

NVIDIA Corp NVDA ★★★★★ 20 Nov 2025 02:31, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
186.52 USD 19 Nov 2025	240.00 USD 20 Nov 2025 02:28, UTC	0.78	4.54 USD Tril 19 Nov 2025	Wide	Large Growth	Very High	Exemplary	3 Sep 2025 05:00, UTC

Sector	Industry
Technology	Semiconductors

Business Description

Nvidia is a leading developer of graphics processing units. Traditionally, GPUs were used to enhance the experience on computing platforms, most notably in gaming applications on PCs. GPU use cases have since emerged as important semiconductors used in artificial intelligence to run large language models. Nvidia not only offers AI GPUs, but also a software platform, Cuda, used for AI model development and training. Nvidia is also expanding its data center networking solutions, helping to tie GPUs together to handle complex workloads.

- We still see Nvidia shares as undervalued and view recent AI bubble chatter as a buying opportunity. Longer-term concerns about AI funding and energy buildouts are valid in the medium to long term, but 2026 is shaping up to be another stellar AI year, in our view.

Coming up: Nvidia not only expects strong revenue growth in the January quarter, but also healthy gross margins in the 75% range. The firm is seeing higher input costs, but we anticipate that Nvidia's strong pricing power will enable the firm to pass these costs on to customers.

Business Strategy & Outlook Brian Colello, CPA, Senior Equity Analyst, 20 Nov 2025

Nvidia has a wide economic moat, thanks to its market leadership in graphics processing units, or GPUs, hardware, software, and networking tools needed to enable the exponentially growing market around artificial intelligence. In the long run, we expect tech titans to strive to find second-sources or in-house solutions to diversify away from Nvidia in AI, but these efforts will, at best, only chip away at Nvidia's AI dominance.

Nvidia's GPUs run parallel processing workloads, using many cores to efficiently process data at the same time. In contrast, central processing units, or CPUs, such as Intel's processors for PCs and servers, or Apple's processors for its Macs and iPhones, process the data of "0's and 1's" in a serial fashion. The wheelhouse of GPUs has been the gaming market, and Nvidia's GPU graphics cards have long been considered best of breed.

More recently, parallel processing has emerged as a near-requirement to accelerate AI workloads. Nvidia took an early lead in AI GPU hardware, but more importantly, developed a proprietary software platform, Cuda, and these tools allow AI developers to build their models with Nvidia. We believe Nvidia not only has a hardware lead but also benefits from high customer switching costs around Cuda, making it unlikely for another chip designer to emerge as a leader in AI training. Nvidia's expansion into networking has been impressive, allowing customers to cluster AI GPUs together for AI training.

We think Nvidia's prospects will be tied to the AI market, for better or worse, for quite some time. We expect leading cloud vendors to continue to invest in in-house, while AMD is also working on GPUs and AI accelerators for the data center. However, we view Nvidia's GPUs and Cuda as the industry leaders, and the firm's massive valuation will hinge on the pace of AI buildouts in the years ahead.

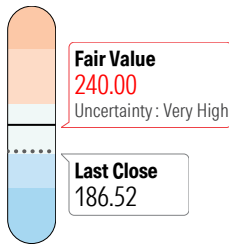
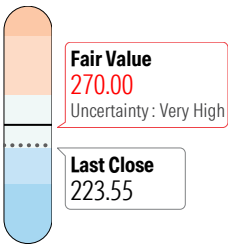
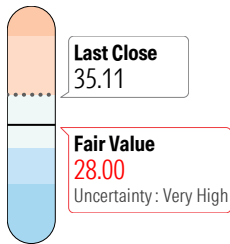
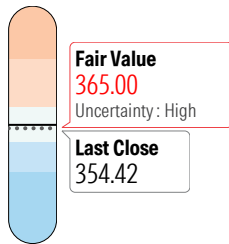
Bulls Say Brian Colello, CPA, Senior Equity Analyst, 20 Nov 2025

- The AI infrastructure opportunity is massive, and Nvidia foresees \$3 trillion-\$4 trillion of annual AI infrastructure spending by 2030.
- Nvidia's data center GPUs and Cuda software platform have established the company as the dominant vendor for AI model training and inference.
- Nvidia is expanding nicely within AI, not just supplying industry-leading GPUs but also moving into

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Competitors

	NVIDIA Corp NVDA	Advanced Micro Devices Inc AMD	Intel Corp INTC	Broadcom Inc AVGO
	 Fair Value 240.00 Uncertainty: Very High Last Close 186.52	 Fair Value 270.00 Uncertainty: Very High Last Close 223.55	 Last Close 35.11 Fair Value 28.00 Uncertainty: Very High	 Fair Value 365.00 Uncertainty: High Last Close 354.42
Economic Moat	Wide	Narrow	None	Wide
Currency	USD	USD	USD	USD
Fair Value	240.00 20 Nov 2025 02:28, UTC	270.00 12 Nov 2025 00:12, UTC	28.00 18 Sep 2025 19:15, UTC	365.00 13 Oct 2025 18:04, UTC
1-Star Price	420.00	472.50	49.00	565.75
5-Star Price	120.00	135.00	14.00	219.00
Assessment	Fairly Valued 19 Nov 2025	Fairly Valued 19 Nov 2025	Overvalued 19 Nov 2025	Fairly Valued 19 Nov 2025
Morningstar Rating	★★★★★ 20 Nov 2025 02:31, UTC	★★★★★ 19 Nov 2025 22:29, UTC	★★★ 19 Nov 2025 22:30, UTC	★★★★★ 19 Nov 2025 22:41, UTC
Analyst	Brian Colello, Senior Equity Analyst	Brian Colello, Senior Equity Analyst	Brian Colello, Senior Equity Analyst	William Kerwin, Senior Equity Analyst
Capital Allocation	Exemplary	Exemplary	Standard	Exemplary
Price/Fair Value	0.78	0.83	1.25	0.97
Price/Sales	28.38	12.58	2.93	27.64
Price/Book	46.24	6.61	1.59	21.98
Price/Earning	51.67	115.14	592.00	84.00
Dividend Yield	—	0.00%	0.00%	0.67%
Market Cap	4,541.20 Bil	363.95 Bil	167.47 Bil	1,673.70 Bil
52-Week Range	86.62—212.19	76.48—267.08	17.67—42.48	138.10—386.48
Investment Style	Large Growth	Large Growth	Large Blend	Large Growth

networking, software, and services to tie these GPUs into even more-powerful clusters.

Bears Say Brian Colello, CPA, Senior Equity Analyst, 20 Nov 2025

- Nvidia's customers are a handful of the largest Tech companies in the world, and they all have an incentive to eventually diversify away from Nvidia to some extent.
- AI infrastructure spending has been impressive but revenue and use cases are less certain, perhaps providing doubts that there is a good return on investment on AI that might lead to a spending downturn at some point in the future.
- Geopolitics have entered the AI space, most notably limiting Nvidia's AI opportunities in China.

Economic Moat Brian Colello, CPA, Senior Equity Analyst, 28 Oct 2025

We assign Nvidia a wide economic moat rating, thanks to intangible assets around its graphics processing units and high customer switching costs around its proprietary software, Cuda, for AI tools,

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which enables developers to use Nvidia's GPUs to build AI models.

Nvidia was an early leader and designer of GPUs, which were originally developed to offload graphic processing tasks on PCs and gaming consoles. Nvidia has emerged as the clear market share leader in discrete GPUs. We attribute Nvidia's leadership to intangible assets associated with GPU design, as well as the associated software, frameworks, and tools required by developers to work with these GPUs.

GPUs perform parallel processing, in contrast to the serial processing performed by central processing units used to run the software and applications on PCs, smartphones, and many other types of devices. CPU examples include Intel's and AMD's PC and server processors, as well as Apple's and Qualcomm's smartphone processors. These CPUs conduct serial processing of 0's and 1's in a particular order to run an instruction set to run software and perform functions. In contrast, parallel processing does not need to run in a linear order. This is particularly useful, for example, when capturing an image. A GPU often has more cores than a CPU and performs simpler processing (such as capturing the data within a single image pixel) but throws many more cores at the image to catch all the data quickly. If CPUs were to conduct this task, they would have to capture the pixels in order; one can envision the CPU starting at the top and working its way down the image, while the GPU takes a snapshot in full.

In our view, the nature of parallel processing in GPUs is at the heart of Nvidia's dominance in its various end markets. PC graphics were the initial key application, allowing for more robust and immersive gaming over the past couple of decades. In the past decade, however, the parallel processing of GPUs was also found to run the matrix multiplication algorithms needed to power AI models more efficiently.

AI development has two key phases. The first is AI training. Using an image recognition example, developers might feed 50,000 images into a model, labeling them as either a picture of a cat, or not a cat. The model will look for the various aspects of each image and determine the scores and weights that are most common within a "cat" image. This may be an image with whiskers (although mice have whiskers too) or one with pointy ears (although the ears of a fox are also pointy), but a combination of all these factors may lead the model to effectively recognize cats in future images.

The second AI phase is inference, where the AI model decides on an image based on its prior training. In the cat example, the user would feed an unlabeled image into the model, and the model provides an output of whether it recognizes a cat or not.

Similar techniques are used in large language models associated with generative AI. In these cases, LLMs are fed with massive amounts of data, which may come from the internet, research papers, databases, and so on. Based on this data, the LLM determines scores and weights associated with language and which words are associated with one another.

GPUs are best suited to make these many billions of calculations needed for LLMs to predict the next

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word in a query (GPT-4 was trained on 1.8 trillion parameters, for example). More important, Nvidia made shrewd moves to build and expand the Cuda software platform, creating and hosting a variety of libraries, compilers, frameworks, and development tools that allowed AI professionals to build their models. Cuda is proprietary to Nvidia and only runs on Nvidia GPUs, and we believe this hardware plus software integration has created high customer switching costs in AI that contribute to Nvidia's wide moat.

Even if a chip competitor were to build a GPU on par with Nvidia, we surmise that the code and models built on Cuda to date would not be ported over to another GPU, giving Nvidia an incumbency advantage. It is conceivable that alternatives may emerge that might never touch Cuda or an Nvidia GPU, but Nvidia had virtually no competition in this arena at the dawn of AI, so any enterprise building an LLM but waiting for alternatives would have been left in the dust.

In AI inference, we believe that a variety of chip solutions will be used over time to detect patterns and provide the output associated with AI models. However, Nvidia's entrenchment in AI training makes it a likely winner in AI inference as well, not only as training GPUs are repurposed for inference, but as Nvidia uses its training know-how to push the needle on more innovative inference products.

Beyond Nvidia's AI prowess today, which we believe is exceptionally strong, we think the company is making the proper moves to widen its moat even further. Nvidia's software efforts with Cuda remain impressive, while Nvidia expanded into networking solutions, most notably with its acquisition of Mellanox for InfiniBand and, more recently, with its Spectrum Ethernet products. We don't want to discount Nvidia's know-how here either. Many AI models don't run on solo GPUs, but rather a connected system of many GPUs running in tandem. Nvidia's proprietary products, such as NVLink, do a good job of connecting Nvidia GPUs together to run these larger models.

Looking at the competitive landscape, AMD is a well-capitalized chipmaker with GPU expertise, although we view the company as being in a position of weakness on the software front. Perhaps the biggest threat might be from in-house chip solutions from hyperscalers, such as Google's tensor processing units, or TPUs, Amazon's Trainium and Inferentia chips. There's no guarantee that any of these chips will be superior to Nvidia's GPUs across a wide range of applications, but it's likely that each of these in-house chips might perform specific workloads better than a general AI GPU from Nvidia or others.

However, we believe that cloud computing companies will have to offer their enterprise customers a full menu of GPUs and accelerators so that they can run AI workloads. Amazon and Google may use Trainium and TPUs to train their own AI models, respectively, but we think they may struggle to encourage a host of enterprise customers to optimize their AI models for these in-house semis. Doing so would prevent these enterprise customers from switching among cloud providers, and enterprises are

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typically loath to be locked into a single vendor. Thus, neutral merchant GPU vendors will likely be demanded by enterprise customers, and again, we foresee Nvidia remaining at the head of the pack for quite some time.

Fair Value and Profit Drivers Brian Colello, CPA, Senior Equity Analyst, 20 Nov 2025

Our fair value estimate is \$240 per share. This fair value estimate implies an equity value of \$5.5 trillion. Our fair value estimate implies a fiscal 2026 (ending January 2026 or effectively calendar 2025) price/adjusted earnings multiple of 51 times and fiscal 2027/2028 forward price/adjusted earnings multiples of 31 times and 25 times, respectively.

Our fair value estimate and Nvidia's stock price will be driven by its prospects in the data center and AI GPUs, for better or worse. Nvidia's DC business has achieved exponential growth already, rising from \$3 billion in fiscal 2020 to \$115 billion in fiscal 2025 and will likely be \$191 billion in fiscal 2026, representing 66% annual growth.

We model 62% growth to \$310 billion of DC revenue in fiscal 2027. Nvidia has disclosed at its GTC conference in Washington D.C. that it has visibility into \$500 billion of cumulative Blackwell and Rubin revenue in calendar 2026, which we think implies \$300 billion-plus of revenue coming in calendar 2026 (which is effectively fiscal 2027). This increase is thanks to the relatively higher prices associated with Blackwell Ultra and the rapid growth in supply of such products. We no longer model revenue from China, but this has likely enabled even more supply for Blackwell sold to the rest of the world.

We then model 23%, 15%, and 14% growth in fiscal 2028, 2029, and 2030, respectively, to \$500 billion in fiscal 2030 (which is effectively calendar 2029), resulting in a 34% CAGR from fiscal 2025 to fiscal 2030. The main driver of this tremendous growth is an ongoing increase in capital expenditures in data centers at leading enterprise and cloud computing customers. Nvidia has suggested that each gigawatt-sized data center represents a \$50 billion opportunity for the company, while the firm has line of sight to tens of such GW data centers being built out this decade.

We think it is reasonable that Nvidia may face an inventory correction or a pause in AI demand at some point in the medium term thereafter, so we model only 2% growth in fiscal 2031. Excluding this pause in expansion, we anticipate average annual DC growth in the low teens thereafter and consider this to be a reasonable long-term growth rate as AI matures. In the long run, we think that cloud computing revenue at the hyperscalers can grow at a low-teens rate, capital expenditures as a percentage of revenue remains at consistent levels at these hyperscalers, and thus we model Nvidia's revenue growth to be on par with these cloud computing growth rates.

In gaming, which was formerly Nvidia's largest business, we model 10% average annual long-term revenue growth, bringing the total business to over \$28 billion in fiscal 2030. We have high hopes for

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Nvidia's automotive business as greater processing power will be required in active safety systems and autonomous driving. We model \$2.6 billion of revenue in fiscal 2026 and revenue growing at a 17% CAGR over the next decade to \$9.2 billion of revenue in fiscal 2035.

In summation, Nvidia achieved 126% and 114% revenue growth in fiscal 2024 and fiscal 2025, and has guided to 64% growth in fiscal 2026. While these percentages will represent peak growth rates, we still anticipate robust growth for Nvidia in the years ahead. We model a three-year CAGR of 47% for Nvidia from fiscal 2025 to fiscal 2028.

Nvidia's massive DC growth has been gross margin-accretive, as GAAP gross margin expanded from 57% in fiscal 2023 to 75% in fiscal 2025. We model a near-term dip in GAAP gross margin to 71% in fiscal 2026 as Blackwell is a more costly product to ramp up and Nvidia will recover only a portion of the loss associated with its H20 writeoff earlier in fiscal 2026. However, Nvidia should achieve mid-70% gross margins exiting fiscal 2026.

In the long run, we anticipate a modest gross margin in the decade ahead, as we lower it to the low-70% range a decade from now. Still, we are optimistic about Nvidia's ability to retain its pricing power in DC products, thanks to the high switching costs associated with the Cuda platform.

Nvidia earned an exceptional 62% GAAP operating margin in fiscal 2025, as it prospered from significant operating leverage during the AI boom. We anticipate that GAAP operating margin will be 60% in fiscal 2026, again due to the H20 writeoff, but will hover around 60% (plus or minus 5%) in each year of our 10-year forecast period.

Risk and Uncertainty Brian Colello, CPA, Senior Equity Analyst, 28 Oct 2025

We assign Nvidia a Morningstar Uncertainty Rating of Very High due to the nascent nature of the AI market. In our view, Nvidia's valuation will be tied to its ability to grow within AI, for better or worse. Nvidia is an industry leader in GPUs used in AI model training, while carving out a good portion of demand for chips used in AI inference workloads (which involve running a model to make a prediction or output).

The biggest risk, in our view, is the pace of AI spending going forward. Nvidia prospered from exponential AI growth in recent years, but such spending comes from a handful of customers, and they all have an incentive to eventually optimize, if not reduce, their investments over time. Within these AI buildouts, we also think that tech leaders will turn to in-house chips for at least a portion of their workloads. Google's TPUs and Amazon's Trainium and Inferentia chips were designed with AI workloads in mind. Diversification is also possible, and among existing semis vendors, AMD is quickly expanding its GPU lineup to serve these cloud leaders.

We also foresee geopolitical risk and uncertainty, most notably with US restrictions that have prevented

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Nvidia, at various times, from selling its AI products into China.

Capital Allocation Brian Colello, CPA, Senior Equity Analyst, 20 Nov 2025

We assign Nvidia an Exemplary Capital Allocation Rating, which reflects our assessment of a sound balance sheet, exceptional investments associated with the firm's strategy and execution, and attractive and appropriate shareholder distribution policies.

Nvidia is in outstanding financial health. As of October 2025, the company held \$60.6 billion in cash and investments, as compared with \$8.5 billion in short- and long-term debt. We think the firm generates sufficient cash flow and has ample resources to meet its debt obligations, capital expenditure requirements, potential acquisitions, and shareholder returns.

We remain impressed with Nvidia's prescient investments in GPUs, networking semis, and software, as the company spent the past decade (if not longer) laying the groundwork to emerge as the clear leader in AI training GPUs and associated software and tools. We now believe that Nvidia benefits from hefty switching costs in the data center. Even if AMD or another competitor could build a semiconductor that is comparable with Nvidia's data center GPUs, we surmise that AI developers will stick with Nvidia because such AI models were built with Cuda.

We think Nvidia's investments in startups such as OpenAI and Anthropic are wise uses of cash. We recognize these deals are circular in nature. In theory, Nvidia might potentially push unwanted GPUs on to companies in which it has a stake. However, we view this risk as minimal in the near-term and even the long-run. These startups must buy as many Nvidia GPUs as possible to pave the way for leading large language models. Nvidia's use of this cash inflow to make investments is reasonable, in our view. Given AI supply constraints, we have little near-term concern about Nvidia pushing unwanted GPUs on to its startup or neocloud partners.

On the M&A front, the deal that stands out is Nvidia's acquisition of Mellanox Technologies for \$6.9 billion in early 2020. Mellanox sells networking products that focus on efficient data transfer in data centers via its InfiniBand technology. Nvidia has deployed InfiniBand masterfully while expanding its networking product lineup into Ethernet-based devices.

In September 2020, Nvidia attempted to acquire ARM Holdings from the SoftBank Group in a transaction valued at \$40 billion. Nvidia's hope was to steer ARM toward the development of data center products while incorporating Nvidia's AI expertise. The deal immediately faced pushback from ARM's licensee customers and regulatory challenges and was terminated in February 2022. We don't think the failed merger was a dealbreaker for Nvidia, as the company continues to license IP from ARM and has launched its "Grace" line of ARM-based CPUs for the data center.

Management initiated a quarterly dividend in the fourth quarter of fiscal 2013 to return excess cash to shareholders, but the payout is rather immaterial today. Most of Nvidia's distributions to shareholders

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come in the form of share repurchases.

Analyst Notes Archive

Nvidia: Shares Big AI Dreams With OpenAI as Firms Announce a Strategic Partnership Brian Colello, CPA, Senior Equity Analyst, 22 Sep 2025

Nvidia and OpenAI announced a letter of intent for a strategic partnership to deploy at least 10 gigawatts (GW) of Nvidia systems for OpenAI's artificial intelligence infrastructure. Nvidia intends to invest up to \$100 billion in OpenAI "as new Nvidia systems are deployed." Why it matters: We think this partnership fits within the framework of the \$500 billion Stargate project, announced in January. OpenAI and its Stargate partners have tremendous aspirations for AI, and Nvidia is cementing its role in these buildouts. The deal also likely squashes any concern that OpenAI's new custom chip (developed with Broadcom) will materially dent Nvidia's AI market share within these data centers. The bottom line: We maintain our \$190 fair value estimate and our Very High Uncertainty Rating for wide-moat Nvidia. Shares rose about 4% on the news Sept. 22 and appear fairly valued. Our valuation is based on tremendous AI adoption, and the letter of intent is one of several we like to see to support these bullish industrywide growth expectations. The timing of buildouts was not disclosed. We're cautiously optimistic that any expansion will be conducted at a measured and reasonable pace. Nvidia's gear have short shelf lives, perhaps naturally squashing any temptation for massive buildouts years in advance of anticipated demand. Coming up: We hope to hear more about Nvidia's future investments in OpenAI. Nvidia certainly has excess cash to invest in OpenAI in this manner. For now, we'll consider any investments to be arm's length transactions. However, these investments might be circular and raise related party concerns, as Nvidia may own shares in a customer that will likely use such funds to buy more Nvidia gear. Further, and in general, we foresee four risks that may mute the industry's AI aspirations—supply chain expansion, financing availability, energy/power requirements, and geopolitical restrictions. All this may affect the pace of this deal's buildouts over time.

Nvidia: Collaboration With Intel Might Bring Some Goodwill With US; Maintain \$190 Fair Value Brian Colello, CPA, Senior Equity Analyst, 18 Sep 2025

Nvidia and Intel announced a collaboration to jointly develop multiple generations of custom data center and PC products. Nvidia will also invest \$5 billion in Intel's common stock at a price of \$23.28 per share. Why it matters: For Nvidia, we view this as a good investment. The company tried to dismiss this angle, but it might be buying some goodwill with the US government (which owns 10% of Intel) and, in turn, will be allowed to sell more advanced artificial intelligence chips into China. Nvidia has long paired x86 CPUs from Intel, such as Sapphire Rapids, with its GPU servers. The collaboration extends this relationship with NVLink connectivity. We haven't expected AMD to gain share here, since AMD offers competing AI products. Nvidia's deal to supply RTX GPU chiplets into Intel's x86 PC CPU products

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should boost Nvidia's non-data center businesses. However, we're hesitant to declare this PC win as a material driver of Nvidia's future growth. The bottom line: We maintain our \$190 fair value estimate for wide-moat Nvidia and retain our Very High Uncertainty Rating. The shares rose about 4% in Sept. 18 trading but still appear modestly undervalued to us, as we see tremendous upside for AI buildouts in the years ahead. For Nvidia, we view the \$5 billion investment as immaterial and don't believe it will alter the company's core business plans. Nvidia reinforced its commitment to Arm-based Grace CPUs, for example, and won't shift fully toward Intel x86 CPUs. Between the lines: Importantly, Nvidia gave no indication that it will use Intel 14A or otherwise shift significant portions of manufacturing to Intel Foundry. We doubt the \$5 billion is meaningful enough to essentially force Nvidia to use Intel, either for core products or even for the chips in collaboration.

Nvidia Earnings: US Growth Outshines the Drama in China; Raising Fair Value to \$190 From \$170

Brian Colello, CPA, Senior Equity Analyst, 28 Aug 2025

Nvidia reported fiscal second-quarter revenue of \$46.7 billion, up 56% year over year and ahead of guidance of \$45.0 billion. Third-quarter guidance of \$54.0 billion would represent 54% year-over-year growth. Results and guidance both exclude any H20 product revenue sold into China. Why it matters: No surprise, but there is still tremendous demand for Nvidia's artificial intelligence products with no signs of a slowdown. Revenue (or lack thereof) from China adds volatility, but we're most impressed with the Blackwell Ultra rollout and strong demand from leading US cloud customers. The bottom line: We raise our fair value estimate for wide-moat Nvidia to \$190 from \$170 and maintain our Very High Uncertainty Rating. Although we reduce and push out our estimates for China revenue, the increase in US supply leads us to boost our near- and medium-term growth rates. Nvidia has steadily increased AI revenue by approximately \$4 billion per quarter over the past eight quarters as new supply comes online. We're encouraged that guidance points to a \$7 billion boost in the third quarter, with the accelerating supply of Blackwell Ultra rack-scale products. Shares sold off modestly after hours, likely because near-term revenue didn't beat FactSet Consensus estimates by as much as in recent quarters, but we view this as a buying opportunity. Long view: Nvidia believes the global AI market will grow at a 50% pace and has confidence in the buildout plans of its large customers. Even with our fair value increase, 50% growth in calendar 2026 would represent upside to our model and would be ahead of current consensus estimates. Management expects cumulative data center spending of up to \$4 trillion over the rest of the decade, while Nvidia has captured about a third of such capital expenditures to date. We view these estimates as both reasonable and a sign that AI spending will not decline anytime soon.

Nvidia: Maintaining Fair Value as US Will Get a Piece of the Action in AI Chips Sold Into China

Brian Colello, CPA, Senior Equity Analyst, 11 Aug 2025

Nvidia and Advanced Micro Devices are expected to soon receive the previously announced export licenses from the US government to sell artificial intelligence chips into China. In exchange, the

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companies have agreed to pay the US government 15% of the revenue from these chip sales. Why it matters: First reported by the Financial Times, the 15% payment is unusual and surprising. Various reports suggest that no similar structure has ever been agreed upon as part of an export license. We consider this news as part of a larger story in semiconductor regulations. Semis are exempt from tariffs in the US today, but they could reportedly spike to 100%. Meanwhile, manufacturers are expanding production in the US. Ultimately, we anticipate more deals coming soon. The bottom line: We maintain our \$170 fair value estimate for wide-moat Nvidia as well as our Very High Uncertainty Rating. Not only is the future size of AI still uncertain, but global regulatory environments around AI are unpredictable and can change rapidly. At this point, we think of this payment as effectively a tax on the gross margin dollars of AI chip sales into China. However, the structure, and even the legality, of such payments remains in question. Coming up: We still estimate that Nvidia will sell \$30 billion of AI chips into China in fiscal 2027 (which is effectively calendar 2026), and a 15% tax could reduce our fiscal 2027 net income estimates by about 4%. We don't think the tax will stall either Nvidia's sales or China's adoption in any way. Our \$30 billion revenue estimate would represent 16% of our \$182 billion data center revenue estimate for Nvidia in fiscal 2027. Before restrictions, China accounted for as much as 20% of revenue in Nvidia's data center segment. We hope to learn more about this agreement along with Nvidia's earnings report on Aug. 27.

Nvidia: Raising Fair Value Estimate to \$170 From \$140 as Nvidia Is Back in Business in China Brian Colello, CPA, Senior Equity Analyst, 15 Jul 2025

Nvidia announced that the US will reverse course and now approve the sale of H20 graphics processors, or GPUs, into China for artificial intelligence workloads. Sales of the H20 were banned 90 days ago, causing Nvidia to incur a \$5.5 billion write-off and miss out on tens of billions of revenue. Why it matters: We're pleasantly surprised by the US reversal, as resumption of H20 sales may enable Nvidia to reemerge as the primary, if not dominant, technology provider for China's AI. The H20 is still throttled down versus Nvidia's best products but remains in high demand in China. We assume the reversal stays in place going forward, although we are cautiously, rather than wholly, optimistic about the latest restrictions. If retained, we think Nvidia will remain more dominant in AI than ever, supporting its outstanding revenue growth and gross margins. The bottom line: We raise our fair value estimate for wide-moat Nvidia to \$170 from \$140. We maintain our Very High fair value Uncertainty Rating as the outlook for China, and AI demand in general, is bright but fluid and may reverse rapidly and without much warning. Nvidia's stock price now appears fairly valued to us as we reinsert H20 revenue into our model, assume that China revenue is greater than our pre-ban expectations, and boost our longer-term gross margin assumptions. We are reinserting \$5 billion of revenue to the October and January quarters, and about \$30 billion into fiscal 2027 and future years. We expect a near-term rush of H20 orders later this year and assume that Chinese AI firms buy H20's with confidence in the years ahead. Long view: The US reversal may signal a change in overall AI policy versus China, as AMD will also

NVIDIA Corp NVDA★★★★

20 Nov 2025 02:31, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
186.52 USD 19 Nov 2025	240.00 USD 20 Nov 2025 02:28, UTC	0.78	4.54 USD Tril 19 Nov 2025	Wide	Large Growth	Very High	Exemplary	3 Sep 2025 05:00, UTC

receive a similar benefit. Rather than block US AI accelerator sales into China, thus enabling Chinese AI firms to support other vendors like Huawei, these firms might remain dependent on the hardware, software, and networking provided by US firms like Nvidia.

Nvidia Earnings: Export Controls Aren't Slowing It Down; Raising Fair Value to \$140 From \$125

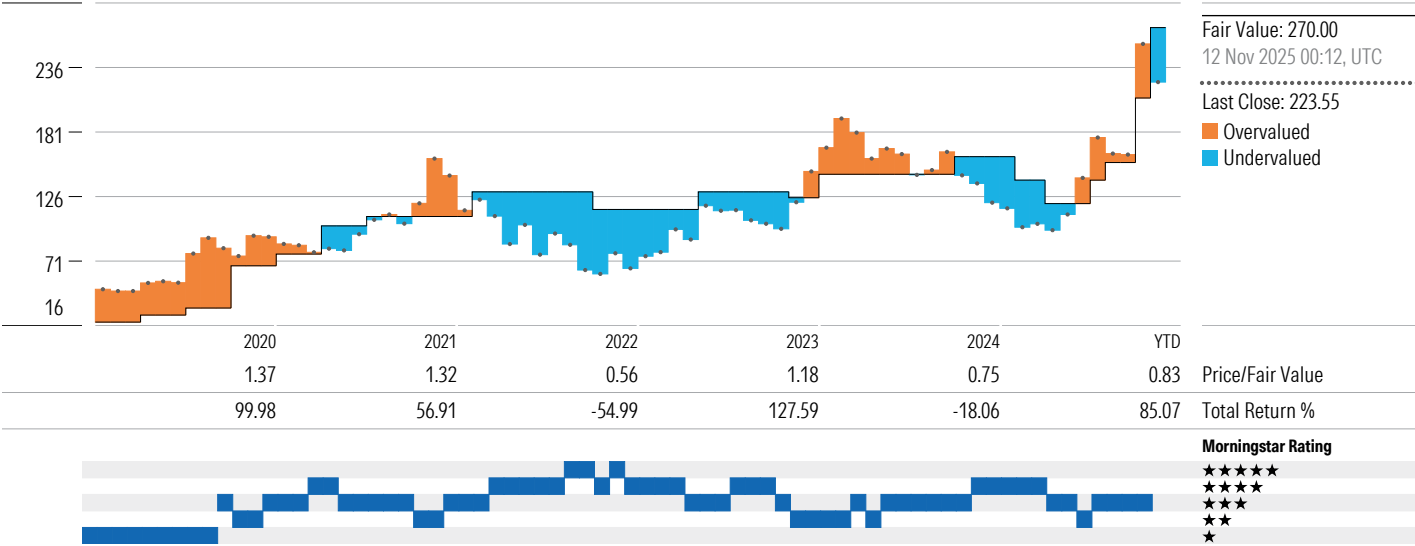
Brian Colello, CPA,Senior Equity Analyst,29 May 2025

Nvidia reported fiscal first-quarter revenue of \$44.1 billion, ahead of guidance and up 69% from the year-ago period. Second-quarter revenue guidance of \$45 billion would represent 50% year-over-year growth. Both figures incorporate lost revenue from China due to US export controls.Why it matters: We're encouraged by Nvidia's revenue growth despite being blocked from selling H20 products (custom-built for China's artificial intelligence market). This caused a \$4.5 billion inventory write-off and foregone revenue of \$2.5 billion and \$8.0 billion in the first and second quarters, respectively. First-quarter data center revenue of \$39.1 billion was up 73% year over year, as almost 70% of revenue came from Nvidia's latest Blackwell products. Of this revenue, \$4.6 billion came from H20 sold into China before the restrictions were enacted on April 9, 2025. Nvidia's gaming revenue was a bright spot, up 48% sequentially and up 42% year over year, as new gaming products based on the Blackwell architecture were well-adopted. The bottom line: We raise our fair value estimate for wide-moat Nvidia to \$140 per share from \$125 as Blackwell supply (and revenue) expanded faster than we anticipated and should support higher long-term AI revenue. We retain our Very High Morningstar Uncertainty Rating. Shares rose about 5% after hours following the results and appear fairly valued, as we think the market was similarly impressed by Blackwell and calmed by Nvidia's ability to grow despite China export controls. Coming up: Nvidia expects revenue in the July quarter to increase about 3% sequentially, with modest growth across all segments. Growth would have been 14% sequentially and 77% year over year if Nvidia were allowed to sell \$8.0 billion of H20 products into China as desired. ■■■

NVIDIA Corp NVDA ★★★★★ 20 Nov 2025 02:31, UTC

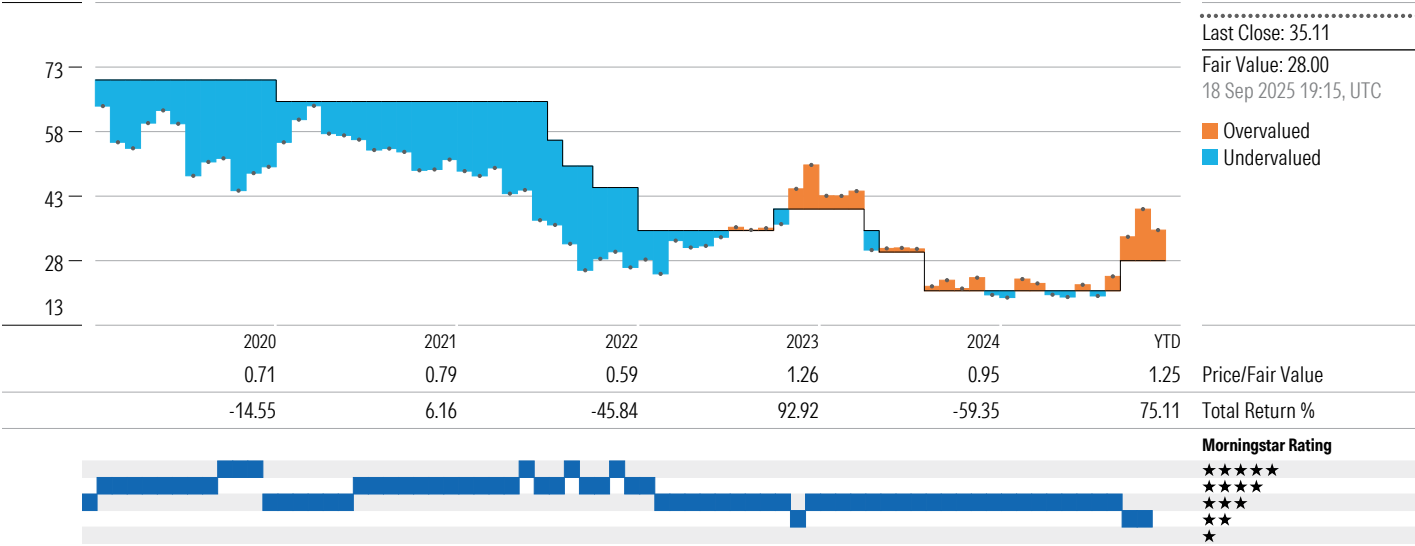
Competitors Price vs. Fair Value

Advanced Micro Devices Inc AMD



Total Return % as of 19 Nov 2025. Last Close as of 19 Nov 2025. Fair Value as of 12 Nov 2025 00:12, UTC.

Intel Corp INTC



Total Return % as of 19 Nov 2025. Last Close as of 19 Nov 2025. Fair Value as of 18 Sep 2025 19:15, UTC.

NVIDIA Corp NVDA ★★★★★ 20 Nov 2025 02:31, UTC

Last Price 186.52 USD 19 Nov 2025	Fair Value Estimate 240.00 USD 20 Nov 2025 02:28, UTC	Price/FVE 0.78	Market Cap 4.54 USD Tril 19 Nov 2025	Economic Moat™ Wide	Equity Style Box Large Growth	Uncertainty Very High	Capital Allocation Exemplary	ESG Risk Rating Assessment¹ 3 Sep 2025 05:00, UTC
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Morningstar Valuation Model Summary

Financials as of 19 Nov 2025

Fiscal Year, ends 31 Jan	Actual			Forecast				
	2023	2024	2025	2026	2027	2028	2029	2030
Revenue (USD Mil)	26,974	60,922	130,497	213,637	337,388	413,422	474,890	540,639
Operating Income (USD Mil)	5,577	32,972	81,454	128,550	218,051	264,029	299,344	335,688
EBITDA (USD Mil)	5,768	34,480	83,318	131,381	222,890	270,830	308,728	347,647
Adjusted EBITDA (USD Mil)	5,768	34,480	83,318	131,381	222,890	270,830	308,728	347,647
Net Income (USD Mil)	4,368	29,760	72,880	113,949	182,809	221,081	250,476	280,724
Adjusted Net Income (USD Mil)	8,365	32,313	74,266	115,943	189,514	229,810	261,090	293,621
Free Cash Flow To The Firm (USD Mil)	-564	23,023	50,605	51,926	123,313	181,356	217,572	246,528
Weighted Average Diluted Shares Outstanding (Bil)	25	25	25	25	24	24	23	23
Earnings Per Share (Diluted) (USD)	0.17	1.19	2.94	4.64	7.56	9.30	10.71	12.21
Adjusted Earnings Per Share (Diluted) (USD)	0.33	1.30	2.99	4.72	7.84	9.66	11.17	12.78
Dividends Per Share (USD)	0.02	0.02	0.03	0.04	0.04	0.04	0.04	0.04

Margins & Returns as of 19 Nov 2025

	3 Year Avg	Actual			Forecast					5 Year Avg
		2023	2024	2025	2026	2027	2028	2029	2030	
Operating Margin %	44.1	20.7	54.1	62.4	60.2	64.6	63.9	63.0	62.1	62.8
EBITDA Margin %	—	21.4	56.6	63.8	61.5	66.1	65.5	65.0	64.3	—
Adjusted EBITDA Margin %	—	21.4	56.6	63.8	61.5	66.1	65.5	65.0	64.3	64.5
Net Margin %	40.3	16.2	48.9	55.9	53.3	54.2	53.5	52.7	51.9	53.1
Adjusted Net Margin %	47.0	31.0	53.0	56.9	54.3	56.2	55.6	55.0	54.3	55.1
Free Cash Flow To The Firm Margin %	24.8	-2.1	37.8	38.8	24.3	36.6	43.9	45.8	45.6	39.2

Growth & Ratios as of 19 Nov 2025

	3 Year CAGR	Actual			Forecast					5 Year CAGR
		2023	2024	2025	2026	2027	2028	2029	2030	
Revenue Growth %	69.3	0.2	125.9	114.2	63.7	57.9	22.5	14.9	13.9	32.9
Operating Income Growth %	100.9	-44.5	491.2	147.0	57.8	69.6	21.1	13.4	12.1	32.7
EBITDA Growth %	196.9	-48.6	497.8	141.6	57.7	69.7	21.5	14.0	12.6	35.1
Adjusted EBITDA Growth %	95.1	-48.6	497.8	141.6	57.7	69.7	21.5	14.0	12.6	33.1
Earnings Per Share Growth %	96.9	-54.7	584.9	146.2	58.0	62.8	23.0	15.2	14.0	33.0
Adjusted Earnings Per Share Growth %	96.9	-24.9	288.3	131.1	57.8	65.9	23.3	15.6	14.4	33.0

Valuation as of 19 Nov 2025

	Actual			Forecast				
	2023	2024	2025	2026	2027	2028	2029	2030
Price/Earning	59.2	47.3	40.2	39.5	23.8	19.3	16.7	14.6
Price/Sales	17.9	24.9	22.5	21.3	13.5	11.0	9.6	8.4
Price/Book	22.2	35.8	37.5	32.6	16.7	10.1	6.9	5.0
Price/Cash Flow	—	—	—	—	—	—	—	—
EV/EBITDA	83.3	43.8	34.9	34.2	20.2	16.6	14.6	12.9
EV/EBIT	86.1	45.8	35.7	35.0	20.6	17.0	15.0	13.4
Dividend Yield %	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dividend Payout %	4.8	1.2	1.1	0.9	0.5	0.4	0.4	0.3
Free Cash Flow Yield %	—	—	—	—	—	—	—	—

Operating Performance / Profitability as of 19 Nov 2025

Fiscal Year, ends 31 Jan	Actual			Forecast				
	2023	2024	2025	2026	2027	2028	2029	2030
ROA %	10.6	45.3	65.3	62.6	56.6	44.5	35.9	30.1
ROE %	19.8	69.2	91.9	81.2	67.7	50.4	39.4	32.5
ROIC %	20.5	61.0	97.1	97.2	99.4	78.5	63.4	53.7

NVIDIA Corp NVDA ★★★★★ 20 Nov 2025 02:31, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
186.52 USD 19 Nov 2025	240.00 USD 20 Nov 2025 02:28, UTC	0.78	4.54 USD Tril 19 Nov 2025	Wide	Large Growth	Very High	Exemplary	3 Sep 2025 05:00, UTC

Financial Leverage (Reporting Currency)	Actual			Forecast				
	2023	2024	2025	2026	2027	2028	2029	2030
Fiscal Year, ends 31 Jan								
Debt/Capital %	2.4	0.7	0.4	0.1	0.1	0.1	0.1	0.1
Assets/Equity	1.9	1.5	1.4	1.3	1.2	1.1	1.1	1.1
Net Debt/EBITDA	-0.2	-0.4	-0.4	-0.5	-0.7	-1.1	-1.5	-2.0
Total Debt/EBITDA	2.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0
EBITDA/ Net Interest Expense	134.1	-40.8	-32.4	-19.1	-101.2	-116.0	-126.9	-137.2

Forecast Revisions as of 19 Nov 2025	2026		2027		2028	
Prior data as of 28 Oct 2025	Current	Prior	Current	Prior	Current	Prior
Fair Value Estimate Change (Trading Currency)	240.00	225.00	—	—	—	—
Revenue (USD Mil)	213,637	208,843	337,388	323,777	413,422	399,422
Operating Income (USD Mil)	128,550	124,846	218,051	209,895	264,029	258,629
EBITDA (USD Mil)	131,381	126,671	222,890	213,901	270,830	264,513
Net Income (USD Mil)	115,943	110,374	189,514	182,564	229,810	224,817
Earnings Per Share (Diluted) (USD)	4.64	4.43	7.56	7.38	9.30	9.24
Adjusted Earnings Per Share (Diluted) (USD)	4.72	4.50	7.84	7.57	9.66	9.47
Dividends Per Share (USD)	0.04	0.04	0.04	0.04	0.04	0.04

Key Valuation Drivers as of 19 Nov 2025

Cost of Equity %	9.0
Pre-Tax Cost of Debt %	5.5
Weighted Average Cost of Capital %	9.0
Long-Run Tax Rate %	15.0
Stage II EBI Growth Rate %	12.0
Stage II Investment Rate %	41.0
Perpetuity Year	20

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

Discounted Cash Flow Valuation as of 19 Nov 2025

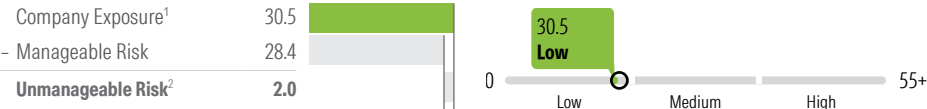
	USD Mil
Present Value Stage I	1,333,435
Present Value Stage II	1,202,677
Present Value Stage III	2,874,674
Total Firm Value	5,410,787
Cash and Equivalents	43,210
Debt	8,463
Other Adjustments	0
Equity Value	5,445,534
Projected Diluted Shares	24
Fair Value per Share (USD)	240.00

NVIDIA Corp NVDA ★★★★★ 20 Nov 2025 02:31, UTC

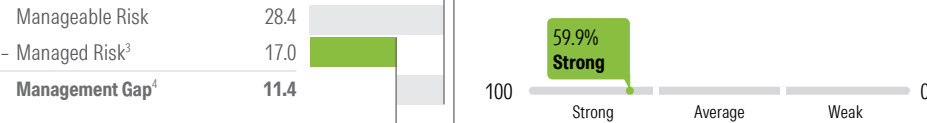
Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
186.52 USD 19 Nov 2025	240.00 USD 20 Nov 2025 02:28, UTC	0.78	4.54 USD Tril 19 Nov 2025	Wide	Large Growth	Very High	Exemplary	3 Sep 2025 05:00, UTC

ESG Risk Rating Breakdown

Exposure



Management



- 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 59.9% 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 Assessment⁵



ESG Risk Rating is of Sep 03, 2025. Highest Controversy Level is as of Nov 08, 2025. Sustainability Subindustry: Semiconductor Design and Manufacturing. Sustainability provides Morningstar with company ESG ratings and metrics on a monthly basis and as such, the ratings in Morningstar may not necessarily reflect current Sustainability's scores for the company. For the most up to date rating and more information, please visit: sustainability.com/esg-ratings/.

Peer Analysis 03 Sep 2025

Company Name	Exposure	Management	ESG Risk Rating
NVIDIA Corp	30.5 Low 0 —●— 55+	59.9 Strong 100 —●— 0	13.4 Low 0 —●— 40+
Qualcomm Inc	37.8 Medium 0 —●— 55+	69.1 Strong 100 —●— 0	13.6 Low 0 —●— 40+
Advanced Micro Devices Inc	31.4 Low 0 —●— 55+	64.4 Strong 100 —●— 0	12.5 Low 0 —●— 40+
Intel Corp	48.9 Medium 0 —●— 55+	66.6 Strong 100 —●— 0	18.8 Low 0 —●— 40+
—	— — 0 —●— 55+	— — 100 —●— 0	— — 0 —●— 40+

Appendix

Historical Morningstar Rating

NVIDIA Corp NVDA 19 Nov 2025 22:30, 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 ★★

Advanced Micro Devices Inc AMD 19 Nov 2025 22:29, 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 ★★★★★
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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 ★★★★
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Dec 2020 ★★	Nov 2020 ★★	Oct 2020 ★★★★	Sep 2020 ★	Aug 2020 ★	Jul 2020 ★	Jun 2020 ★	May 2020 ★	Apr 2020 ★	Mar 2020 ★	Feb 2020 ★	Jan 2020 ★

Intel Corp INTC 19 Nov 2025 22:30, 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 ★★★★★
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Dec 2020 ★★★★★	Nov 2020 ★★★★★	Oct 2020 ★★★★★	Sep 2020 ★★★★	Aug 2020 ★★★★	Jul 2020 ★★★★	Jun 2020 ★★★★	May 2020 ★★★★	Apr 2020 ★★★★	Mar 2020 ★★★★	Feb 2020 ★★★★	Jan 2020 ★★★★

Broadcom Inc AVGO 19 Nov 2025 22:41, 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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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, in-depth 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 short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term 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 single-point 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 working capital 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

Morningstar Equity Research Star Rating Methodology



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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.

Qualitative Analysis Uncertainty Ratings	Margin of Safety	
	★★★★★ 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

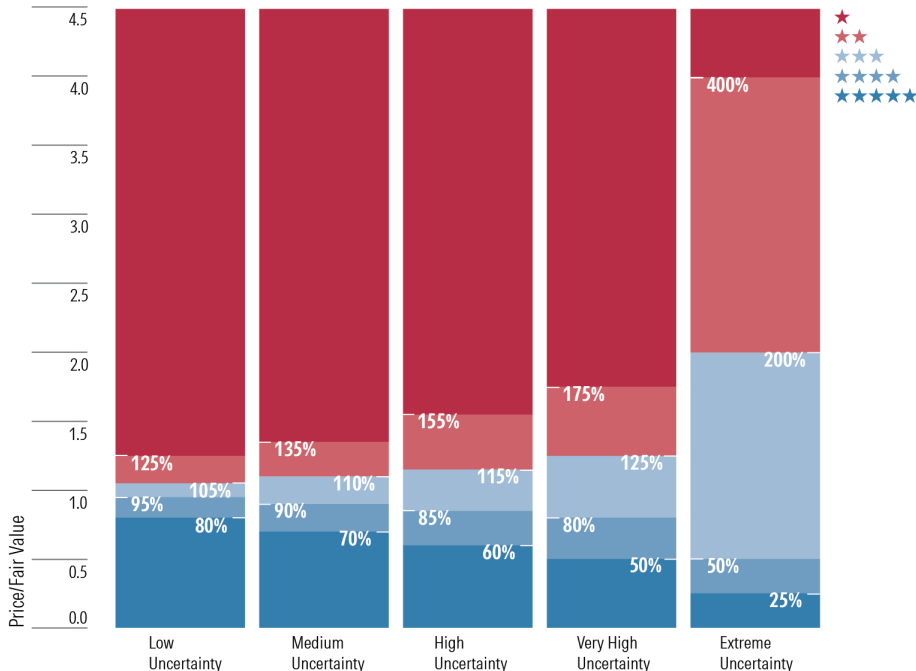
Our uncertainty rating is based on the interquartile range, or the middle 50% of potential outcomes, covering the 25th percentile–75th percentile. This means that when a stock hits 5 stars, we expect there is a 75% chance that the intrinsic value of that stock lies above the current market price. Similarly,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



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 multi-year 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,

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

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

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

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

Sustainalytics' ESG Risk Ratings measure the degree to which company's economic value at risk is driven by environment, social and governance (ESG) factors.

Sustainalytics analyzes over 1,300 data points to assess a company's exposure to and management of ESG risks. In other words, ESG Risk Ratings measures a company's unmanaged ESG Risks represented as a quantitative score.

Unmanaged Risk is measured on an open-ended scale starting at zero (no risk) with lower scores representing less unmanaged risk and, for 95% of cases, the unmanaged ESG Risk score is below 50.

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

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

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

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