2031, as some maintained use of video conferencing displaces business trips (mainly internal visits).

Our 2022 Sabre revenue forecast assumes an air booking recovery to the low 50s of 2019, followed by a rebound to the mid-60s in 2023. We forecast 13% and 12% annual sales growth for the travel solutions and hospitality segments, respectively, during 2022-31.

In the travel solutions segment, our forward 10-year network sales forecast is derived from revenue per booking that reaches $5.15 in 2031 from $4.82 in the prepandemic year of 2019. Our 2022-31 IT solutions (IT for airlines) sales forecast is derived from increasing airline revenue per passenger boarded (to $1.45 in 2031 from $1.34 in 2019) as customers adopt new and existing products and by passenger boarding growth over the IT platform.

While we see incremental investments deleveraging against weaker travel demand in the near term, our 2025 operating margin (after investments wane and travel demand returns) is 18%. As a result of our top-line and cost forecasts, we expect operating margins stay around the high-teens in the back half of our 10-year forecast from 9.1% in the prepandemic year of 2019 (heavy investment period).

Risk and Uncertainty Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

Our Morningstar Uncertainty Rating for Sabre is Very High.

The travel industry is cyclical. A prolonged contraction in travel demand from COVID-19 or economic contraction could cause an increasing amount of small-business traditional travel agencies to shutdown, which could marginally affect long-term transaction volume done on Sabre’s travel network. Also, an increasing portion of business travel following the crisis could be replaced by video meetings, which would affect the global distribution system industry. Such disruptions could lead to the potential need for incremental liquidity, which could occur at value-destructive levels.

Airlines continue to look for ways to migrate bookings directly to their websites, although costs are often similar to those found on indirect distribution platforms like Sabre’s global distribution system, which also increasingly allow for more control of the customer relationship.

Advancement in technologies could make it increasingly easy for end users to access not only GDS content but supply from smaller competitive offerings. Also, blockchain technology is in the early phases of development. Still, these threats currently lack the processing and aggregation capabilities that GDS operators offer.

Sabre faces environmental, social, and governance risks around innovation tax code changes, data breaches, potential fees should its platform be viewed as anticompetitive, and obtaining and retaining engineering talent.

Capital Allocation Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

We view Sabre's capital allocation as Standard, as the company’s weak balance sheet is offset by our fair view on its investment strategy and shareholder distribution.

Sabre's financial health profile is weak. The company ended 2021 with $3.7 billion in net debt, representing about 50% of its enterprise value (based on our $12 fair value estimate). Also, we forecast Sabre’s 2023 net debt/EBITDA at 13.8 times, although we expect it to improve to 6.0 times in 2024 as travel demand continues to improve from the depths of the pandemic. More encouraging is that Sabre doesn’t have any material debt maturing until 2024 ($536 million).

We see Sabre’s investment strategy as fair. Although the company’s cloud investment has trailed Amadeus', it has made strides to correct that gap the last three plus years, which we see as prudent and benefitting its ability to develop innovative products that will further entrench them with customers. We are also in agreement with the company’s focus on harmonizing its platform to the industry’s New Distribution Capability protocol, as that should help maintain its network and efficient scale advantages over at least the next 10 years, in our view. We have confidence that management will be able to execute on its investment strategy. We believe CEO Sean Menke and other executives have the experience to lead Sabre through an increasingly complex technological landscape. Although Menke only joined Sabre in October 2015 as president of the travel network division, he has extensive industry experience. He was previously an executive at Hawaiian Airlines and Air Canada and also served as

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Frontier Airlines' CEO. We think this insight into Sabre's customer base will prove valuable as the global distribution operator works to improve its technology offerings for airlines and hoteliers. Additionally, although we are neutral on the 7 times 2019 EBITDA multiple, the sale of the AirCentre business should free up capital to allocate further to New Distribution Capability.

Finally, we see Sabre's shareholder distribution as appropriate. We hold no issue with the company's approach to offer dividends during times of normal travel demand. Also, we have no problem with Sabre's history of share repurchases, which averaged a reasonable $71 million annually during 2017-19.

Analyst Notes Archive

Our 2022 Forecast for Sabre Still on Track, but Cost of Equity Adjustment Drives Our FVE Lower Dan Wasiolek, Senior Equity Analyst, 16 Dec 2022

We are maintaining our near-term (2022) and intermediate-term (2025) sales and EBITDA forecasts for narrow-moat Sabre; they have remained relatively unchanged throughout this year. However, we are increasing the firm's cost of equity to 11% from 9%, based on a reassessment of a handful of factors. As a result, we've lowered our fair value estimate to $12 per share from $15, leaving the shares still undervalued.

Our prior 9% cost of equity tied directly to our modeling of Sabre's cyclicality, midcycle margins, and financial and operating leverage, all of which remain unaltered. That said, we recently changed Sabre's Morningstar Uncertainty Rating to Very High from High based on our new quantitative methodology. In isolation, this rating, which can fluctuate with market and idiosyncratic conditions, implies a 13.5% cost of equity in our discounted cash flow model, though we view 11% as more appropriate.

An increase in the cost of equity to 11% from 9% surpasses our unchanged 10% pretax cost of debt for the company, which seems intuitive, given the capital structure priority. Also, our prior 9% cost of equity and intact 10% cost of debt for Sabre compare with 9% and 5.8% for narrow-moat peer Amadeus, yet equate to a total weighted average cost of capital of 8.3% for both, given the lower debt/equity ratio of the latter. Given Amadeus' larger revenue share and lower debt levels, however, we think it makes qualitative sense for Sabre's total cost of capital to exceed that of its competitor.

Although Sabre is generally tracking to hit 2022 sales and EBITDA forecasts laid out at the start of this year, its shares are down around 30% year to date. We attribute the poor performance to the disdain that investors currently have for the company's leveraged balance sheet amid higher interest rates and fears of an economic growth slowdown.

We See Improving Demand and Liquidity at Sabre, but the Share Price Suggests Otherwise Dan Wasiolek, Senior Equity Analyst, 2 Nov 2022

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As we digest third-quarter earnings, we think that Sabre shares continue to be held back by demand destruction and liquidity angst, despite the preponderance of evidence suggesting otherwise. We don't plan to materially change our $15 fair value estimate, leaving shares deeply undervalued.

We surmise that the market was disappointed by Sabre's third-quarter air bookings reaching just 56% of 2019's levels, below our 59% forecast and flat from three months ago, as well as management guiding 2022 total bookings to 55% of 2019's level versus a prior range of 50%-70%. But air booking volumes continue to gradually improve from the pandemic nadir of April 2020, recovering to 50%, 58%, 59%, and 60% of 2019's level in July, August, September, and October, respectively. Further, third-quarter revenue per air booking rose to $6.27 from $4.59 last year, driven by a higher mix of higher-revenue cross-border travel. We calculate that the updated 2022 guidance equates to sales of around $2.6 billion, which is in line with FactSet consensus forecasts and above our $2.5 billion estimate (which assumes total bookings reach low-50s of 2019's level). Looking into 2023, we expect total bookings to recover to mid-60s of prepandemic marks. We acknowledge the uncertain economic outlook but think Sabre's demand can move higher in 2023 even if a mild recession occurs. This view is stoked by pent-up corporate demand (views echoed recently by the major airline carriers) and airline seat capacity reaching 102% of prepandemic marks in the first quarter of 2024, compared with 89% and 91%, respectively, in the third and fourth quarters of 2022.

We see little risk to Sabre servicing its debt, particularly as it has refinanced $1.3 billion of debt scheduled to mature in 2024 out to 2028 (at rates of SOFR plus 425-500 basis points), leaving just a $536 million obligation for that year, and has $800 million in cash, with free cash flow set to inflect positive in the fourth quarter.

Investors Should Pack Travel Investments, as Demand Can Persist Amid Demand and Credit Concerns Dan Wasiolek, Senior Equity Analyst, 18 Oct 2022

Despite enduring travel demand into the fall of 2022 and our view that it can continue into 2023, investor concerns around future trips and credit availability have grounded share price performance across the industry. As a result, we see meaningful opportunities to book investment stays in Sabre, Accor, Booking Holdings, and Norwegian, which trade at 64%, 42%, 44%, and 54% discounts to our $15, EUR 37.50, $2,900, and $28 fair value estimates, respectively.

Unpacking this, travel demand has been improving since its nadir in April 2020, when domestic road leisure trips first led the recovery, given that excursions could be met within the confines of social distancing and other restrictive measures to fight COVID-19. Travel demand has continued to grow further in 2021 and this year, aided by vaccine distribution and eased restrictions, with ongoing leisure trips augmented by increasing business and group journeys. We've seen this manifest in markets, like the U.S. and Europe, as hotels have boasted revenue per available room in line with 2019's level. Further, the Global Distribution System industry, which is more exposed to business travel, is seeing

Morningstar Equity Analyst Report | Report as of 30 Jan 2023 10:12, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
7.02 USD 27 Jan 2023	12.00 USD 16 Dec 2022 21:13, UTC	0.59	2.31 USD Bil 27 Jan 2023	Narrow	Negative	Very High	Standard	4 Jan 2023 06:00, UTC

rising air booking volumes, which we calculated at around 70% of 2019's level this summer versus about 40% in the year-ago period.

In our view, investors remain overly concerned by the potential for economic conditions to weaken and for credit availability to be siphoned off. In this vein, our stance is that even if a mild retraction were to occur, we still believe travel demand can grow in 2023, stoked by pent-up demand, service consumption growth, and remote work flexibility. We think that liquidity and demand profiles are still sufficient across our travel coverage to make it through this period of uncertainty, including for the more leveraged cruise lines and Sabre.

Sabre's August Bookings Tracking Toward Our Forecast, as Investor Demand and Liquidity Angst Remain Dan Wasiolek, Senior Equity Analyst, 7 Sep 2022

Sabre disclosed its net air bookings in August were 56% of 2019's level, with the final days of the month ramping back to 60%, after some industry air travel disruptions drove July to around a low-50s level. Overall, the company's bookings remain in a very gradual uptrend, with April at 52% of prepandemic marks, May at 56%, and June at 60%. The stable to improving demand trend comes despite economic slowdown concerns, driven by some return of business and group travel (which we estimate was more than half of Sabre's prepandemic sales). We don't plan to adjust our third-quarter and fourth-quarter air booking forecast of 59% and 53% of 2019's level, respectively. We still think Sabre's air bookings can recover to mid-60s of prepandemic marks in 2023, up from low-50s in 2022, and make a full return to 2019's level by 2027. Our $15 per share valuation is unchanged, leaving shares undervalued.

In our view, investors are pricing in too much angst over how inflation might affect future demand and debt-servicing ability for Sabre. To reach $7 per share in our discounted cash flow model, one would need to assume Sabre's air and hotel demand levels don't show any further improvement from current levels the rest of the decade. We see this as unreasonable, as eased COVID-19 restrictions allow corporations to return to in-person meetings and conferences. Also, we think Sabre will still be able to invest behind its network, efficient scale, and switching cost advantaged business, which foster its narrow moat. Sabre has no debt maturing in 2022 or 2023, though $1.2 billion and $2.0 billion are scheduled due in 2024 and 2025, respectively. We model Sabre refinancing $500 million in debt in both 2023 and 2024 at 9%-10% rates (like levels seen at the depth of the pandemic in April 2020). Also, we already incorporate a 10% cost of debt for Sabre, well above the 6.5% modeled for Amadeus, which we think captures the company's relatively higher financing needs.

Sabre's Demand and Profit Improving; Shares Pricing in Too Much Economic and Financial Distress Dan Wasiolek, Senior Equity Analyst, 2 Aug 2022

Narrow-moat Sabre shares flew 7% higher as second-quarter air bookings reached 56% of 2019's level in the quarter, near our 55% forecast. Like last quarter, the recovery improved each month in the period,

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Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
7.02 USD 27 Jan 2023	12.00 USD 16 Dec 2022 21:13, UTC	0.59	2.31 USD Bil 27 Jan 2023	Narrow	Negative	Very High	Standard	4 Jan 2023 06:00, UTC

with April at 52% of prepandemic marks, May at 56%, and June at 60%. The rebound was led by higher-margin corporate and overseas travel, driving revenue per air booking to $6.19 (128% of 2019's level) versus $5.96 a quarter ago. The improving demand and mix lifted adjusted EBITDA margins to 3.7%, up from a negative 5.2% print last quarter. Like narrow-moat peer Amadeus, Sabre noted demand temporarily moderated in July due to airport and airline disruptions. Still, Sabre lifted its 2022 scenarios, now expecting $100 million and $200 million more in sales based on air bookings at 50% and 60%-70% of 2019's level, respectively. And Sabre now sees 2022 adjusted EBITDA ranging from $0 to $275 million versus negative $85 to positive $165 million prior. We do not plan to materially change our air booking forecast for low-50s of prepandemic marks or $32 million adjusted EBITDA forecast for 2022. We still expect a full recovery in air bookings by late 2028 and low-20% adjusted EBITDA margins by mid-decade, as the company leverages recent platform investments. We do not expect a material change to our $15 valuation on Sabre. Shares are attractive, with investors appearing to price in severe economic contraction, share loss, and financing requirements.

We think investors are overly pessimistic on the company's liquidity profile. Sabre has no debt maturing in 2022 or 2023, though $1.2 billion and $2.0 are scheduled due in 2024 and 2025, respectively. We plan to model Sabre refinancing $500 million in debt in both 2023 and 2024 at 9%-10% rates (like levels seen at the depth of the pandemic in April 2020). Also, we already incorporate a 10% cost of debt for Sabre, well above the 6.5% modeled for Amadeus, which we think captures the company's relatively higher financing needs

Sabre Stock Appears to Price In Prolonged Period of Weak Economic Data; Shares Attractive Dan Wasiolek, Senior Equity Analyst, 13 May 2022

Sabre's share price has been chopped by 35% so far in May and is more than 50% below our intact $15 fair value estimate, as concerns surface about how inflation might affect future demand and debt-servicing ability for the company. We think investors are underappreciating Sabre's demand opportunity and liquidity profile and see the pullback as an attractive entry point.

To reach a price of around $8 per share in our discounted cash flow model, one would need to assume that Sabre's air booking volume shows no improvement the rest of 2022 through 2027, with a recovery to just mid-50% of 2019 levels by the end of this decade. We see this as unreasonable, as eased COVID-19 restrictions allow corporations to return to in-person meetings and conferences. In fact, Sabre's demand has accelerated through April from the omicron-affected January, resulting in air bookings of 29%, 45%, and 52% of 2019 levels in January, February, and March, respectively, and 53% in April. Barring a renewed health crisis, we think business travel will continue to recover, as companies look to retain and win contracts through in-person meetings. As a result, we expect Sabre's air bookings to return to 54% of 2019 levels in 2022 and 74% in 2023, with a full recovery by 2028.

Morningstar Equity Analyst Report | Report as of 30 Jan 2023 10:12, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS Page 13 of 22

Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
7.02 USD 27 Jan 2023	12.00 USD 16 Dec 2022 21:13, UTC	0.59	2.31 USD Bil 27 Jan 2023	Narrow	Negative	Very High	Standard	4 Jan 2023 06:00, UTC

Sabre does have elevated debt levels, but we think its liquidity profile can handle macro-induced demand pressures. The company ended its March quarter with $1.2 billion in cash, and we believe it is near free cash flow breakeven at April demand levels, which again we expect to improve further in 2022-23. Also, Sabre has no material debt due until 2024, when $1.2 billion is set to mature, followed by $2.0 billion in 2025 (the company has been able to refinance as needed throughout the pandemic, aided by its intact narrow economic moat). Finally, Sabre remains on track to see cost savings from its transition to the cloud, which we expect to aid operating margins that reach 19% by 2025 from the midteens in 2017-18.

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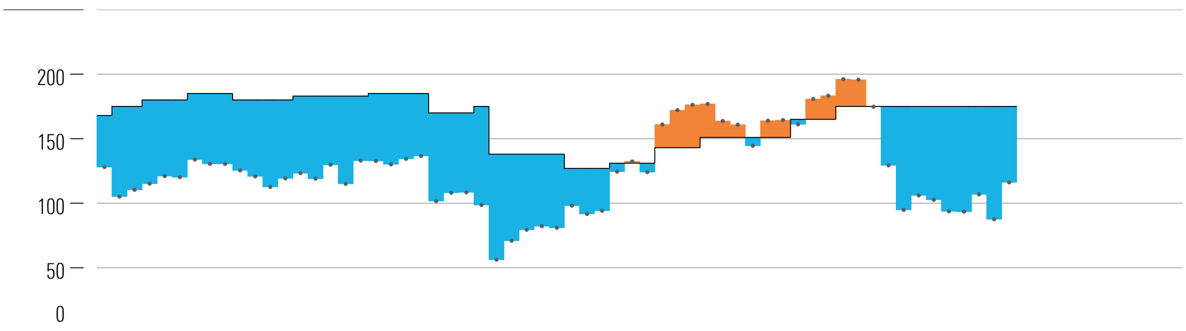
Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Competitors Price vs. Fair Value

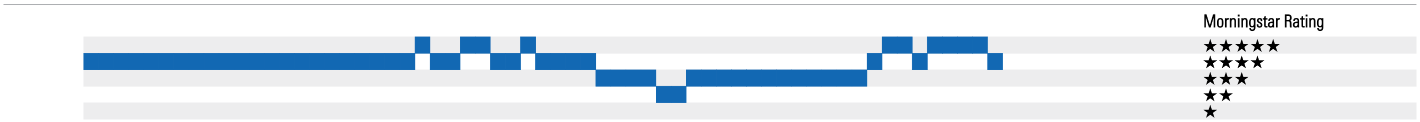
Expedia Group Inc EXPE



Fair Value: 175.00
14 Feb 2022 15:10, UTC

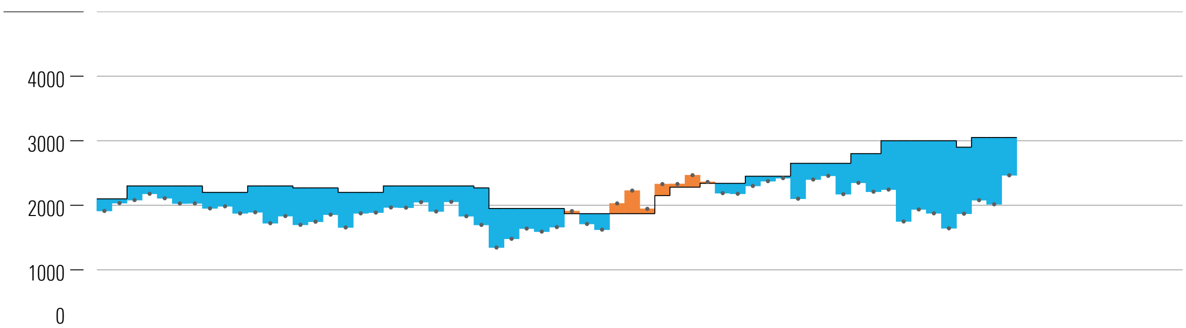
Last Close: 116.18
Over Valued
Under Valued

	2018	2019	2020	2021	2022	YTD	
	0.63	0.64	1.01	1.10	0.50	0.66	Price/Fair Value
	-4.91	-2.83	22.75	36.50	-51.53	32.63	Total Return %



Total Return % as of 27 Jan 2023. Last Close as of 27 Jan 2023. Fair Value as of 14 Feb 2022 15:10, UTC.

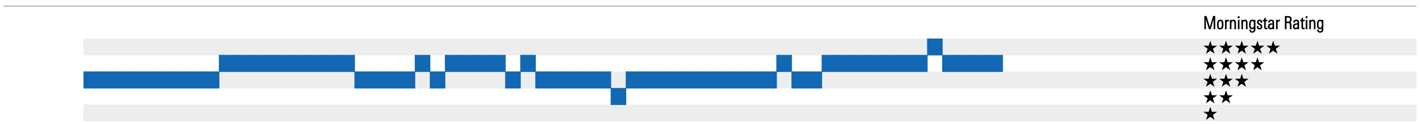
Booking Holdings Inc BKNG



Fair Value: 3,050.00
7 Nov 2022 20:05, UTC

Last Close: 2,464.51
Over Valued
Under Valued

	2018	2019	2020	2021	2022	YTD	
	0.75	0.89	1.19	0.91	0.66	0.81	Price/Fair Value
	-0.88	19.24	8.45	7.72	-16.00	22.29	Total Return %

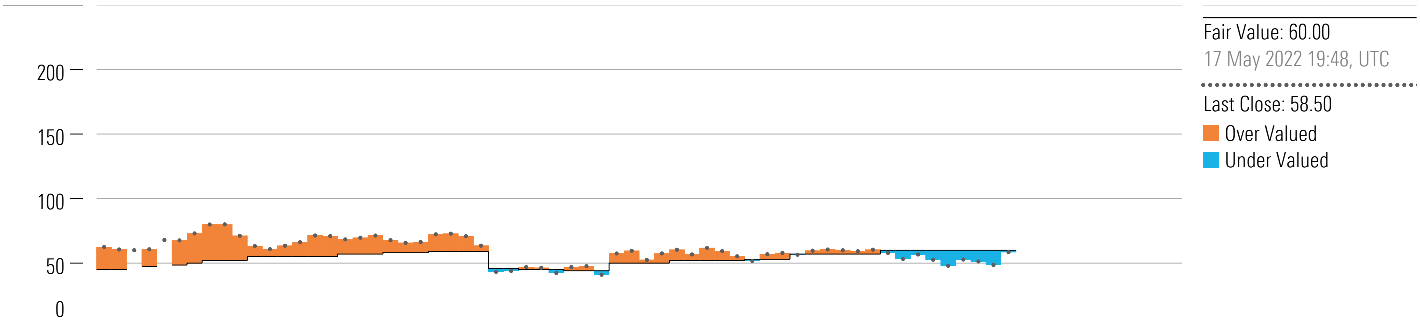


Total Return % as of 27 Jan 2023. Last Close as of 27 Jan 2023. Fair Value as of 7 Nov 2022 20:05, UTC.

Morningstar Equity Analyst Report | Report as of 30 Jan 2023 10:12, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS

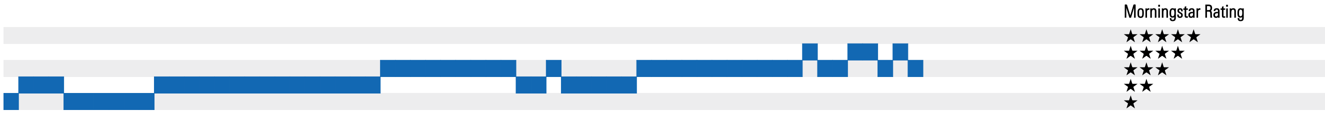
Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Amadeus IT Group SA A AMS



	2018	2019	2020	2021	2022	YTD
Price/Fair Value	1.11	1.23	1.19	1.05	0.81	0.97
Total Return %	3.10	21.59	-17.42	0.13	-18.59	20.49

Morningstar Rating



Total Return % as of 27 Jan 2023. Last Close as of 27 Jan 2023. Fair Value as of 17 May 2022 19:48, UTC.

Sabre Corp SABR ★★★★ 27 Jan 2023 22:33, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
7.02 USD 27 Jan 2023	12.00 USD 16 Dec 2022 21:13, UTC	0.59	2.31 USD Bil 27 Jan 2023	Narrow	Negative	Very High	Standard	4 Jan 2023 06:00, UTC

Morningstar Historical Summary

Financials as of 30 Sep 2022

Fiscal Year, ends 31 Dec	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD	TTM
Revenue (USD K)	2,523,546	2,631,417	2,960,896	3,373,387	3,598,484	3,866,956	3,974,988	1,334,100	1,688,875	—	1,905,836	2,406,473
Revenue Growth %	5.9	4.3	12.5	13.9	6.7	7.5	2.8	-66.4	26.6	—	60.4	60.2
EBITDA (USD K)	667,832	625,659	878,685	900,272	932,409	968,774	770,650	-715,411	-418,384	—	72,732	677
EBITDA Margin %	26.5	23.8	29.7	26.7	25.9	25.1	19.4	-53.6	-24.8	—	3.8	0.0
Operating Income (USD K)	380,930	421,345	459,769	459,572	574,552	562,016	363,417	-988,039	-665,487	—	-206,260	-332,136
Operating Margin %	15.1	16.0	15.5	13.6	16.0	14.5	9.1	-74.1	-39.4	—	-10.8	-13.8
Net Income (USD K)	-100,494	69,223	545,482	242,562	242,531	337,531	158,592	-1,282,339	-928,469	—	-275,357	-462,053
Net Margin %	-5.4	2.2	18.4	7.2	6.7	8.7	4.0	-96.7	-56.3	—	-15.3	-20.1
Diluted Shares Outstanding (K)	256,191	246,747	280,067	282,752	278,320	277,518	276,217	289,855	320,922	—	326,170	325,508
Diluted Earnings Per Share (USD)	-0.54	0.23	1.95	0.86	0.87	1.22	0.57	-4.45	-2.96	—	-0.89	-1.48
Dividends Per Share (USD)	—	0.18	0.36	0.52	0.56	0.56	0.56	0.14	0.00	—	0.00	0.00

Valuation as of 30 Dec 2022

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Recent Qtr	TTM
Price/Sales	—	1.8	2.7	2.1	1.6	1.6	1.6	1.7	1.8	0.8	0.8	0.8
Price/Earnings	—	60.6	31.7	30.0	29.7	18.0	26.4	-3.5	-2.5	-4.2	-4.2	-4.2
Price/Cash Flow	—	-277.8	16.3	12.7	8.0	7.9	10.2	-7.7	-4.6	-6.2	-6.2	-6.2
Dividend Yield %	—	0.89	1.29	2.08	2.73	2.59	2.5	2.33	—	—	—	—
Price/Book	—	78.7	16.8	9.2	8.8	6.4	6.5	6.0	-7.6	-2.7	-2.7	-2.7
EV/EBITDA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Operating Performance / Profitability as of 30 Sep 2022

Fiscal Year, ends 31 Dec	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD	TTM
ROA %	-2.9	1.2	10.9	4.4	4.3	5.9	2.8	-21.9	-16.7	—	—	-9.2
ROE %	—	—	192	43.9	36.9	40.7	16.6	-212	—	—	—	—
ROIC %	—	—	18.9	9.1	8.4	11.1	6.6	-22.6	—	—	—	—
Asset Turnover	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.2	0.3	—	—	0.5

Financial Leverage

Fiscal Year, ends 31 Dec	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Recent Qtr	TTM
Debt/Capital %	—	97.3	86.8	84.0	83.1	77.5	77.9	94.5	—	—	—	—
Equity/Assets %	—	1.8	8.9	10.9	12.3	16.7	16.5	4.6	—	—	—	—
Total Debt/EBITDA	—	4.9	3.8	3.8	3.7	3.5	4.4	-6.8	—	—	—	—
EBITDA/Interest Expense	2.4	2.9	5.1	5.7	6.1	6.2	4.9	-3.2	-1.6	Infinite	0.4	0.0

Morningstar Analyst Historical/Forecast Summary as of 13 Oct 2022

Financials

			Estimates		
Fiscal Year, ends 12-31-2021	2021	2022	2023	2024	2025
Revenue (USD Mil)	1,334	1,689	2,532	3,067	3,743
Revenue Growth %	-66.4	26.6	49.9	21.1	22.1
EBITDA (USD Mil)	-448	-261	69	406	709
EBITDA Margin %	-33.6	-15.5	2.7	13.2	18.9
Operating Income (USD Mil)	-988	-665	-257	66	447
Operating Margin %	-74.1	-39.4	-10.2	2.2	12.0
Net Income (USD Mil)	-934	-731	-349	-68	191
Net Margin %	-70.0	-43.3	-13.8	-2.2	5.1
Diluted Shares Outstanding (Mil)	290	321	323	323	323
Diluted Earnings Per Share(USD)	-3.22	-2.28	-1.08	-0.21	0.59
Dividends Per Share(USD)	0.14	0.00	0.00	0.00	0.00

Forward Valuation

			Estimates		
	2021	2022	2023	2024	2025
Price/Sales	2.9	1.6	0.9	0.8	0.6
Price/Earnings	-3.7	-3.8	-6.5	-33.4	11.9
Price/Cash Flow	-4.6	-5.9	-8.1	-297.8	11.4
Dividend Yield %	1.2	—	—	—	—
Price/Book	9.6	-5.5	-2.5	-2.1	-2.2
EV/EBITDA	-15.2	-24.9	90.4	15.4	8.8

Morningstar Equity Analyst Report | Report as of 30 Jan 2023 10:12, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS Page 17 of 22

Appendix
Historical Morningstar Rating

Sabre Corp SABR 27 Jan 2023 22:33, UTC

Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
—	—	—	—	—	—	—	—	—	—	—	★★★★
Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★
Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★	★★★	★★★	★★★★
Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★
Dec 2018	Nov 2018	Oct 2018	Sep 2018	Aug 2018	Jul 2018	Jun 2018	May 2018	Apr 2018	Mar 2018	Feb 2018	Jan 2018
★★★★	★★★★	★★★★	★★★★	★★★★	★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★★

Expedia Group Inc EXPE 27 Jan 2023 22:33, UTC

Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
—	—	—	—	—	—	—	—	—	—	—	★★★★
Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
★★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★★	★★★★★	★★★★	★★★	★★★	★★★	★★★
Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★	★★	★★★	★★★
Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★
Dec 2018	Nov 2018	Oct 2018	Sep 2018	Aug 2018	Jul 2018	Jun 2018	May 2018	Apr 2018	Mar 2018	Feb 2018	Jan 2018
★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★

Booking Holdings Inc BKNG 27 Jan 2023 22:33, UTC

Dec 2023	Nov 2023	Oct 2023	Sep 2023	Aug 2023	Jul 2023	Jun 2023	May 2023	Apr 2023	Mar 2023	Feb 2023	Jan 2023
—	—	—	—	—	—	—	—	—	—	—	★★★★
Dec 2022	Nov 2022	Oct 2022	Sep 2022	Aug 2022	Jul 2022	Jun 2022	May 2022	Apr 2022	Mar 2022	Feb 2022	Jan 2022
★★★★	★★★★	★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★
Dec 2021	Nov 2021	Oct 2021	Sep 2021	Aug 2021	Jul 2021	Jun 2021	May 2021	Apr 2021	Mar 2021	Feb 2021	Jan 2021
★★★	★★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★
Dec 2020	Nov 2020	Oct 2020	Sep 2020	Aug 2020	Jul 2020	Jun 2020	May 2020	Apr 2020	Mar 2020	Feb 2020	Jan 2020
★★	★★★	★★★	★★★	★★★	★★★	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
Dec 2019	Nov 2019	Oct 2019	Sep 2019	Aug 2019	Jul 2019	Jun 2019	May 2019	Apr 2019	Mar 2019	Feb 2019	Jan 2019
★★★	★★★★	★★★	★★★	★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★
Dec 2018	Nov 2018	Oct 2018	Sep 2018	Aug 2018	Jul 2018	Jun 2018	May 2018	Apr 2018	Mar 2018	Feb 2018	Jan 2018
★★★★	★★★★	★★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★

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Amadeus IT Group SA A AMS 27 Jan 2023 18:06, UTC

Dec 2023 —	Nov 2023 —	Oct 2023 —	Sep 2023 —	Aug 2023 —	Jul 2023 —	Jun 2023 —	May 2023 —	Apr 2023 —	Mar 2023 —	Feb 2023 —	Jan 2023 ★★★
Dec 2022 ★★★★	Nov 2022 ★★★	Oct 2022 ★★★★	Sep 2022 ★★★★	Aug 2022 ★★★	Jul 2022 ★★★	Jun 2022 ★★★★	May 2022 ★★★	Apr 2022 ★★★	Mar 2022 ★★★	Feb 2022 ★★★	Jan 2022 ★★★
Dec 2021 ★★★	Nov 2021 ★★★	Oct 2021 ★★★	Sep 2021 ★★★	Aug 2021 ★★★	Jul 2021 ★★★	Jun 2021 ★★	May 2021 ★★	Apr 2021 ★★	Mar 2021 ★★	Feb 2021 ★★	Jan 2021 ★★★
Dec 2020 ★★	Nov 2020 ★★	Oct 2020 ★★★	Sep 2020 ★★★	Aug 2020 ★★★	Jul 2020 ★★★	Jun 2020 ★★★	May 2020 ★★★	Apr 2020 ★★★	Mar 2020 ★★★	Feb 2020 ★★★	Jan 2020 ★★
Dec 2019 ★★	Nov 2019 ★★	Oct 2019 ★★	Sep 2019 ★★	Aug 2019 ★★	Jul 2019 ★★	Jun 2019 ★★	May 2019 ★★	Apr 2019 ★★	Mar 2019 ★★	Feb 2019 ★★	Jan 2019 ★★
Dec 2018 ★★	Nov 2018 ★★	Oct 2018 ★	Sep 2018 ★	Aug 2018 ★	Jul 2018 ★	Jun 2018 ★	May 2018 ★	Apr 2018 ★★	Mar 2018 ★★	Feb 2018 ★★	Jan 2018 ★

Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, indepth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss shortterm market-price movements), but we believe these negatives are mitigated by deep analysis and our longterm approach.

Morningstar's equity research group ("we," "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate and (4) the current market price. This process ultimately culminates in our singlepoint star rating.

1. Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

When considering a company's moat, we also assess whether there is a substantial threat of value destruction, stemming from risks related to ESG, industry disruption, financial health, or other idiosyncratic issues. In this context, a risk is considered potentially value destructive if its occurrence would eliminate a firm's economic profit on a cumulative or midcycle basis. If we deem the probability of occurrence sufficiently high, we would not characterize the company as possessing an economic moat.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger; stable where we don't anticipate changes to competitive advantages over the next several years; or negative when we see signs of deterioration.

2. Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in workingcapital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

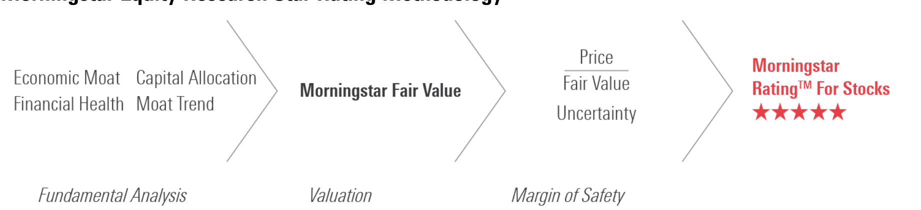
Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

3. Uncertainty Around That Fair Value Estimate

Morningstar's Uncertainty Rating is designed to capture the range of potential outcomes for a company's intrinsic value. This rating is used to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating is

Morningstar Equity Research Star Rating Methodology



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aimed at identifying the confidence we should have in assigning a fair value estimate for a given stock.

Our Uncertainty Rating is meant to take into account anything that can increase the potential dispersion of future outcomes for the intrinsic value of a company, and anything that can affect our ability to accurately predict these outcomes. The rating begins with a suggested rating produced by a quantitative process based on the trailing 12-month standard deviation of daily stock returns. An analyst overlay is then applied, with analysts using the suggested rating, historical rating data, and their own knowledge of the company to inform them as they make the final Uncertainty Rating decision. Ultimately, the rating decision rests with the analyst. Analysts take into account many characteristics when making their final decision, including cyclical factors, operational and financial factors such as leverage, company-specific events, ESG risks, and anything else that might increase the potential dispersion of future outcomes and our ability to estimate those outcomes.

Our recommended margin of safety—the discount to fair value demanded before we'd recommend buying or selling the stock—widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the potential dispersion of outcomes, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the Uncertainty Rating provides guidance in portfolio construction based on risk tolerance.

Our Uncertainty Ratings are: Low, Medium, High, Very High, and Extreme.

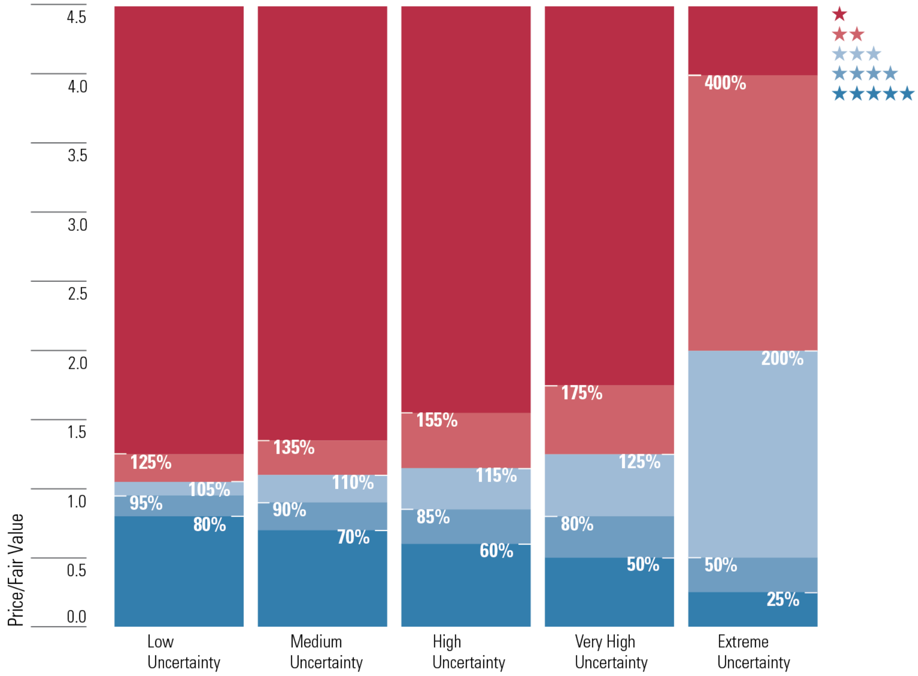
	Margin of Safety	
Qualitative Analysis Uncertainty Ratings	★★★★★Rating	★Rating
Low	20% Discount	25% Premium
Medium	30% Discount	35% Premium
High	40% Discount	55% Premium
Very High	50% Discount	75% Premium
Extreme	75% Discount	300% Premium

Our uncertainty rating is based on the interquartile range, or the middle 50% of potential outcomes, covering the 25th percentile–75th percentile. This means that when a stock hits 5 stars, we expect there is a 75% chance that the intrinsic value of that stock lies above the current market price. Similarly, when a stock hits 1 star, we expect there is a 75% chance that the intrinsic value of that stock lies below the current market price.

4. Market Price

The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

Morningstar Equity Research Star Rating Methodology



For more details about our methodology, please go to https://shareholders.morningstar.com.

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn 5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Other Definitions

Last Price: Price of the stock as of the close of the market of the last trading day before date of the report.

Research Methodology for Valuing Companies

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider companies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exemplary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

Capital Allocation (or Stewardship) analysis published prior to Dec. 9, 2020, was determined using a different process. Beyond investment strategy, financial leverage, and dividend and share buyback policies, analysts also considered execution, compensation, related party transactions, and accounting practices in the rating.

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider companies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exemplary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

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Sustainalytics ESG Risk Rating Assessment: The ESG Risk Rating Assessment is provided by Sustainalytics; a Morningstar company.

Sustainalytics' ESG Risk Ratings measure the degree to which company's economic value at risk is driven by environment, social and governance (ESG) factors. Sustainalytics analyzes over 1,300 data points to assess a company's exposure to and management of ESG risks. In other words, ESG Risk Ratings measures a company's unmanaged ESG Risks represented as a quantitative score. Unmanaged Risk is measured on an open-ended scale starting at zero (no risk) with lower scores representing less unmanaged risk and, for 95% of cases, the unmanaged ESG Risk score is below 50.

Based on their quantitative scores, companies are grouped into one of five Risk Categories (negligible, low, medium, high, severe). These risk categories are absolute, meaning that a 'high risk' assessment reflects a comparable degree of unmanaged ESG risk across all subindustries covered.

The ESG Risk Rating Assessment is a visual representation of Sustainalytics ESG Risk Categories on a 1 to 5 scale. Companies with Negligible Risk = 5 Globes, Low Risk = 4, Medium Risk = 3 Globes, High Risk = 2 Globes, Severe Risk = 1 Globe. For more information, please visit sustainalytics.com/esg-ratings/

Ratings should not be used as the sole basis in evaluating a company or security. Ratings involve unknown risks and uncertainties which may cause our expectations not to occur or to differ significantly from what was expected and should not be considered an offer or solicitation to buy or sell a security.

Risk Warning

Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Uncertainty Rating serves as a useful data point with respect to sensitivity analysis of the assumptions used in our determining a fair value price.

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