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59586

Abstract

This equity research report provides a comprehensive analysis of Advanced Micro Devices (AMD), a leading player in the semiconductor industry. The report includes detailed financial forecasts, an in-depth financial analysis, and a valuation using multiple methodologies such as DCF, APV, FTE, and comparable analysis. After thoroughly evaluating the semiconductor industry, macroeconomic environment, and AMD's strategic positioning, I conclude that the company's growth potential makes it a strong investment opportunity, recommending a buy rating for the stock.

Keywords

Advanced Micro Devices, data center, innovation, artificial intelligence

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ADVANCED MICRO DEVICES

COMPANY REPORT

TECHNOLOGY-SEMICONDUCTORS

17 DECEMBER 2024

STUDENT: NICHOLAS HEYBURN

From Underdog to Industry Giant: AMD's Climb in the Semiconductor Race

- I issue a **Buy** recommendation for AMD with a target price of **$172**, reflecting a **37.6% premium** over the current stock price of **$125**. The target price is derived by weighing **30%** from three cash flow-based valuations and **10%** from the mean of a Monte Carlo simulation.
- After a slump in the early 2000s**, Lisa Su's appointment as CEO in 2014** has driven AMD's rise to market prominence. Under her leadership, AMD is now strategically positioned to compete in the rapidly expanding data center and AI industries, which she predicts will reach **a $500 billion market**.
- Competing with market leader Nvidia will present significant challenges. To close the gap, AMD is expected to maintain its commitment to **R&D spending** that exceeds the industry average, focusing on innovations aimed at gaining market share.
- Semiconductor industry continues to be greatly affected by **geopolitics** as many nations scramble to diversify their semiconductor supply chain.
- Data center revenue is poised to drive AMD's growth over the next decade, with a projected compound annual growth rate of **19%**, surpassing **$65 billion** by 2033.

Company description

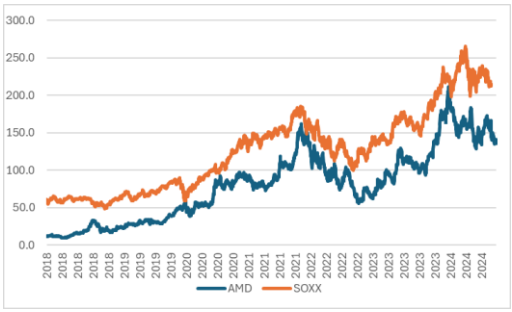
Advanced Micro Devices, Inc. (AMD) produces semiconductor products and devices. The company offers products such as graphics, video and multimedia products and supplies it to third-party foundries, as well as provides assembling, testing, and packaging services worldwide.

Recommendation:	**BUY**
Price Target FY25:	**172 $**
	€
Price (as of 2-Mar-25)	**125.79 $**

Yahoo Finance: 16/12/2024

52-week range ($)	121.83 - 227.30
Market Cap ($m)	**230,495**
Outstanding Shares (m)	1623

Source: Yahoo Finance



Source: Yahoo Finance

(Values in $ millions)	2023	2024E	2025F
Revenues	22,680	25,656	32,505
EBITDA	4,222	6,272	9072
Net Profit	1,038	5,433	8307
EPS	.64	3.32	5.07
FCF	3,236	3,520	7,225

Source: Bloomberg

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Executive Summary

Advanced Micro Devices (AMD) is at the center of the artificial intelligence (AI) boom, an industry currently dominated by their competitor, Nvidia. However, with AMD expecting extraordinary growth in the addressable AI market and its products starting to gain market share, the company is well-positioned to capitalize on the growing opportunities created by this boom.

In the Q3 earnings call, AMD CEO Lisa Su stated" In the Data Center alone, we expect the AI accelerator TAM will grow at more than 60% annually to $500 billion in 2028. To put that in context, this is roughly equivalent to annual sales for the entire semiconductor industry in 2023."

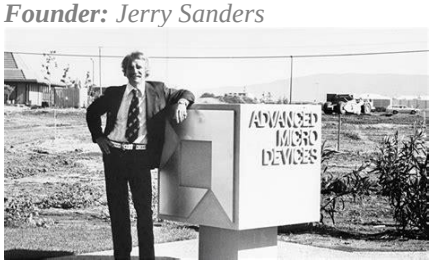
Geopolitical dynamics currently play a significant role in the semiconductor industry. The vast majority of AMD's manufacturing, and the semiconductor industry as a whole, is concentrated in Taiwan, a nation central to the ongoing tensions between the United States and China. AMD will naturally diversify its supply chain as its main manufacturer, Taiwan Semiconductor Manufacturing Company (TSMC), expands operations in the U.S. due to the CHIPS Act. For now, however, the semiconductor industry's growth remains closely tied to the balance of power between the world's two largest economies.

This report provides a comprehensive analysis of Advanced Micro Devices, including a deep dive into the macroeconomic landscape of the semiconductor industry and AMD's role within it. It also covers a breakdown of the company's financials, a forecast for the next decade, and finally, a comprehensive analysis of my valuation of Advanced Micro Devices, incorporating three cash flow valuation methods (Discounted Cash Flow, Adjusted Present Value, and Flow to Equity), along with a comparables analysis, a Monte Carlo simulation, and scenario analysis. The methodology behind the target price calculation combines the sum of each cash flow valuation, weighted by scenario analysis, with an equal weighting of 30% applied to each cash flow valuation, completed by adding a 10% weight to the mean calculated through the Monte Carlo simulation. From this methodology, I arrived at the **final target price of $172**, which implies a **BUY** recommendation at the current market price of $125.

Company Overview

History

Founder: *Jerry Sanders*



Current CEO: *Lisa Su*

Figure 1: *Board of Directors*

Advanced Micro Devices, founded in 1969 by Jerry Sanders, quickly gained recognition in the semiconductor industry with its high-performance microprocessors. After going public in 1972 and expanding internationally, the company faced setbacks by the 2000s due to mismanagement and a lack of innovation, leading to financial losses and lost customers[1].

In 2014, AMD appointed engineer Lisa Su as CEO, marking a significant turning point. Her focus on innovation and reinvention, combined with a 2016 partnership with Taiwan Semiconductor Manufacturing Company, enabled AMD to leverage advanced technology to enhance processor performance. These changes revitalized AMD's position in the industry.

Name	Role	Start Date
Dr. Lisa T. Su	Chair and CEO	2014
Nora M. Denzel	Lead Independent Director	2014
Mark Durcan	Director	2017
Michael P. Gregoire	Director	2017
Joseph A. Householder	Director	2019
John Marren	Director	2017
John Ohlson	Director	2022
Ahbi Talwalker	Director	2017
Elizabeth Vanderslice	Director	2022

Product Mix

AMD produces a range of computer processors, including CPUs, APUs, GPUs, EPYC processors, and FPGAs, designed to handle various computing tasks across different industries.

CPUs: AMD's central processing units are critical for performing calculations and executing instructions, acting like the brain of a computer. These processors are responsible for tasks such as launching programs, managing memory, multitasking, and running complex applications.

Graphics Processing Units (GPUs): AMD also excels in GPUs, providing high-performance graphics often at a lower price point compared to competitors like Nvidia. These GPUs are designed to handle demanding gaming and graphical tasks, delivering smooth experiences and great visuals.

Accelerated Processing Units (APUs): Combining both CPUs and integrated GPUs, APUs allow for simultaneous processing and rendering of graphics on a single unit.

EPYC Processors: AMD's EPYC processors are designed for data centers and cloud platforms, excelling at handling multi-threaded tasks like artificial intelligence and cloud computing. These processors are ideal for high-

[1] TechSpot, *The Rise, Fall and Revival of AMD,* June 29, 2020.

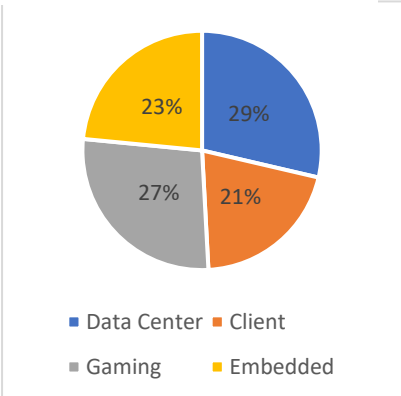
performance computing environments requiring efficient processing of large datasets and complex calculations.

FPGAs (Field Programmable Gate Arrays): AMD's FPGAs are for aerospace and defense applications, particularly in systems like radar and military communications.

Customer Base

AMD's largest customers are businesses in the Artificial Intelligence and cloud computing industries, including notable companies such as Meta, Google, Sony, Samsung, Oracle, and Microsoft. Most of AMD's customers are based in the United States, with U.S. companies accounting for 35% of total revenue. Other significant markets include Japan, contributing 20% of revenue, and China (including Hong Kong), accounting for 15%. Their customers differ depending on the segment they do business. The Data Center segment primarily serves hyperscale data centers, original design manufacturers (ODMs), system integrators, and original equipment manufacturers (OEMs). Customers in the Client and Gaming segments include PC OEMs, ODMs that manufacture motherboards for AMD's chipset products, and add-in board manufacturers (AIBs) responsible for graphics cards. AMD's Embedded segment supports a broad range of industries, including aerospace and defense, automotive, data center, and communication infrastructure, showcasing the company's versatility and ability to cater to diverse market needs[2].

Figure 2: Revenue by Segment



Source: Company data

Figure 3: List of major acquisitions

Year	Company Acquired	Price
2006	ATI Technologies Inc.	$5.4 B
2012	SeaMicro Inc.	$334 M
2017	Nitero Inc.	N/A
2021	Xilinx Inc.	$49 B
2024	ZT Systems	$4.9 B

Source: Investopedia

Strategy

Nvidia justifiably dominates much of the discourse around AI and GPUs, with their H100 and H200 GPUs playing a central role in securing nearly the entire market. However, this landscape may soon be changing. Nvidia's rise to dominance was likely facilitated by a lack of competition, and AMD's MI300 could be the catalyst the market needs to shift the balance.

AMD's leadership has repeatedly acknowledged Nvidia's innovation and market dominance, noting that while they recognize Nvidia's success, they are not complacent. Instead, AMD continues to innovate and has focused on minimizing the friction involved in switching to AMD processors. This strategy is designed to

[2] Forbes, *AMD Earnings: Shares Tumble as Semiconductor Giant Narrowly Beat Expectations On Record Data Center Revenue*, Oct 29, 2024.

make transitioning from Nvidia's products as seamless as possible. Early signs of success are evident, as many MI300 users are also customers of Nvidia.

With AI spending projected to reach $1 trillion over the next few years, it appears that AMD's strategy is to continue innovating, increasing its relevance, and gradually capturing market share from Nvidia year by year.

Pat Gelsinger was hired to be Intel's CEO in 2021, making his tenure as CEO just under 4 years

In addition, AMD finds itself in a unique position relative to its other major competitor, Intel. Intel's recent parting with CEO Pat Gelsinger marks a continued period of disappointment for the company. Intel has yet to establish a viable business model around its manufacturing arm, and with the new CEO likely tasked with focusing on this area, AMD has the opportunity to truly leave them behind in the AI and data center markets.

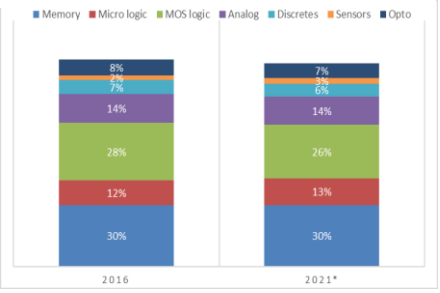
Figure 4: Suppliers

Source: Suppliers

Fabrication and Assembly Network

AMD's product manufacturing follows a strategic outsourcing model that allows the company to focus on design while leveraging the expertise of third-party manufacturers for production and assembly. This approach maximizes efficiency by outsourcing the manufacturing and assembly of its products to trusted third-party specialists, enabling AMD to focus on design and innovation.

Figure 5: Share of Global Semiconductor Wafer Demand 2016-2021, by Category



Source: Statista

Their supply chain starts with the design and development of high-performance semiconductor products. Once the designs are complete, AMD partners with third-party foundries for the production of the wafers. They have established key relationships with Taiwan Semiconductor Manufacturing Company (TSMC), the primary provider for many of AMD's advanced products. They also maintain a Wafer Supply Agreement (WSA) with GLOBALFOUNDRIES (GF) for the production of HPC products at the 12 nm and 14 nm nodes. Additionally, TSMC, United Microelectronics Corporation (UMC), and Samsung Electronics contribute to the manufacturing of integrated circuits (ICs), such as programmable logic devices, which are essential to AMD's broader product lineup.

After wafer production, AMD outsources the manufacturing of board-level graphics products to specialized third-party manufacturers. This enables the company to focus its internal resources on core design and innovation, leaving the assembly of more complex components to those with specialized expertise. The wafers are then sent to AMD's assembly, test, marking, and packaging partners, who are primarily located in the Asia-Pacific region. They partner with Siliconware Precision Industries and King Yuan Electronics Company through joint ventures with Tongfu Microelectronics Co., Ltd. These companies handle

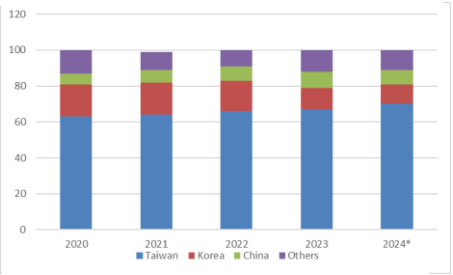
the final stages of the manufacturing process, assembling the chips, testing their functionality, marking them for identification, and packaging them for shipment.

Once the chips are fully assembled, tested, and packaged, they are ready to be delivered to customers across AMD's key markets, including data centers, client gaming, and embedded applications.

The Semiconductor Industry

The Structure of the Semiconductor Industry

Figure 6: Semiconductor Foundries Market Share



Source: Statista

Wafer Fabrication

Wafer fabrication is the initial and most resource-intensive stage of semiconductor production. This process is carried out in highly specialized facilities known as fabs and involves several meticulously controlled steps such as crystal growth, wafer slicing, polishing, and doping. The introduction of cutting-edge technologies, including extreme ultraviolet (EUV) lithography and advanced materials like silicon carbide, has greatly enhanced the efficiency and precision of this stage.

Assembly and Testing

The assembly and testing phase is critical for validating and packaging semiconductor devices, ensuring their functionality and reliability before integration into electronic systems. This segment has faced significant disruptions, notably during the pandemic, which exposed vulnerabilities in global supply chains. The resulting shortage of raw materials and production bottlenecks at outsourced semiconductor assembly and testing (OSAT) facilities have posed serious challenges.

To address these issues, companies have embraced strategies such as diversifying supply chains and adopting automation. Advances in packaging technologies, including 2.5D and 3D integration, are transforming this phase, enabling higher performance by improving interconnect density between components. Additionally, the emergence of chiplet architectures, where smaller modular chip components are assembled into larger systems, offers a scalable and cost-effective solution to manufacturing constraints.

Design and Development

The design phase is central to the digital revolution, and it is where AMD truly excels. This phase is dedicated to developing high-performance semiconductor products that influence nearly every aspect of modern life, from communication and transportation to entertainment and beyond.

Key Players in the Industry

Intel and Nvidia are two of AMD's largest rivals, with Intel leading in CPUs and Nvidia dominating in GPUs. AMD competes with Intel through its Ryzen and EPYC processors, while it challenges Nvidia with its Radeon GPUs, but Nvidia's CUDA ecosystem remains a significant advantage.

Nvidia Corporation

As the largest and most valuable competitor in the industry, Nvidia reached a market valuation exceeding $3 trillion in 2024. Known for its GPUs in consumer electronics, Nvidia is also a leader in producing semiconductors for cloud computing, supercomputers, and AI applications.

Intel

A semiconductor giant since its founding in 1968, Intel remains a top revenue generator in the industry. The company produces high-performance CPUs, GPUs, chipsets, and flash memory, maintaining its strong market presence.

Broadcom

With its market cap expected to exceed $800 billion by the end of 2024, Broadcom is a key player in the industry. It designs semiconductors and enterprise software, serving sectors such as telecommunications, smartphones, and data centers.

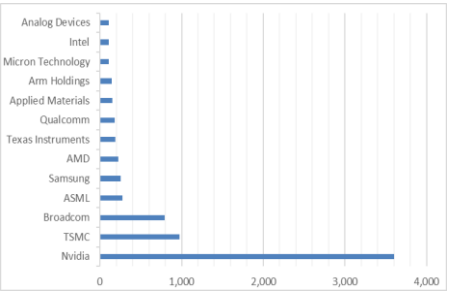
Micron Technology Inc.

Founded in 1978, Micron is an emerging player in the semiconductor space, supporting markets like AI, IoT, mobile devices, and servers. Its solutions are vital to modern data centers and emerging technologies such as autonomous vehicles.

Texas Instruments

Established in 1930, TI specializes in analog chips and embedded processors. Its products, including microcontrollers and multi-core processors, serve industries such as automotive, industrial, and consumer electronics, cementing its role in powering essential technologies[3].

Figure 7: *Leading Semiconductor Companies by Market Cap*



Source: *Statista*

[3] JUSDA, *In-depth analysis of the semiconductor industry in 2024*, July 17, 2024.

The Chips and Science Act

The CHIPS Act, enacted in 2022, is a landmark U.S. legislative effort aimed at revitalizing domestic semiconductor manufacturing, advancing research and development, and mitigating national security risks associated with semiconductor supply chains. The Act provides $52 billion in grants and subsidies for manufacturing and research initiatives and includes a 25% investment tax credit to incentivize semiconductor production within the United States.

Figure 8: CHIPS Funding Allocation by Company

Company	Amount
Intel	$8.5B
TSMC	$6.6B
Samsung	$6.4B
Micron	$6.14B
Global Foundries	$1.5B
Microchip Technology	$162M
Polar Semiconductor	$120M
BAE Systems	$35M

Source: The Verge

The Geopolitics of the CHIPS Act

The CHIPS Act was enacted as an effort from the United States to revive its semiconductor manufacturing industry. In the 1990´s, the U.S. semiconductor companies started to focus more on chip design rather than manufacturing, thus, sending their manufacturing to foundries overseas. At the time, the United States leadership lacked the strategic foresight about the importance of domestic chip manufacturing which has allowed countries in the Asia-Pacific region like China, Taiwan, Singapore, and others to overtake the U.S. in chip manufacturing innovation[4].

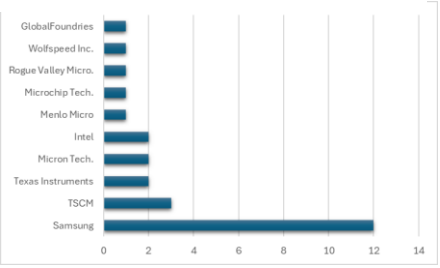
The U.S. is engaged in an intense competition with China for technological supremacy, as dominance in this field is increasingly viewed as a critical determinant of global power. With China's longstanding claim over Taiwan and concerns about potential future conflict, the U.S. remains deeply concerned about the security of semiconductor supply chains and the strategic implications of China potentially disrupting or asserting control over Taiwan's crucial manufacturing sector.

This legislation was widely hailed as a significant victory for the Biden administration. However, with much of the allocated funding yet to be distributed, a new administration under Donald Trump could potentially reshape the deal. In a recent interview, Trump criticized the chip deal, making an argument that the U.S. taxpayer bears an undue share of the burden. He proposed funding the initiative through tariffs on chip imports instead, asserting that this approach would incentivize companies to relocate their manufacturing to U.S. soil. This tariff-based approach risks further straining U.S.-China relations, as a forced relocation of manufacturing from Taiwan might be perceived as a direct challenge to China's technological ambitions, however, U.S. politicians will be weighing

[4] Financial Times, *The geopolitics of chips: Chips in the USA*, November 12 2024.

those risks as this approach brings the possibility of bolstering domestic manufacturing, which could reduce U.S. dependence on foreign supply chains, enhance economic resilience, and creating jobs within the semiconductor industry.

Figure 9: North American Fabs by Owner



Source: Z2Data

Leveraging the CHIPS Act: Opportunities for AMD

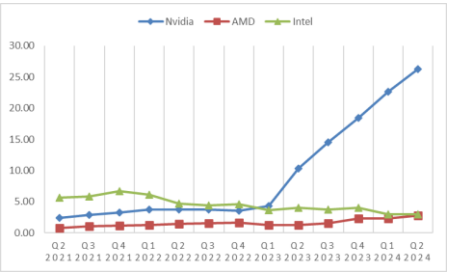
The White House and TSMC recently finalized an $11 billion package of grants and loans to bolster TSMC's U.S.-based manufacturing initiatives. Additionally, GLOBALFOUNDRIES (GFS) secured $1.5 billion in support for its domestic production facilities. With TSMC's operations concentrated in geopolitically sensitive Taiwan, these investments in U.S. infrastructure represent a significant step toward reducing AMD's supply chain vulnerabilities. As AMD relies heavily on TSMC for advanced semiconductor fabrication, these incentives to expand U.S. operations will enhance supply chain resilience and support AMD's ability to meet growing demand.

Challenges for AMD Under the Act

While the CHIPS Act strengthens AMD's supply chain, it also provides substantial advantages to its competitors, particularly Intel. As the flagship American semiconductor company in this initiative, Intel is receiving a significant portion of the Act's funding. These resources will be directed toward revitalizing Intel's struggling foundry business, allowing it to scale production capabilities and pursue its vertically integrated model of designing and manufacturing chips in-house. If Intel's government-backed investments succeed, its ability to control costs and accelerate product development could challenge AMD's competitive position, potentially diminishing its current edge in the market.

The AI Arms Race is Just Beginning

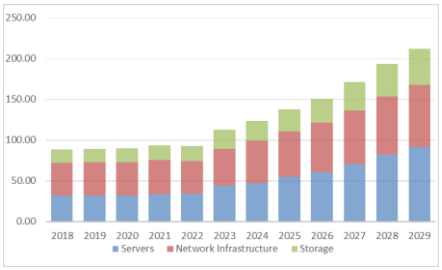
Figure 10: Data Center Revenue per Quarter for NVDA, INTC, and AMD



Source: Statista

The data center landscape is undergoing rapid transformation, fueled by the explosive growth of AI applications. As AI becomes more integral to cloud computing and high-performance workloads, companies are significantly increasing capital expenditures on advanced infrastructure. Spending on AI-specific components like GPUs, CPUs, accelerators, and high-bandwidth memory has surged, with capex growth among major cloud providers expected to exceed 40% in 2024. GPUs remain the backbone of AI server configurations, particularly for training large-scale models, but high-core-count CPUs and networking technologies are also gaining prominence.

Figure 11: Data center revenue in the United States from 2018 to 2029, by segment

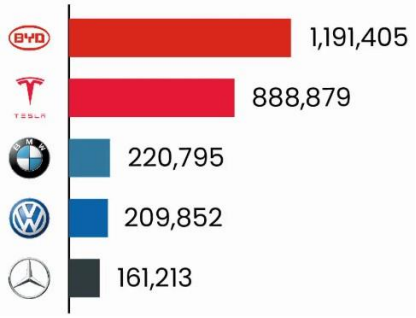


Source: Statista

AMD has emerged as a strong competitor to Nvidia in the rapidly expanding AI market. Its differentiation lies in advanced memory capabilities, particularly with the MI300X GPU, which has already attracted major clients such as Meta. Meta uses the MI300X for its Llama generative AI model and in recent benchmarks, the MI300X even outperformed Nvidia's H100 Tensor Core GPU in Meta's Llama model, demonstrating that AMD offers solutions that are superior to the competition for large language models[5]. Additionally, AMD's upcoming Turin server CPUs are helping to erode Intel's dominance in the CPU market by providing superior performance and scalability. While Nvidia continues to lead overall in the AI space, its supply constraints have opened the door for competitors like AMD. Strategic acquisitions, including the $49 billion Xilinx deal and the $4.9 billion purchase of ZT Systems, have greatly enhanced AMD's capabilities in adaptive computing and data center technologies[6].

One of the largest battlegrounds in AI is the automotive industry. Almost every car maker is diving into AI, with the level of integration varying. Companies like BMW Group, Mercedes-Benz, and Volkswagen are incorporating generative AI into their virtual assistants, while companies like Tesla, Apple, and Waymo are working towards fully autonomous, self-driving cars. In January, AMD announced the arrival of two new devices: the Versal AI Edge XA, which adds an advanced AI engine for applications like surround-view and forward cameras, in-cabin monitoring, LiDAR, 4D radar, and autonomous driving and parking[7]. The other offering, the Ryzen Embedded V2000 Series, is designed to significantly enhance the in-vehicle experience through the infotainment console and passenger displays.

Figure 12: Global EV Sales (H1 2023)



Source: Straights Research

Their competitors, however, are also not asleep at the wheel in the automotive market. Nvidia announced earlier this year that it is expanding its collaborations with BYD, which overtook Tesla last year as the best-selling Electric Vehicle (EV) manufacturer, as well as other Chinese automakers[8]. BYD and Li Auto both revealed that they will use Nvidia's Thor chip platform, while other Chinese manufacturers have adopted their Orin chipset. Qualcomm, in October, announced the development of two automotive-focused chips: the Snapdragon Cockpit Elite and Snapdragon Ride Elite. The Cockpit Elite, similar to AMD's

[5] *Next Platform, Stacking Up AMD Versus Nvidia For Llama 3.1 GPU Inference*, July 29, 2024.
[6] The Register, *AMD, Xilinx complete world's biggest semiconductor merger thanks to stock boom*, Mon 14 Feb 2022.
[7] AMD, *AMD Reshapes Automotive Industry with Advanced AI Engines and Elevated In-Vehicle Experiences at CES 2024*, Jan. 04, 2024.
[8] Financial Times, *Tesla overtaken by China's BYD as world's biggest EV maker*, January 2 2024.

Ryzen V2000 chip, focuses on the in-car experience, while the Ride Elite chip, like AMD's Versal chip, supports autonomous driving[9].

Intel has also aggressively entered the automotive industry. At CES 2024, they announced the acquisition of Silicon Mobility, a fabless silicon and software company specializing in System-on-Chips (SoCs) for EV energy management. They also introduced a new family of AI-enhanced SoCs for software-defined vehicles, supporting a variety of in-vehicle AI applications like e-mirrors, gaming, and video conferencing. Most impressively, they introduced an open chiplet[10] platform that allows for the integration of third-party chiplets into Intel's automotive products, offering automakers the flexibility to select and combine chiplets to meet specific vehicle requirements, facilitating faster and more cost-effective development and upgrades over time[11].

The fight for leadership in the AI market is going to be intense, however, it appears that there may just be enough space for many players as AMD just this year increased their forecast for the total addressable market for AI accelerators to $500 billion by 2028, which should be encouraging to not just AMD, but all competitors of Nvidia.

The Energy Issue

Figure 13: Global Energy Consumption from Data Centers

Source: Goldman Sachs, Cisco,IEA

The excitement surrounding artificial intelligence can be seen worldwide. In November of this year, ChatGPT ranked as the eighth most visited website in the world[12]. Considering that the other websites in the top rankings were long-established giants such as Google, YouTube, and Wikipedia, and that ChatGPT didn't exist three years ago, this demonstrates the extraordinary reach and influence large language models like this are having. At the same time, the world's largest companies are making massive investments into AI. Meta, for instance, increased its AI spending to $40 billion this year, while Microsoft's AI investment will reach approximately $19 billion this year.

With these remarkable investments, a pressing question arises: can current infrastructure keep up with this demand? Data centers and AI, which are the largest drivers of growth for AMD, consumed about 2% of global electricity in 2022. The United States, hosting 33% of the world's 8,000 data centers, is projected to see data center electricity demand rise to 6% of total consumption by

[9] Toms Guide, *A smarter ride awaits, as Qualcomm's Snapdragon automovie chips get better AI, new Oryon CPU,* October 22, 2024.
[10] A normal "monolithic" chip integrates all the functions for the device or processor (memory, cache, i/o operations, etc.) while a chiplet is specialized to handle only one or a few tasks allowing for optimization. AMD uses chiplets for their Ryzen and EPYC processors.
[11] Forbes, *Intel's Big Automotive Play: SoCs And An Acquisition,* Jan 10, 2024.
[12] Similarweb,*Top Websites Ranking*, December 1, 2024

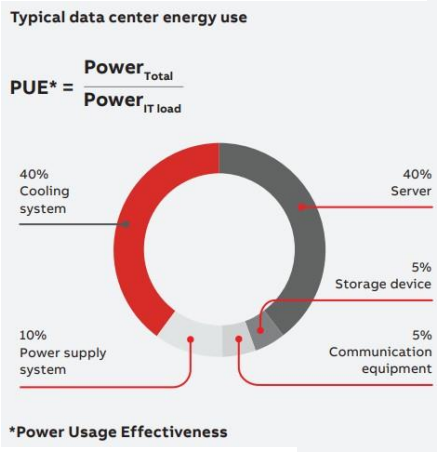
2026 and China, which accounts for 10% of global data centers expects their electricity demand from these facilities is expected to double by 2030[13].

On the software side, AI applications also consume large amounts of energy. For example, a typical Google search requires 0.3 watt-hours (Wh) of electricity, whereas a ChatGPT query demands 2.9 Wh. Considering there are around 9 billion searches conducted daily, it's easy to see where further integrating AI at scale could get out of hand, adding almost 10 terawatt-hours (TWh) of annual electricity demand globally.

The primary contributors to this energy consumption in data centers are cooling systems and servers, each responsible for about 40% of total usage. The remaining 20% is consumed by power supply systems, storage devices, and communication equipment. To address this, companies are exploring more energy-efficient solutions like liquid cooling, which leverages water's higher thermal transfer properties to dissipate heat compared to air cooling[14]. Google also reported that they are using machine learning through their DeepMind AI to reduce the electricity demand of their data center cooling systems.

While efficiency improvements will surely help, the growing energy needs of AI may depend heavily on the expansion of nuclear power. Over the next two years, 29 gigawatts (GW) of additional nuclear capacity is expected to come online globally, with more than half of this expansion in China and India. Meanwhile, regions like France and Japan are boosting nuclear generation through plant recovery and restarts. By 2025, global nuclear electricity production is projected to surpass the previous record set in 2021, which could be critical in supplying the energy needs for AI. How the energy infrastructure around the globe grows will be very important to AMD and other semiconductor companies as their growth will depend on its support.

Figure 14: *Data Center Energy Use*



Source: *Vertiv*

The 10 largest data center markets by total power in Megawatts are Northern Virginia, Beijing, Oregon, Phoenix, Shanghai, Dallas, Columbus, Atlanta, Tokyo, and London. *(Cushman & Wakefield)*

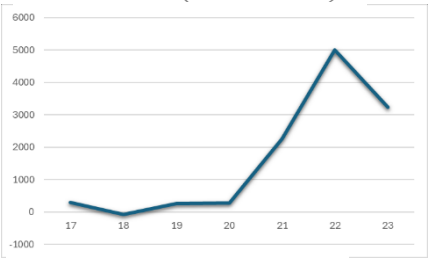
[13] IEA, *Electricity 2024, Analysis and forecast to 2026*, January 2024

[14] ABB, *Motors in data centers Powering the connected world*, May 2022.

Financial Analysis

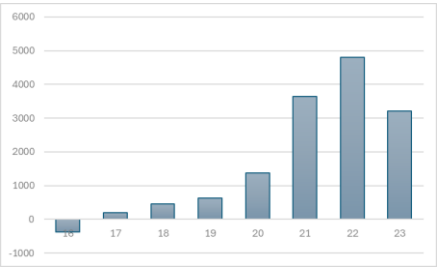
Financial Performance

Figure 15: AMD Free Cash Flow (2016-2023)



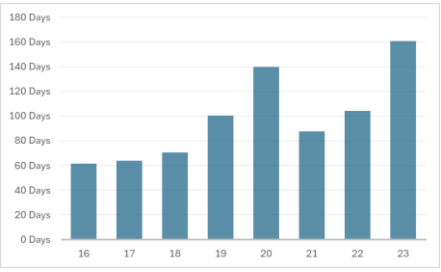
Source: Internal Calculations

Figure 16: AMD EBITA



Source: Internal Calculations

Figure 17: AMD Cash Conversion Cycle



Source: Internal calculations

To evaluate AMD's financial performance, a Piotroski score analysis was conducted, which assesses financial health by examining profitability, leverage, and operating efficiency. AMD consistently scored 7 out of 9 from 2017 to 2022, reflecting strong financial health. However, their score decreased by one point in 2023 due to a decline in gross margin. Despite this, AMD's 2023 Piotroski score remains indicative of a healthy company.

AMD's Return on Invested Capital has experienced a significant decline over the past two years, falling from 70% in 2021 to 8% in 2022 and 5% in 2023. This drop is primarily due to increased intangible assets resulting from large acquisitions.

Profitability from operations declined across all metrics analyzed. Their EBITDA margin fell from 20% to 14% in 2023, and their EBIT margin and net margin followed similar trends, with the latter decreasing by 2%. Regarding profitability from investments, AMD's Return on Assets dropped to 1% in 2023. However, their asset turnover ratio remained constant at an impressive 82%, demonstrating their efficiency in generating revenue from assets.

AMD's operating working capital has increased every year since 2016 barring 2021, landing at 5.5 billion. They saw the number of days it takes to collect on their accounts receivables decrease to 60 days in 2021 and then increase back up to 87 days in 2023. AMD also saw their days it takes to sell their inventory increase every year since 2017, landing at 141 days in 2023. On the liabilities side, the days it takes to pay their payables decreased from 79 to 67 days in 2023; however, their accrued liabilities turnover increased from 48 days to 50 days in 2023. Their overall operating liabilities decreased in 2023 from 6.3 billion to 5.9 billion.

The company's capital expenditure decreased by 142% in 2023 due to the insignificant change in property, plant, and equipment, and their Cash Conversion Cycle, which measures how long cash is tied up in operations, increased to 161 days in 2023, which is significantly higher than their peers' average of 129 days.

In analyzing AMD’s financial position, I calculated the Sloan Accruals ratio, which provides insight into the company's earnings quality and potential for earnings manipulation. Over the period from 2017 to 2023, AMD’s Sloan Accruals

numbers fluctuated, with the most significant uptick occurring in 2020, reaching 15.3%. This spike in accruals reflects an increase in the difference between reported earnings and cash flows, which may indicate that a larger portion of the earnings was derived from non-cash items.

Throughout the analyzed period, AMD displayed a mix of positive and negative Sloan Accruals ratios. In 2023, the ratio was 0.5%, with the 2 prior years even being negative. This suggests that the company was not inflating its earnings through accruals over the past 3 years, thus, giving us an accurate picture of the company's financial health and performance.

Figure 18:AMD Z-Score 2023

Working Capital / Total Assets	15%
Net Income / Total Assets	1%
EBIT / Total Assets	1%
Market Cap / Total Liabilities	1872%
Sales / Assets	33%
Z-Score	**18.9**

Source: *Internal calculations*

Credit Risk Analysis

To assess AMD's credit risk, I conducted an analysis using both Altman's Z-score and Ohlson's O-score models. A Z-score above 2.9 is typically considered indicative of good credit health. In 2017, AMD's Z-score was 4.7, signaling a strong credit position. By 2023, my calculations show a remarkable increase in their Z-score to 18.95, compared to Bloomberg's reported Z-score of 14.40.

These results suggest that, according to this metric, AMD is in robust credit health.

Figure 19: Z-Score Weights

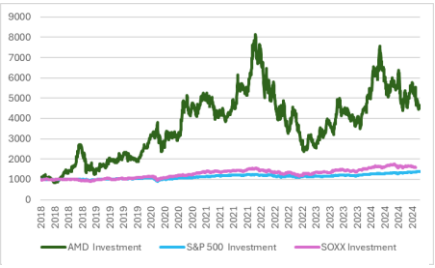
Coefficient	Weight
X1	1.2
X2	1.4
X3	3.3
X4	0.99
X5	0.6

However, it is important to note that the Z-score is traditionally more applicable to manufacturing companies, while AMD's key differentiator in the semiconductor industry is its focus on design rather than manufacturing. Therefore, this metric should not be relied upon in isolation when evaluating AMD's credit risk.

To further assess AMD's financial stability, I also employed the Ohlson model, which evaluates the likelihood of a company facing financial distress in the near future. In 2018, AMD's O-score was 0.83, translating to a 70% probability of default. Since then, the company's credit health has significantly improved, with the 2023 O-score dropping to -2.28, corresponding to only a 9% chance of default.

In addition to these models, AMD's leverage ratios suggest a generally healthy financial position. The company's interest coverage ratio exceeds 300%, and its debt-to-capital ratio is notably low at just 4%. Although AMD's cash flow to debt ratio has decreased from 145% to 11%, it still indicates the company is able to service its debt with current operating cash flow.

Figure 20: Data Center Revenue per Quarter



Source: Yahoo Finance

Figure 21: 2023 Dupont Analysis

Net Income	854
Sales	22680
Net Profit Margin	**4%**
Sales	22680
Total Assets	67885
Asset Turnover Ratio	**33%**
Total Assets	67885
Common Equity	55892
Equity Multiplier	**1.21457454**
ROE	**2%**

Source: Internal calcualtions

While AMD's debt-to-EBITDA ratio stands at a relatively high 6.15x, its net debt ratio is a strong -3.65, further demonstrating the company's healthy financial standing. Overall, these metrics indicate that AMD is in a solid credit position with manageable risk.

Dupont Analysis

Return on Equity (ROE) measures how effectively a company generates profits for its equity investors. The DuPont Analysis breaks ROE into three components: operational efficiency, asset efficiency, and leverage, allowing for a more fundamental analysis of what is driving profitability.

Operational efficiency, represented by the net profit margin (NPM), reflects how much profit the company earns from each dollar of revenue. AMD's NPM was negative at -12% in 2016, reflecting losses at the time. Over the years, it improved significantly, peaking at 26% in 2020, before settling at 4% in 2023. Asset efficiency, measured by asset turnover, indicates how effectively the company utilizes its assets to generate revenue. AMD's asset turnover has steadily declined from over 100% in 2016 to 33% in 2023. The leverage component, represented by the assets-to-equity ratio, has also decreased significantly as AMD's equity has grown, landing at 121% in 2023.

AMD's ROE, which was above 40% for both 2020 and 2021, has fallen to around 2% over the last two years. This decline is largely attributable to the increase in assets and equity following AMD's acquisition of Xilinx in 2021.

Market Performance

Regarding AMD's market performance, an analysis was conducted using daily return data from AMD, covering a period starting February 2018. The results revealed that a $1,000 investment in AMD at that time would have grown to $4,500 today. To provide context, this analysis was extended to two benchmark indices: the S&P 500 Index, which tracks the performance of the largest U.S. companies by market capitalization, and the SOXX Index, which reflects the semiconductor industry's performance. The findings showed that the same $1,000 investment in the S&P 500 Index would now be worth just under $1,400, while an investment in the SOXX Index would have grown to just under $1,600.

To better understand the performance of AMD's stock, a Value at Risk (VaR) and Expected Shortfall (ES) analysis was conducted to provide insights into the potential losses that could occur under adverse market conditions.

Figure 22: AMD VaR and Conditional VaR

Conf. %	VaR	Exp Shortfall
99%	-8%	-10%
97.5%	-7%	-9%
95%	-5%	-8%
90%	-4%	-7%

Source: *Internal calcualtions*

The use of Value at Risk instead of Expected Shortfall was a significant factor in why banks failed to adequately account for extreme market events during the 2008 financial crisis. VaR, while useful for measuring potential losses within a specific confidence interval, does not capture the magnitude of risk beyond its threshold. This limitation meant that VaR underestimated the likelihood of extreme losses in times of market stress.

Value at Risk quantifies the maximum potential loss an investment could experience over a specified time period at a given confidence level. For AMD, the analysis revealed that at a 99% confidence level, the VaR was calculated to be –8%. This indicates there is a 1% probability that the stock's loss could exceed 8% over the specified time frame. At a 95% confidence level, the VaR was –5%, meaning there is a 5% chance that the loss could surpass 5% during the same period. While VaR is a useful measure for summarizing tail risk, it has limitations, as it only indicates the threshold of losses within the confidence interval without accounting for the magnitude of losses beyond that threshold.

Expected Shortfall addresses this limitation by estimating the average loss that would occur if the VaR threshold is breached. For AMD, the Expected Shortfall analysis showed that at a 99% confidence level, the Expected Shortfall was calculated at –10%, meaning that if the 1% worst-case scenario materializes, the average loss would be 10%. At a 95% confidence level, the ES decreased to –8%, indicating the average loss in the 5% worst-case scenarios is slightly lower.

To contextualize AMD's risk profile, similar analyses were performed for its competitors, Nvidia and Intel. At the 99% confidence level, Nvidia and Intel both had an Expected Shortfall of –4%, significantly lower than AMD's –10%. At the 95% confidence level, Nvidia and Intel's Expected Shortfall decreased further to –3%, while AMD's Expected Shortfall only decreased to –8%. This underscores the significantly higher tail risk for AMD in reference to other major semiconductor companies

Financial Forecasts

Revenue

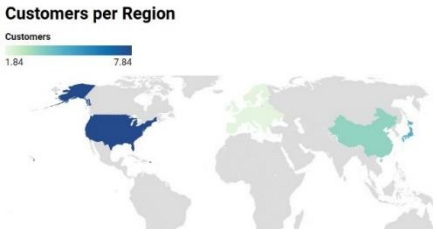
Due to the absence of detailed product-specific revenue data, I have decided to structure my revenue forecasts by focusing on research related to AMD's product segment performance and outlook as well as the geographic distribution of its client base.

Data Center

AMD's data center segment is poised to be the primary driver of its growth in the coming years. The increasing demand for artificial intelligence and high-performance computing, particularly for GPU´s and high-core-count CPU's positions AMD well to capitalize on these trends. With the MI300 series GPU expected to gain market share, I project a compound annual growth rate (CAGR)

of 31% for the data center segment through 2026. Beyond that, growth is anticipated at a CAGR of 14% from 2026 through 2033

Figure 23: AMD Customers per Region



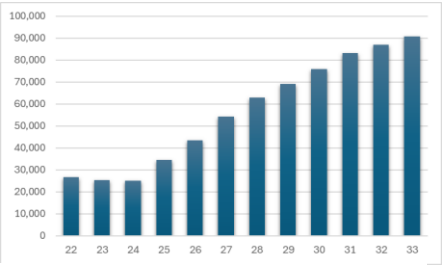
Source: Company data

Client

With AMD gaining 3.5%-to-4%-unit share year-over-year, driven by strong demand for its Ryzen PC chips, I have projected an 13% CAGR through 2026. While it is plausible for AMD to continue capturing market share from Intel, the latter's dominance in the PC chip market and its competitive capabilities cannot be overlooked. Therefore, I expect the Client segment for AMD to have a CAGR of 3% from 2026 through 2033, reflecting both its growth potential and the sustained competitive pressure from Intel.

Gaming

Figure 24: Total AMD Forecasted Net Revenue



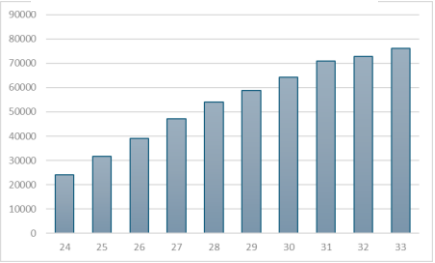
Source: Internal calculations

AMD’s gaming segment is projected to experience the lowest growth amongst its product lines. This segment is highly competitive and cyclical, which can pose challenges to consistent performance. With the current gaming console cycle nearing its end and both Microsoft and Sony expected to launch new-generation consoles in the latter part of the 2020s, there is potential for a temporary uptick in gaming sales growth during that period. However, considering these dynamics, I have applied a 4% CAGR for this segment over the decade.

Embedded

With the increasing demand for embedded solutions in industries such as AI, automotive, and IoT for applications like real-time data analytics and autonomous driving, AMD’s continued investment in its EPYC and Ryzen processors positions the segment for strong growth. As these markets expand, the need for high-performance embedded systems will rise, prompting AMD to capture a larger share. Given these trends, I have applied a 5% CAGR for the embedded segment over the next decade.

Figure 25: Forecasted Operating Expenses



Source: Internal calculations

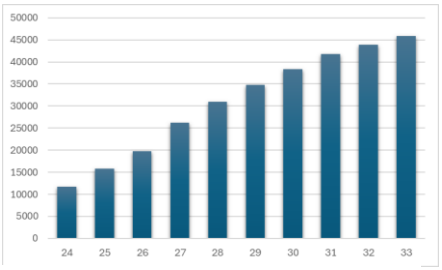
Operating Expenses

AMD's primary operating expenses include cost of sales, research and development (R&D), and general and administrative expenses. In 2017, AMD’s cost of sales represented an exceptionally high 77% of revenues. By 2023, the company had successfully reduced this to 50%, thus also steadily increasing their gross margin. I anticipate that AMD will continue this trend, reaching the industry average of 46% by 2025 and further reducing cost of sales as a percentage of revenue to 43% by 2029.

AMD has also prioritized R&D investments to strengthen its position as an industry leader in innovation. Over the past three years, R&D expenses as a percentage of revenue have grown from 17% to 26%. This commitment to innovation positions AMD ahead of its peers in R&D allocation, a trend expected to persist through the next decade, stabilizing at approximately 20% of revenues.

General and administrative expenses have historically fluctuated near 10% of revenues and are expected to remain stable at 9% of revenues throughout the forecast period.

Figure 26: Forecasted Gross Margin

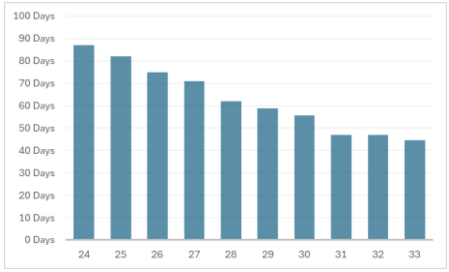


Source: Internal calculations

Working Capital

AMD's most significant operating current assets are accounts receivable and inventory. In the mid-2010s, AMD collected their receivables with an impressive average of just 21 days. However, this figure increased to 101 days in 2019. Since then, AMD has improved its efficiency in this area. I expect the company to reach the industry average of 50 days by 2031 and outperform the average by 2033, reducing it to 44 days.

Figure 28: Forecasted Accounts Recievables Days

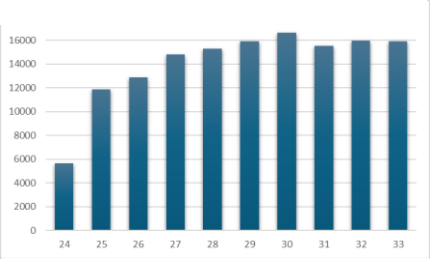


Source: Internal calculations

It takes AMD 99 days on average to sell its inventory, compared to 96 days for the industry. Over the past two years, AMD's inventory turnover has been less efficient, with their days inventory outstanding reaching 141 days in 2023. I anticipate that AMD will gradually improve its inventory management, aligning with the industry average by 2033. Additionally, AMD's total current assets are projected to grow by 50% over the next two years, followed by steady growth of 2% year-over-year through 2033.

AMD's most significant operating current liabilities are their accounts payable and accrued liabilities. The company has consistently exceeded the industry average of 45 days for accounts payable, reaching 79 and 67 days in 2022 and 2023, respectively. While I expect AMD to continue taking longer to pay its suppliers, I forecast that the company will reduce this figure to 55 days by 2031.

Figure 29: Forecasted Operating Working Capital



Source: Internal calculations

The time it takes AMD to settle its accrued liabilities has been historically inconsistent, with levels such as 67 days in 2020 and as low as 33 days in 2016. I have forecasted a steady increase in this metric, with the number of days to settle accrued liabilities rising from 50 days to 65 days by 2033.

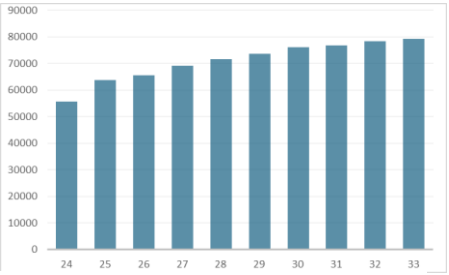
Invested Capital

AMD's Property, Plant, and Equipment (PPE) as a percentage of revenue has incrementally increased over the past decade, reaching 7% in 2023. I expect this trend to continue, with PPE expected to reach 10% of revenues by 2033. Historically, AMD's capital expenditures (CAPEX) have remained at or below 5% of revenues, and I forecast this level to remain stable at 5% throughout the next decade.

The company's operating leases, reflected in Right-of-Use (ROU) assets as a percentage of revenue, have increased from 2% to 3% in 2023. I anticipate a modest rise in this ratio, reaching 4% over the course of the decade.

In line with valuation principles suggesting that typical acquisitions fail to create value, I have assumed that goodwill and acquired intangibles will remain constant at their current levels.

Figure 30: Forecasted Invested Capital

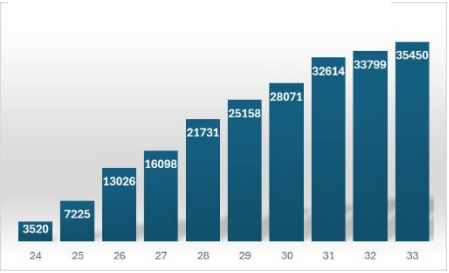


Source: Internal calculations

Free Cash Flow

With the year-over-year change in invested capital expected to remain in line with historical trends in the near term and gross cash flow steadily increasing, I foresee AMD's free cash flow (FCF) achieving consistent growth throughout the decade. By 2025, I estimate gross cash flow to reach $10.7 billion, with FCF exceeding $7 billion. As the decade progresses, I anticipate revenue growth will significantly outpace the increase in depreciation and amortization, driving gross cash flow to surpass $36 billion by 2033. Coupled with a declining year-over-year change in invested capital later in the decade, AMD's FCF is projected to reach an impressive $35 billion by the same time frame.

Figure 31: Forecasted Free Cash FLow



Source: Internal calculations

Valuation

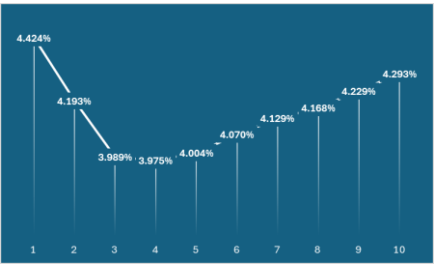
Cost of Capital

In the valuation of AMD, a Weighted Average Cost of Capital (WACC) was calculated for each forecasted year to ensure that each year's cash flow is discounted at a cost of capital aligned with the maturity of the cash flow. For 2024, the WACC was calculated to be 11.96%, fluctuating between 11.5% and 12% for the remainder of the forecast period.

Risk-Free Rate

The risk-free rate was determined using U.S. Treasury STRIPS (zero-coupon bonds) that correspond to each forecasted year. In 2025, the risk-free rate was

Figure 32: Forecasted Risk-Free Rate



Source: Bloomberg

4.193%. Over the subsequent two years, the rate fell below 4%, before rising back above 4% for the remainder of the forecast period. By 2033, the final year of the forecast, the risk-free rate had increased to 4.293%.

Market Risk Premium

The market risk premium, calculated as the market return minus the risk-free rate, was based on the number calculated by NYU professor Aswath Damodoran. In his calculations of country and equity risk premiums, he calculated the United States to have a market premium of 4.6% This 4.6% premium remained constant throughout the WACC calculations for the entire forecast period.

Beta

The beta used in the Capital Asset Pricing Model (CAPM) to calculate the cost of equity was derived by averaging the betas of AMD's industry peers. According to Bloomberg, AMD's beta was calculated at 1.91, with Texas Instruments having the lowest beta of 1.29 and Nvidia the highest at 2.31. The average industry beta of the peer group was 1.82, and this figure was used as the beta in the cost of capital calculation. This beta of 1.82 was held constant throughout the forecast period.

Cost of Debt

The cost of debt was obtained using AMD's long-term corporate bonds. AMD currently has a callable bond maturing in 2052 with a yield to maturity of 4.47%, which was used as the cost of debt in the model. This rate of 4.47% was constant throughout the WACC calculations for the entire forecast period.

Cost of Equity

The levered cost of equity was calculated using the CAPM formula: risk-free rate plus beta multiplied by the market risk premium. Due to changes in the risk-free rate over time, the cost of equity fluctuated throughout the forecast period but remained within the 13% range.

Taxes

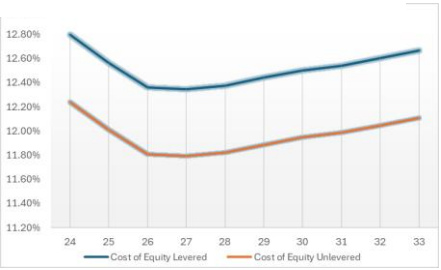
The tax rate used in the model was 21%, consistent with the current statutory corporate tax rate in the United States. However, scenario analysis was conducted to account for the possibility of reduced corporate tax rates under the future U.S. political administration.

Figure 33: *Industry Betas*

Companies	Beta YTD
Average	**1.82**
Median	**1.77**
Advanced Micro Dev	1.91
NVIDIA Corp	2.31
Broadcom	2.09
Marvell technology I	2.09
Lattice Semiconduc	2.09
Intel	1.77
Qualcom	1.73
Microchip Technolo	1.7
Analog Devices Inc	1.52
Impinj inc	1.52
Texas Instruments	1.29

Source: *Bloomberg*

Figure 34: *Forecasted AMD Levered and Unlevered Cost of Equity*



Source: *Internal calculations*

Terminal Growth Rate

The terminal growth rate assumption used after the forecasted period was calculated by taking the average GDP growth rate of all of the countries in which AMD does business and then weighing those countries by the amount of customers AMD has in those countries. The average GDP growth rate was 2.7%, and after applying the weights, the final terminal growth rate was established at 2.5%.

Figure 36: Terminal Growth via Weighted Average GDP Adjusted for AMD's Regional Business Distribution

USA	2.4%
China	5.7%
Japan	0.5%
Singapore	2.9%
Taiwan	3.2%
EU	1.7%
Average	2.7%
Weighted of customers	2.5%
Terminal Growth	**2.5%**

Source: Bloomberg, Internal calculations

Cash Flow Valuations

I conducted three valuations based on discounting the future value of projected cash flows to the present: the Discounted Cash Flow (DCF) model, the Adjusted Present Value (APV) model, and the Flow to Equity (FTE) model. The DCF model produced an enterprise value of $279 billion with a per share price of $169. The Adjusted Present Value model, which analyzes the company as if it were entirely equity-financed and then adds the present value of financing effects, yielded an enterprise value of $248 billion with a per share price of $149. The Flow to Equity model, which discounts the expected cash flow to equity holders after accounting for debt payments, resulted in an enterprise value of $275 billion with a per share price of $166.

Comparable Companies Analysis

In my comparable companies analysis, I selected 8 US-based Mega Cap companies and 7 US-based Large Cap companies within the semiconductor devices industry. The multiples used in the analysis included EV/Sales, EV/EBITDA, EV/EBIT, EV/NOPAT, and the P/E ratio. AMD’s implied share price for every multiple was below its current market price, suggesting that the company is currently trading at a premium relative to its peers.

Scenario Analysis

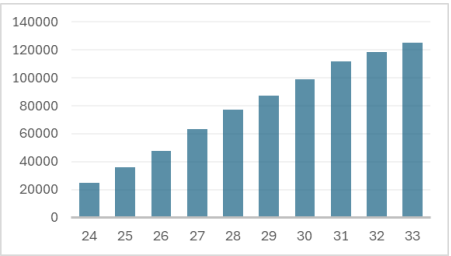
A detailed scenario analysis was conducted to evaluate the sensitivity of AMD’s stock price to variations in key inputs. The analysis considered changes in revenue, corporate tax policy, cost of sales, working capital components, and property, plant, and equipment (PPE). Among these, revenue, cost of sales, and PPE had the most significant impacts on valuation.

Figure 37: DCF EV to Equity Bridge

Core Enterprise Value	**280291**
Non Operating	
Enterprise Value	-2449
Enterprise Value	**277843**
Less: Net Debt	3476
Equity Value	**274367**
# Shares Outstanding	1623
Implied Share Price	**169**

Source: *Internal calculations*

Figure 38: Forecasted Revenues in the Optimistic Case



Source: *Internal calculations*

Revenue Scenarios

1. Base Scenario: Assumes the current forecast as the baseline.
2. Optimistic Scenario: Projects a 28% increase in each segment's revenue throughout the forecast period.
3. Pessimistic Scenario: Projects a 12% decrease in each segment's revenue throughout the forecast period.
4. China Invading Taiwan Scenario: With the majority of AMD's manufacturing being done in Taiwan, the company would be significantly affected if the long-standing rumored Chinese invasion of Taiwan were to materialize. I assigned a 40% decrease in base revenues starting in 2028.

With all else held constant, the optimistic scenario increased valuations to $228 (DCF), $203 (APV), and $227 (FTE). Conversely, the pessimistic scenario reduced valuations to $149 (DCF), $134 (APV), and $146 (FTE). The Taiwan invasion scenario resulted in valuations dropping below $100 across all models.

Cost of Sales Scenarios

1. Base Scenario: Original forecasted levels.
2. Optimistic Scenario: Models a 5% reduction in cost of sales annually.
3. Pessimistic Scenario: Models a 7% increase in cost of sales annually.

The optimistic case, holding all else constant, increased valuations by $18 (DCF), $17 (APV), and $19 (FTE).

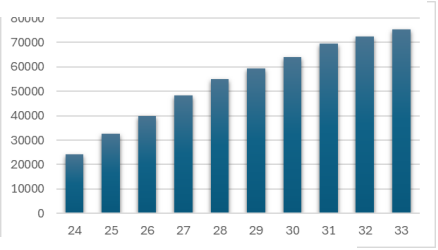
PPE Scenarios

1. Base Scenario: Original forecasted levels.
2. Higher Scenario: Models a 2% increase in PPE as a percentage of revenue.
3. Lower Scenario: Models a 2% decrease in PPE as a percentage of revenue.

A higher PPE percentage increased valuations by $3 (DCF) and $2 (APV), while a lower percentage reduced both by $3.

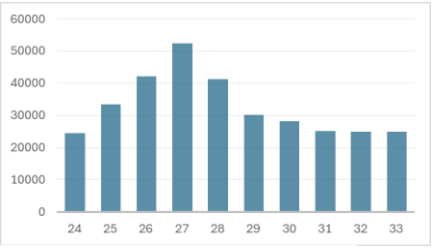
Monte Carlo Simulation

Figure 39: Forecasted Revenues in the Pessimistic Case



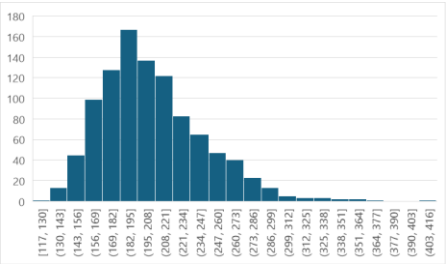
Source: Internal calculations

Figure 40: Forecasted Revenues in the Invasion of Taiwan Scenario



Source: Internal calculations

Figure 41: Monte Carlo Simulation Share Price Distribution After 10,00 Iterations



Source: Internal calculations

To gain deeper insights into AMD's future performance, I conducted a Monte Carlo simulation analyzing the sensitivity of the projected share price to changes in three key variables: revenue growth, operating expenses as a percentage of revenue, and the weighted average cost of capital (WACC). For revenue growth, I applied a standard deviation of 11%, reflecting the variability in my forecasted growth rates and using the same method for operating expenses as a percentage of revenue, landing at a 6% standard deviation. I used the standard deviation of my forecasts because I have already incorporated historical trends into my revenue and operating expense projections. By using the standard deviation of my forecasts, I better model the potential divergence between my predictions and possible future outcomes, capturing the range possible realities from my predictions. For the WACC, I applied a 1% standard deviation to reflect its relative stability. After running 10,000 iterations, the simulation revealed a 93% probability that AMD's share price will fall between $171 and $198, underscoring the robustness of my forecast.

Target Price

To determine the final share price, I identified revenue growth and the future U.S. tax regime as the most uncertain factors. Consequently, I calculated the share price for every combination of revenue and tax regime scenarios across all three cash flow valuation methods.

For each combination of revenue and tax scenarios, I assigned probabilities and computed a weighted price. The final price for each cash flow valuation was derived as the sum of the weighted valuation scenarios.

In addition to cash flow valuations, I conducted a Monte Carlo simulation to model the impact of changes in revenue growth, operating expenses as a percentage of revenue, and the weighted average cost of capital (WACC) on the final share price. After 10,000 iterations, the Monte Carlo simulation

computed the mean share price as $185 and also found that over 92% of the computed stock prices fell between $153 and $182 which has further reinforced the findings of my DCF and FTE valuations.

Finally, I assigned a 30% confidence level to each cash flow valuation and a 10% confidence level to the Monte Carlo-calculated mean. By summing these weighted values, I computed the final share price and determined the target price to be **$172**.

Figure 42: Target Price Calculation

Valuation Method	Weighted Price	
DCF	$	52
APV	$	48
FTE	$	53
Monte Carlo	$	18
Share price	**$**	**172**

Source: Internal calculations

Corporate Information

Corporate Responsibility

AMD's corporate governance emphasizes four key areas: Digital Impact, which drives innovation; Belonging, fostering an inclusive and creative work environment; Sustainability, focusing on renewable energy sourcing within the company and its supply chain; and Supply Chain Responsibility, ensuring safe products and working conditions through strong partner collaboration. Governance is overseen by four teams: the Board of Directors, the Executive Team, the ESG Executive Steering Committee, and the Corporate Responsibility Team[15].

Shareholder Information

Figure 28: AMD Top Institutional Shareholders

Holder	Shares	%Out	Value
Vanguard Group Inc	148.77M	9.17%	18,847,484,922
Blackrock Inc.	129.52M	7.98%	16,408,360,692
State Street Corporation	70.17M	4.32%	8,889,871,804
Price (T.Rowe) Associates Inc	35.31M	2.18%	4,473,193,410
Geode Capital Management, LLC	34.24M	2.11%	4,338,352,553
Morgan Stanley	30.4M	1.87%	3,850,885,023
FMR, LLC	26.7M	1.65%	3,383,244,226
Fisher Asset Management, LLC	23.8M	1.47%	3,014,618,506
Norges Bank Investment Management	22.46M	1.38%	2,845,518,012
JP Morgan Chase & Company	21.94M	1.35%	2,779,598,290

Source: Yahoo Finance

Insiders at AMD own less than 0.5% of its total shares. Institutional investors hold the majority of ownership, accounting for over 70% of the total shares. The largest shareholders among institutions are Vanguard, holding 9% of shares, BlackRock, with 8%, and State Street, with 4%.

In terms of mutual fund holdings, the Vanguard Total Stock Market Index Fund holds 3% of the company's total shares, followed by the Vanguard 500 Index Fund with 2.5%, and Invesco's QQQ ETF (Series 1), which accounts for 2%.

[15] AMD, *Corporate Responsibility Report*, January 2024

Appendix

Financial Statements

Appendix 1: Forecasted Income

Forecasted Income Statement (USD m)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Revenue	4272	5330	6475	6731	9763	16434	23601	22680	24410	33494	42079	52366	60790	66861	73327	80366	83845	87487
Cost of sales	3274	3466	4028	3863	5416	8505	11550	11278	11641	16077	20198	23565	26748	28750	31261	34558	35745	37619
Amortization of acquired intangibles 1	0	0	0	0	0	0	1448	942	999	1675	2104	2618	3040	3343	3666	4018	4192	3937
Gross Margin	**998**	**1864**	**2447**	**2868**	**4347**	**7929**	**10603**	**10460**	**11770**	**15742**	**19777**	**26183**	**31003**	**34768**	**38400**	**41791**	**43908**	**45931**
Research and Development	1008	1196	1434	1547	1983	2845	5005	5872	6209	7369	8416	10473	12158	13372	14665	16073	16769	17497
Marketing, general, and administrative	460	516	562	750	995	1448	2336	2352	2540	3014	3787	4713	5471	6018	6599	7233	7546	7874
Amortization of acquired intangibles 2	0	0	0	0	0	0	2100	1869	1665	3014	3787	4713	5471	6018	6599	7233	7546	7874
Restructuring and other special charges	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Licensing gain	-88	-52	0	-60	0	-12	-102	-34	-46	-50	-63	-79	-91	-100	-110	-121	-126	-131
Operating Income	**-372**	**203**	**451**	**631**	**1369**	**3648**	**1264**	**401**	**1402**	**2395**	**3850**	**6363**	**7994**	**9461**	**10645**	**11372**	**12172**	**12817**
Interest expense	-156	-126	-121	-94	-47	-34	-88	-106	7	413	531	675	821	970	1149	1363	1592	1875
Other income	80	-9	0	-165	-47	55	8	197	172	117	122	127	132	137	143	149	155	162
Earnings Before Tax	**-448**	**68**	**330**	**372**	**1275**	**3669**	**1184**	**492**	**1581**	**2926**	**4503**	**7165**	**8947**	**10569**	**11838**	**12884**	**13920**	**14854**
Provision for income taxes	-39	18	-9	31	-1210	513	-122	-346	643	1167	1588	2208	2659	3036	3386	3688	3929	4097
Equity in income (loss) of ATMP JV	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equity loss in investee	0	-7	-2	0	5	6	14	16	25	26	28	29	31	32	34	35	37	39
Net Income	**-497**	**43**	**337**	**341**	**2490**	**3162**	**1320**	**854**	**963**	**1785**	**2943**	**4985**	**6319**	**7564**	**8585**	**9232**	**10028**	**10797**

Source: *Company data, internal analysis*

Appendix 2: Forecasted Balance Sheet

Forecasted Balance Sheet (USD m)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Assets																		
Cash and cash equivalents	1264	1185	1078	1466	1595	2535	4835	3933	5067	6423	8070	10043	11658	12823	14063	15413	16080	16778
Operating Cash	85	107	130	135	195	329	472	454	468	642	807	1004	1166	1282	1406	1541	1608	1678
Excess Cash	1179	1078	949	1331	1400	2206	4363	3479	4599	5781	7263	9039	10493	11540	12656	13871	14472	15100
Short-term investements	-	-	-	-	-	1073	1020	1840	1127	1175	1221	1270	1321	1375	1431	1491	1554	1621
Marketable securities	-	-	78	37	695	-	-	-	6	33	42	52	61	67	73	80	84	87
Accounts receivable, net	311	454	1235	1859	2066	2706	4126	5376	8696	7525	8646	10186	10326	10751	11161	10349	10797	10664
Inventories, net	751	694	845	982	1399	1955	3771	4351	6458	5783	7016	7904	8663	8991	9440	10077	10064	10228
Prepayment and other - GLOBALFOUNDRIES	32	33	34	20	10	-	-	-	0	0	0	0	0	0	0	0	0	0
Recievables from related parties	-	-	-	-	-	2	2	9	31	13	16	20	23	26	28	31	32	34
Prepaid expenses and other current assets	172	268	270	233	378	312	1265	1259	1848	1468	1729	2152	2332	2565	2813	3083	3216	3356
Total current assets	**2530**	**2634**	**3540**	**4597**	**6143**	**8583**	**15019**	**16768**	**22334**	**22429**	**26741**	**31627**	**34384**	**36596**	**39009**	**40523**	**41827**	**42768**
Property, plant and equipment, net	164	261	348	500	641	702	1513	1589	2157	2763	3577	4582	5471	6185	6966	7836	8385	8967
Operating lease right-of-use asset	-	-	-	205	208	367	460	633	800	921	1262	1702	2128	2507	2933	3416	3563	3718
Goodwill	289	289	289	289	289	289	24177	24262	30905	30905	30905	30905	30905	30905	30905	30905	30905	30905
Acquisition related intangibles	-	-	-	-	-	-	24118	21363	24913	24913	24913	24913	24913	24913	24913	24913	24913	24913
Investment: equity method	59	58	58	58	63	69	83	99	163	175	187	199	213	228	243	260	278	297
Deferred tax assets	-	-	-	22	1245	931	58	366	1452	1878	2582	3630	4375	4990	5544	5997	6339	6529
Other non-current assets	279	310	321	357	373	1478	2152	2805	3464	3014	2525	2618	3040	3343	3666	4018	4192	4374
Total Assets	**3321**	**3552**	**4556**	**6028**	**8962**	**12419**	**67580**	**67885**	**87088**	**86989**	**92691**	**100176**	**105428**	**109666**	**114179**	**117867**	**120401**	**122470**
Liabilities and Stockholders' Equity																		
Short-term debt	0	70	136	0	0	0	0	0	142	184	236	300	365	432	511	606	708	834
Accounts payable	440	384	834	988	468	1321	2493	2055	3040	2712	3320	3874	4397	4726	5139	5207	5386	5669
Payables to related parties	383	412	207	213	78	85	463	363	557	529	664	775	879	945	1028	1136	1175	1237
Accrued liabilities	391	555	783	1084	1796	2424	3077	3082	4956	5047	6687	8608	9993	10991	12054	14312	14931	15580
Current portion of long-term debt, net	0	0	0	0	0	312	0	751	1166	1505	1932	2459	2990	3533	4186	4963	5797	6829
Other current liabilities	69	92	24	74	75	98	336	438	556	1376	2306	2712	2975	3092	3204	3319	3272	3226
Deferred income on shipments to distributors	63	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0
Total current liabilities	**1346**	**1513**	**1984**	**2359**	**2417**	**4240**	**6369**	**6689**	**10417**	**11353**	**15145**	**18727**	**21600**	**23719**	**26122**	**29544**	**31270**	**33375**
Long-term debt, net	1435	1325	1114	486	330	1	2467	1717	5859	7567	9711	12358	15032	17761	21039	24947	29139	34327
Long-term operating lease liabilities	0	0	0	199	201	348	396	535	679	603	531	457	391	339	282	225	113	56
Deferred tax liabilities	-	-	-	-	-	12	1934	1202	1508	1734	1959	2155	2284	2399	2518	2644	2777	2915
Other long-term liabilities	124	118	192	157	177	321	1664	1850	2260	2486	2610	2741	2878	3021	3172	3331	3498	3673
Total liabilities	**2905**	**2956**	**3290**	**3201**	**3125**	**4922**	**12830**	**11993**	**20723**	**23743**	**29956**	**36438**	**42184**	**47239**	**53134**	**60692**	**66796**	**74347**
Stockholders' equity:																		
Capital stock:																		
Common stock, par value	9	9	10	12	12	12	16	17	448	448	448	448	448	448	448	448	448	448
Additional paid-in capital	8334	8464	8750	9963	10544	11069	58005	59676	421827	421827	421827	421827	421827	421827	421827	421827	421827	421827
Treasury stock, at cost	-119	-108	-50	-53	-131	-2130	-3099	-4514	-10146	-14088	-15756	-16797	-18625	-20687	-23090	-27606	-31972	-38222
Accumulated deficit (updated annually with net income)	-7803	-7775	-7436	-7095	-4605	-1451	-131	723	-345706	-344884	-343727	-341684	-340350	-339105	-338084	-337438	-336641	-335873
Accumulated other comprehensive income (loss)	-5	6	-8	-	17	-3	-41	-10	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56
Total Stockholders' equity	**416**	**596**	**1266**	**2827**	**5837**	**7497**	**54750**	**55892**	**66366**	**62346**	**62736**	**63738**	**63243**	**62426**	**61045**	**57175**	**53605**	**48123**
Total Liabilities and Stockholders' Equity	**3321**	**3552**	**4556**	**6028**	**8962**	**12419**	**67580**	**67885**	**87088**	**86989**	**92691**	**100176**	**105428**	**109666**	**114179**	**117867**	**120401**	**122470**

Source: *Company data, internal analysis*

Appendix 3: Forecasted Cash Flow Statement

Free Cash Flow and Cash Flow to Investors (USD m)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
NOPAT	-436	329	393	440	880	2768	4252	2790	4232	5079	7465	10382	13146	15291	17146	18730	19970	20772
Depreciation and amortization	133	144	170	222	312	407	4174	3453	3419	5656	7250	9164	10809	11958	13192	14542	15260	15577
Gross Cash Flow	**-303**	**473**	**563**	**662**	**1192**	**3175**	**8426**	**6243**	**7651**	**10735**	**14715**	**19546**	**23955**	**27249**	**30337**	**33273**	**35229**	**36349**
Invested Capital	800	973	1624	2022	2941	3864	55291	55628	69951	73462	75151	78599	80823	82914	85180	85839	87269	88169
Intangibles and Goodwill	289	289	289	289	289	289	48295	45625	55817	55817	55817	55817	55817	55817	55817	55817	55817	55817
Change in Adj. Invested Capital		172	651	398	920	922	3421	3007	4132	3510	1689	3448	2224	2091	2267	658	1430	900
Free Cash Flow		**301**	**-88**	**264**	**273**	**2252**	**5005**	**3236**	**3520**	**7225**	**13026**	**16098**	**21731**	**25158**	**28071**	**32614**	**33799**	**35450**
Other income	80	-9	0	-165	-47	55	8	197	172	117	122	127	132	137	143	149	155	162
Taxes related to nonoperating accounts	-124	-24	-17	154	46	-50	-7	-201	-155	-16	5	29	51	78	110	149	191	244
Other nonoperating taxes	199	-4	-81	-72	-1417	-122	10	54	-179	-179	-179	-179	-179	-179	-179	-179	-179	-179
Decrease (increase) in excess cash	51	-100	-130	383	68	807	2157	-884	1120	1182	1482	1776	1454	1048	1116	1215	600	629
Decrease (increase) in tax credit carryforward	-249	-760	-58	71	-414	-301	500	34	-198	6	15	26	19	16	13	10	6	2
Cash flow to investors		**-596**	**-374**	**634**	**-1491**	**2641**	**7673**	**2437**	**4280**	**8336**	**14470**	**17877**	**23208**	**26258**	**29274**	**33958**	**34573**	**36306**

Source: *Company data, internal analysis*

Appendix 4: Dupont Analysis

Dupont Analysis								
(USD m)	16	17	18	19	20	21	22	23
Net Income	-497	43	337	341	2490	3162	1320	854
Sales	4272	5329	6475	6731	9763	16434	23601	22680
Net Profit Margin	**-12%**	**1%**	**5%**	**5%**	**26%**	**19%**	**6%**	**4%**
Sales	4272	5329	6475	6731	9763	16434	23601	22680
Total Assets	3321	3552	4556	6028	8962	12419	67580	67885
Asset Turnover Ratio	**129%**	**150%**	**142%**	**112%**	**109%**	**132%**	**35%**	**33%**
Total Assets	3321	3552	4556	6028	8962	12419	67580	67885
Common Equity	416	596	1266	2827	5837	7497	54750	55892
Equity Multiplier	**798%**	**596%**	**360%**	**213%**	**154%**	**166%**	**123%**	**121%**
ROE	**-119%**	**7%**	**27%**	**12%**	**43%**	**42%**	**2%**	**2%**

Source: *Company data, internal analysis*

Appendix 5: Sloan's Accruals Ratio

Sloans Accruals Ratio								
(USD m)	16	17	18	19	20	21	22	23
Current Assets	2,530	2,634	3,540	4,597	6,143	8,583	15,019	16,768
Change in CA		**104**	**906**	**1,057**	**1,546**	**2,440**	**6,436**	**1,749**
Cash/cash equivalents	1,264	1,185	1,078	1,466	1,595	2,535	4,835	3,933
Change in Cash		**(79)**	**(107)**	**388**	**129**	**940**	**2,300**	**(902)**
Current Liabilities (CL)	1,346	1,513	1,984	2,359	2,417	4,240	6,369	6,689
Change in CL		**167**	**471**	**375**	**58**	**1,823**	**2,129**	**320**
debt included in current liabilities	-	70	136	-	-	312	-	751
Change in STD		**70**	**66**	**(136)**	**-**	**312**	**(312)**	**751**
Deferred Tax	302	186	212	340	666	821	1,346	2,072
Change in DTA		**(116)**	**26**	**128**	**326**	**155**	**525**	**726**
depreciation and amortization expense	133	144	170	222	312	407	4,174	3,453
Total assets	3,321	3,552	4,556	6,028	8,962	12,419	67,580	67,885
Acruals		**(174)**	**464**	**64**	**1,373**	**(263)**	**(1,954)**	**355**
Sloans Accruals		**-4.9%**	**10.2%**	**1.1%**	**15.3%**	**-2.1%**	**-2.9%**	**0.5%**

Source: *Company data, internal analysis*

Appendix 6: DCF Valuation

Financial Structure											
(USD m)	16	17	18	19	20	21	22	23	24	25	26
Unlevered Operating Free Cash Flows	3520	7225	13026	16098	21731	25158	28071	32614	33799	35450	36329
Perpetual growth rate										2%	2%
WACC	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Implicit Leverage in the WACC	1%	1%	2%	2%	2%	3%	4%	5%	6%	7%	9%
Operating Enterprise Value (fair value)	256798	280291	300204	318828	333932	347443	359813	369274	378786	387974	397592
Net Financial Debt (fair and book value)	**2568**	**3476**	**4616**	**6079**	**7895**	**10186**	**13080**	**16646**	**21172**	**26890**	**35783**
Fair Value of Equity (fair value)	254230	276816	295589	312749	326037	337257	346733	352628	357614	361084	361809
In the Forecasted Balance Sheets:											
Total Invested Capital (book value)	69951	73462	75151	78599	80823	82914	85180	85839	87269	88169	
Net Financial Debt (book value)	2568	3476	4616	6079	7895	10186	13080	16646	21172	26890	
Equity (book value)	**67383**	**69986**	**70535**	**72520**	**72928**	**72728**	**72100**	**69193**	**66097**	**61278**	

Appendix 6: APV Valuation

Source: *Company data, internal analysis*

Adjusted Present Value Model																		
(USD m)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Unlevered Free Cash Flow	0	301	-88	264	273	2,252	5,005	3,236	3,520	7,225	13,026	16,098	21,731	25,158	28,071	32,614	33,799	35,450	36,329
Discount Rate (Ru)									12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Discounted FCFul									**228115**	**252517**	**275617**	**295129**	**313830**	**329194**	**343165**	**356088**	**366147**	**376450**	**386586**
Interest Expense									7	413	531	675	821	970	1149	1363	1592	1875	15835
Tax Shield									1	87	111	142	172	204	241	286	334	394	3325
Discounted Tax Shield									**1**	**80**	**98**	**119**	**139**	**157**	**178**	**202**	**226**	**254**	**3325**
Operating Enterprise Value									**228116**	**252596**	**275715**	**295248**	**313968**	**329351**	**343343**	**356288**	**366372**	**376705**	**389911**

Appendix 8: FTE Valuation

Cash Flow to Equity (USD m)	16	17	18	19	20	21	22	23	24	25	26
Free Cash Flow to Eqiuity Investors	8,146	8,095	14,212	18,111	23,616	26,634	29,962	34,995	35,839	38,424	39,376
Perpetual growth rate										2.5%	2.5%
WACC	13%	13%	12%	12%	12%	12%	13%	13%	13%	13%	13%
Implicit Leverage in the WACC	1%	1%	2%	2%	2%	3%	4%	5%	6%	7%	9%
Operating Enterprise Value (fair value)	251,916	276,056	296,530	315,072	330,358	344,610	357,524	367,223	377,434	386,571	396,154
Net Financial Debt (fair and book value)	**2519**	**3423**	**4559**	**6007**	**7810**	**10103**	**12997**	**16553**	**21097**	**26793**	**35654**
Fair Value of Equity (fair value)	249,396	272,632	291,970	309,065	322,548	334,507	344,528	350,670	356,337	359,777	360,500
In the Forecasted Balance Sheets:											
Total Invested Capital (book value)	69951	73462	75151	78599	80823	82914	85180	85839	87269	88169	
Net Financial Debt (book value)	**2519**	**3423**	**4559**	**6007**	**7810**	**10103**	**12997**	**16553**	**21097**	**26793**	
Equity (book value)	**67432**	**70039**	**70592**	**72591**	**73012**	**72811**	**72184**	**69286**	**66172**	**61375**	

Source: *Company data, internal analysis*

Appendix 9: Piotroski Score

Piotroski Score (USD m)							
Profitability							
Return on Assets	1	1	1	1	1	1	1
Cash Flow from Operations	1	1	1	1	1	1	1
Net Income	1	1	1	1	1	1	1
Accruals	1	0	1	0	1	1	0
Leverage							
Decrease in Leverage	1	1	1	1	1	0	1
Increase in Current Ratio	0	1	1	1	0	1	1
No New Shares Issued	1	0	0	1	1	0	0
Operating Efficiency							
Increase in Gross Margin	1	1	1	1	1	1	0
Increase in Asset Turnover	1	1	0	0	0	1	1
Piotroski Score	**8**	**7**	**7**	**7**	**7**	**7**	**6**

Source: *Company data, internal analysis*

Appendix 10: Monte Carlo Observations

Bin	Range	Observations	Probability
1	124.37 153.34	54	0.54%
2	153.34 182.32	9207	92.07%
3	182.32 211.29	327	3.27%
4	211.29 240.26	224	2.24%
5	240.26 269.23	117	1.17%
6	269.23 298.20	51	0.51%
7	298.20 327.17	15	0.15%
8	327.17 356.14	3	0.03%
9	356.14 385.11	0	0.00%
10	385.11 414.08	1	0.01%
11	414.08 443.06	1	0.01%

Source: *Internal analysis*

Appendix 11: Cost of Capital

Year	FY24	FY25	FY26	FY27	FY28	FY29	FY230	FY31	FY32	FY33
Risk Free Rate	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Beta	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
Market Risk Premium	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Cost of Equity	**13%**	**13%**	**12%**	**12%**	**12%**	**12%**	**13%**	**13%**	**13%**	**13%**
Cost of Debt	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**	**4%**
Net Debt (% of EV)	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Equity %	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Tax rate	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
WACC	**12%**	**12%**	**12%**	**12%**	**12%**	**12%**	**12%**	**12%**	**12%**	**12%**

***Source:** Internal analysis*

Appendix 12: Weighted valuation calculations

Revenue Scenario	Tax Regime Scena	Probability(R)	Probability(T)	Joint Probability	DCF Valuation	Weighted DCF	APV Valuation	Weighted APV	FTE Valuation	Weighted FTE
Base	Current	0.55	33%	18%	168.7	**30.9**	149.2	**27.3**	165.7	**30.4**
Base	Modest Reduction	0.55	33%	18%	168.8	**30.9**	149.3	**27.4**	165.9	**30.4**
Base	Strong Reduction	0.55	33%	18%	169.6	**31.1**	150.1	**27.5**	166.7	**30.6**
Optimistic	Current	0.25	33%	8%	228.0	**19.0**	216.9	**18.1**	245.4	**20.4**
Optimistic	Modest Reduction	0.25	33%	8%	228.0	**19.0**	217.2	**18.1**	245.7	**20.5**
Optimistic	Strong Reduction	0.25	33%	8%	230.0	**19.2**	218.5	**18.2**	247.1	**20.6**
Pessimistic	Current	0.13	33%	4%	148.8	**6.4**	134.4	**5.8**	145.8	**6.3**
Pessimistic	Modest Reduction	0.13	33%	4%	148.9	**6.5**	134.5	**5.8**	145.9	**6.3**
Pessimistic	Strong Reduction	0.13	33%	4%	149.5	**6.5**	135.2	**5.9**	146.5	**6.3**
Taiwan Invasion	Current	0.07	33%	2%	74.5	**1.7**	69.4	**1.6**	68.5	**1.6**
Taiwan Invasion	Modest Reduction	0.07	33%	2%	74.5	**1.7**	69.5	**1.6**	68.5	**1.6**
Taiwan Invasion	Strong Reduction	0.07	33%	2%	74.6	**1.7**	69.6	**1.6**	68.5	**1.6**
Final Price						**174.73**		**159.00**		**176.65**

***Source:** Internal analysis*

Appendix 12: Comparable companies analysis

							Revenue			EBIT		P/E		
Company Name	Price 12/2/24	Shares Outstanding	Market Cap	Enterprise Value	Debt/Equity	Debt/EV	EV/T12M	EV/ 25 Y Est	EV/EBITA	EV/T12M	EV/25 Y Est	T12M	25 Y Est	EV/NOPAT
ADVANCED MICRO DEVICES	142	1623	230495	228230	0.04x	0.01x	9x	9x	60x	166x	37x	126x	42x	130x
ANALOG DEVICES INC	223	496	110170	116339	0.2x	0.1x	12x	11x	31x	57x	27x	68x	31x	62x
APPLIED MATERIALS INC	183	828	150318	147872	0.3x	0.0x	5x	5x	19x	19x	17x	21x	20x	21x
BROADCOM INC	167	4671	777838	837705	1.1x	0.1x	18x	16x	40x	64x	27x	153x	33x	123x
LAM RESEARCH CORP	79	1292	100542	99934	0.6x	0.0x	6x	6x	22x	22x	19x	25x	22x	25x
MICRON TECHNOLOGY INC	99	1109	111403	114364	0.3x	0.1x	5x	3x	77x	88x	10x	140x	11x	139x
NVIDIA CORP	139	24508	3420846	3366787	0.2x	0.0x	30x	26x	47x	47x	40x	54x	47x	55x
QUALCOMM INC	163	1113	179832	183266	0.6x	0.1x	5x	4x	17x	18x	13x	18x	14x	19x
TEXAS INSTRUMENTS INC	202	912	180195	189208	0.8x	0.1x	12x	12x	33x	34x	36x	37x	39x	38x
Large Caps														
COHERENT CORP	107	155	17455	22433	0.5x	0.2x	4x	4x	39x	116x	24x	(263x)	29x	(126x)
INTEL CORP	22	4309	95073	122899	0.5x	0.4x	2x	2x	(15x)	(13x)	(115x)	(6x)	(159x)	(7x)
MACOM TECHNOLOGY SOLUTIONS H	141	72	10323	10141	0.5x	0.1x	14x	11x	91x	138x	42x	132x	40x	164x
MICROCHIP TECHNOLOGY INC	65	537	33166	41287	1.0x	0.2x	8x	9x	24x	36x	33x	45x	41x	43x
MONOLITHIC POWER SYSTEMS INC	583	49	28392	26985	0.0x	0.0x	13x	12x	55x	56x	36x	65x	41x	67x
ON SEMICONDUCTOR	70	426	28148	30643	0.4x	0.1x	4x	4x	15x	16x	15x	17x	17x	18x
SKYWORKS SOLUTIONS INC	88	160	13968	13639	0.2x	0.1x	3x	3x	17x	21x	14x	24x	17x	23x
Peer Companies Summary Valuation Statistics														
Minimum	22	49	10,323	10,141	0.0x	0.0x	2x	2x	(15x)	(13x)	(115x)	(263x)	(126x)	(263x)
25th percentile	83	293	28,270	28,814	0.3x	0.1x	5x	4x	18x	20x	15x	20x	20x	20x
75th percentile	175	1,202	165,075	165,569	0.6x	0.1x	13x	12x	44x	61x	34x	67x	65x	67x
Maximum	583	24,508	3,420,846	3,366,787	1.1x	0.4x	30x	26x	91x	138x	42x	153x	164x	153x
Median	139	828	100,542	114,364	0.5x	0.1x	6x	6x	31x	36x	24x	37x	38x	37x
Mean	155	2,709	350,511	354,900	0.5x	0.1x	9x	9x	34x	48x	16x	35x	44x	35x
Advanced Micro Devices	142	1,623	230,495	228,230	0.0x	0.0x	9x	9x	60x	166x	37x	126x	130x	126x

***Source: Bloomberg,** Internal analysis*

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