Amazon.com Inc AMZN ★★★★ 3 Feb 2023 05:14, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Moat Trend™	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
112.91 USD 2 Feb 2023	137.00 USD 3 Feb 2023 05:12, UTC	0.82	1.15 USD Tril 2 Feb 2023	Wide	Stable	High	Exemplary	1 Feb 2023 06:00, UTC

Dan Romanoff, CPA
Senior Equity Analyst
Morningstar
+1 312 244 7816
dan.romanoff@morningstar.com

Contents

Reporting Currency: USD | Trading Currency: USD
Currency amounts expressed with "$" are in U.S. dollars (USD) unless otherwise denoted.

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

Solid Results for Amazon With Continued AWS Deceleration in January; Outlook Light; FVE Cut to $137

Analyst Note Dan Romanoff, CPA, Senior Equity Analyst, 3 Feb 2023

Wide-moat Amazon reported solid fourth-quarter results but provided a first-quarter outlook that was shy of our expectations. E-commerce was generally solid while Amazon Web Services continues to decelerate, including through January. We see real progress being made on the operational side, which was masked by impairment charges. We still foresee healthy long-term growth driven by e-commerce proliferation, AWS, and advertising, but the near term remains a work in progress with macro issues weighing on 2023, albeit with improvement in 2024. We cut our estimates on the top and bottom lines for 2023 while leaving the rest of our estimates largely unchanged. In turn, we cut our fair value estimate to $137 per share from $150. Still, we see the shares as attractive.

Fourth-quarter revenue grew 9% year over year as reported, or 12% in constant currency, to $149.2 billion, compared with guidance of $140 billion-$148 billion. Currency improved during the quarter, which eased pressure on revenue growth. Compared with our model, online stores was light while third-party seller services was well ahead, and other segments were in line to slightly ahead. From a retail perspective (all year over year, as reported), revenue from online stores declined 2%, physical stores improved 6%, third-party seller services grew 20%, and subscription services increased 13%. On the latter point, we're impressed that Rings of Power helped draw in new Prime members.

The two most critical segments, AWS and advertising, grew 20% and 19% over the year-ago period, respectively. Management sees good customer additions within AWS and notes positive conversations about moving new workloads to the cloud. However, enterprise customers continue to optimize cloud spending, consistent with

Financial Summary and Key Statistics

	Actual		Forecast	
	2021	2022	2023	2024
Revenue (USD Mil)	469,822	513,983	545,336	607,352
Revenue Growth %	21.7	9.4	6.1	11.4
Operating Income (Mil)	24,879	12,248	11,747	22,593
Operating Margin %	5.3	2.4	2.2	3.7
Adjusted EBITDA (Mil)	71,932	73,330	82,561	98,872
Adjusted EBITDA Margin %	15.3	14.3	15.1	16.3
Earnings Per Share (Diluted) (USD)	3.24	-0.27	0.94	1.75
Adjusted Earnings Per Share (Diluted) (USD)	3.24	-0.27	0.94	1.75
Adjusted EPS Growth %	55.0	-108.2	-454.0	85.7
Price/Earnings	51.5	-311.1	120.1	64.5
Price/Book	12.4	5.9	7.5	6.8
EV/EBITDA	23.0	23.6	14.8	12.4
Free Cash Flow Yield %	-0.9	-1.0	2.2	3.6

Source: Morningstar Valuation Model. Data as of 02 Feb 2023.

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Sector	Industry
Consumer Cyclical	Internet Retail

Business Description

Amazon is a leading online retailer and one of the highest-grossing e-commerce aggregators, with $386 billion in net sales and approximately $578 billion in estimated physical/digital online gross merchandise volume in 2021. Retail-related revenue represents approximately 80% of the total, followed by Amazon Web Services' cloud computing, storage, database, and other offerings (10%-15%), advertising services (5%), and other. International segments constitute 25%-30% of Amazon's non-AWS sales, led by Germany, the United Kingdom, and Japan.

comments from other cloud providers. Management believes this will continue for at least a couple quarters, noting that AWS growth was in the midteens year over year for the month of January.

Despite further deceleration this quarter, AWS remains critical to Amazon's overall revenue growth in the near term and long term. Like Microsoft noted earlier this week, Amazon is in discussions with customers to help them optimize spending and consumption on public cloud services. Management noted that new customers are being added and new workloads are planned, but it nonetheless expects depressed revenue expansion to persist at least through midyear. Microsoft also expects a lag between customer optimization efforts and new workload migration.

We think we are in the early innings of cloud migration; management disclosed that it believes 90%-95% of enterprise workloads remain on-premises. Strong backlog growth gives us comfort that the runway for AWS remains long. We also think cloud migration is an obvious cost-cutting move for enterprise customers, which we think puts a floor under growth even if the economy formally descends into a recession. We continue to believe that the migration to the public cloud is an enormous opportunity and remains in the early stages of evolution, with AWS being the clear leader.

Operating profit came in at $2.7 billion, compared with guidance of breakeven to $4.0 billion, producing an operating margin of 1.8% compared with 2.5% a year ago. Impairment charges stemming from self-insurance liabilities, impairments of property and equipment and operating leases, and estimated severance costs totaled $2.7 billion. In other words, normalized operating profit was $5.4 billion, nicely ahead of the top end of guidance. Amazon continues to make progress on its excess expenses, particularly in improvements to the productivity of the fulfillment network and transportation. Management plans to continue to optimize operations throughout 2023.

While guidance was slightly shy of our model, we are not surprised, given the macro environment. However, we think the continued AWS deceleration in January will be unnerving to investors. Amazon’s first-quarter outlook includes $121 billion-$126 billion in revenue and operating income from breakeven to $4.0 billion, compared with FactSet consensus estimates of $125.5 billion and $4.0 billion, respectively. Guidance assumes 210 basis points of pressure from currency impacts. Included in operating profit guidance is $640 million of severance costs. which renders profitability guidance better than it appears at first glance. We see a path to continuous margin improvement over time, even as uncertain macro conditions weigh in the near term.

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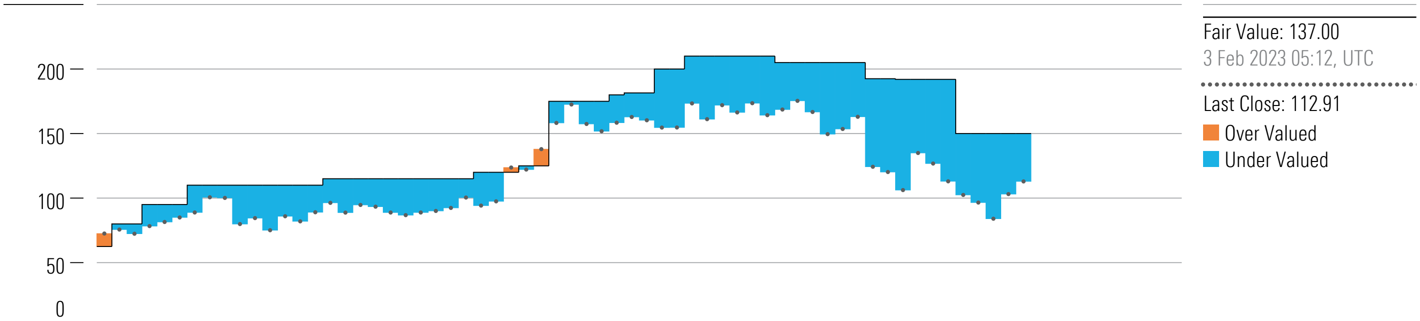
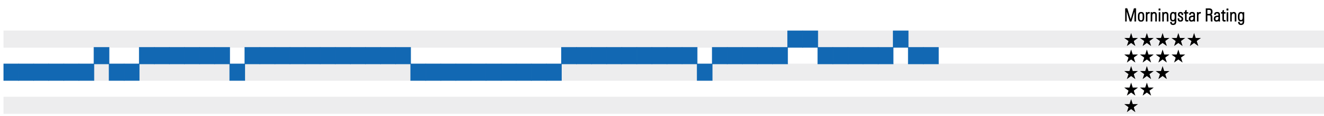
Price vs. Fair Value

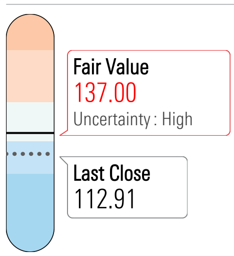


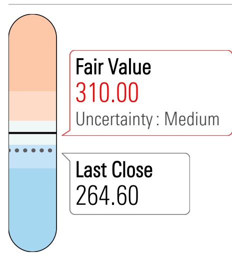
	2018	2019	2020	2021	2022	YTD	
	0.68	0.80	0.90	0.81	0.56	0.82	Price/Fair Value
	28.43	23.03	76.26	2.38	-49.62	34.42	Total Return %

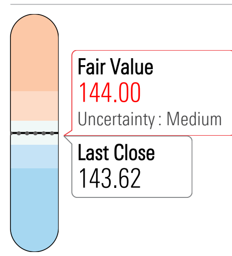


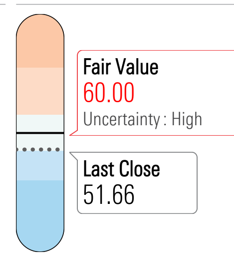
Competitors

	Amazon.com Inc AMZN	Microsoft Corp MSFT	Walmart Inc WMT	eBay Inc EBAY









	Amazon.com Inc AMZN	Microsoft Corp MSFT	Walmart Inc WMT	eBay Inc EBAY
Economic Moat	Wide	Wide	Wide	Narrow
Moat Trend	Stable	Stable	Stable	Negative
Currency	USD	USD	USD	USD
Fair Value	137.00 3 Feb 2023 05:12, UTC	310.00 25 Jan 2023 04:36, UTC	144.00 31 Jan 2023 09:02, UTC	60.00 6 Nov 2022 22:59, UTC
1-Star Price	212.35	418.50	194.40	93.00
5-Star Price	82.20	217.00	100.80	36.00
Assessment	Under Valued 3 Feb 2023	Under Valued 3 Feb 2023	Fairly Valued 3 Feb 2023	Under Valued 2 Feb 2023
Morningstar Rating	★★★★3 Feb 2023 05:14, UTC	★★★★2 Feb 2023 22:29, UTC	★★★2 Feb 2023 22:29, UTC	★★★★2 Feb 2023 22:29, UTC
Analyst	Dan Romanoff, Senior Equity Analyst	Dan Romanoff, Senior Equity Analyst	Zain Akbari, Equity Analyst	Sean Dunlop, Equity Analyst
Capital Allocation	Exemplary	Exemplary	Standard	Standard
Price/Fair Value	0.82	0.85	1.00	0.86
Price/Sales	2.24	9.72	0.66	3.01
Price/Book	7.92	10.76	5.36	5.78
Price/Earnings	—	29.40	44.19	—
Dividend Yield	—	0.96%	1.56%	1.70%
Market Cap	1,151.87 Bil	1,969.63 Bil	387.31 Bil	28.03 Bil
52-Week Range	81.43—170.83	213.43—315.95	117.27—160.77	35.92—60.66
Investment Style	Large Growth	Large Growth	Large Value	Mid Core

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Morningstar Valuation Model Summary

Financials as of 02 Feb 2023	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Revenue (USD Mil)	386,064	469,822	513,983	545,336	607,352	673,289	743,075	817,464
Operating Income (USD Mil)	22,899	24,879	12,248	11,747	22,593	31,173	40,795	51,909
EBITDA (USD Mil)	48,150	59,175	53,709	58,929	72,548	82,747	95,782	109,458
Adjusted EBITDA (USD Mil)	57,358	71,932	73,330	82,561	98,872	100,798	115,392	130,688
Net Income (USD Mil)	21,331	33,364	-2,722	9,797	18,329	25,372	33,167	42,364
Adjusted Net Income (USD Mil)	21,331	33,364	-2,722	9,797	18,329	25,372	33,167	42,364
Free Cash Flow To The Firm (USD Mil)	18,358	-35,416	-31,177	22,568	13,990	25,176	34,251	44,055
Weighted Average Diluted Shares Outstanding (Bil)	10	10	10	10	11	11	11	11
Earnings Per Share (Diluted) (USD)	2.09	3.24	-0.27	0.94	1.75	2.42	3.16	4.03
Adjusted Earnings Per Share (Diluted) (USD)	2.09	3.24	-0.27	0.94	1.75	2.42	3.16	4.03
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Margins & Returns as of 02 Feb 2023		Actual			Forecast					
	3 Year Avg	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**5 Year Avg**
Operating Margin %	4.5	5.9	5.3	2.4	2.2	3.7	4.6	5.5	6.4	4.5
EBITDA Margin %	—	12.5	12.6	10.5	10.8	12.0	12.3	12.9	13.4	—
Adjusted EBITDA Margin %	14.8	14.9	15.3	14.3	15.1	16.3	15.0	15.5	16.0	15.6
Net Margin %	4.0	5.5	7.1	-0.5	1.8	3.0	3.8	4.5	5.2	3.7
Adjusted Net Margin %	4.0	5.5	7.1	-0.5	1.8	3.0	3.8	4.5	5.2	3.7
Free Cash Flow To The Firm Margin %	-2.9	4.8	-7.5	-6.1	4.1	2.3	3.7	4.6	5.4	4.0

Growth & Ratios as of 02 Feb 2023		Actual			Forecast					
	3 Year CAGR	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**5 Year CAGR**
Revenue Growth %	22.4	37.6	21.7	9.4	6.1	11.4	10.9	10.4	10.0	9.7
Operating Income Growth %	-5.6	57.5	8.6	-50.8	-4.1	92.3	38.0	30.9	27.2	33.5
EBITDA Growth %	0.0	—	—	—	—	—	—	—	—	0.0
Adjusted EBITDA Growth %	19.3	32.8	25.4	1.9	12.6	19.8	2.0	14.5	13.3	12.3
Earnings Per Share Growth %	-161.4	—	—	—	—	—	—	—	—	—
Adjusted Earnings Per Share Growth %	-161.4	81.8	55.0	-108.2	-454.0	85.7	38.4	30.7	27.7	—

Valuation as of 02 Feb 2023	Actual			Forecast				
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Price/Earnings	77.9	51.5	-311.1	120.1	64.5	46.7	35.7	28.0
Price/Sales	2.4	3.5	3.3	2.1	1.9	1.7	1.6	1.4
Price/Book	17.8	12.4	5.9	7.5	6.8	5.9	5.1	4.3
Price/Cash Flow	35.5	-111.2	-100.5	46.6	28.2	26.2	21.0	17.3
EV/EBITDA	16.3	23.0	23.6	14.8	12.4	12.1	10.6	9.3
EV/EBIT	40.9	66.4	141.4	104.0	54.1	39.2	29.9	23.5
Dividend Yield %	—	—	—	—	—	—	—	—
Dividend Payout %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Free Cash Flow Yield %	2.8	-0.9	-1.0	2.2	3.6	3.8	4.8	5.8

Operating Performance / Profitability as of 02 Feb 2023	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
ROA %	7.8	9.0	-0.6	2.1	3.6	4.6	5.5	6.3
ROE %	27.4	28.8	-1.9	6.5	11.1	13.6	15.4	16.7
ROIC %	30.3	25.6	12.3	13.6	15.8	14.2	15.0	16.4

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Financial Leverage (Reporting Currency)	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Debt/Capital %	25.4	26.1	31.5	30.3	27.7	23.8	19.8	17.3
Assets/Equity	3.4	3.0	3.2	3.1	3.0	2.9	2.7	2.6
Net Debt/EBITDA	-1.1	-0.8	-0.1	-0.4	-0.6	-0.8	-1.1	-1.3
Total Debt/EBITDA	0.6	0.7	0.9	0.8	0.7	0.6	0.5	0.4
EBITDA/ Net Interest Expense	34.8	39.8	31.0	33.6	40.7	42.8	51.8	63.9

Forecast Revisions as of 2 Feb 2023	2023		2024		2025	
Prior data as of 27 Oct 2022	**Current**	**Prior**	**Current**	**Prior**	**Current**	**Prior**
Fair Value Estimate Change (Trading Currency)	137.00	150.00	—	—	—	—
Revenue (USD Mil)	545,336	511,324	607,352	564,417	673,289	628,834
Operating Income (USD Mil)	11,747	11,563	22,593	14,502	31,173	23,707
EBITDA (USD Mil)	82,561	75,866	98,872	85,384	100,798	88,999
Net Income (USD Mil)	9,797	-1,160	18,329	11,992	25,372	19,225
Earnings Per Share (Diluted) (USD)	0.94	-0.11	1.75	1.15	2.42	1.84
Adjusted Earnings Per Share (Diluted) (USD)	0.94	-0.11	1.75	1.15	2.42	1.84
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00

Key Valuation Drivers as of 02 Feb 2023	
Cost of Equity %	9.0
Pre-Tax Cost of Debt %	5.5
Weighted Average Cost of Capital %	8.8
Long-Run Tax Rate %	21.0
Stage II EBI Growth Rate %	8.4
Stage II Investment Rate %	-47.2
Perpetuity Year	20

Additional estimates and scenarios available for download at https://pitchbook.com/.

Discounted Cash Flow Valuation as of 02 Feb 2023	**USD Mil**
Present Value Stage I	317,062
Present Value Stage II	601,448
Present Value Stage III	494,586
Total Firm Value	**1,413,096**
Cash and Equivalents	70,026
Debt	-67,150
Other Adjustments	1
Equity Value	**1,415,973**
Projected Diluted Shares	10
Fair Value per Share (USD)	**137.00**

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Income Statement (USD)	Actual			Forecast				
Fiscal Year, ends 31 Dec	2020	2021	2022	2023	2024	2025	2026	2027
Revenue (Mil)	**386,064**	**469,822**	**513,983**	**545,336**	**607,352**	**673,289**	**743,075**	**817,464**
Cost of Goods Sold (Mil)	233,307	272,344	288,831	313,568	348,013	383,775	421,695	461,867
Gross Profit (Mil)	**152,757**	**197,478**	**225,152**	**231,768**	**259,339**	**289,514**	**321,380**	**355,597**
Selling, General, Administrative & Other Expenses (Mil)	129,932	172,537	211,641	219,530	236,260	257,870	280,139	303,279
Advertising & Marketing Expenses	—	—	—	—	—	—	—	—
Research & Development	—	—	—	—	—	—	—	—
Depreciation & Amortization (if reported separately)	—	—	—	—	—	—	—	—
Adjusted Operating Income (Mil)	**22,899**	**24,879**	**12,248**	**11,747**	**22,593**	**31,173**	**40,795**	**51,909**
Financial Non-Cash (Gains)/Losses (Mil)	0	0	0	0	0	0	0	0
Irregular Cash (Gains)/Losses (Mil)	0	0	0	0	0	0	0	0
Operating Income (Mil)	**22,899**	**24,879**	**12,248**	**11,747**	**22,593**	**31,173**	**40,795**	**51,909**
Net Interest Expense (Mil)	-1,279	-13,272	18,184	-654	-607	-943	-1,189	-1,717
Income Tax Expense (Mil)	2,863	4,791	-3,217	2,604	4,872	6,744	8,817	11,261
After-Tax Items (Mil)	0	0	0	0	0	0	0	0
(Minority Interest) (Mil)	16	4	-3	0	0	0	0	0
Net Income (Mil)	**21,331**	**33,364**	**-2,722**	**9,797**	**18,329**	**25,372**	**33,167**	**42,364**
Adjusted Net Income (Mil)	**21,331**	**33,364**	**-2,722**	**9,797**	**18,329**	**25,372**	**33,167**	**42,364**
Weighted Average Diluted Shares Outstanding (Bil)	10	10	10	10	11	11	11	11
Diluted Earnings Per Share	**2.09**	**3.24**	**-0.27**	**0.94**	**1.75**	**2.42**	**3.16**	**4.03**
Diluted Adjusted Earnings Per Share	**2.09**	**3.24**	**-0.27**	**0.94**	**1.75**	**2.42**	**3.16**	**4.03**
Dividends Per Common Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EBITDA (Mil)	**48,150**	**59,175**	**53,709**	**58,929**	**72,548**	**82,747**	**95,782**	**109,458**
Adjusted EBITDA (Mil)	**57,358**	**71,932**	**73,330**	**82,561**	**98,872**	**100,798**	**115,392**	**130,688**

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Key Cash Flow Items (USD)	Actual			Forecast as of 2 Feb				
Fiscal Year, ends 31 Dec	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Cash from Working Capital (Mil)	31,549	-1,313	1,893	5,171	6,951	9,542	10,110	10,739
(Capital Expenditures) (Mil)	-40,141	-61,053	-63,645	-61,078	-60,735	-60,596	-63,161	-65,397
Depreciation (Mil)	25,251	34,296	41,461	46,419	49,196	50,901	54,319	56,896
Amortization (Mil)	—	—	—	763	759	673	669	654
Net New (Investment), Organic (Mil)	**-1,409**	**-46,368**	**-43,070**	**13,524**	**-3,618**	**876**	**2,354**	**3,393**
(Purchases)/Sales of Companies & Assets (Mil)	2,771	3,672	-2,992	-1,000	-1,000	-1,000	-1,000	-1,000
Net New (Investment), Total (Mil)	**1,362**	**-42,696**	**-46,062**	**12,524**	**-4,618**	**-124**	**1,354**	**2,393**
Other Non-Cash Items, From Cash Flows (Mil)	-2,653	-14,169	17,426	763	759	673	669	654
Free Cash Flow to the Firm (Mil)	**18,358**	**-35,416**	**-31,177**	**22,568**	**13,990**	**25,176**	**34,251**	**44,055**

Balance Sheet (USD)	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Assets								
Cash and Equivalents (Mil)	42,122	36,220	53,888	77,628	90,887	112,619	142,768	188,179
Inventory (Mil)	23,795	32,640	34,405	37,800	41,952	46,263	50,834	55,677
Accounts Receivable (Mil)	24,542	32,891	42,360	37,352	41,599	46,116	50,896	55,991
Net Property, Plant and Equipment (Mil)	113,114	160,281	186,715	201,384	212,933	222,639	231,491	240,003
Goodwill (Mil)	15,017	15,371	20,288	20,538	20,788	21,038	21,288	21,538
Other Intangibles (Mil)	0	0	0	-63	-123	-96	-65	-19
Other Operating Assets (Mil)	60,331	83,317	108,881	95,434	103,250	111,093	118,892	126,707
Non-Operating Assets (Mil)	0	0	0	0	0	0	0	0
Total Assets (Mil)	**321,195**	**420,549**	**462,675**	**486,209**	**527,425**	**575,810**	**632,242**	**704,214**
Liabilities								
Accounts Payable (Mil)	72,539	78,664	79,600	88,057	95,346	105,144	115,533	126,539
Debt (Mil)	31,816	48,744	67,150	67,804	66,593	62,404	57,362	57,362
Other Operating Liabilities (Mil)	123,436	154,896	169,882	174,507	191,316	208,720	226,638	245,239
Non-Operating Liabilities (Mil)	0	0	0	0	0	0	0	0
Total Liabilities (Mil)	**227,791**	**282,304**	**316,632**	**330,368**	**353,255**	**376,268**	**399,533**	**429,140**
Equity								
Shareholders' Equity (Mil)	93,404	138,245	146,043	155,841	174,171	199,542	232,709	275,074
Minority Interest (Mil)	0	0	0	0	0	0	0	0
Total Equity (Mil)	**93,404**	**138,245**	**146,043**	**155,841**	**174,171**	**199,542**	**232,709**	**275,074**

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

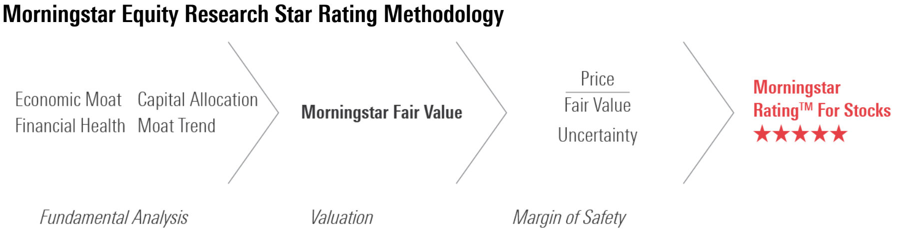
Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with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

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.

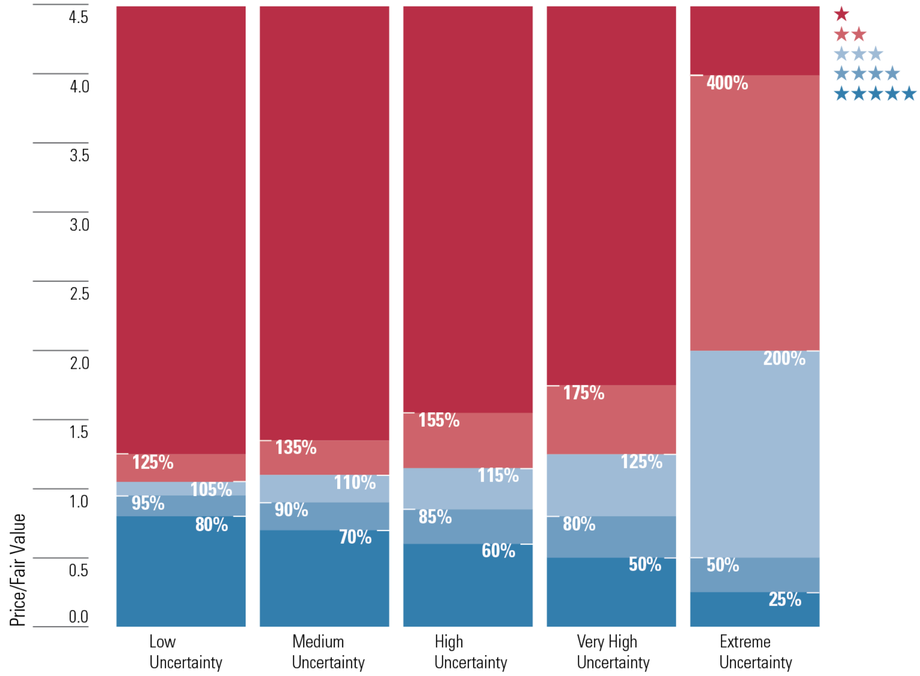
	Margin of Safety	
Qualitative Analysis Uncertainty Ratings	★★★★★Rating	★Rating
Low	20% Discount	25% Premium
Medium	30% Discount	35% Premium
High	40% Discount	55% Premium
Very High	50% Discount	75% Premium
Extreme	75% Discount	300% Premium

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/

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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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