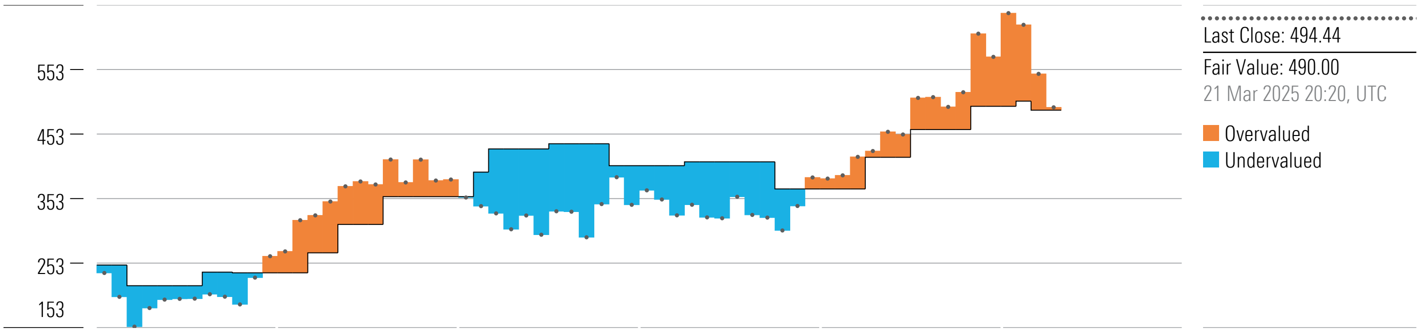
Morningstar Equity Analyst Report | Report as of 14 Apr 2025 18:42, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NEW YORK STOCK EXCHANGE, INC.

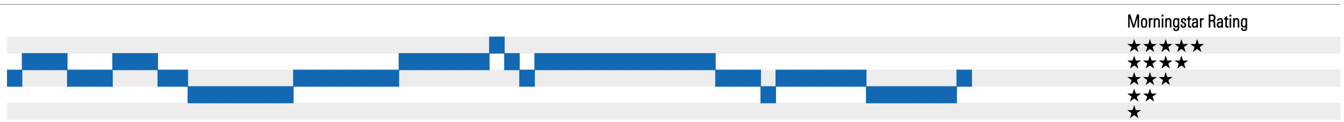
The Goldman Sachs Group Inc GS ★★★ 11 Apr 2025 21:35, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
494.44 USD 11 Apr 2025	490.00 USD 21 Mar 2025 20:20, UTC	1.01	157.62 USD Bil 14 Apr 2025	Narrow	Large Value	Medium	Standard	2 Apr 2025 05:00, UTC

Price vs. Fair Value



	2020	2021	2022	2023	2024	YTD
Price/Fair Value	1.11	1.07	0.85	1.05	1.15	1.01
Total Return %	16.87	47.53	-7.89	15.40	51.42	-13.13



Total Return % as of 11 Apr 2025. Last Close as of 11 Apr 2025. Fair Value as of 21 Mar 2025 20:20, 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.

Goldman Sachs Earnings: Strong Start to 2025 as Uncertainty Breeds Heightened Trading Activity

Analyst Note Brett Horn, CFA, Senior Equity Analyst, 14 Apr 2025

Narrow-moat-rated Goldman Sachs reported a strong start to the year as near-constant shifts in market sentiment bred heightened volatility that produced exceptional trading revenue, effectively masking the tepid deal-making environment posing headwinds for investment banking. Despite strong quarterly results and a recent selloff alongside broader equity markets, we continue to see shares being modestly overvalued as we maintain our $490 fair value estimate.

The company reported net income to common shareholders of $4.6 billion, or $14.12 per diluted share, on $15.1 billion of net revenue. Investment banking revenue declined 7% sequentially, and 8% year over year, as heightened macroeconomic uncertainty stalled the cyclical recovery in deal-making activity that has been underway. Despite these muted results, the global banking and markets segment holistically booked net revenue gains of 26% sequentially and 10% year over year, as continued developments in tariff policies spiked market volatility, enabling the FICC and equities businesses to generate historic revenues as clients repositioned their portfolios. While we forecast some normalization over the long run for both the trading and investment banking businesses, which we believe are currently over-earning and under-earning, respectively, we note that both trends may persist in the short term until markets attain more clarity surrounding shifts in global trade policy and their second-order geopolitical impacts.

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Sector	Industry
Financial Services	Capital Markets

Business Description

Goldman Sachs is a leading global investment banking and asset management firm. Approximately 14% of its revenue comes from investment banking, 42% from trading, 20% from asset & wealth management, 15% from net interest income, and 9% from other principal transactions. Around 64% of the company's net revenue is generated in the Americas, 13% in Asia, and 23% in Europe, the Middle East, and Africa.

The asset and wealth management segment has become increasingly material for the consolidated entity, which we view favorably as management fees exhibit less cyclicality than investment banking fees. Segment results this quarter were mixed, as net revenue contraction of 22% sequentially and 3% year over year, was worse than expected considering assets are about 65% fixed income, but continued net inflows brought assets under supervision up to $3.17 trillion, increasing its long-run earnings potential.

Business Strategy & Outlook Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

Goldman Sachs is refocusing the initiatives it’s been working over the previous several years. At its most recent investor day in 2023, the firm emphasized three priorities. In its investment banking and trading business, it is trying to maximize client wallet share and grow its financing business. In asset and wealth management, it wants to grow its management fees, including in wealth management and raising third-party capital for its alternatives business. In its new platforms business, it wants to scale and achieve profitability.

Goldman Sachs had been building businesses for noninstitutional clients but has drastically pared down its ambitions. It has found or is finding new homes for acquisitions it had done in wealth management and installment lending to more main street customers. While we didn’t view these acquisitions as needle movers for profitability, they were steps toward diversifying the business and fit in with trends that the market had rewarded at peers. The acquisitions, divestitures, and decreased profitability from newer initiatives muddied the company’s investment narrative and financial statements. With Goldman refocusing, it will revert to mainly being valued as an investment bank.

Many of Goldman’s expense and revenue lines are in transition. Restructuring much of its consumer credit business should reset its expense level lower. On the revenue side, the main two areas of uncertainty are: 1) whether trading revenue, which has been elevated over the previous several years, is maintained near current levels or rebases lower, and 2) whether investment banking revenue recovers from recent cyclical lows to levels closer to pre-covid (approximately $7 billion) or closer to the $9 billion-$14 billion booked in 2020-21.

Goldman Sachs’ financial targets are for a through-the-cycle return on equity of 14% to 16%, return on tangible common equity of 15% to 17%, and an expense ratio of about 60%. We currently forecast the company missing its targets and model the company achieving a return on tangible common equity of about 12%. Given our outlook, we think the firm should trade at about 1.5 times tangible book value.

Bulls Say Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

- More stable investment management and net interest income could cause investors to reassess Goldman's earnings quality and increase their willingness to pay a premium for it.

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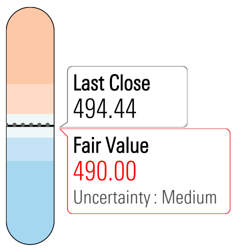
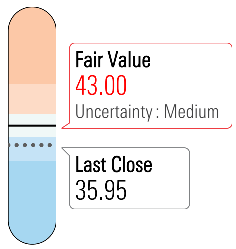
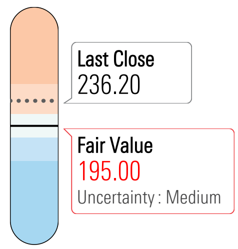
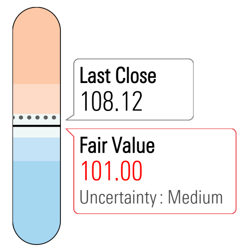
Competitors

	The Goldman Sachs Group Inc GS	Bank of America Corp BAC	JPMorgan Chase & Co JPM	Morgan Stanley MS
				
Economic Moat	Narrow	Wide	Wide	Narrow
Currency	USD	USD	USD	USD
Fair Value	490.00 21 Mar 2025 20:20, UTC	43.00 4 Feb 2025 23:19, UTC	195.00 24 Jan 2025 21:20, UTC	101.00 21 Mar 2025 20:28, UTC
1-Star Price	661.50	58.05	263.25	136.35
5-Star Price	343.00	30.10	136.50	70.70
Assessment	Fairly Valued 11 Apr 2025	Undervalued 11 Apr 2025	Overvalued 11 Apr 2025	Fairly Valued 11 Apr 2025
Morningstar Rating	★★★11 Apr 2025 21:35, UTC	★★★★11 Apr 2025 21:35, UTC	★★11 Apr 2025 21:33, UTC	★★★11 Apr 2025 21:33, UTC
Analyst	Brett Horn, Senior Equity Analyst	Suryansh Sharma, Senior Equity Analyst	Suryansh Sharma, Senior Equity Analyst	Brett Horn, Senior Equity Analyst
Capital Allocation	Standard	Standard	Exemplary	Exemplary
Price/Fair Value	1.01	0.84	1.21	1.07
Price/Sales	3.08	2.80	3.90	2.90
Price/Book	1.48	1.00	1.98	1.83
Price/Earning	11.88	11.20	12.78	12.60
Dividend Yield	2.38%	2.84%	2.14%	3.35%
Market Cap	153.67 Bil	273.32 Bil	657.34 Bil	173.91 Bil
52-Week Range	387.12—672.19	33.07—48.08	179.20—280.25	85.12—142.03
Investment Style	Large Value	Large Value	Large Value	Large Value

- The company's trading operations can potentially do well in recessions and periods of economic uncertainty, which can buffer earnings.
- Several of the company's primary US and European competitors have been forced to restructure, which could give Goldman an opportunity to gain market share.

Bears Say Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

- While Goldman is in a better capital position than it was and has a shifting business mix, it may take a while for the market to give the company full credit for the changes. The company's strategy has also been somewhat muddied by recent acquisitions and divestitures.
- There remains uncertainty over whether the fairly strong investment banking and trading revenue post-covid that investment banks have reported is maintainable.
- Lower leverage than in the past reduces returns to shareholders. Newly proposed banking regulations could further decrease leverage at banks.

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Economic Moat Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

We assess Goldman Sachs as having a narrow Morningstar Economic Moat Rating. The Goldman Sachs name has brand recognition that provides a competitive advantage for garnering investment banking deals and recruiting top talent. Its global reach and scale also give it the ability to vie for large cross-border deals that smaller brokerages can't handle. The company frequently ranks in the top three investment banks for global equity underwriting and for mergers and acquisitions advisory. Goldman Sachs also ranks in the top 10 investment banks for fixed-income underwriting.

The company's high-return-on-capital asset-management business has the moat characteristics of the stronger asset managers, as it is well diversified by asset type and distribution channel. Of the company's $3.1 trillion of assets under supervision at the end of 2024, approximately 10% are in alternative investments, 25% in equities, 38% in fixed income, and 27% in liquidity products. By distribution channel, assets are pretty evenly split among high-net-worth individuals, third-party distributed, and institutional clients.

While brokerage and principal investing are competitive businesses, Goldman Sachs is arguably the best in the business, with a history of strong growth and returns partially attributable to its informational advantages, technology infrastructure, and risk management. The company consistently generates annual trading revenue of $10 billion to over $20 billion in some years, which makes it one of the largest broker/dealers in the world.

Even though Goldman Sachs is first-class in its industry, it's an industry with a history of fallen stars. Additionally, the company’s return on equity over the previous decade has been in the high-single-digit to low-double-digit percentage, which isn’t significantly different from the company’s cost of capital. Therefore, we believe assigning the company a wide Morningstar Economic Moat Rating with its connotation of stability and ability to earn excess economic returns through multiple economic cycles going forward is currently unwarranted.

Investment banking moats (equity underwriting, debt underwriting, merger advisory, restructuring advisory) are primarily built on intangibles. Intangibles for an investment bank are in the strength of its reputation, relationships with investors, history with company executives, industry expertise, research analyst coverage, track record of successful deals, and distribution capabilities. Having a strong intangibles asset-based moat increases the probability that the investment bank will be hired for the coveted lead advisor position on an investment banking deal that comes with superior revenue share and economics compared with other investment banks in the underwriting syndicate, or that provides lower value services, such as a fairness opinion on the valuation of a deal. A strong brand can also position the firm as an employer of choice for productive bankers. High-level indicators of an investment bank’s intangible asset can be seen in its investment banking league table position, participation in high-profile transactions, and revenue production of its bankers.

We see little evidence of moats in developed financial markets for institutional securities trading by investment banks and broker/dealers. Financial instruments in developed markets often have fairly transparent pricing and high levels of liquidity (the ability to trade without significantly affecting the financial instrument's price). The tight trading spreads of equities on financial exchanges and increased electronification of fixed-income trading are examples of the decreased profit potential for institutional broker/dealers. Increased profits may be had in more opaque areas of trading, such as bespoke derivatives or block trades, but they often come with greater risk for the broker/dealer. For example, a close-to-ideal situation for a broker/dealer would be to execute two offsetting trades simultaneously, such as buying shares from a client who wants to sell out of a position and immediately selling those shares to another client that wants to buy them. However, in a block trade where the investment bank buys a large chunk of shares from a selling shareholder, those shares would sit on the investment bank's balance sheet while looking for investors to buy those shares. In the time that the shares are on the investment bank's balance sheet, the value of the shares could decrease and produce a loss on that block trade.

Even high revenue and operating margins in institutional trading don't necessarily indicate an economic moat that generates excess returns on capital. For a couple of global investment banks with USD billions in institutional trading revenue and operating margins that can be 10 percentage points higher than smaller investment banks, they can have returns on capital that are volatile and in the high single digits to low double digits, which is not significantly different from the cost of capital needed to support the business. Broker/dealers often have to hold an inventory of financial instruments on their balance sheet to facilitate client transactions, such as fixed-income securities. Financial regulators have increased the amount of generally more expensive capital, such as shareholders' equity or long-dated corporate bonds, that are used to fund the inventory of financial instruments at large banks with trading operations to reduce their solvency risk and liquidity risk. So, even if the revenue and operating margins of an investment bank's institutional trading business are high, returns on capital can be low, which signals the lack of a moat that generates excess economic returns.

We believe the asset-management business is conducive to the creation of economic moats, with switching costs and intangible assets being the most durable sources of competitive advantage for firms operating in the industry. Although the switching costs might not be explicitly large, inertia and the uncertainty of achieving better results by moving from one asset manager to another tend to keep many investors invested with the same funds for extended periods. As a result, money that flows into asset-management firms tends to stay there. For the industry overall, the average narrow redemption (retention) rate, which does not include exchange redemptions, has been 25% or less (75% or greater) annually during the past 5-, 10-, 15-, 20-, 25-, and 30-year periods. While the traditional asset managers tend to rely more on investor inaction to keep redemption rates low, alternative asset managers use lockup periods that can prevent investors from redeeming part or all their investment for prolonged periods. Private equity funds tend to have the longest lockup periods of seven-10 years compared with what is more common quarterly redemption periods for most hedge funds and credit alternatives offerings after a period of time invested with a fund (albeit generally with a cap on period-level redemptions).

Asset managers can improve on the switching cost advantage inherent in their business with organizational attributes (such as product mix, distribution channel concentration, and geographic reach) and intangible assets (such as strong and respected brands and manager reputations derived from successful records of investment performance), which can provide them with a degree of differentiation from their peers.

We generally refer to all these things—the organizational attributes and the more common intangibles—as intangible assets that can either add to or subtract from the switching cost advantage that might be inherent in an asset manager's business model. For example, firms that offer niche products with significantly higher switching costs—such as retirement accounts, alternative funds with lockup periods, and tax-managed strategies—that allow them to hold on to assets longer are generally viewed as having intangibles that clearly separate them from peers. Meanwhile, depth and breadth of product mix, distribution channel concentration, geographic reach, and successful records of investment performance are all visible attributes but it tends to be harder to make the direct connection to their influence on switching costs, but it can generally be inferred that firms with above-average investment performance will tend to see lower redemption rates, while companies with diversified offerings can offset flows out of one asset class or geography with flows into another during market cycles.

While the barriers to entry are not particularly significant for the industry, the barriers to success are extremely high, as it not only takes time and skill to put together a long enough record of investment performance to start gathering assets but even more time to build the scale necessary to remain competitive. This has generally provided the larger, more established asset managers with an advantage over the smaller players in the industry, especially when it comes to gaining cost-effective access to distribution platforms.

Competition for investor inflows can be stiff and has traditionally centered on investment performance, especially in the retail channel. Although institutional investors and retail gatekeepers are exerting pressure on pricing, competition based on price has been rare, aside from what we've seen in the US market for exchange-traded funds. While compensation remains the single largest expense for most asset managers, supplier power has been manageable, as many firms have reduced their reliance on star managers and have tied manager and analyst pay to both portfolio and overall firm performance.

Asset stickiness (the degree to which assets remain with a manager over time) tends to be a bigger differentiator between wide- and narrow-moat firms, as those asset managers that have demonstrated an ability to gather and retain investor assets during different market cycles have tended to produce more stable levels of profitability, with returns exceeding their cost of capital for longer periods.

While the more broadly diversified asset managers are structurally set up to hold on to assets regardless of market conditions, it has been firms with solid product sets across asset classes (built on repeatable investment processes), charging reasonable fees, and with singular corporate cultures dedicated to a common purpose that have done a better job of gathering and retaining assets. Firms offering niche products with significantly higher switching costs—such as retirement accounts, funds with lockup periods, and tax-managed strategies—have tended to hold on to assets longer.

Fair Value and Profit Drivers Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

We are lowering our fair value estimate for Goldman Sachs to $490 from $504 per share after making some changes to our assumptions based on current capital market conditions. Our fair value estimate equates to 10.6 times forward earnings per share and 1.5 times tangible book value.

Over the next five years, we project net revenue to grow at a 2.0% compound annual growth rate. We forecast less than 1% annual growth in trading income, as recent trading levels are arguably elevated. We also forecast net interest income to decline on the back of rate normalization and the assumption that Goldman Sachs will slow down the growth of or even decrease the size of its balance sheet in coming years. Barring a mania in the capital markets, we don't expect investment banking to approach 2021's level of over $14 billion in the foreseeable future. That said, we forecast investment banking revenue growing at around a 3.2% compound annual growth rate from the 2024 level of $7.7 billion. For asset-management revenue growth, we forecast modest revenue yield compression in the asset-management business and annual growth in assets under supervision of slightly over 7%.

In the long run, we project a gross leverage ratio of about 13.5 times, operating margins of 34%, and returns on tangible common equity of around 12%. The company has an operating margin goal of around 40% and return on tangible common equity goal of 15% to 17%, which we find to be a bit optimistic. We model a midcycle compensation ratio of 32%.

Risk and Uncertainty Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

The largest risk for Goldman Sachs is that it may have been too slow to adapt to the current regulatory and capital markets environment. Other banks were quicker to materially change their operations, such as by increasing the emphasis on their investment management operations and de-emphasizing their trading operations. While Goldman Sachs did modestly pare back its trading operations and has recently been speaking more about its investment management business and digital banking, these changes came later than peers, and it will take a while for them to scale. We generally believe that Goldman

Sachs' recent strategic plans are reasonable, but currently forecast the company either being on the low end or slightly missing its goals for operating margins and return on capital.

Goldman Sachs has moderate exposure to environmental, social, and governance risks. The largest social issue for Goldman Sachs and many other investment banks is their ability to attract and retain high-quality talent. Additionally, many investment banks are notorious for their long work hours. This is factored into our model via a relatively high compensation ratio. Investment banks and wealth management firms can often have product governance issues stemming from their sales and trading operations of selling products that aren't suitable to their clients and profiting at their clients' expense. Regulatory fines and litigation expenses are a normal part of business that we generally incorporate into our valuation model.

Our Morningstar Uncertainty Rating for Goldman Sachs is Medium. US banking regulations have become much stricter since the 2008 great recession, but this has also granted banks increased access to capital and liquidity to weather recessions.

Capital Allocation Brett Horn, CFA, Senior Equity Analyst, 21 Mar 2025

We give Goldman Sachs a Standard Morningstar Capital Allocation Rating. In our opinion, the company’s balance sheet is sound, its capital investment decisions are fair, and its capital return strategy is appropriate. At the end of 2024, the company had a standardized common equity Tier 1 capital ratio of 15.0%. This ratio is calculated based on risk-weighted assets, so is a reasonable measure of capital adequacy for comparison with peers. Goldman's 15.0% is on the higher end for banks and is currently a bit above the company's own internal target. Management aims to keep a 50- to 100-basis-point buffer above its regulatory capital requirements, and the currently CET1 ratio represents a buffer of 130 basis points. The company’s capital investment decisions are fair, with Goldman Sachs primarily growing through internal investment rather than acquisitions, as illustrated by the company having less than $10 billion of goodwill and intangibles compared with a $1 trillion-plus balance sheet. Some recent business expansions and acquisitions involving consumer credit and wealth management were arguably ill-timed or poorly executed but were not significant to the company's overall valuation. We assess the company’s capital return strategy as appropriate. Goldman Sachs has historically returned more capital through share repurchases than dividends, which makes sense for a company whose earnings can be volatile. Over the previous decade, the company's return on equity has only been around 10%-11%.

David Solomon was appointed CEO in 2018. He had been chief operating officer and co-head of investment banking at Goldman Sachs. Since becoming CEO, Solomon has made some changes in the management team, such as appointing a new chief financial officer and chief operating officer. He's laid out several strategic goals for the company. Under his leadership, the company has generally been successful with his investment banking, trading, and asset management goals. However, it's been behind and may never meet its consumer banking goals. We also forecast the company either missing or being on the lower end of its expense ratio and return on equity goals.

Analyst Notes Archive

US Blanket Tariffs Pose Significant Macroeconomic Risks and Are Unconditionally Bad for US Banks

Suryansh Sharma,Senior Equity Analyst,3 Apr 2025

President Donald Trump unleashed a barrage of tariffs on US trading partners that were significantly more aggressive and broader in scope than the market's expectation. US banks reacted negatively to the tariff announcements, and the US bank index was down more than 8%. Why it matters: The banking business is inherently tied to the macroeconomic performance of the US economy, and any negative impact on the economy will eventually percolate through the US banking industry's profitability. Economic slowdowns (or recessions) have a materially adverse impact on the US banking industry's loan growth, credit costs, investment banking fees, trading profitability, and asset management fees. The bottom line: Given the significant uncertainty associated with the tariff announcements, we are currently in the wait-and-see stance and do not plan to materially change our fair value estimates for US banks. While there are selective opportunities, US banks are fairly valued on average even after today's sharp correction, and we think investors should wait for a bigger margin of safety before going all-in into the sector. Big picture: If the current tariff regime remains in place in the long run, the US banking industry will certainly be hit hard, and the probability of recession will increase substantially. We estimate a midteens percentage fair value estimate decrease for the sector in a bear-case scenario, but the bank stocks can correct significantly more than that in the near term, given the hit to their profitability.

Goldman Sachs Earnings: Fairly Strong End to the Year; We Expect Continued Strength Michael Wong, CFA,Director,16 Jan 2025

Narrow-moat-rated Goldman Sachs reported a fairly strong end to 2024, and we expect continued strength in revenue despite US interest rates likely remaining relatively high and US policy uncertainty. The company reported net earnings to common shareholders of $13.5 billion, or $40.54 per diluted share, for the year. This produced a return on tangible equity of 13.5%. For the fourth quarter, net revenue sequentially increased 9% due primarily to equity investment gains and seasonal strength in investment banking revenue. We don’t anticipate making a material change to our $496 per share fair value estimate for Goldman Sachs and assess shares are slightly overvalued. While we expect continued strength in revenue over the next couple of years, shares are trading at about 1.8 times book value when return on equity for the year was only 12.7%, and the company still has work to do to meet its midteens ROE target.While there’s been a shift in the market view for interest rates, positive economic sentiment, which is a driver of Goldman Sachs' earnings, remains healthy. It’s pertinent to note that Goldman produced fairly strong revenue growth and earnings in 2024 when the effective federal-funds rate was 5.14%. Even if the rate isn't cut as much as previously expected in 2025, it's still starting the year at 4.33%, which is better than the 2024 average. While the equity markets may be back to interpreting good economic data, such as strong employment numbers, as bad for markets because it lessens the magnitude of rate cuts, good economic data is positive for most of Goldman Sachs' business lines. Political uncertainty can cause some hesitation for investment banking, but it could also keep trading revenue high, and in the longer term, the strength of the economy is more a driver of earnings.

Goldman Sachs: Increasing Our Fair Value by 8% to $496 Due to a Stronger Capital Markets Outlook
Michael Wong, CFA,Director,18 Nov 2024

We are increasing our fair value estimate for narrow-moat-rated Goldman Sachs to $496 from $460 per share. This is about 12 times forward earnings and 1.6 times tangible book value. Of the net $36 increase in our fair value estimate, about $10 is from earnings since our previous valuation update, $7 is from changes in our revenue and expense forecasts, and $19 is from reducing our projected increase in regulatory capital.Over the next five years, we project net revenue to grow at an over 3.5% compound annual growth rate. Our year-five revenue is also around 5% lower than the revenue it booked in 2021, which was an abnormally strong year. We forecast less than 2% annual growth in trading and net interest income, as recent trading levels are arguably elevated and we assume Goldman Sachs will slow down the growth of or even decrease the size of its balance sheet in coming years.Barring a mania in the capital markets, we don't expect investment banking to approach 2021's level of over $14 billion in the foreseeable future. That said, we forecast investment banking revenue growing at around a 7.5% compound annual growth rate from the 2023 level of $6.2 billion. For asset-management revenue growth, we forecast modest revenue yield compression in the asset-management business and annual growth in assets under supervision of 6%-7%.In the long run, we project a gross leverage ratio of about 13.5 times, operating margins of 36%, and returns on tangible common equity of around 14%. The company has an operating margin goal of around 40% and a return on tangible common equity goal of 15%-17%. We model an across-the-cycle 32% compensation ratio and use a 9.5% cost of equity in our model.

Republican Win Largely Positive for Capital Markets and Investment-Services Firms Michael Wong, CFA,Director,15 Nov 2024

We believe the election of Donald Trump as president and Republican control of the US Senate and House will be largely positive for capital markets and investment-services firms. We will adjust our valuation models as government policies solidify, but with a rally of over 10% for multiple capital markets companies after the election, we believe potential tailwinds have largely been incorporated into share prices. We view most capital markets and investment-services firms as fairly valued to slightly overvalued.In terms of investment banking, the Republican Party has historically been more friendly toward mergers than the Democratic Party. Investment banks in general, and M&A-focused investment banks like Evercore and Lazard especially, will benefit from higher M&A volume. Equity underwriting should remain strong as long as the stock market holds up, while there's more uncertainty around fixed-income underwriting with the yield curve steepening.A likely steepening yield curve should add to net interest income. The Federal Reserve is cutting rates on the short end, and the 10-year US Treasury yield is picking up after the election, as the market is pricing in likely higher inflation in the long term. While the Federal Reserve should continue to cut interest rates, the market is pricing in a more gradual pace of cuts, which benefits some companies with a relatively higher proportion of interest-earning assets tied to short-term interest rates.If the stock market is able to hold on to recent gains, and especially if the market continues to trend upward, wealth-management and retail brokerages should report new records in client assets, which are the foundation of earnings growth.

The New World of Direct Indexing and Mass Personalization: Potential Disruption Can't Be Ignored

Michael Wong, CFA,Director,11 Nov 2024

Direct indexing in some form has existed for decades, but advances in technology have recently broadened its availability. With its arguable superiority to existing passive index funds and exchange-traded funds, investment industry leaders are positioning for the opportunities and threats it unleashes. While there have already been hundreds of billions of dollars dedicated to direct indexing offerings, numerous firms such as BlackRock and Morgan Stanley have acquired direct indexing capabilities in anticipation of further rapid growth.Informed by our case studies and analysis, we calculate a broad range of outcomes for the growth of direct indexing. At the low end, direct-to-retail investor direct indexing offerings could remain a niche product of unfulfilled potential similar to robo-advisors with annual revenue in hundreds of millions. Though, at the high end, direct indexing and mass personalization could be as momentous as the advent of exchange-traded funds, restructuring the investment services ecosystem.If direct indexing becomes widespread, we believe the winners will be the retail brokerages and robo-advisors. Traditional active and passive asset managers will likely be hit by direct indexing. And index providers, financial data firms, and wealth management service providers could face opportunities and threats from the growth of direct indexing. We see little effect on the profits of wealth management firms.

Goldman Sachs Earnings: Results Remain Relatively Strong Amid Economic Uncertainty Michael Wong, CFA,Director,15 Oct 2024

Narrow-moat-rated Goldman Sachs reported relatively strong third-quarter results amid an often-changing market outlook for the US economy and interest rates. The company reported net income to common shareholders of $2.8 billion, or $8.40 per diluted share, on $12.7 billion of net revenue. Net revenue increased 7% from the previous year and was flat sequentially. ROE for the quarter was 10.4%, and year to date it's 12%. We don't anticipate making a significant change to our $460 fair value estimate for Goldman Sachs and assess shares are fairly valued to slightly overvalued.After second-quarter results where revenue had decreased 10% from the first quarter, we had opined that revenue would continue to remain relatively strong, as the economy remained healthy. During the quarter, market views of the economy swung from bearish leanings due to the unemployment rate increasing and thoughts that the Federal Reserve may have been too late in cutting interest rates to even more recently that the Fed might be slower in cutting interest rates after the 50-basis-point cut in September because some employment numbers were revised to the better and reported inflation hasn’t fallen as quickly. Overall, it seems that employment numbers aren’t significantly worsening, inflation is still on a moderating trend, and a large gap remains between the current federal-funds rate and most economists’ estimates of what the neutral interest rate for the economy should be, so we believe the US economic outlook remains positive and interest rates will continue to move lower over the next couple of years. A continued healthy economy and lower interest rates should be positive for capital markets activity and Goldman Sachs.

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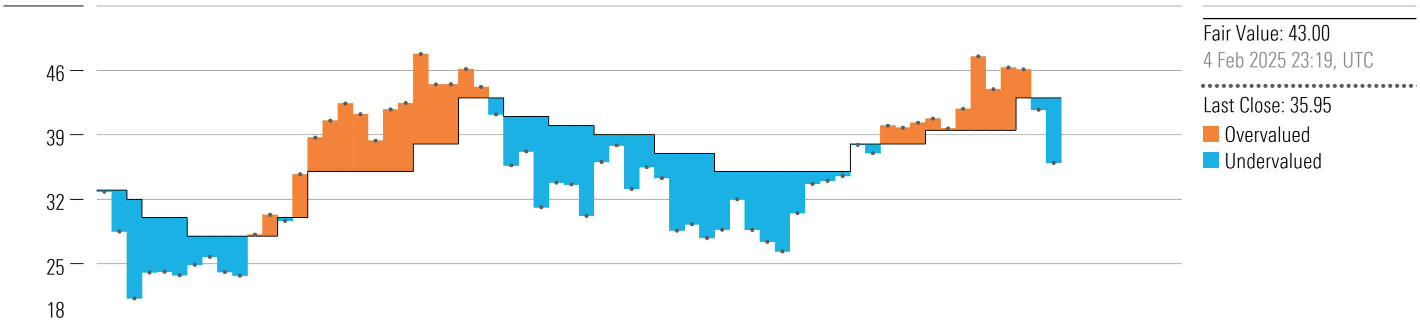
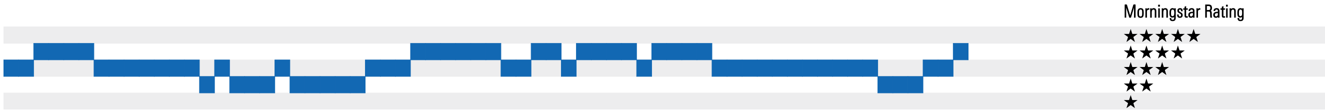
The Goldman Sachs Group Inc GS ★★★ 11 Apr 2025 21:35, UTC

Competitors Price vs. Fair Value

Bank of America Corp BAC

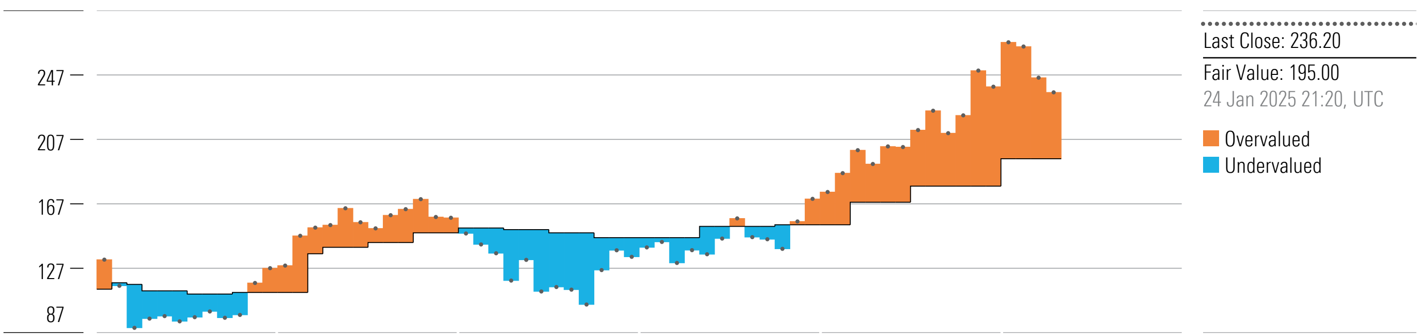


	2020	2021	2022	2023	2024	YTD	
	1.08	1.17	0.85	0.96	1.11	0.84	Price/Fair Value
	-11.90	49.36	-23.62	4.44	33.50	-17.61	Total Return %

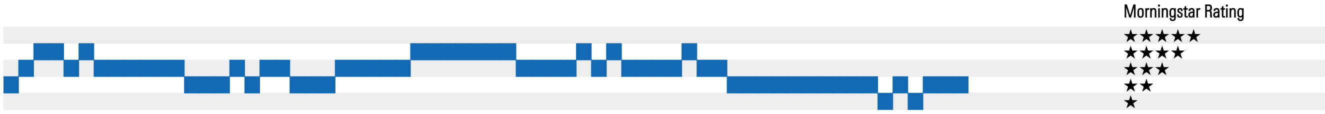


Total Return % as of 11 Apr 2025. Last Close as of 11 Apr 2025. Fair Value as of 4 Feb 2025 23:19, UTC.

JPMorgan Chase & Co JPM



	2020	2021	2022	2023	2024	YTD	
	1.13	1.06	0.92	1.10	1.35	1.21	Price/Fair Value
	-6.26	27.53	-12.79	29.87	43.63	-0.36	Total Return %



Total Return % as of 11 Apr 2025. Last Close as of 11 Apr 2025. Fair Value as of 24 Jan 2025 21:20, UTC.

Morningstar Equity Analyst Report | Report as of 14 Apr 2025 18:42, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NEW YORK STOCK EXCHANGE, INC. Page 14 of 24

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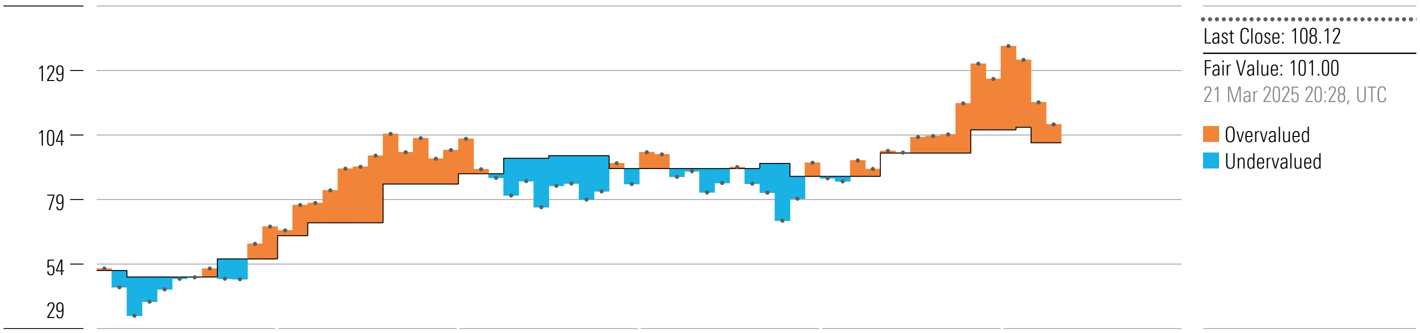
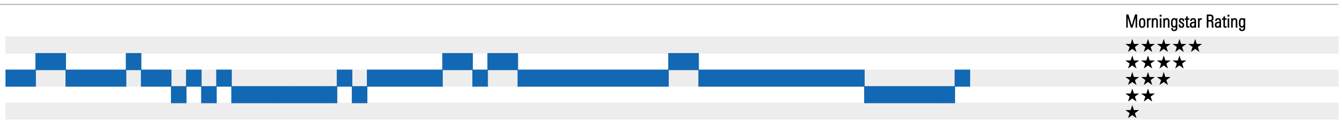
Competitors Price vs. Fair Value

Morgan Stanley MS



	2020	2021	2022	2023	2024	YTD
Price/Fair Value	1.22	1.15	0.93	1.06	1.19	1.07
Total Return %	36.80	46.30	-10.38	13.50	38.63	-13.26



Total Return % as of 11 Apr 2025. Last Close as of 11 Apr 2025. Fair Value as of 21 Mar 2025 20:28, UTC.

Morningstar Equity Analyst Report | Report as of 14 Apr 2025 18:42, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NEW YORK STOCK EXCHANGE, INC. Page 15 of 24

The Goldman Sachs Group Inc GS ★★★ 11 Apr 2025 21:35, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
494.44 USD 11 Apr 2025	490.00 USD 21 Mar 2025 20:20, UTC	1.01	157.62 USD Bil 14 Apr 2025	Narrow	Large Value	Medium	Standard	2 Apr 2025 05:00, UTC

Morningstar Valuation Model Summary

Financials as of 21 Mar 2025	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Net Interest Income (USD Mil)	7,678	6,351	8,056	8,925	10,152	10,660	9,291	7,753
Non Interest Income (USD Mil)	39,687	39,903	45,456	47,284	49,530	52,053	51,955	51,541
Total Pre-Provision Revenue (USD Mil)	47,365	46,254	53,512	56,209	59,683	62,713	61,246	59,295
Provision for Loan Losses (USD Mil)	2,715	1,028	1,348	1,324	1,457	1,602	1,699	1,767
Operating Expenses (USD Mil)	31,164	34,487	33,767	34,779	36,853	38,644	38,353	37,724
Operating Income (USD Mil)	13,486	10,739	18,397	20,106	21,373	22,466	21,194	19,804
Net Income Available to Common Stockholders (USD Mil)	11,261	8,516	14,276	16,085	17,099	17,973	16,744	15,645
Adjusted Net Income (USD Mil)	10,764	7,907	13,525	15,334	16,348	17,222	15,993	14,894
Weighted Average Diluted Shares Outstanding (Mil)	358	346	334	334	334	334	334	334
Earnings Per Share (Diluted) (USD)	30.06	22.87	40.54	45.96	49.00	51.62	47.94	44.65
Adjusted Earnings Per Share (Diluted) (USD)	30.06	22.87	40.54	45.96	49.00	51.62	47.94	44.65
Dividends Per Share (USD)	9.00	10.50	11.50	12.00	12.00	12.00	12.00	12.00

Margins & Returns as of 21 Mar 2025		Actual			Forecast					
	3 Year Avg	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**5 Year Avg**
Net Interest Margin %	0.5	0.5	0.4	0.5	0.5	0.6	0.6	0.5	0.4	0.5
Efficiency Ratio %	67.8	65.8	74.6	63.1	61.9	61.8	61.6	62.6	63.6	62.3
Provision as % of Loans	0.9	1.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8

Growth & Ratios as of 21 Mar 2025		Actual			Forecast					
	3 Year Avg	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**5 Year Avg**
Net Interest Income Growth %	7.6	18.7	-17.3	26.9	10.8	13.8	5.0	-12.9	-16.6	-0.8
Non Interest Income Growth %	-4.9	-24.9	0.5	13.9	4.0	4.8	5.1	-0.2	-0.8	2.5
Total Pre-Provision Revenue Growth %	—	-20.2	-2.4	15.7	5.0	6.2	5.1	-2.3	-3.2	—
Operating Expenses Growth %	—	-2.4	10.7	-2.1	3.0	6.0	4.9	-0.8	-1.6	—
Operating Income Growth %	—	-50.1	-20.4	71.3	9.3	6.3	5.1	-5.7	-6.6	—
Net Income Growth %	-13.9	-47.9	-24.4	67.6	12.7	6.3	5.1	-6.8	-6.6	—
Earnings Per Share Growth %	-12.0	-49.4	-23.9	77.3	13.4	6.6	5.4	-7.1	-6.9	2.0

Valuation as of 21 Mar 2025	Actual			Forecast				
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Price/Earning	11.4	16.9	14.1	10.8	10.1	9.6	10.3	11.1
Price/Book	—	—	—	—	—	—	—	—
Price/Tangible Book	1.3	1.4	1.9	1.5	1.5	1.4	1.3	1.3
Dividend Yield %	2.7	2.0	2.4	2.4	2.4	2.4	2.4	2.4
Dividend Payout %	34.2	53.0	33.3	26.1	24.5	23.3	25.0	26.9

Operating Performance / Profitability as of 21 Mar 2025	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
ROA %	0.8	0.5	0.9	1.0	1.0	1.0	0.9	0.8
ROE %	9.9	7.3	12.0	12.9	13.2	13.3	11.8	10.8
Return on Tangible Equity %	11.2	8.0	13.5	14.6	14.9	15.0	13.2	12.0

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The Goldman Sachs Group Inc GS ★★★ 11 Apr 2025 21:35, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
494.44 USD 11 Apr 2025	490.00 USD 21 Mar 2025 20:20, UTC	1.01	157.62 USD Bil 14 Apr 2025	Narrow	Large Value	Medium	Standard	2 Apr 2025 05:00, UTC

Financial Leverage (Reporting Currency)	Actual			Forecast				
Fiscal Year, ends 31 Dec	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Equity/Assets %	8.1	7.1	7.3	7.7	7.5	7.7	7.6	7.6

Forecast Revisions as of	2025		2026		2027	
Prior data as of 4 Oct 2023	**Current**	**Prior**	**Current**	**Prior**	**Current**	**Prior**
Fair Value Estimate Change (Trading Currency)	490.00	349.90	—	—	—	—
Net Interest Income (USD Mil)	8,925	7,035	10,152	6,822	10,660	6,759
Total Pre-Provision Revenue (USD Mil)	56,209	45,954	59,683	46,424	62,713	46,985
Operating Income (USD Mil)	20,106	11,975	21,373	13,060	22,466	14,200
Net Income (USD Mil)	—	8,963	—	9,820	—	10,721
Earnings Per Share (Diluted) (USD)	45.96	26.23	49.00	30.06	51.62	29.94
Adjusted Earnings Per Share (Diluted) (USD)	45.96	26.23	49.00	30.06	51.62	29.94
Dividends Per Share (USD)	12.00	-10.50	12.00	-11.00	12.00	-11.00

Key Valuation Drivers as of 21 Mar 2025	
Cost of Equity %	9.0
Stage II Net Income Growth Rate %	4.0
Stage II Incremental ROIC %	15.0
Perpetuity Year	15

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

Discounted Cash Flow Valuation as of 21 Mar 2025	**USD Mil**
Present Value Stage I	0
Present Value Stage II	0
Present Value of the Perpetuity	0
Total Common Equity Value before Adjustment	**0**
Other Adjustments	—
Equity Value	**157,018**
Projected Diluted Shares	328
Fair Value per Share (USD)	**490.00**

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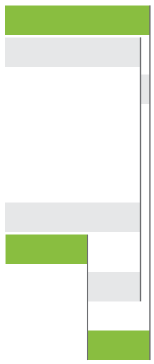
The Goldman Sachs Group Inc GS ★★★ 11 Apr 2025 21:35, UTC

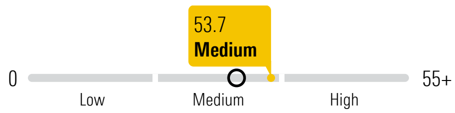
Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
494.44 USD 11 Apr 2025	490.00 USD 21 Mar 2025 20:20, UTC	1.01	157.62 USD Bil 14 Apr 2025	Narrow	Large Value	Medium	Standard	2 Apr 2025 05:00, UTC

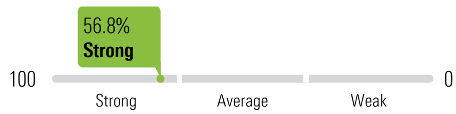
ESG Risk Rating Breakdown

Exposure	
Company Exposure[1]	53.7
– Manageable Risk	50.2
Unmanageable Risk[2]	**3.5**
Management	
Manageable Risk	50.2
– Managed Risk[3]	28.5
Management Gap[4]	**21.7**
Overall Unmanaged Risk	**25.2**



● Subject ○ Subindustry (48.0)

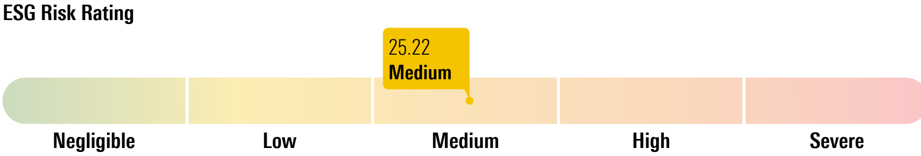




- Exposure represents a company's vulnerability to ESG risks driven by their business model
- Exposure is assessed at the Subindustry level and then specified at the company level
- Scoring ranges from 0-55+ with categories of low, medium, and high-risk exposure

- Management measures a company's ability to manage ESG risks through its commitments and actions
- Management assesses a company's efficiency on ESG programs, practices, and policies
- Management score ranges from 0-100% showing how much manageable risk a company is managing

ESG Risk Rating



ESG Risk Ratings measure the degree to which a company's value is impacted by environmental, social, and governance risks, by evaluating the company's ability to manage the ESG risks it faces.

1. A company's Exposure to material ESG issues 2. Unmanageable Risk refers to risks that are inherent to a particular business model that cannot be managed by programs or initiatives 3. Managed Risk = Manageable Risk multiplied by a Management score of 56.8% 4. Management Gap assesses risks that are not managed, but are considered manageable 5. ESG Risk Rating Assessment = Overall Unmanaged Risk = Management Gap plus Unmanageable Risk

ESG Risk Rating Assessment[5]

ESG Risk Rating is of Apr 02, 2025. Highest Controversy Level is as of Apr 08, 2025. Sustainalytics Subindustry: Investment Banking and Brokerage. Sustainalytics provides Morningstar with company ESG ratings and metrics on a monthly basis and as such, the ratings in Morningstar may not necessarily reflect current Sustainalytics' scores for the company. For the most up to date rating and more information, please visit: sustainalytics.com/esg-ratings/.

Peer Analysis 02 Apr 2025

Peers are selected from the company's Sustainalytics-defined Subindustry and are displayed based on the closest market cap values

Company Name	Exposure			Management			ESG Risk Rating		
The Goldman Sachs Group Inc	53.7 | Medium	0	55+	56.8 | Strong	100	0	25.2 | Medium	0	40+
Bank of America Corp	53.2 | Medium	0	55+	58.4 | Strong	100	0	24.4 | Medium	0	40+
Lazard Inc	45.0 | Medium	0	55+	51.8 | Strong	100	0	22.8 | Medium	0	40+
Morgan Stanley	53.5 | Medium	0	55+	57.3 | Strong	100	0	24.8 | Medium	0	40+
JPMorgan Chase & Co	53.7 | Medium	0	55+	52.9 | Strong	100	0	27.3 | Medium	0	40+

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Appendix
Historical Morningstar Rating

The Goldman Sachs Group Inc GS 11 Apr 2025 21:35, UTC

Dec 2025	Nov 2025	Oct 2025	Sep 2025	Aug 2025	Jul 2025	Jun 2025	May 2025	Apr 2025	Mar 2025	Feb 2025	Jan 2025
—	—	—	—	—	—	—	—	★★★	★★	★★	★★
Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★	★★	★★	★★★	★★★	★★★	★★★	★★★	★★★	★★	★★★	★★★
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
★★★	★★★	★★★★	★★★★	★★★★	★★★	★★★	★★★	★★★★	★★★★	★★★★	★★★

Bank of America Corp BAC 11 Apr 2025 21:35, UTC

Dec 2025	Nov 2025	Oct 2025	Sep 2025	Aug 2025	Jul 2025	Jun 2025	May 2025	Apr 2025	Mar 2025	Feb 2025	Jan 2025
—	—	—	—	—	—	—	—	★★★★	★★★	★★★	★★
Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★	★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★
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
★★★	★★★	★★★	★★★	★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★	★★★

JPMorgan Chase & Co JPM 11 Apr 2025 21:33, UTC

Dec 2025	Nov 2025	Oct 2025	Sep 2025	Aug 2025	Jul 2025	Jun 2025	May 2025	Apr 2025	Mar 2025	Feb 2025	Jan 2025
—	—	—	—	—	—	—	—	★★	★★	★★	★
Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★	★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★
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
★★★	★★★	★★★	★★★	★★★	★★★	★★★★	★★★	★★★★	★★★★	★★★	★★

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Morgan Stanley MS 11 Apr 2025 21:33, UTC

Dec 2025	Nov 2025	Oct 2025	Sep 2025	Aug 2025	Jul 2025	Jun 2025	May 2025	Apr 2025	Mar 2025	Feb 2025	Jan 2025
—	—	—	—	—	—	—	—	★★★	★★	★★	★★
Dec 2024	Nov 2024	Oct 2024	Sep 2024	Aug 2024	Jul 2024	Jun 2024	May 2024	Apr 2024	Mar 2024	Feb 2024	Jan 2024
★★	★★	★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★
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
★★	★★★	★★★	★★★★	★★★	★★★	★★★	★★★	★★★★	★★★★	★★★	★★★

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.

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.

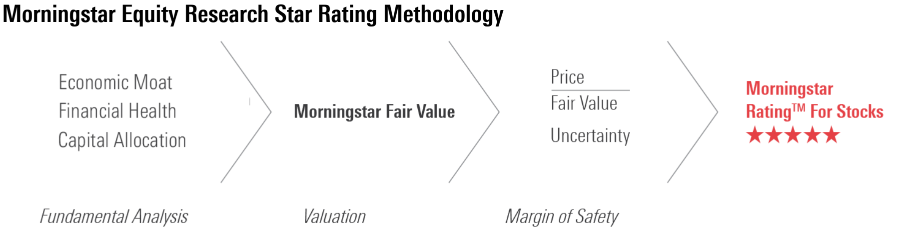
Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return 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 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 any-

Morningstar Equity Research Star Rating Methodology



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thing 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.

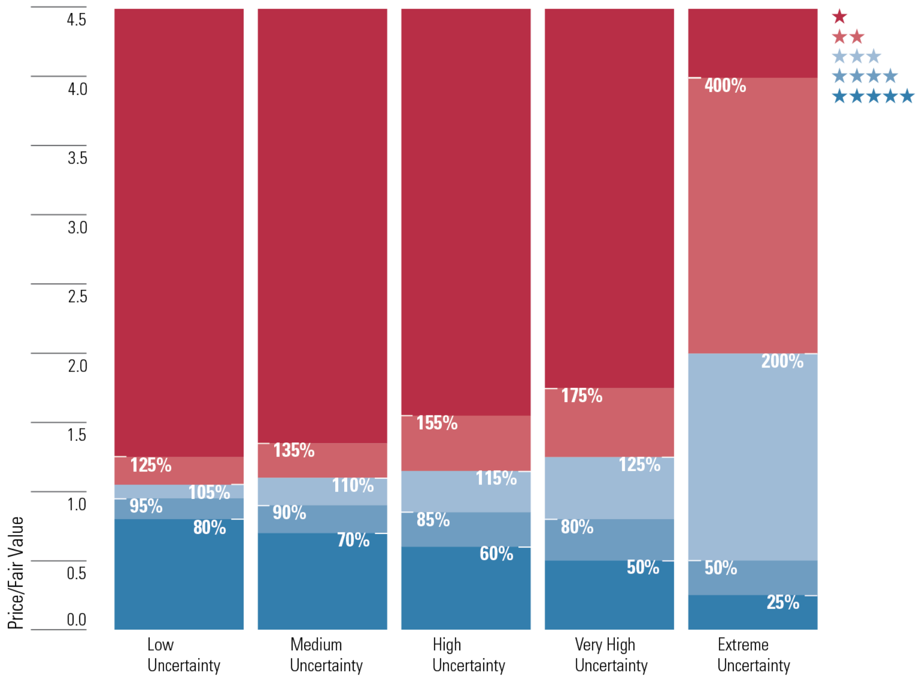
4. Market Price

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.

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

Morningstar Star Rating for Stocks

Morningstar Equity Research Star Rating Methodology



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.

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 compan-

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ies' 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.

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