

Advanced Micro Devices Inc

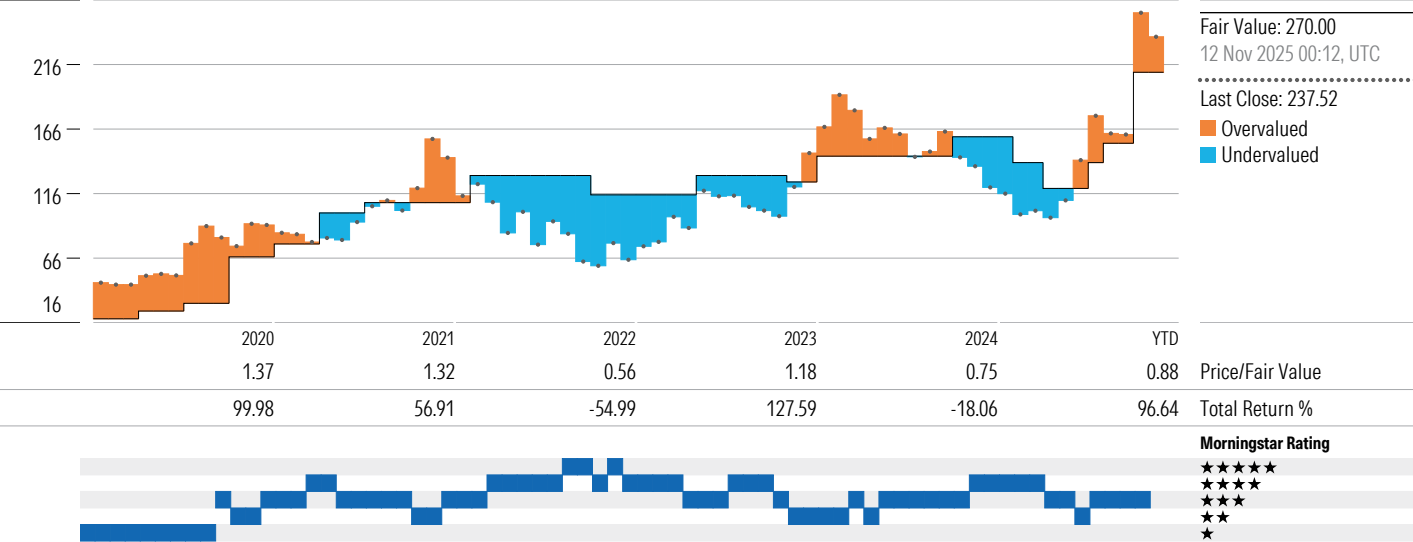
AMD

★★★

12 Nov 2025 00:16, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
237.52 USD 11 Nov 2025	270.00 USD 12 Nov 2025 00:12, UTC	0.88	386.69 USD Bil 11 Nov 2025	Narrow	Large Growth	Very High	Exemplary	3 Sep 2025 05:00, UTC

Price vs. Fair Value



Total Return % as of 11 Nov 2025. Last Close as of 11 Nov 2025. Fair Value as of 12 Nov 2025 00:12, UTC.

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

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

AMD: Investor Day Touts Tremendous AI Growth With Steady Margins; Fair Value Up to \$270 from \$210

Analyst Note Brian Colello, CPA, Senior Equity Analyst, 12 Nov 2025

AMD hosted an investor day with updated revenue growth and financial targets. These include growth in the next three to five years of 80% in data center AI products, 60% in all data center products, and 35% for total AMD. AMD's adjusted gross margin target is now 55%-58%, ahead of 54% currently.

Why it matters: AMD increased its bullishness on the artificial intelligence market, both in total (targeting a \$1 trillion-plus market by 2030) and for the company (expecting 10%-plus market share). This implies \$100 billion in AI revenue for AMD over the next three to five years, which exceeds our expectations.

- ▶ Meanwhile, AMD is targeting modest gross margin expansion, which is encouraging to us as we were concerned that AI revenue might be a bit dilutive as the company strives to gain market share. Between growth and healthy margins, AMD is targeting \$20 of earnings per share by 2030.
- ▶ AI growth seems plausible to us and is based on its customer conversations. AMD has public partnerships with OpenAI, Oracle, and Meta today. AMD hinted that it is in deep discussions with other leading hyperscalers, sovereign entities, and AI-native firms.

The bottom line: We raise our fair value estimate for narrow-moat AMD to \$270 from \$210, as we once again lift our AI revenue estimates for the firm. We retain our Very High Uncertainty Rating as the AI market continues to shift rapidly. Shares now appear a little undervalued to us.

Advanced Micro Devices Inc ★★ ★ 12 Nov 2025 00:16, UTC

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Sector  Technology	Industry Semiconductors
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Business Description

Advanced Micro Devices designs a variety of digital semiconductors for markets such as PCs, gaming consoles, data centers (including artificial intelligence), industrial, and automotive applications. AMD's traditional strength was in central processing units and graphics processing units used in PCs and data centers. However, AMD is emerging as a prominent player in AI GPUs and related hardware. Additionally, the firm supplies the chips found in prominent game consoles such as the Sony PlayStation and Microsoft Xbox.

- We now model a 31% revenue compound annual growth rate for AMD through 2029, up from our prior estimate of 26%. Our data center and AI GPU CAGRs now rise to 42% and 62%, respectively, up from 37% and 55%. Yet we still have some modest conservatism compared with AMD's targets.
- Even though the AI industry is computing-constrained, and management addressed these concerns head-on, we're still cautious that industry funding and energy/power generation might cause firms like OpenAI to grow a bit more slowly than visualized.

Business Strategy & Outlook Brian Colello, CPA, Senior Equity Analyst, 6 Oct 2025

Advanced Micro Devices has significant digital semiconductor expertise and is well positioned to prosper from favorable trends in data centers and artificial intelligence. We consider AMD to be one of two notable firms in graphics processing units, which are especially well suited for AI. The company may play second fiddle to Nvidia in AI GPUs, but its GPU expertise should become increasingly valuable, and lucrative, in the years ahead.

We think AMD's data center business should boom over the next few years. Its server CPUs should be in high demand, as should its GPUs suited for AI workloads. AMD pegs the total addressable market for AI accelerators, such as GPUs, at higher than \$500 billion by 2028. While we foresee Nvidia capturing the bulk of this value over the next several years, we think that all AI vendors and customers will seek alternatives to keep Nvidia's dominance at bay, and AMD might be the best positioned to emerge as a second source in AI. AMD's partnership with OpenAI should validate AMD's emergence as an AI product leader, in our view.

Historically, AMD's primary products include processors and GPUs tailored to PCs, game consoles, and servers. In our view, AMD's PC and server success stems from the rare x86 architecture license that it possesses from Intel, which allows AMD and Intel to build x86 CPUs for Microsoft Windows PCs. We view it as a heavy lift for Windows to rewrite its x86 software to work with other processors, but Apple made this move in recent years to support its internal ARM-based processors. ARM will likely gain share in the PC market, but we still expect x86-based chips from AMD and Intel to retain leadership in the Windows PC market for quite some time.

AMD has benefited from its outsourced manufacturing model, as its tight relationship with industry leader Taiwan Semiconductor enabled AMD to grab a technological lead as its rival, Intel, stumbled with its internal manufacturing roadmap. We anticipate that AMD will continue to gain market share over the next few years as Intel strives to turn it around, but AMD's gains could last longer if Intel were to stumble further.

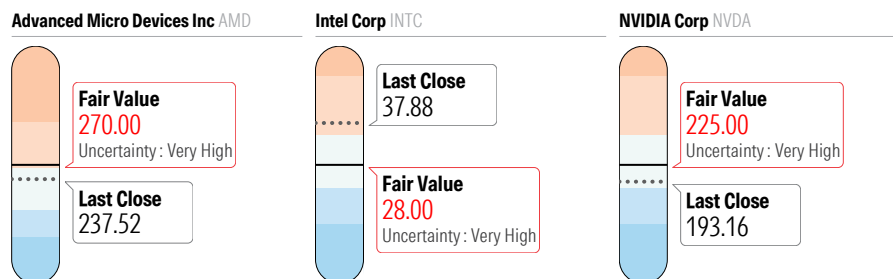
Bulls Say Brian Colello, CPA, Senior Equity Analyst, 12 Nov 2025

- AI offers a massive opportunity to GPU makers, and while AMD lags industry leader Nvidia, we see plenty of room in the AI market for AMD.

Advanced Micro Devices Inc **AMD** ★★★ 12 Nov 2025 00:16, UTC

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Competitors



	Advanced Micro Devices Inc AMD	Intel Corp INTC	NVIDIA Corp NVDA
Economic Moat	Narrow	None	Wide
Currency	USD	USD	USD
Fair Value	270.00 12 Nov 2025 00:12, UTC	28.00 18 Sep 2025 19:15, UTC	225.00 28 Oct 2025 22:55, UTC
1-Star Price	472.50	49.00	393.75
5-Star Price	135.00	14.00	112.50
Assessment	Fairly Valued 11 Nov 2025	Overvalued 11 Nov 2025	Fairly Valued 11 Nov 2025
Morningstar Rating	★★★ 12 Nov 2025 00:16, UTC	★★ 11 Nov 2025 22:37, UTC	★★★ 11 Nov 2025 22:37, UTC
Analyst	Brian Colello, Senior Equity Analyst	Brian Colello, Senior Equity Analyst	Brian Colello, Senior Equity Analyst
Capital Allocation	Exemplary	Standard	Exemplary
Price/Fair Value	0.88	1.35	0.86
Price/Sales	12.44	3.17	29.70
Price/Book	6.53	1.72	48.40
Price/Earning	121.99	640.83	56.71
Dividend Yield	0.00%	0.00%	—
Market Cap	386.69 Bil	180.78 Bil	4,702.87 Bil
52-Week Range	76.48—267.08	17.67—42.48	86.62—212.19
Investment Style	Large Growth	Large Blend	Large Growth

- ▶ AMD has gained market share in the PC CPU market as Intel's manufacturing prowess has hit several road bumps in recent years.
- ▶ AMD's partnership with chip manufacturing leader TSMC, plus its adoption of a chiplet manufacturing strategy, has allowed the company to come to market with more formidable products and greater flexibility to bring new products to market quickly.

Bears Say Brian Colello, CPA, Senior Equity Analyst, 12 Nov 2025

- ▶ AMD will need to improve its software capabilities to make a dent in Nvidia's AI dominance, as Nvidia is strong in not only GPUs but associated AI software tools.
- ▶ Despite AMD's recent share gains, Intel remains the industry leader in PC CPUs and might recapture most of the market if it can deliver industry-leading manufacturing capabilities once again.
- ▶ AMD's gaming semicustom chip business is beholden to the design cycles and launches of new gaming consoles, and it might be a couple of more years until next-generation consoles arrive.

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Economic Moat Brian Colello, CPA, Senior Equity Analyst, 6 Oct 2025

We assign AMD a narrow economic moat based on intangible assets around a variety of chip designs (including those from Xilinx, which we rated as having a narrow moat before it was acquired in 2022). We think it is more likely than not that AMD will generate excess returns on capital over the next 10 years, and perhaps even longer.

AMD is perhaps best known for its CPUs for PC desktops and notebooks within its client business segment. We think that AMD has a moat in this business, not only because of chip design expertise honed over decades, but also because AMD is one of two prominent firms to hold an x86 instruction set architecture license. AMD is also emerging as a prominent GPU vendor in artificial intelligence and holds valuable expertise in hardware, software, and rack-scale solutions, as well.

In PCs, Intel initially developed x86 in the 1970s and licensed the architecture to AMD to satisfy conditions from IBM that required a second source of chips. Intel and AMD are the primary licensees of x86 and owners of x86 intellectual property, as they have a cross-licensing agreement that covers the x86 patent portfolio and would be terminated if either firm were acquired or had a change of control. The exclusivity of the x86 license serves as a significant barrier to entry for other chipmakers (such as Qualcomm and Apple) that cannot make an x86 processor without a license.

For many years, effectively all PC software (including Microsoft's Windows, Apple's Mac operating systems, and any desktop software applications running on both operating systems) was designed for the x86 architecture. Software makers could not easily deviate from building x86-optimized applications, while Microsoft and Apple would have a heavy lift to convert their operating systems to alternate instruction sets (such as those by ARM, which is the dominant instruction set for mobile devices, used in processors from Qualcomm, Samsung, Apple's iPhone and others). In turn, Apple (for the Mac) and PC vendors (for Windows machines) had little choice than to buy x86 processors from (mostly) Intel or (on occasion) AMD to run their PCs.

Today, however, Apple has already done the heavy lifting of converting its Mac software to ARM and has now built excellent in-house processors for its Mac lineup. Further, an increasing portion of software is hosted in the cloud and can run on multiple operating systems and isn't tied to only x86 devices.

Microsoft has dabbled in ARM-based versions of Windows and may increase these investments over time. We still think it would be a heavy lift for any on-device software makers to port their software to be compatible with ARM-based PCs, but we think the writing is on the wall here to move such software to the cloud or on to ARM-based devices like the Mac. Thus, we don't think the x86 architecture is as moaty as it once was, although we still foresee x86-based processors from Intel and AMD as making up a significant portion of the PC market for the next several years.

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In years past, Intel dominated the PC market, not only because of its x86 know-how, but also its internal manufacturing advantage over virtually any other chipmaker, which allowed Intel to come out with best-of-breed products that made it nearly impossible for AMD to gain meaningful market share. These dynamics have flipped in recent years, however, as Intel has stumbled in internal manufacturing. Meanwhile, AMD has partnered closely with Taiwan Semiconductor, the world's largest outsourced chip manufacturer. TSMC now has a market lead in making cutting-edge chips, and AMD is bringing more competitive products to the PC market. Further, AMD has focused on a chiplet strategy with TSMC that is improving yields and flexibility, boosting AMD's portfolio even further.

In turn, AMD has gained market share from Intel in PCs in recent years. Intel is investing heavily in new process nodes to strive for manufacturing parity, if not leadership, with TSMC. Intel also struck a chiplet partnership with Nvidia, where Nvidia will provide GPU tiles within Intel's CPUs. If Intel is successful, it could regain some lost x86 PC market share. However, we no longer view AMD as an also-ran in PC CPUs, and even if Intel were to improve, we still think AMD could retain enough customers to maintain a healthy PC business.

In server CPUs within AMD's data center segment, we see similar dynamics where most of the software (particularly in the enterprise) is based on x86, and we think AMD has a moat in this segment too. Again, Intel's manufacturing stumbles and AMD's partnership with TSMC have enabled AMD to gain market share and profitability, and we don't think Intel will easily recapture such share even if its internal manufacturing were to improve.

We also think that any cloud-based software vendors face high switching costs to move their software from x86 servers and on to ARM-based servers, although the switching costs are likely far lower between hosting software on an Intel x86 server versus an AMD one. Still, like the PC market, we see ARM-based processors as a threat, as Amazon, Nvidia, and others are developing ARM-based processors to run traditional server workloads, as well as AI applications. Optimizing data center architectures and workloads for ARM-based servers, rather than x86 ones, is again a heavy lift, from what we can gather. Still, we recognize that mega-cap tech firms and cloud leaders (Microsoft, Apple, Amazon) may have the incentive to do so if they can use ARM-based processors to elevate their data centers and devices. Ultimately, we don't foresee a mass exodus away from x86 architectures in the data center for the next several years.

In AI, we think AMD's GPU expertise is becoming increasingly valuable in AI applications. GPUs perform parallel processing, in contrast to the serial processing performed by CPUs, to run the software and applications on PCs. In the past decade, the parallel processing of GPUs was found to more efficiently run the matrix multiplication algorithms needed to power artificial intelligence models. AMD is working diligently to deliver AI-centric GPUs to market.

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However, Nvidia has a clear lead in GPU hardware and has captured most AI training workloads today. It has spent a decade or more developing its 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, so we think it will take some effort for AI customers to port any AI models based on CUDA over to AMD's hardware and RocM software stack.

That said, since Nvidia and CUDA are clearly dominant in AI GPUs today, we think leading cloud vendors will continue to seek second sources for AI and have the necessary incentives to port AI models from Nvidia to other vendors, at least enough to keep Nvidia honest as a vendor. AMD's partnership with OpenAI bodes well on this front. In-house chip development by the hyperscalers will continue, but partnerships with AMD may emerge as well, assuming AMD can improve upon its software chops to allow new customers to use AMD's GPUs for AI training.

We view AMD's embedded business as moaty, as this business is mostly inorganic from the acquisition of Xilinx. We long believed that Xilinx warranted a narrow moat, based on its expertise in the field-programmable gate array niche of the broader chip industry (with Intel-Altera being the other major FPGA supplier). Although FPGAs are standard components that can be sold to many different users for a multitude of applications, converting a complex algorithm to an efficient custom hardware architecture can be an arduous task. Customers are generally reluctant to switch FPGA vendors, which would require their engineers to learn new software and design tools. Some of Xilinx's FPGAs are used extensively in communication equipment that may have operational lifetimes of at least a decade if not longer. Thus, it can not only be difficult for new entrants to gain market share but also less likely that existing customers defect from Altera (owned by Intel) to Xilinx or vice versa.

We generally do not view AMD's discrete GPU business for gaming nor its semicustom chip business for gaming consoles as moaty, although we acknowledge that the chip design expertise for both likely aided AMD in its ability to deliver profitable GPUs to the data center in the future. In gaming, we think AMD has intangible assets related to GPU patents and chip design expertise. However, it did not lead to excess returns on capital for AMD when its CPU business was lagging, and we believe AMD's GPU operating margins lag its CPU business.

Fair Value and Profit Drivers Brian Colello, CPA, Senior Equity Analyst, 12 Nov 2025

Our fair value estimate is \$270 per share, which implies a 2025 adjusted price/earnings ratio of 68 times but a 2027 adjusted price/earnings ratio of 26 times.

We expect AMD to achieve a top-line compound annual growth rate of 31% from 2025 to 2029. We model 32% growth in 2025, thanks to market share gains over Intel in PC and server CPUs, as well as growth in AI GPUs. We model growth of 33% and 45% in 2026 and 2027, respectively, as the OpenAI

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partnership ramps up and AMD starts to earn tens of billions of dollars in revenue from AI GPUs. We model a long-term growth rate in the low-20% thereafter as AMD cements its place as a prominent AI vendor. These estimates are modestly shy of AMD's forecast of 35% revenue growth over the next three to five years.

We are most bullish on the data center segment, in which AMD forecasts a total available market of \$1 trillion by 2030. This TAM includes GPUs, CPUs, high-bandwidth memory, and AI networking chips.

For AMD's data center segment, which includes both x86 server CPUs and AI GPUs, we model a 42% revenue CAGR over the next five years. Within this segment, we think AMD can carve out a decent portion of the AI accelerator market over time, although our expectations at the start of 2025 are less bullish than what we modeled when AMD's GPUs were introduced in 2024. We model AMD's AI GPU revenue reaching \$7.0 billion in 2025 versus \$5.0 billion earned in 2024 and nearly zero revenue earned in 2023 and prior. This \$7.0 billion figure is depressed as AMD was banned from selling MI308 products into China in June 2025, and we don't model this revenue re-entering our model.

We model AMD reaching \$14 billion of AI GPU revenue in 2026, boosted by the ramp of its MI450 products into OpenAI in the second half of 2026. The OpenAI partnership has led us to double our AI GPU revenue estimates thereafter. We model 118% growth to \$31 billion in 2027, 35% growth to \$41 billion in 2028, and 35% growth to \$56 billion in 2029. This equates to a 62% CAGR from 2025 to 2029, shy of AMD's estimates of an 80% CAGR over the next three to five years in AI GPUs. We think it's conceivable that energy/power and funding constraints may emerge that lead the industry to grow a little more slowly than the brightest of aspirations.

In client revenue (PC CPUs), we model a 17% CAGR over the next five years as AMD gains market share from Intel, although tariffs may stunt sales of PCs in general. In gaming, AMD faced a brutal downturn in 2024 due to aging gaming consoles. We model a 17% CAGR in the next five years, but off this trough in business conditions. We anticipate that AMD will retain its semi-custom processor business within upcoming gaming consoles released by Microsoft and Sony. We model a 5% CAGR for AMD's embedded business.

Adjusted gross margin expanded from 45% in 2020 to 53% in 2024. We model modest deterioration in adjusted gross margin to 52% in 2025 but a recovery to 55% in 2029. This is on par with management's new long-term target.

Similarly, adjusted operating margin was 24% in 2024, but data center growth should lead to operating margin expansion to 36% in 2029. This is in line with management's long-term target of 35%.

Risk and Uncertainty Brian Colello, CPA, Senior Equity Analyst, 6 Oct 2025

Our Morningstar Uncertainty Rating for AMD is Very High, as AI is moving at warp speeds and future

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workloads and improvements are uncertain. We also see uncertainty around potential tariffs and restrictions on AI sales into China.

AMD sees a massive opportunity to gain share in GPUs targeting AI applications, but we view Nvidia as a clear leader here with a wide economic moat in not only hardware design but also associated software tools. Even if AMD's GPU designs are up to par (or better), we view the associated software tools as a hurdle where AMD is behind today and will need to catch up to Nvidia. Further, we expect leading hyperscale cloud computing customers to continue to invest in AI processors. Google's Tensor processing units and Amazon's Trainium and Inferentia chips were designed with AI workloads in mind, while Microsoft and Meta have announced semiconductor design plans.

In PCs, AMD continues to square off against Intel, the formerly dominant market leader that has lost its manufacturing edge in recent years. Intel struck a partnership with Nvidia, which might make for improved PC products. If Intel can regain its manufacturing lead, AMD may face a more formidable x86 foe. Additionally, if Microsoft were to continue to push its Windows PC ecosystem toward PCs with ARM-based processors, new entrants could pose credible threats to both AMD and Intel. All the while, the PC market remains cyclical, and AMD will have to navigate the cycles accordingly.

On the environmental, social, and governance front, we do not foresee any material issues on the horizon. Perhaps the greatest risk is the potential scarcity of experienced chip design talent. We think the firm has done a solid job developing chip designers internally.

Capital Allocation Brian Colello, CPA, Senior Equity Analyst, 6 Oct 2025

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

Lisa Su took over as CEO in 2014; she was previously COO. She was named chair of the board as well in 2022. In 2023, Jean Hu took over as CFO from Devinder Kumar, having served as Marvell's CFO previously. Since Su took charge, we think management has done a solid job in driving a more focused long-term plan across both PC and server end markets. The firm has adopted a chiplet strategy (which disaggregates parts of chips and utilizes the most practical manufacturing process) and tapped TSMC to manufacturing its leading-edge processors. As a result of this strategy, AMD has been capturing market share at Intel's expense as the latter has struggled with its advanced manufacturing processes. We are also impressed with the pace of AMD's innovation in AI.

We think AMD has made nice strategic moves in recent years to expand beyond the PC CPU market. In February 2022, AMD closed the purchase of FPGA leader Xilinx in an all-stock deal worth about \$50 billion. Xilinx represents a margin-accretive business for AMD and gives AMD entry into industrial, automotive, and communications infrastructure end markets, all while helping AMD offer more robust products in the data center. AMD has also made nice bolt-on acquisitions, such as Pensando Systems,

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Silo AI, and ZT Systems, to improve its presence in AI and data centers. Organically, we like AMD's focus on the data center end market, as the company is well positioned to carve out a piece of the AI pie with its GPU expertise.

We view AMD as having a solid balance sheet. As of June 2025, AMD had \$5.9 billion in cash and cash equivalents against total debt of \$3.2 billion. AMD does not pay a dividend but has bought back shares in recent years. We'd expect any capital distributions in the years ahead to be done via additional buybacks as part of this program.

Analyst Notes Archive

AMD: The Company Has Arrived in AI With a Massive OpenAI Deal; Fair Value Estimate to \$210 From \$155 Brian Colello, CPA, Senior Equity Analyst, 6 Oct 2025

AMD and OpenAI reached an agreement where AMD will supply artificial intelligence gear for up to 6 gigawatts of OpenAI's AI infrastructure. AMD expects the deal to earn tens of billions of dollars of annual incremental revenue with the rollout starting in second-half 2026. Why it matters: We're highly encouraged with this deal for AMD as it validates its AI technology and significantly boosts its future AI revenue and profits. AMD hinted at the potential for "well over \$100 billion" in future revenue. We've long believed that AMD will carve out a piece of the AI pie. This deal suggests that AMD's slice of the market might be a bit higher than expected. However, we doubt it displaces Nvidia as the dominant AI vendor. The bottom line: We raise our fair value estimate for narrow-moat AMD to \$210 from \$155 thanks to this upcoming AI windfall. We retain our Very High Uncertainty Rating as surprising, massive AI deals seem to be arising weekly. We have doubled our estimates for AMD's AI GPU revenue in 2027 and beyond. We now project \$42.2 billion for AMD by 2029 versus our prior estimate of \$20.7 billion. AMD will issue warrants for up to 160 million shares (about 10% of total shares) to OpenAI. We're not alarmed by the warrants and suspect that investors would gladly trade this accretive revenue windfall for some stock dilution if AMD were to hit all its targets. Coming up: OpenAI continues to have massive aspirations for AI adoption, driving significant deals with both Nvidia and AMD. No timeline was set for OpenAI's rollout. Perhaps the greatest risk to AMD's future revenue from this deal may come from the energy and power requirements that OpenAI and its partners will need for such massive infrastructure buildouts. If OpenAI and its partners were to roll out this infrastructure slower than envisioned, it might be bad for their aspirations but perhaps good for investors fearful of an AI bubble. The 90's .com bubble had no such outside energy constraints.

AMD: The Intel-Nvidia Collaboration Is Worth Watching but Not a Death Blow; Maintain \$155 Valuation Brian Colello, CPA, Senior Equity Analyst, 18 Sep 2025

AMD's rivals, Intel and Nvidia, 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

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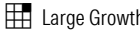
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of \$23.28 per share. Why it matters: We view the Intel-Nvidia deal as a modest negative for AMD, as the collaboration may lead to more competitive x86 CPUs for Intel that might stop the bleeding in its recent market share losses to AMD. However, AMD's share gains over Intel in recent quarters in x86 CPUs have been substantial, and we still think it's uncertain that Intel can halt these share losses in the near term or even the medium term. Perhaps a positive for AMD is that Nvidia's investment might make it cozier with the US government (which owns 9.9% of Intel), which might allow Nvidia (and AMD) to sell more advanced artificial intelligence products into China. The bottom line: We maintain our \$155 fair value estimate and Very High fair value Uncertainty Rating for narrow-moat AMD. Shares have retreated from the \$175 range a month ago and now appear fairly valued to us. The deal doesn't alter our thesis that AMD will carve out a piece of the AI pie over time while gaining share over Intel in x86 CPUs in the PC and data center. Big picture: Nvidia has long paired x86 CPUs from Intel, such as Sapphire Rapids, within 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. For those workloads where customers seek strong performance and/or buy x86 CPUs independent of GPUs, we believe that AMD has leapfrogged Intel as the server CPUs of choice, given the former's share gains in recent years. We're modestly more concerned about Nvidia's deal to supply RTX GPU chiplets into Intel's x86 PC CPU products. It's possible that improved graphics performance, if not the Nvidia brand, may edge PC makers back toward Intel instead of AMD.

AMD: Maintain \$155 Fair Value as US Will Get a Piece of the Action on AI Chips Sold Into China Brian Colello, CPA, Senior Equity Analyst, 11 Aug 2025

Nvidia and AMD will soon receive the previously announced export licenses from the US government to sell artificial intelligence chips into China. In new news, both companies have agreed to pay the US government 15% of the revenue from these chip sales in exchange for the approval. Why it matters: First reported by the Financial Times, the 15% payment is surprising and appears unusual to us. Various reports suggest that no similar structure has ever been agreed upon as part of an export license. We consider this as part of a larger story in semiconductor regulation. Semis are exempt from tariffs in the US today, but they could reportedly spike to 100%. Meanwhile, manufacturers are expanding production in the US. We anticipate more deals coming soon. The bottom line: We maintain our \$155 fair value estimate for narrow-moat Advanced Micro Devices, as well as our Very High Uncertainty Rating. Not only is the future size of artificial intelligence still uncertain, but the global regulatory environment for AI is unpredictable and may 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 remain in question. Coming up: While we estimate that AMD's AI rival, Nvidia, will sell \$30 billion of AI chips into China in calendar 2026, we do not yet make explicit assumptions for AMD's China AI business, as it is far smaller and more nascent. Instead, we view China as a greenfield opportunity for AMD. While we think that AMD may emerge as a second source in AI accelerators in the

Advanced Micro Devices Inc ★★ ★ 12 Nov 2025 00:16, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
237.52 USD 11 Nov 2025	270.00 USD 12 Nov 2025 00:12, UTC	0.88	386.69 USD Bil 11 Nov 2025	 Narrow	 Large Growth	Very High	Exemplary	 3 Sep 2025 05:00, UTC

US, Huawei is already a top-two choice for AI developers in China today, so competition will be even more robust for AMD in China.

AMD Earnings: Strong CPU Share Gains and AI Prospects; Raising Fair Value to \$155 From \$140 Brian Colello, CPA, Senior Equity Analyst, 6 Aug 2025

AMD reported second-quarter revenue of \$7.7 billion, up 3% sequentially, up 32% year over year, and at the high end of guidance. AMD forecasts third quarter revenue of \$8.7 billion, which would represent growth of 13% sequentially, 28% year over year, and ahead of FactSet Consensus estimates. Why it matters: AMD continues to prosper from Intel's struggles as it gains market share in both PC and server processors. Meanwhile, all eyes remain on AMD's budding artificial intelligence business, and we think the results were admirable given the ban on MI308 processor sales into China. Data center revenue still increased by 14% year over year despite the inability to sell MI308 products into China. Within data center, we estimate that server CPU revenue was \$2.3 billion and grew about 25% year over year, while DC GPU revenue (ex-China) was close to \$1 billion. We think AMD is gaining traction in AI GPUs to carve out a piece of the pie against its rival, Nvidia. We're impressed with CEO Lisa Su's comment that she sees a line of sight for "tens of billions" of AI revenue in the not-too-distant future. The bottom line: We raise our fair value estimate for narrow moat AMD to \$155 from \$140 as we lift our AI GPU estimates amid these bullish comments. Given the size of the AI market of \$500 billion-plus, we think AMD's aspirations are reasonable. Shares sold off about 4% after-hours, as we suspect investors were seeking even more upside after the stock made a terrific run in recent months. We still view shares as modestly overvalued, as optimism around AMD's AI GPUs might still be a bit ahead of itself. Coming up: The incremental \$1 billion of revenue in the September quarter will mostly come from AI GPUs as its next-generation MI355 products ramp up. We model \$1.8 billion and \$2.6 billion in AI GPU revenue in the third and fourth quarters, respectively.

AMD: Raising Fair Value Estimate to \$140 From \$120 as Ban on AMD's Sales Into China Will Be Reversed Brian Colello, CPA, Senior Equity Analyst, 15 Jul 2025

AMD has learned that the US will reverse course and approve the sale of its MI308X graphics processors, or GPUs, into China for artificial intelligence workloads. Sales of the MI308X were banned 90 days ago, causing AMD to incur an \$800 million write-off. Why it matters: We're pleasantly surprised by the US reversal, as both AMD and rival Nvidia are now allowed to support China's AI aspirations. The MI308X is not AMD's most advanced product, but it presents another potential customer base for AMD's budding AI aspirations versus Nvidia. We assume the reversal stays in place going forward, although we are cautiously, rather than wholly, optimistic about the latest restrictions. If retained, we still view Nvidia as the dominant AI supplier into China, but we're encouraged that AMD will have chances to compete. The bottom line: We raise our fair value estimate for narrow-moat AMD to \$140 from \$120. This raise is the inverse of our cut in April to \$120 from \$140 when the ban was implemented. We

Advanced Micro Devices Inc ★★★ 12 Nov 2025 00:16, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
237.52 USD 11 Nov 2025	270.00 USD 12 Nov 2025 00:12, UTC	0.88	386.69 USD Bil 11 Nov 2025	 Narrow	 Large Growth	Very High	Exemplary	 3 Sep 2025 05:00, UTC

maintain our Very High uncertainty rating for AMD. Shares appear modestly overvalued as we think its AI prospects might be a tad overestimated by the market. We view Nvidia as the bigger winner from the reversal, as Nvidia's H20 products are vital to China's AI buildouts, and China may rush to buy more H20s than ever before. We are re-inserting \$1.2 billion of revenue in 2025 and \$2.8 billion to our 2029 AI GPU estimates for AMD. We also boost our near-term gross margin estimates as we assume much of the prior write-off will be reversed. Long view: The US reversal may signal a change in overall AI policy toward China. Rather than block U.S. 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—predominantly Nvidia, but perhaps AMD as well.

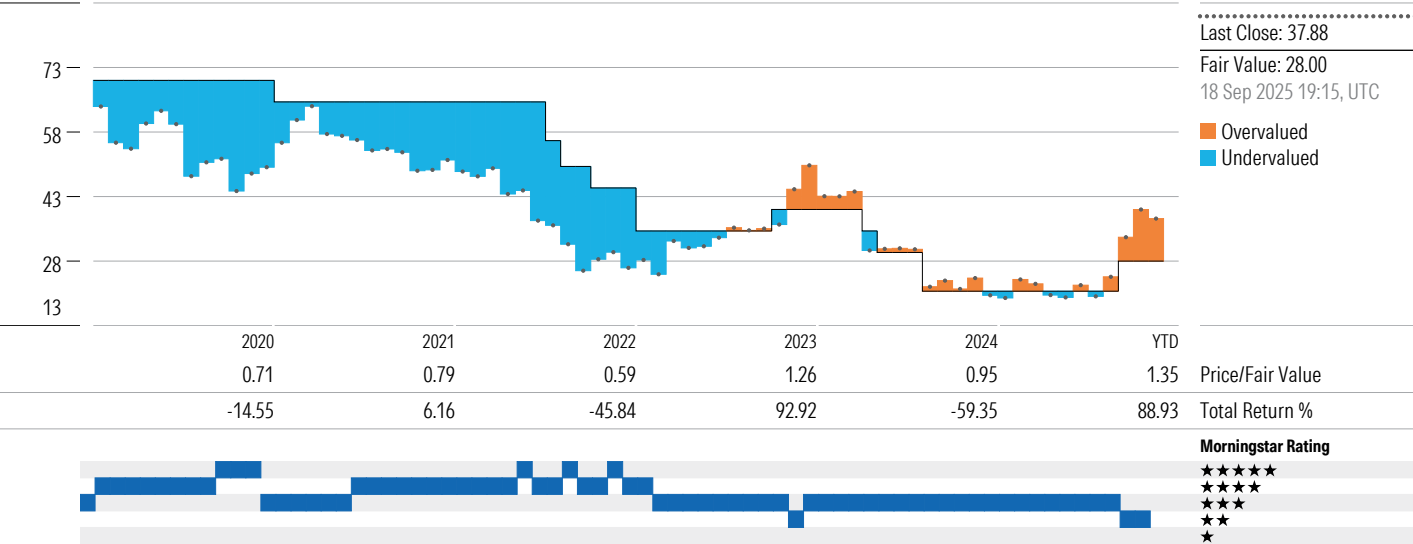
AMD: “Advancing AI” Event Shows a Promising Roadmap; Maintain \$120 Fair Value Estimate Brian Colello, CPA, Senior Equity Analyst, 16 Jun 2025

AMD's Advancing AI event introduced several new products in semiconductors, software, and services. Highlights include the Instinct MI350 series of AI GPUs, a preview of next year's rack scale solution, the “Helios” MI400 series, and advancements in AMD's ROCm software ecosystem. Why it matters: We're encouraged by AMD's advancements in artificial intelligence, especially rack-scale solutions such as Helios. While we still believe that Nvidia is ahead of AMD on AI hardware, and perhaps still sizably ahead on AI software, we think AMD will carve out a piece of the AI pie over time. AMD brought several large tech partners on stage, most notably including Sam Altman, founder of OpenAI. We continue to believe that large AI and cloud leaders will continue to support AMD as an external alternative to Nvidia's dominant (but capable) solutions. The bottom line: We maintain our \$120 fair value estimate for narrow-moat AMD. Shares appear fairly valued and reflect our thesis that AMD will win a piece of AI, while likely gaining significant share in x86 CPUs in PCs and servers. Shares traded down modestly on June 12, as several AMD announcements were relatively well known. Shares were up over 9% on June 16, perhaps because of rumored GPU wins with Amazon (as mentioned by CNBC). AWS was a title sponsor for AMD's event. We continue to anticipate high volatility in our AI GPU estimates. On the upside, AMD could see exponential growth if it were to expand with any hyperscaler or sovereign buildout. On the downside, Nvidia may still dominate AI, relegating AMD to niche status. Coming up: AMD also lifted its industrywide AI accelerator forecast, now expecting revenue to exceed its prior forecast of \$500 billion by 2028. AI inference workloads should lead the way, with AMD forecasting an 80% CAGR for this segment of AI computing chipsets. AI revenue, in total, should rise at a 60% CAGR from the \$45 billion earned in 2023. ■■■

Advanced Micro Devices Inc **AMD** ★★★ 12 Nov 2025 00:16, UTC

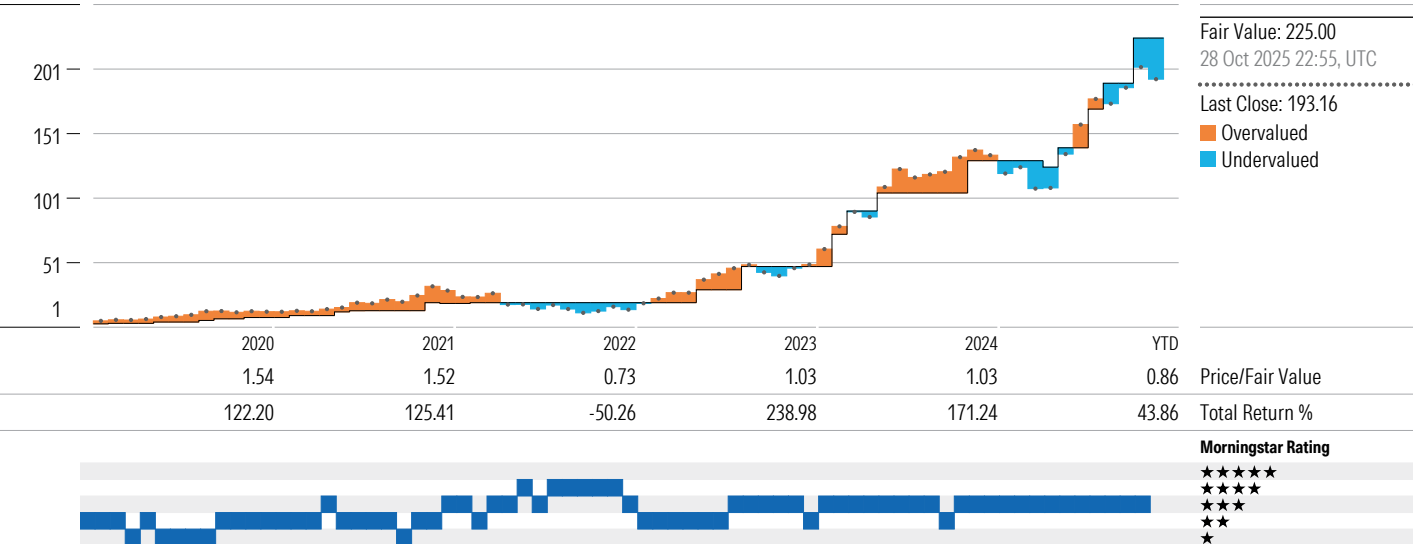
Competitors Price vs. Fair Value

Intel Corp **INTC**



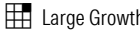
Total Return % as of 11 Nov 2025. Last Close as of 11 Nov 2025. Fair Value as of 18 Sep 2025 19:15, UTC.

NVIDIA Corp **NVDA**



Total Return % as of 11 Nov 2025. Last Close as of 11 Nov 2025. Fair Value as of 28 Oct 2025 22:55, UTC.

Advanced Micro Devices Inc ★★ ★ 12 Nov 2025 00:16, UTC

Last Price 237.52 USD 11 Nov 2025	Fair Value Estimate 270.00 USD 12 Nov 2025 00:12, UTC	Price/FVE 0.88	Market Cap 386.69 USD Bil 11 Nov 2025	Economic Moat™  Narrow	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 11 Nov 2025

Fiscal Year, ends 31 Dec	Actual			Forecast				
	2022	2023	2024	2025	2026	2027	2028	2029
Revenue (USD Mil)	23,601	22,680	25,785	33,986	45,293	65,698	80,490	99,513
Operating Income (USD Mil)	1,162	367	2,038	3,332	7,284	16,245	22,802	31,874
EBITDA (USD Mil)	5,438	3,854	4,964	6,341	10,245	19,188	25,737	34,683
Adjusted EBITDA (USD Mil)	5,438	3,854	4,964	6,341	10,245	19,188	25,737	34,683
Net Income (USD Mil)	1,320	854	1,641	4,147	6,347	14,125	19,765	27,566
Adjusted Net Income (USD Mil)	5,504	4,302	5,420	6,531	9,827	17,563	23,172	30,844
Free Cash Flow To The Firm (USD Mil)	3,439	415	-498	3,845	5,432	8,332	15,894	21,939
Weighted Average Diluted Shares Outstanding (Mil)	1,571	1,625	1,637	1,637	1,637	1,664	1,719	1,774
Earnings Per Share (Diluted) (USD)	0.84	0.53	1.00	2.53	3.88	8.49	11.50	15.54
Adjusted Earnings Per Share (Diluted) (USD)	3.50	2.65	3.31	3.99	6.00	10.55	13.48	17.39
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Margins & Returns as of 11 Nov 2025

	3 Year Avg	Actual			Forecast					5 Year Avg
		2022	2023	2024	2025	2026	2027	2028	2029	
Operating Margin %	4.8	4.9	1.6	7.9	9.8	16.1	24.7	28.3	32.0	22.2
EBITDA Margin %	—	23.0	17.0	19.3	18.7	22.6	29.2	32.0	34.8	—
Adjusted EBITDA Margin %	—	23.0	17.0	19.3	18.7	22.6	29.2	32.0	34.8	27.5
Net Margin %	5.3	5.6	3.8	6.4	12.2	14.0	21.5	24.6	27.7	20.0
Adjusted Net Margin %	21.1	23.3	19.0	21.0	19.2	21.7	26.7	28.8	31.0	25.5
Free Cash Flow To The Firm Margin %	4.8	14.6	1.8	-1.9	11.3	12.0	12.7	19.8	22.1	15.6

Growth & Ratios as of 11 Nov 2025

	3 Year CAGR	Actual			Forecast					5 Year CAGR
		2022	2023	2024	2025	2026	2027	2028	2029	
Revenue Growth %	16.2	43.6	-3.9	13.7	31.8	33.3	45.1	22.5	23.6	31.0
Operating Income Growth %	-17.5	-68.0	-68.4	455.3	63.5	118.6	123.0	40.4	39.8	73.3
EBITDA Growth %	10.6	32.1	-29.1	28.8	27.8	61.6	87.3	34.1	34.8	49.1
Adjusted EBITDA Growth %	6.4	32.1	-29.1	28.8	27.8	61.6	87.3	34.1	34.8	47.5
Earnings Per Share Growth %	-27.0	-67.3	-37.5	90.8	152.8	53.1	118.9	35.4	35.2	73.0
Adjusted Earnings Per Share Growth %	-27.0	25.4	-24.4	25.1	20.5	50.5	75.8	27.7	29.0	73.0

Valuation as of 11 Nov 2025

	Actual			Forecast				
	2022	2023	2024	2025	2026	2027	2028	2029
Price/Earning	18.5	55.6	36.5	59.5	39.6	22.5	17.6	13.7
Price/Sales	4.4	10.5	7.6	11.4	8.5	5.9	4.8	3.9
Price/Book	1.9	4.3	3.4	6.4	5.8	4.8	4.0	3.3
Price/Cash Flow	—	—	—	—	—	—	—	—
EV/EBITDA	18.7	61.0	39.0	60.4	37.4	20.0	14.9	11.1
EV/EBIT	87.5	640.9	95.0	115.0	52.6	23.6	16.8	12.0
Dividend Yield %	—	—	—	—	—	—	—	—
Dividend Payout %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Free Cash Flow Yield %	—	—	—	—	—	—	—	—

Operating Performance / Profitability as of 11 Nov 2025

Fiscal Year, ends 31 Dec	Actual			Forecast				
	2022	2023	2024	2025	2026	2027	2028	2029
ROA %	2.0	1.3	2.4	5.5	7.3	13.0	14.8	16.4
ROE %	2.4	1.5	2.9	6.8	9.4	17.3	19.5	21.3
ROIC %	10.0	4.9	6.3	8.1	12.2	19.6	22.8	26.3

Advanced Micro Devices Inc ★★ ★ 12 Nov 2025 00:16, UTC

Last Price 237.52 USD 11 Nov 2025	Fair Value Estimate 270.00 USD 12 Nov 2025 00:12, UTC	Price/FVE 0.88	Market Cap 386.69 USD Bil 11 Nov 2025	Economic Moat™  Narrow	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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Financial Leverage (Reporting Currency)	Actual			Forecast				
	2022	2023	2024	2025	2026	2027	2028	2029
Fiscal Year, ends 31 Dec								
Debt/Capital %	2.7	1.3	1.1	0.4	0.4	0.3	0.3	0.3
Assets/Equity	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3
Net Debt/EBITDA	-0.6	-0.7	-0.6	-1.3	-1.4	-1.3	-1.7	-2.0
Total Debt/EBITDA	0.5	0.8	0.4	0.3	0.2	0.1	0.1	0.0
EBITDA/ Net Interest Expense	68.0	-42.4	-55.8	-39.4	-106.7	-106.6	-143.0	-192.7

Forecast Revisions as of 11 Nov 2025	2025		2026		2027	
	Current	Prior	Current	Prior	Current	Prior
Prior data as of 5 Nov 2025						
Fair Value Estimate Change (Trading Currency)	270.00	210.03	—	—	—	—
Revenue (USD Mil)	33,986	33,986	45,293	45,211	65,698	65,930
Operating Income (USD Mil)	3,332	3,332	7,284	7,162	16,245	15,624
EBITDA (USD Mil)	6,341	6,341	10,245	10,123	19,188	18,567
Net Income (USD Mil)	6,531	6,531	9,827	9,835	17,563	17,228
Earnings Per Share (Diluted) (USD)	2.53	2.53	3.88	3.90	8.49	8.36
Adjusted Earnings Per Share (Diluted) (USD)	3.99	3.99	6.00	6.01	10.55	10.35
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00

Key Valuation Drivers as of 11 Nov 2025

Cost of Equity %	9.0
Pre-Tax Cost of Debt %	5.8
Weighted Average Cost of Capital %	9.0
Long-Run Tax Rate %	13.0
Stage II EBI Growth Rate %	10.0
Stage II Investment Rate %	44.0
Perpetuity Year	15

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

Discounted Cash Flow Valuation as of 11 Nov 2025

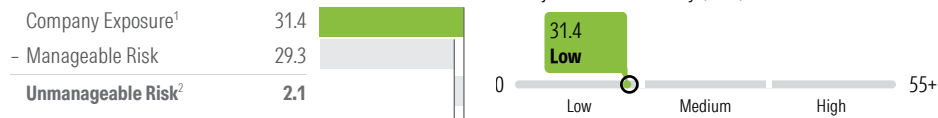
	USD Mil
Present Value Stage I	39,553
Present Value Stage II	111,748
Present Value Stage III	255,511
Total Firm Value	406,812
Cash and Equivalents	5,132
Debt	1,721
Other Adjustments	0
Equity Value	410,223
Projected Diluted Shares	1,637
Fair Value per Share (USD)	270.00

Advanced Micro Devices Inc ★★ ★ 12 Nov 2025 00:16, UTC

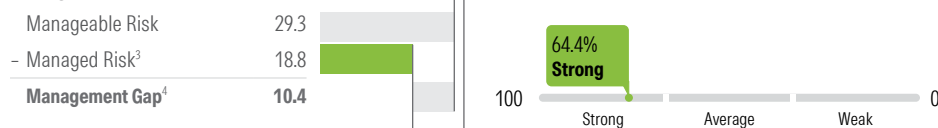
Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
237.52 USD 11 Nov 2025	270.00 USD 12 Nov 2025 00:12, UTC	0.88	386.69 USD Bil 11 Nov 2025	 Narrow	 Large Growth	Very High	Exemplary	 3 Sep 2025 05:00, UTC

ESG Risk Rating Breakdown

Exposure



Management



Overall Unmanaged Risk 12.5

- 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 64.4% 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. Sustainalytics Subindustry: Semiconductor Design and Manufacturing. 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 03 Sep 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
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+
NVIDIA Corp	30.5 Low 0 —●— 55+	59.9 Strong 100 —●— 0	13.4 Low 0 —●— 40+
Maxscend Microelectronics Co Ltd	44.8 Medium 0 —●— 55+	25.3 Average 100 —●— 0	34.3 High 0 —●— 40+
—	— — 0 —●— 55+	— — 100 —●— 0	— — 0 —●— 40+

Appendix

Historical Morningstar Rating

Advanced Micro Devices Inc AMD 11 Nov 2025 22:37, 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 ★

Intel Corp INTC 11 Nov 2025 22:37, 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 ★★★★

NVIDIA Corp NVDA 11 Nov 2025 22:37, 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 ★★
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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, 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.

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

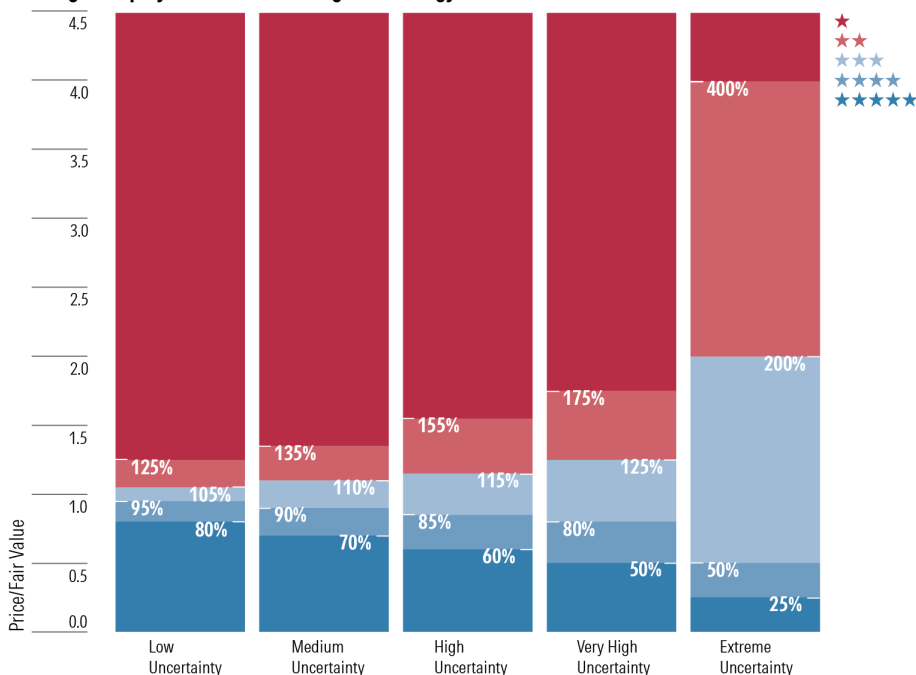
Our uncertainty rating is based on the interquartile range, or the middle 50% of potential outcomes, covering the 25th percentile–75th percentile. This means that when a stock hits 5 stars, we expect there is a 75% chance that the intrinsic value of that stock lies above the current market price. Similarly,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