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Equity research on AMD:
Unlocking value in a competitive industry

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Abstract

This thesis provides an equity research analysis of Advanced Micro Devices (AMD), evaluating its financial performance, market strategy, and competitive positioning within the semiconductor industry. Over the past decade, AMD has transformed itself into a key player in high-performance computing, data centers, AI hardware, and gaming segments. The study highlights AMD's strategic turnaround, starting with the launch of Ryzen processors in 2017 and subsequent market share gains against competitors like Intel and NVIDIA. Key partnerships with TSMC and acquisitions such as Xilinx and Pensando have strengthened its technological capabilities and broadened its revenue streams.

AMD's financial performance reflects its strategic priorities, with gross margins improving from 38% in 2018 to 51% in 2022, although softening slightly to 50% in 2023 due to rising operational costs. Regional analysis shows the U.S. emerging as AMD's largest market, surpassing China, while Europe and Asia-Pacific continue to demonstrate steady growth driven by cloud computing and AI adoption. Despite concerns about underinvestment, as seen in a declining Capex-to-D&A ratio and stagnating ROIC, AMD's focus on innovation and liquidity positions it well for future growth.

Valuation models, including DCF, APV, and EVA, indicate an implied share price range of \$137.57 to \$163.04, reflecting significant upside potential. This research concludes with a BUY recommendation, emphasizing AMD's strong financial fundamentals, market adaptability, and long-term growth potential in the expanding semiconductor industry.

Keywords

Equity Research

Semiconductor Industry

Strategic Acquisitions

Valuation Models

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This report is part of the joint report (annexed), developed by Francisco Biscaia Rei and Ana Marta Teixeira and should be read as an integral part of it.

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- 1969 Launch of AMD
- 1972 Company went public
- 1975 Production of logic chips. Entered RAM chip business
- 1985 Listed in the book the 100 best companies to work in America
- 2000 Introduction of Athlon processor, designed to run Microsoft corporation's Windows operating system
- 2010 All company's graphics processing products have been marketed under AMD brand name
- 2012 Acquired the low-power server manufacturer SeaMicro
- 2021 AMD loses top Data Center sales top executive to Lenovo and reports record revenues in face of chip shortage
- 2022 Significant growth data center business due to demand for EPYC processors
- 2023 New products and technologies, with advancements in GPUs and CPUs for consumer markets. Main investment in AI.
- 2024 ZT systems. Advancing AI 2024 event. Dr Lisa Su Time's 2024 CEO of the year

Executive summary

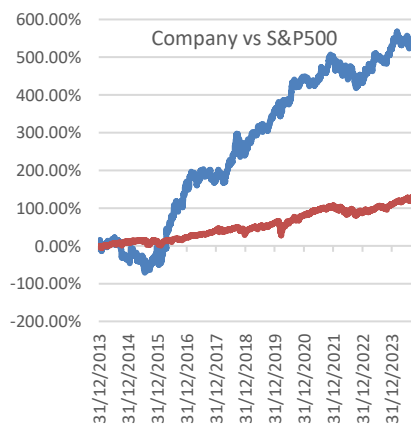
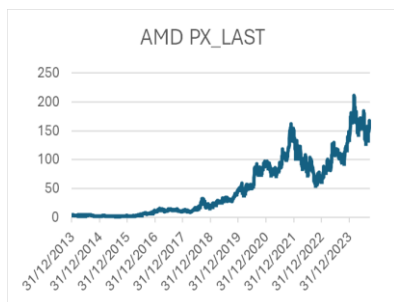
AMD's mission is to be recognized as the leader in powering the life-changing products and experiences that allow users to create, consume, and share seamlessly across billions of immersive devices.

The ownership of the stock of AMD pertains to institutional, retail, and individual investors. Approximately 44.31% of the Company's stock is owned by Institutional Investors, 0.54% is owned by the Insiders, and 55.15% by Public Companies and Individual Investors.

AMD is mainly a technology company that designs and manufactures different computing solutions, processors, graphics cards amongst other peripherals. Most of the research and design are in house, with production mainly by foundry partners, such as TSMC. AMD's products are used to many different applications such as personal computers, servers, gaming consoles amongst many others. Its processors and graphics cards boast performance and efficient power, using advanced architectures coupled with advanced manufacturing processes to realize the same. AMD designs, manufactures, and markets microprocessors, graphics processors, as well as other related technologies for personal computers, gaming consoles, and data centers.

AMD's stock price is driven by report of strong growth, change of leadership, competitive advantages, improved financial performance, AI business, strong financial results and bullish investor sentiment.

From 2015 onwards, AMD's return on stock price is higher than the return on S&P500. From 2015 to 2021, the stock price experienced remarkable growth. AMD went from years of financial losses to consistent profitability in 2017, the launch of Ryzen processors based on Zen architecture marked a major turnaround for the company. These processors allowed competitive price and competed directly with Intel's dominance in the CPU market, particularly in the gaming segment. In just two years, cumulative returns went from -6.12% in the end of 2015 to 171.52% in the end of 2017. This processor captured a significant portion of the CPU market, particularly in the gaming segment. The fact that Dr Lisa Lu was appointed CEO in 2014, with her strategic vision and execution, won the market and investor trust. The partnership with TSMC in 2024, makes AMD the second largest client after Apple, which leverages AMD's performance. AMD also adopted 7nm process earlier, which allowed a better performance and efficiency edge. The revenue and gross margins improved significantly which gave a boost confidence for the investors.



Company overview

The ownership of the stock of AMD pertains to institutional, retail, and individual investors. Approximately 44.31% of the Institutional Investor's shareholding is further classified as owned by Institutional Investors, 0.54% for the Insiders and 55.15% for Other Public Companies and Individual investors.

The Board of AMD amended the Corporate Principles of Governance 2024 to affirm that there exist effective structures for Board Leadership, Management of Accountability and Oversight of Board Actions. The core responsibilities of the Board are to determine the CEO, to oversee the performance of the Company and the integrity of the financial reporting process and systems of internal controls. There are three classes of Directors. The Independent Directors, whom meet the independence criteria of applicable laws and Nasdaq listing rules. The second group is Management Directors, who currently are employees of AMD. Finally, the Non-Management Directors, not holding officer positions in the Company but who may or may not be considered independent due to material relationships, prior affiliations, or family ties with the Company.

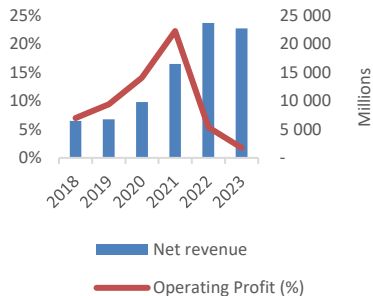
The Board has adopted guidelines designed to provide a flexible framework for its governance activities. This framework is structured to serve the long-term interests of the stockholders and also to enhance the well-being of other stakeholders. The Board intends to review these principles regularly and to reassess and modify them as appropriate.

The AMD Code of Ethics establishes a framework of principles and values guiding the conduct of the Company and its employees, including executive officers. This Code emphasizes the importance of integrity, accountability, and ethical decision-making in all business operations. It outlines responsibilities of executive officers to lead by example, making sure their example is indicative of and reflects the Company's commitment to ethical behavior and compliance with the legal standards set by the laws.

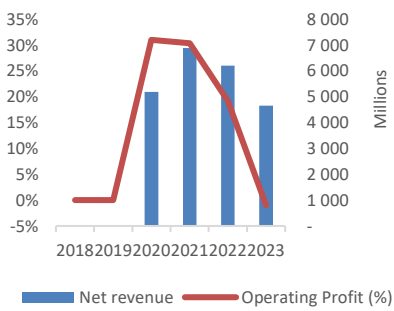
In addition to setting standards relative to ethical conduct, the Code of Ethics also establishes minimum standards concerning financial integrity and financial reporting. The bank expects each executive officer to maintain the highest degree of accuracy and transparency in all reports and public disclosures of financial information, as such information is fundamentally related to the confidence of stakeholders. This commitment to responsible fiscal practices helps ensure the protection of Company assets and contributes to long-term successful growth and development of the same.

Most importantly, such principles enable AMD's leading position to meet the demands of their regulators while concurrently enhancing the firm's overall

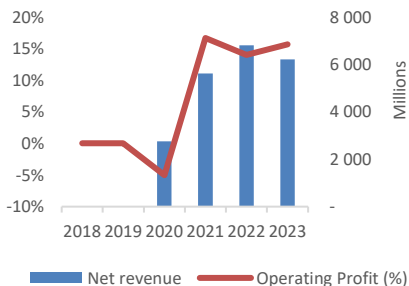
Total revenues



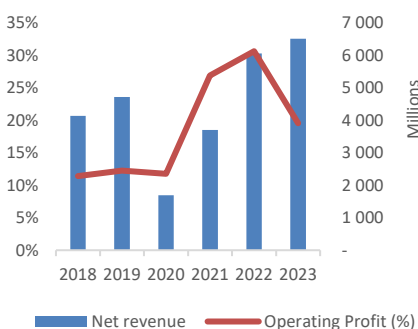
Client segment

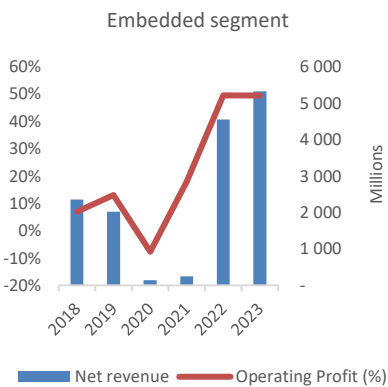


Gaming segment



Data Center segment





reputation as one that acts in a responsible and reliable manner within the technology sector. AMD does most of research and design in house, with production mainly by foundry partners, such as TSMC. AMD designs, manufactures, and markets microprocessors, graphics processors, as well as other related technologies for personal computers, gaming consoles, and data centers.

As we can see in the graph, in 2021 AMD stock price reached to a \$164.46 peak in November. Driven by strong demand for the CPUs, GPUs and custom chips for gaming consoles. The global chip shortage caused by COVID-19 highlighted the importance of semiconductor companies and caused an unpredicted demand for the PCs, laptops and gaming consoles, benefiting AMD's CPU and GPU sales, which drove AMD's value. Nowadays, AMD stock price is mostly driven by leadership in the AI and Data Center Markets, expansion through acquisitions, innovation and positive market sentiment. AMD launched the Instinct MI300X and MI325X GPUs, competing directly with NVIDIA in the lucrative AI hardware market. The integration of AMD's chips into AI infrastructure for partners like OpenAI enhanced AMD's future expected growth. ZT Systems for \$5 billion acquisition expanded in hyperscale data centers, solidifying its positioning in AI and cloud markets.

The total revenues of AMD have a constant and positive growth throughout the years. With a major growth in 2022 of 44%. From 2021 onwards, the operating profit decrease significantly, from 22% to 5%. This is mostly due to AMD's increase of 76% in Research and Development, a 53% increase on cost of sales and costs of Amortization.

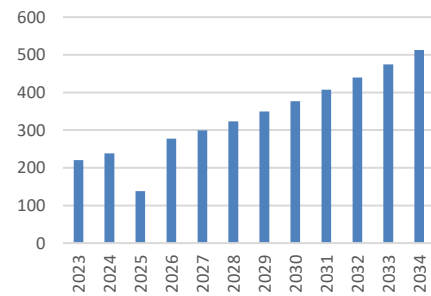
The Data center segment decreased 64.2% revenues in 2019 to 2020. In 2020, this segment represented only 17% of the total revenues of AMD. Still, the operating profit kept constant values of 12% until 2021, which highlights this was due to variable costs. The revenues in 2022 increased 63.6% compared to previous year, with operating profit from 31% to 20%.

Only in 2020, the client segment and gaming center started to exist as a separated segment. The revenues were mostly constant, with a pick of 32.7% in 2021. The operating profit from 2021 onwards decreased from 19% to 6% in 2023, with a -1% in 2022.

In the gaming segment, the revenue increased 104.2% in 2021 in relation to previous year, contributing to 34% of the total revenues, with a -5% of operating profit to 17% in 2021. Overall the operating profit stabilized in 16% in 2023. The embedded segment had 92.9% decrease in the revenues from 2019 to 2020. In 2020 and 2021, the revenue on this sector contributed 1% to the overall revenue of AMD. In 2022 increased 1750.4% compared to previous year

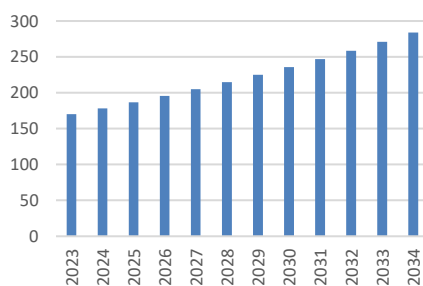
Industry overview

Gaming market size



The market size of client segment in 2023 is estimated at \$114.06 billion and in 2034 the market size is expected to reach \$364.62 billion. The market size is expect to grow approximately 3.2 times from 2023 to 2034. The chart demonstrates a consistent upward trend, with market size increasing every year, driven by factors such as rising demand for cloud computing, growth in AI and machine learning applications, increasing use of data centers for hyperscale operations.

Embedded market size



The market size in 2023 in the gaming sector was \$220.46 billion and expect market to grow to \$512.46 billion by 2034 with a CAGR of 7.97%. This steady growth reflects rising adoption of mobile gaming. AMD is well-positioned to benefit from sustained market expansion.

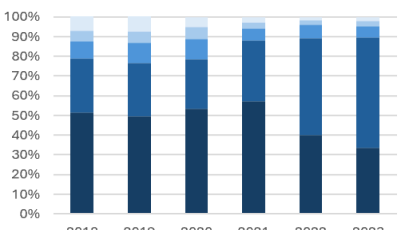
The embedded systems market size has a CAGR of 4.7%, indicating moderate growth. In 2023 is at \$170.04 billion and is projected to grow \$283.90 by 2034. AMD benefits as these technologies become more integral to modern devices and systems.

Market Size Data Center



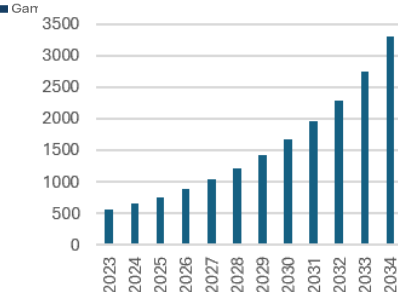
The client size begins at \$559.2 billion in 2023 and market grow to \$3,308 billion by 2034, with a CAGR of 17.54%, reflecting rapid and consistent growth over the 10-year period, driven by advancements in AI.

Nvidia revenue breakdown



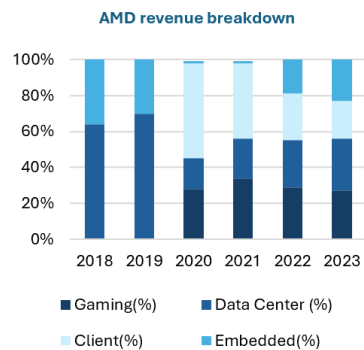
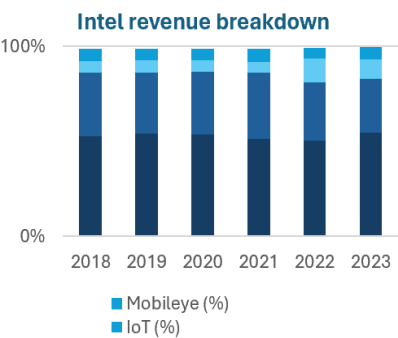
AMD main competitors are Nvidia and Intel, even though they define some segments differently. AMD combines CPUs, GPUs under broader categories and NVIDIA separating Professional Visualization and Automotive into standalone segments. Intel includes Mobileye and IoT as distinct revenue streams. Still, we can compare the segments and revenues between them. Data Center and Gaming are the most comparable segments across all three companies. In the Data center and cloud segments, all three companies target enterprise, AI, and cloud computing workloads. NVIDIA leads in AI GPUs, while Intel and AMD focus more on CPUs. Nvidia optimizes GPUs for AI, machine learning and data processing in cloud and data centers. AMD offers EPYC CPUs and Instinct GPUs for servers and AI applications. Intel provides Xeon processors and other server products for enterprise and cloud solutions. In the gaming segment, both AMD and NVIDIA are key players in the GPU market, while Intel has a smaller share. Nvidia leads with GeForce GPUs for PCs and gaming laptops. AMD supplies Radeon GPUs and custom silicon for gaming consoles like PlayStation and Xbox. Their main differences are in the Automotive market, with AMD's minimal exposure, while NVIDIA and Intel have specific segments for this. Intel is leading with Mobileye, which specializes in ADAS and autonomous driving technologies. NVIDIA has a strong focus on autonomous driving and workstation

Client market size

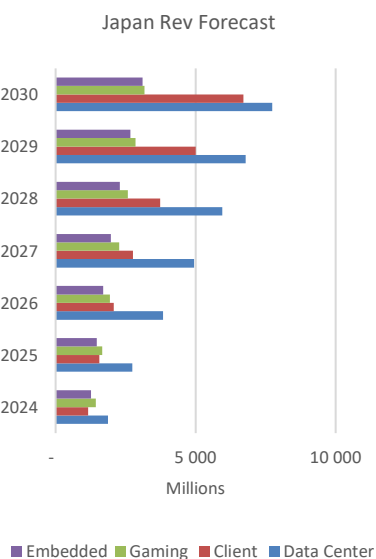
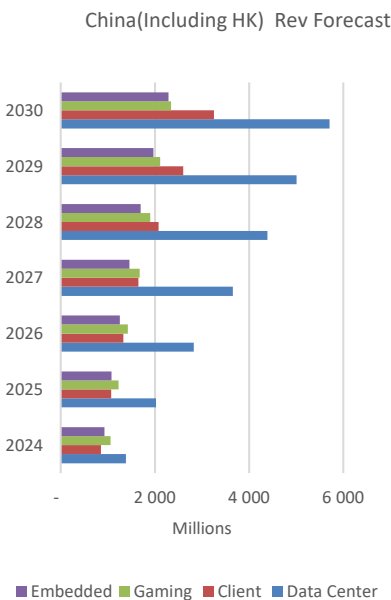
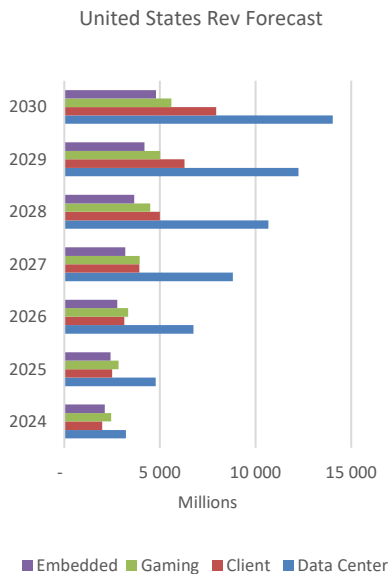


GPUs for professional visualization due to Xilinx. NVIDIA competes with this with a dedicated segment for workstation GPUs and professional 3D rendering. AMD includes embedded processors in its Enterprise, Embedded and Semi-custom segment, boosted with the acquisition of Xilinx. Intel offers IoT solutions for industrial, healthcare and retail. NVIDIA has minimal exposure but leverages GPUs for edge computing and IoT-related AI applications. Regarding professional visualization, is mainly NVIDIA's niche, even though AMD competes but in a smaller scale.

The graphs display Nvidia's, Intel's and AMD's revenue from 2018 until 2023, showing the percentage contribution of each segment to the company's total revenue. For Nvidia, we can clearly see that the Gaming segment is the most important, with consistently showing a large portion of NVIDIA's revenue, contributing over 40% to 50% annually, with the largest contribution of 57% in 2021. Between 2021 and 2023, the proportion of revenue from gaming decreased, reflecting shifts in demand and competition, particularly during NVIDIA's expansion into Data Center and Professional Visualization. The second largest is Data Center, with a rapid growth passing the Gaming sector in 2021 onwards, indicating NVIDIA's strong positioning in AI, cloud computing, and enterprise markets. The other three segments have minimal impact on the revenue. Professional visualization kept 8-10% which corresponds to demand for GPUs in creative industries, 3D rendering, and AI design tools. Automotive revenue has grown incrementally with a maximum of 6% of revenue contribution. This reflects NVIDIA's efforts in autonomous driving and automotive AI solutions. While Intel generates revenue from gaming hardware (CPUs and GPUs), it does not report it as a separate segment. Gaming-related revenues are included in the Client Computing Group (CCG), alongside other consumer computing products. Client Computing has consistently been Intel's largest revenue contributor, representing over 55% of total revenue each year. The second largest is Data Center, that shows an upward trend of 35% in 2021. This growth reflects the increasing demand for Intel's server processors, particularly Xeon processors, in cloud computing, data centers, and AI workloads. The Network & Edge segment has a steady growth over the years with a small proportion of 5-10%, with Intel focusing more on network infrastructure and edge computing, likely due to the growing demand for 5G and edge processing solutions. IoT and Mobileye also have a small portion of Intel's total revenue, with 5% and 2% in 2021, respectively. Intel goal is to diversify, giving solution to industrial, healthcare, and smart home devices. With Mobileye acquisition, the goal is expanding into autonomous driving and AI-based automotive technologies. This separates them from AMD strategy. Unlike Intel and NVIDIA, AMD has minimal exposure in the automotive market, which could limit its ability to capitalize on the growing



demand for autonomous driving technologies. Also, AMD does not have as many diverse business segments like Mobileye (autonomous vehicles) or IoT solutions. Comparing AMD's strategy with Intel and Nvidia, AMD has a competitive portfolio of EPYC CPUs and Radeon GPUs are gaining significant market share in data centers, gaming, and AI sectors, challenging competitors. Also has a strong position in the Gaming consoles, providing custom chips for leading gaming consoles, which secures strong revenue streams. AMD's growing portfolio for AI and cloud computing with EPYC CPUs and Instinct GPUs positions provide a high growth potential in Data Centers. We identify AMD main opportunities like leverage its growing GPU portfolio for AI, machine learning, and cloud applications, areas where NVIDIA has dominance and AMD is well-positioned to expand in the gaming GPU sector, particularly with Radeon and custom gaming chips. The main threats for AMD are geopolitical risks, like trade restrictions and supply chain disruptions, NVIDIA's rapid innovation in AI-focused GPUs and Intel's expansion in cloud computing could threaten AMD's market share and chip shortage and the reliance on third-party manufacturers could challenge AMD's ability to meet demand.



Forecast and Projections

Our forecast methodology leverages historical data reflecting the mature nature of certain segments, while accounting for recent shifts in market dynamics and consumer behavior. The semiconductor industry is a cyclical industry. The industry cycles are driven by inventory as well as world economic growth. AMD has strategically positioned itself to capitalize on these shifts. The upcoming technological advancements, particularly in AI and the growing need for high-performance computing, suggest a robust demand trajectory. For valuation purposes, we reformulated over six years the Income Statement, Balance sheet and cash flow into core, non-core and financial.

In the income statement, we considered most of the accounts as core. Accounts such as Amortization of acquisition-related intangibles and Licensing gain were considered core because they are directly related to the operational part of AMD and other income and cumulative-effect adjustments were considered non-core.

The forecast is for seven years and assuming a conservative view, 2027 is the year of growth stabilization for AMD in all main regions. During the growth phase we still maintain a conservative view, using the GDP growth projections, Inflation and digitalization of economies as the main drivers for these segments and the revenues to grow accordingly to them.

On the Income statement, the estimated growth for Client segment and Data center was mainly based on AI expected growth, semiconductors revenue worldwide, demand for personal computers and the chipsets demand worldwide. These two segments are where it is expected an higher revenue growth, mainly due to AMD raise of 2024 Data Center GPUs revenue outlook, for the 4th consecutive quarter. This was driven by increased adoption of its MI300X accelerator across cloud, strong demand for its Zen 5 notebook and desktop PC processors and OEM, AI customers and, more specifically, noted the increase in MI300X public cloud instances available in the quarter at the likes of Microsoft, Oracle Cloud and multiple AI specialized cloud provider.

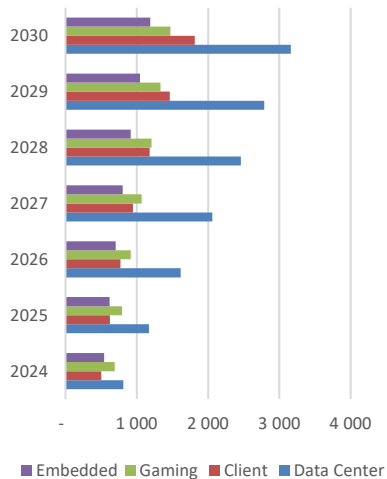
For Data center segment, it was used an average of AI forecast growth and Revenue in semiconductors worldwide, which gave values between the 38% in 2025 to the 16% for 2029. We use this values as a base case, which would increase or decrease depending on the region. For the client segment, we input the average of demand for personal computers, chipsets demand worldwide and Europe aggregate chips demand. For the Gaming segment, we input the average of revenue in semiconductors worldwide and the forecast chip sales for consoles like PlayStation and Xbox. Lastly, we input the average of revenue of

semiconductors worldwide for Embedded and used the average revenues of this segment, as we think that will maintain the stability from previous years.

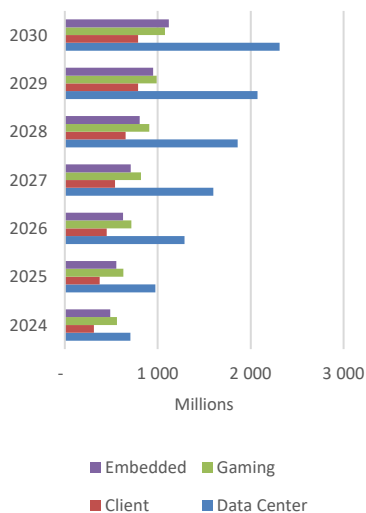
We expect a larger growth for North America in Data Center and Gaming, reaching 15% and 12% in the steady state of 2030, respectively. Following the second largest growth for these segments are in the Asia-Pacific region with a steady growth of 14% and 11% in 2030 respectively in China and 14% and 11% in Japan, respectively. The growth drivers for Asia-Pacific are mainly rise of cloud services, AI, machine learning and big data applications. China's investment in AI and cloud computing is pushing data center demand. The fact that major cloud providers like Google cloud, amazon web and Microsoft Azure are investing mainly in Asia, will drive rapid growth in cloud computing and data center demand. In North America, these cloud providers are also the main drivers. Data center market is expected to grow significantly due to increasing demand for cloud services and AI-driven applications. In Europe, we expect a lower growth but still significant, reaching 13% in steady state in 2030. The European Commission's Digital Strategy is aiming for cloud infrastructure growth and enterprise are continually adopting more AI. The increasing rollout of 5G networks in Europe will also enhance the demand for edge data centers. While Europe will continue to see robust growth, particularly driven by sustainability initiatives, regulatory support, and digital transformation, Asia-Pacific is likely to experience faster growth in the data center market due to factors like a larger market size, rapid cloud adoption, increased demand for AI applications, and hyperscale data center investments. AMD is well-positioned to benefit from data center growth, with its EPYC processors targeting high-performance servers.

For the Gaming segment, we also expect higher growth in the Asia-Pacific market. China and Japan mobile gaming and console gaming largest and fast-growing community remains strong and are the main drivers for this growth. China alone contributed to nearly 45% of the global gaming market. This aligns with AMD's graphics and processing power offerings. United States and Europe already have a mature and high-value market for console and PC gaming, specially United States with the largest gaming market. The fast growth of platforms like steaming and esports drives the market. Europe also has a mature market, specially in the UK, Germany and France. We will continue to see gaming market growing due to rising of next generation gaming consoles and PC upgrades. AMD benefits from strong relationships with Sony and Microsoft, who incorporate AMD's Radeon GPUs and APUs into their consoles. Additionally, AMD's Radeon graphics cards continue to compete with NVIDIA in the high-performance PC gaming sector.

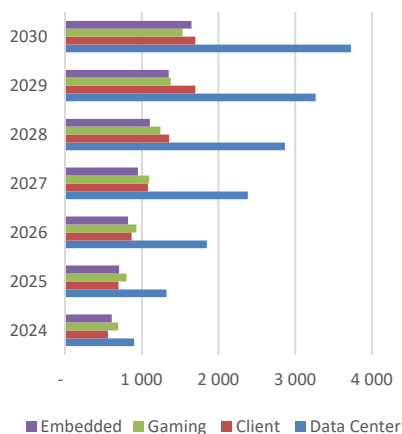
Europe Rev Forecast

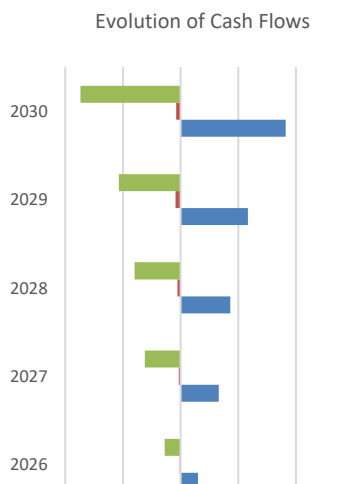
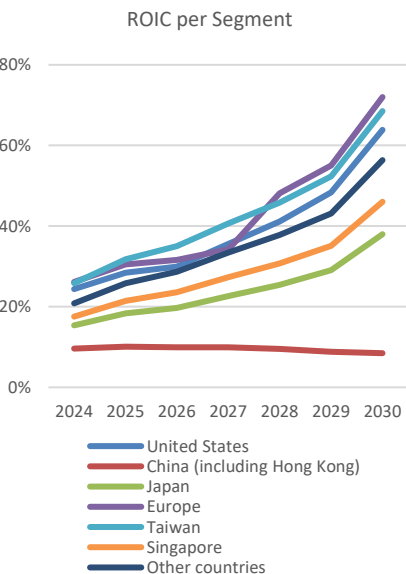
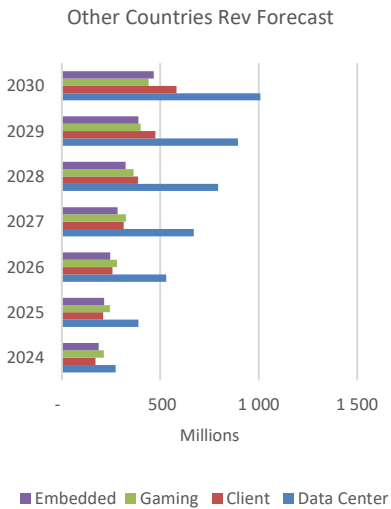


Taiwan Rev Forecast



Singapore Rev Forecast





The Xilinx acquisition strengthens AMD's capabilities in FPGA and embedded processors for IoT, particularly in industrial automation, automotive, and healthcare applications. Like previous segments, we expect an higher growth on Embedded segment in 10% higher than the average of the value drivers in the Asia-Pacific region, followed by Unites States and then Europe. For the Asia-Pacific region, has an hub for manufacturing, industrial automation, and IoT applications, which heavily rely on embedded systems. AMD's Xilinx FPGAs and embedded processors align well with the rising needs of ADAS (advanced driver assistance systems) and in-vehicle computing which has the fastest growing market for Electric Vehicles. There is still strong competition from local players like Huawei and US-China tensions that could disrupt AMD's operations and sales in China. This 16% growth steady state in Asia-Pacific region, followed by forecasted growth of 15% in US where there is a market saturation in some areas and heavy competition from Intel and NVIDIA in key segments. The growth is driven by embedded solutions adopted in IA, automotive and enterprise system. Initiatives like the CHIPS Act encourage local manufacturing and innovation in semiconductors. We expect 14% growth in Europe because it has slow growth cycles compared to Asia-Pacific and economic uncertainty and regulatory challenges. Still, we see opportunities in automotive and Industrial IoT markets and EU investments in smart energy and automation technologies.

AMD's client segment has significant growth opportunities specially in the APAC region with rapid PC penetration as digitalization accelerates and has high population density with growing middle-class spending power. While mature, the U.S. market has seen stable demand for AMD-powered laptops and desktops due to performance and affordability. We expect a growth of 26% in 2030 in the US as AMD has solid brand recognition in the U.S., and its competitive products (like Ryzen processors) attract customers and access to mature, reliable distribution channels, which are offset by market saturation and slower growth compared with the emerging economies. For Europe, we expect 24% growth due to strong demand for eco-friendly technology and infrastructure upgrades. Higher adoption of premium, high-margin systems compared to other regions which are offset by energy crisis that can constrain consumer spending and slower economic growth compared relative to APAC, which we projected a growth of 25%.

Although we recognize and value AMD's long-term focus on the High-Performance Computing market, which needs ongoing investment in R&D and SG&A, we anticipate that higher operating expenses — assuming other factors remain constant — will slow the pace of margin expansion in the near term. In our model, we forecast an increase of 10% in R&D until 2027, the year we expect it will stabilize. Though we still expect a solid expansion in margins over time. We

assumed Research and Development, Marketing general and administrative, amortization and license gain as an average of the previous percentage of revenues of each year.

The balance sheet forecasting process was primarily conducted to assess the changes over time in the key assets that make up the operating net working capital, while also providing a reliable estimate for PPE, operating leases, goodwill, acquisition of intangibles and deferred tax assets and non-core business. Additionally, it served as a check to monitor the company's key liquidity and leverage ratios, including the Debt/Equity ratio (book value), Net Debt/EBITDA, Net Financial Debt/EBITDA after lease payments, current ratio, quick ratio, and cash ratio.

In the Core Unlevered FCF we can see a consistent forecasted growth, highlighting that AMD has a strong operational efficiency and the company's core business generates enough cash to sustain or grow without external financing. The biggest growth is 23% forecasted is in 2029 to 2030, mainly due to core growth in the United States of 33%. The non-core unlevered FCF will be negative, specially in 2029 and 2030, due to a negative variation of the Assets and Liabilities. This has a strong impact for shareholder's and investor's confidence and gives market a positive sentiment.

These projections assume AMD will keep operate with stable, low-risk balance sheet strategies, with minimal changes in working capital requirements, debt levels and capital expenditures. For cash and cash equivalents we assume a stable cash generation with modest growth of 2%, supporting operational needs and minor capital expenses. This reflects AMD's conservative cash management strategy to maintain liquidity for ongoing business and aligns AMD's low debt structure. Inventories is forecasted based on the Average Holding period, which we expected to remain stable at 101 days, assuming AMD has optimized inventory levels to meet demand without overstocking. The account receivable was projected with an average of 66 days of historical Average Collection period, as we expect AMD to maintain consistent credit terms and collection practices with its costumers. Using the average of the historical payable period, we forecasted the Accounts payable, which suggests AMD stable relationship with suppliers, with no anticipated changes in payments or purchasing practices. The other accounts were forecasted in line with the revenue growth.

Analyzing the cash conversion cycle is crucial for assessing AMD's liquidity and short-term financial health. It serves as an important indicator of underlying cash flow risks and can be a useful driver when forecasting accounts receivable, accounts payable, and inventories.

In AMD's case, we observed a CCC of -16 days in 2018, indicating that it was able to convert its inventory and receivables into cash faster than it paid its payables. This suggests that AMD had an efficient working capital cycle.

Between 2019 and 2023, CCC continued to grow, reaching 149 days. This indicates that AMD's cash is tied up longer in working capital as it manages high inventory levels, grown substantially from 845 in 2018 to 4351 in 2023. This increase is likely to meet higher production demand, which increases the Average Holding period, which increases the CCC. The other significant change was in the Average collection period, going from 3 days in 2018 to 87 in 2023. This might be due to extended payment terms with key clients and the increase in the revenues.

In terms of capital structure ratios, the Debt/EBITDA ratio and solvency ratios raised concerns, increasing from 77% to 615% and 38% to 466%, respectively. The increase in the Debt/EBITDA ratio was driven by a rise in debt levels that outpaced growth in equity and EBITDA, pointing to a higher financial risk. These trends highlight the need for careful attention to AMD's liquidity and capital management strategies moving forward.

In the capital structure, there was a substantial decline in AMD's Return on Equity (ROE), Return on Assets (ROA), and Return on Invested Capital (ROIC) from 2018 to 2024. Return on Equity went from 27% in 2018 to 2% in 2023. One of the primary reasons is AMD's equity base expanded during this period, either through retained earnings or capital raising, but the company's net income growth failed to keep up with this expansion. As a result, ROE declined, particularly if the growth in net income was insufficient to offset the increase in equity, thereby diluting the return generated for shareholders. AMD's gross margins and operating profits have likely faced pressure, despite strong growth in certain segments like Data Centers and Client.

The company's increasing operating expenses driven by higher R&D and SG&A spending, could have outpaced revenue growth in some areas, putting a strain on net income and driving down ROE. AMD's equity base likely expanded during this period, either through retained earnings or capital raising, but the company's net income growth failed to keep up with this expansion. As a result, ROE declined, particularly if the growth in net income was insufficient to offset the increase in equity, thereby diluting the return generated for shareholders.

The decline in ROA from 10% to 1% is largely explained by the following: Asset Base Expansion AMD had significantly ramped up its investments in capital expenditures, particularly in R&D and manufacturing infrastructure for next-generation chips. While these investments are essential for long-term growth, they have expanded the asset base substantially.

However, if AMD's revenue growth has not kept pace with the expansion of its assets, it results in a lower asset turnover, which reduces ROA. Despite AMD's focus on high-growth areas such as Data Centers and AI, these investments take time to generate revenue. In the short term, a growing asset base without immediate returns leads to a dilution of ROA, as the company's assets are not generating adequate returns.

The average holding period has increased significantly, particularly due to a rise in the average holding period of inventory, which has grown from 77 days in 2018 to 141 days in 2024. This suggests that AMD is taking longer to sell its products, which leads to a less efficient use of assets.

The ROIC decline from 178% to 2% is the most concerning. This was mainly due to AMD substantial capital investments in areas like new manufacturing processes, data center infrastructure, and advanced research. These investments, while essential for future growth, are capital-intensive and often have long payback periods. In the near term, if these investments are not generating proportional returns, it results in lower ROIC. Additionally, the margins from these investments may have been compressed due to increased operating expenses. The increase in debt financing has put additional pressure on ROIC. As AMD has taken on more debt, the cost of debt has risen, which requires the company to generate higher returns just to cover its interest expenses. This leaves less capital available for equity holders, thereby reducing the overall return on invested capital. A decline in operating income (EBIT) relative to invested capital—which includes both debt and equity—has been a key factor in the decline of ROIC. Although AMD has made significant investments, particularly in next-gen technologies, the operating income growth has been slower than the rise in invested capital, leading to diminished returns on those investments. In the graph we can see an higher ROIC for Taiwan reaching 69% in 2030, followed by Europe and United States, both reaching 72% and 64% respectively in 2030. We forecasted the main regions for Invested capital are United States, Japan and China, with Europe coming in 4th. It was projected the higher revenue will come from the US, followed by Japan and Europe. The United States, Taiwan, and Europe are strong contributors to AMD's overall performance. These regions likely drive the company's growth. The reason why China's ROIC is around 10% is because of the projected invested capital in the region, which is not offset by the country's revenues.

Conclusion

Advanced Micro Devices (AMD) has shown remarkable resilience and strategic adaptability in a dynamic and highly competitive semiconductor industry. Over the last five years, the company has leveraged its strong presence in high-margin segments, such as data centers, embedded systems, and AI hardware, to significantly improve its financial performance.

Gross margins increased from 38% in 2018 to 51% in 2022 before slightly softening to 50% in 2023. This improvement reflects AMD's successful product mix strategy, focusing on premium offerings such as EPYC CPUs and Instinct GPUs, which cater to high-demand sectors like cloud computing and artificial intelligence.

Regionally, AMD has remarkable growth across its core markets, particularly in the United States, which overtook China as its largest revenue contributor by 2023 due to regulatory and economic challenges in the latter. Europe and Asia-Pacific also demonstrated consistent revenue growth, with regions such as Japan and Singapore serving as strongholds for operational efficiencies and market access. Emerging markets in Latin America, the Middle East, and Africa, while smaller contributors, underline AMD's efforts to diversify its revenue streams and build a resilient global portfolio.

AMD's acquisitions of Xilinx and Pensando have been transformative, adding substantial goodwill and enhancing its capabilities in adaptive computing and data center solutions.

These acquisitions have not only expanded AMD's product offerings but also positioned it as a leader in innovation for high-performance computing. Additionally, partnerships with critical players like TSMC reinforce AMD's ability to manage supply chain complexities while scaling to meet global demand.

Financially, AMD has maintained a sustainable capital structure, with low levels of debt and a strong focus on liquidity. The company's cash reserves and marketable securities have grown significantly, providing flexibility for future strategic investments.

While challenges such as a declining Capex-to-D&A ratio and stagnating

ROIC have raised concerns about underinvestment, AMD's R&D focus ensures it remains at the forefront of technological advancements.

Furthermore, the Embedded and Data Center segments have consistently offset weaker performance in the Client and Gaming divisions, highlighting AMD's ability to pivot toward growth drivers even in challenging market conditions.

Valuation analyses indicate compelling upside potential for AMD's stock. Across models such as DCF, APV, and EVA, the implied share prices range from \$137.57 to \$163.04, reflecting a potential upside of up to 28.47% from current levels. This, combined with AMD's robust market position, operational efficiency, and focus on innovation, reinforces its attractiveness as an investment.

In conclusion, AMD is well-positioned to capitalize on emerging opportunities in AI, cloud computing, and gaming, while its strong financial foundation provides stability amidst industry cyclicality. While maintaining focus on strategic reinvestments will be key, AMD's growth trajectory and valuation metrics strongly support a BUY recommendation. Investors are advised to monitor the company's cash deployment, competitive landscape, and macroeconomic trends, but overall, AMD remains a strong candidate for long-term growth.

APPENDIX

ADVANCE MICRO DEVICES

SEMI-CONDUCTORS

STUDENT: "ANA TEIXEIRA E FRANCISCO REI"

COMPANY REPORT

4 DECEMBER 2024

53979@novasbe.pt 57842@novasbe.pt

Unlocking Value in a Competitive Industry

- Launch of its Ryzen processors in 2017, based on the Zen architecture. These processors competed directly with Intel's dominance in the CPU market, offering strong performance at competitive prices.
- AMD's return on stock price is higher than the return on S&P500. From 2015 to 2021, the stock price experienced remarkable growth. In November 2021 stock price peaked at \$164.46. AMD went from years of financial losses to consistent profitability in 2017.
- AMD improved its gross margin from 38% in 2018 to 51% in 2022 (slightly dropping to 50% in 2023) driven by high-margin segments like data centers, while significantly increasing cash reserves and marketable securities to prioritize liquidity and flexibility, maintaining a low D/V ratio and minimal debt, alongside faster growth in receivables and inventories due to longer project cycles and an expanding product portfolio.

Company description

Advanced Micro Devices, Inc. (AMD) is a leader in high-performance and modern computing, providing technologies that drive the products and services addressing some of the world's bigger challenges.

Founded in 1969 as a Silicon Valley start-up, AMD began with a small group of dedicated employees committed to developing cutting-edge semiconductor products. The company set in California, has grown into a global leader. AMD's product portfolio includes x86 microprocessors, GPUs, and system-on-chip (SoC) solutions for a variety of applications, including data centers, gaming, and embedded systems. The company offers well-known brands such as AMD Ryzen and EPYC processors, Radeon graphics, and adaptive SoCs, including FPGAs under the Virtex and Zynq brands.

AMD serves a wide range of customers, including original equipment manufacturers (OEMs), cloud service providers, system integrators, and distributors, through a combination of direct sales and sales representatives. AMD aims to deliver technology to accelerate a full range of data center workloads enable scientists, engineers, and designers to have faster insights and more accurate results.

Recommendation: **BUY**

Vs Previous Recommendation **HOLD**

Price Target FY25: **153.13 €**

Vs Previous Price Target **139.56 €**

Price (as of 16-Dec-24Dec-24) **126.91 €**

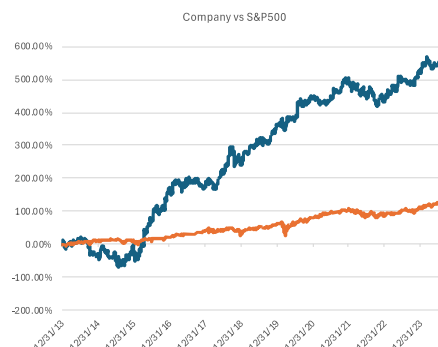
Bloomberg:

52-week range (€) **116.00-227.30**

Market Cap (€b) **240.095**

Outstanding Shares (m) **1620.00**

Source: Yahoo Finance



Source: Bloomberg

	2024	2025	2026
Revenues	27,933	35,691	45,257
EBITDA	10,221	12,334	14,864
Net Profit	10,623	12,777	15,424
EPS	6.56	7.89	9.52
P/E	23.35	19.42	16.08

THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY [INSERT STUDENT'S NAME], A MASTER IN FINANCE STUDENT OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL.
(PLEASE REFER TO THE DISCLOSURES AND DISCLAIMERS AT END OF THE DOCUMENT)

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- 1969 Launch of AMD
- 1972 Company went public
- 1975 Production of logic chips. Entered RAM chip business
- 1985 Listed in the book the 100 best companies to work in America
- 2000 Introduction of Athlon processor, designed to run Microsoft corporation's Windows operating system
- 2010 All company's graphics processing products have been marketed under AMD brand name
- 2012 Acquired the low-power server manufacturer SeaMicro
- 2021 AMD loses top Data Center sales top executive to Lenovo and reports record revenues in face of chip shortage
- 2022 Significant growth data center business due to demand for EPYC processors
- 2023 New products and technologies, with advancements in GPUs and CPUs for consumer markets. Main investment in AI.
- 2024 ZT systems. Advancing AI 2024 event. Dr Lisa Su Time's 2024 CEO of the year

Executive Summary

AMD's mission is to be recognized as the leader in powering the life-changing products and experiences that allow users to create, consume, and share seamlessly across billions of immersive devices.

The ownership of the stock of AMD pertains to institutional, retail, and individual investors. Approximately 44.31% of the Company's stock is owned by Institutional Investors, 0.54% is owned by the Insiders, and 55.15% by Public Companies and Individual Investors.

AMD is mainly a technology company that designs and manufactures different computing solutions, processors, graphics cards amongst other peripherals. Most of the research and design are in house, with production mainly by foundry partners, such as TSMC. AMD's products are used to many different applications such as personal computers, servers, gaming consoles amongst many others. Its processors and graphics cards boast performance and efficient power, using advanced architectures coupled with advanced manufacturing processes to realize the same. AMD designs, manufactures, and markets microprocessors, graphics processors, as well as other related technologies for personal computers, gaming consoles, and data centers.

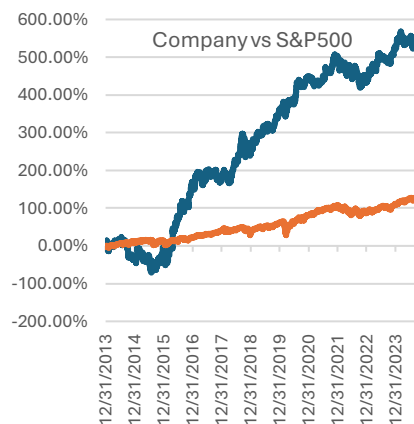
AMD's stock price is driven by report of strong growth, change of leadership, competitive advantages, improved financial performance, AI business, strong financial results and bullish investor sentiment.

From 2015 onwards, AMD's return on stock price is higher than the return on S&P500. From 2015 to 2021, the stock price experienced remarkable growth. AMD went from years of financial losses to consistent profitability in 2017, the launch of Ryzen processors based on Zen architecture marked a major turnaround for the company. These processors allowed competitive price and competed directly with Intel's dominance in the CPU market, particularly in the gaming segment. In just two years, cumulative returns went from -6.12% in the end of 2015 to 171.52% in the end of 2017. This processor captured a significant portion of the CPU market, particularly in the gaming segment. The fact that Dr Lisa Lu was appointed CEO in 2014, with her strategic vision and execution, won the market and investor trust. The partnership with TSMC in 2024, makes AMD the second largest client after Apple, which leverages AMD's performance. AMD also adopted 7nm process earlier, which allowed a better performance and

AMD PX_LAST



Company vs S&P500



efficiency edge. The revenue and gross margins improved significantly which gave a boost confidence for the investors.

Company Overview

The ownership of the stock of AMD pertains to institutional, retail, and individual investors. Approximately 44.31% of the Institutional Investor's shareholding is further classified as owned by Institutional Investors, 0.54% for the Insiders and 55.15% for Other Public Companies and Individual investors.

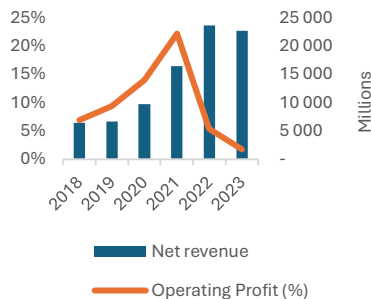
The Board of AMD amended the Corporate Principles of Governance 2024 to affirm that there exist effective structures for Board Leadership, Management of Accountability and Oversight of Board Actions. The core responsibilities of the Board are to determine the CEO, to oversee the performance of the Company and the integrity of the financial reporting process and systems of internal controls. There are three classes of Directors. The Independent Directors, whom meet the independence criteria of applicable laws and Nasdaq listing rules. The second group is Management Directors, who currently are employees of AMD. Finally, the Non-Management Directors, not holding officer positions in the Company but who may or may not be considered independent due to material relationships, prior affiliations, or family ties with the Company.

The Board has adopted guidelines designed to provide a flexible framework for its governance activities. This framework is structured to serve the long-term interests of the stockholders and also to enhance the well-being of other stakeholders. The Board intends to review these principles regularly and to reassess and modify them as appropriate.

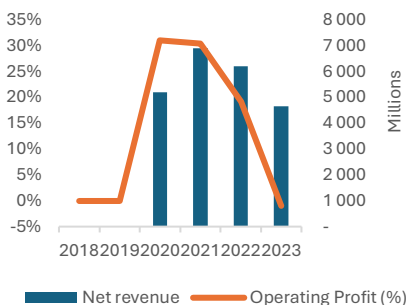
The AMD Code of Ethics establishes a framework of principles and values guiding the conduct of the Company and its employees, including executive officers. This Code emphasizes the importance of integrity, accountability, and ethical decision-making in all business operations. It outlines responsibilities of executive officers to lead by example, making sure their example is indicative of and reflects the Company's commitment to ethical behavior and compliance with the legal standards set by the laws.

In addition to setting standards relative to ethical conduct, the Code of Ethics also establishes minimum standards concerning financial integrity and financial reporting. The bank expects each executive officer to maintain the highest degree of accuracy and transparency in all reports and public disclosures of financial information, as such information is fundamentally related to the confidence of stakeholders. This commitment to responsible fiscal practices

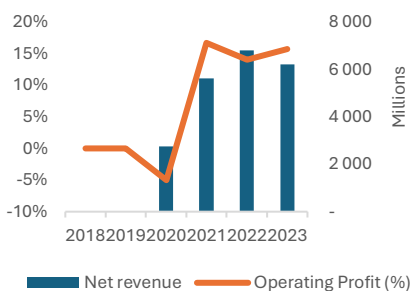
Total revenues



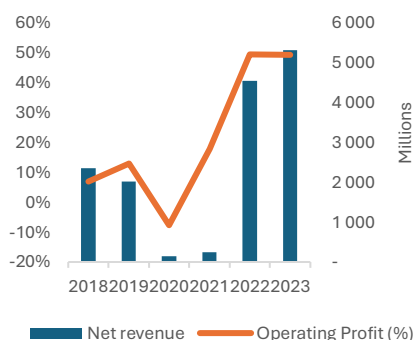
Client segment



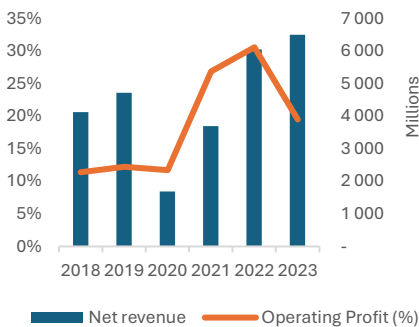
Gaming segment



Embedded segment



Data Center segment



helps ensure the protection of Company assets and contributes to long-term successful growth and development of the same.

Most importantly, such principles enable AMD's leading position to meet the demands of their regulators while concurrently enhancing the firm's overall reputation as one that acts in a responsible and reliable manner within the technology sector. AMD does most of research and design in house, with production mainly by foundry partners, such as TSMC. AMD designs, manufactures, and markets microprocessors, graphics processors, as well as other related technologies for personal computers, gaming consoles, and data centers.

As we can see in the graph, in 2021 AMD stock price reached to a \$164.46 peak in November. Driven by strong demand for the CPUs, GPUs and custom chips for gaming consoles. The global chip shortage caused by COVID-19 highlighted the importance of semiconductor companies and caused an unpredicted demand for the PCs, laptops and gaming consoles, benefiting AMD's CPU and GPU sales, which drove AMD's value. Nowadays, AMD stock price is mostly driven by leadership in the AI and Data Center Markets, expansion through acquisitions, innovation and positive market sentiment. AMD launched the Instinct MI300X and MI325X GPUs, competing directly with NVIDIA in the lucrative AI hardware market. The integration of AMD's chips into AI infrastructure for partners like OpenAI enhanced AMD's future expected growth. ZT Systems for \$5 billion acquisition expanded in hyperscale data centers, solidifying its positioning in AI and cloud markets.

The total revenues of AMD have a constant and positive growth throughout the years. With a major growth in 2022 of 44%. From 2021 onwards, the operating profit decrease significantly, from 22% to 5%. This is mostly due to AMD's increase of 76% in Research and Development, a 53% increase on cost of sales and costs of Amortization.

The Data center segment decreased 64.2% revenues in 2019 to 2020. In 2020, this segment represented only 17% of the total revenues of AMD. Still, the operating profit kept constant values of 12% until 2021, which highlights this was due to variable costs. The revenues in 2022 increased 63.6% compared to previous year, with operating profit from 31% to 20%.

Only in 2020, the client segment and gaming center started to exist as a separated segment. The revenues were mostly constant, with a pick of 32.7% in 2021. The operating profit from 2021 onwards decreased from 19% to 6% in 2023, with a -1% in 2022.

In the gaming segment, the revenue increased 104.2% in 2021 in relation to previous year, contributing to 34% of the total revenues, with a -5% of operating profit to 17% in 2021. Overall the operating profit stabilized in 16% in 2023.

The embedded segment had 92.9% decrease in the revenues from 2019 to 2020. In 2020 and 2021, the revenue on this sector contributed 1% to the overall revenue of AMD. In 2022 increased 1750.4% compared to previous year.

Financial Analysis

We will start with an overview of the historical financials and then we will dive into the reformulated income statement. The income statement was segmented in accordance with the different geographical regions that AMD operates in.

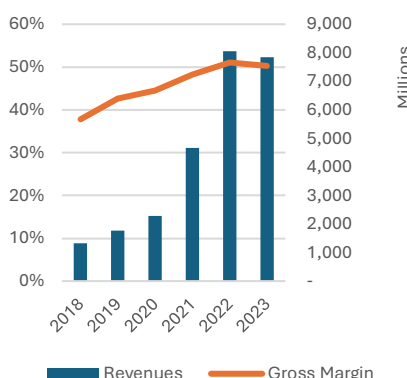
In the United States, the revenues from AMD's core businesses – a mix of its history of client relationships as well as high-end computing and data centers – remained at approximately China's levels until 2023 when by a considerable margin the U.S. overtook China as AMD's largest market. This was largely due to the decidedly unfavorable external economic conditions in China, along with some self-inflicted supply chain issues and regulatory concerns that hampered the whole technology business.

In Japan, one of AMD's stronghold in the Asia-Pacific region, has been able to capture strong revenue growth having 4x its turnover since 2018, having only showed decrease in 2019. However, it is important to note that the decrease was only in their revenues as there was an inventory correction where the client's demand changed and rather than placing new orders all the existing inventories were used and also the macroeconomic environment led to a revenue decrease of 31.43%.

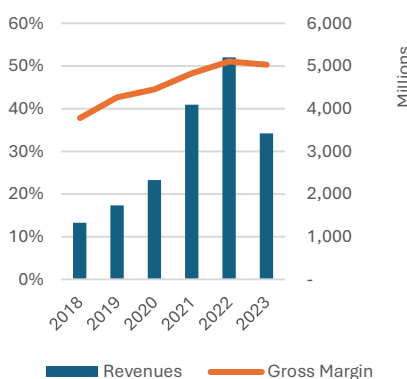
In the case of Europe, the revenue has experienced a compound annual growth rate of 33.99% except for the client segment which registered downturns from 2020 to 2023 due to unfavorable market conditions such as lowered demand and inventory corrections within the PC supply chain.

AMD has used both Singapore and Taiwan as levers in performing on both operational efficiencies and regional access to market. This points to the consistent revenue growth in Singapore, which remains critical for AMD's supply chain and distribution network across Asia. Singapore's revenues have continued to increase since 2018, indicating the country's importance as a logistics hub and a gateway into Asian markets, benefiting from the high demand in segments such as data center and embedded solutions. Historically, Taiwan has played an essential role in the semiconductor manufacturing ecosystem, and AMD has

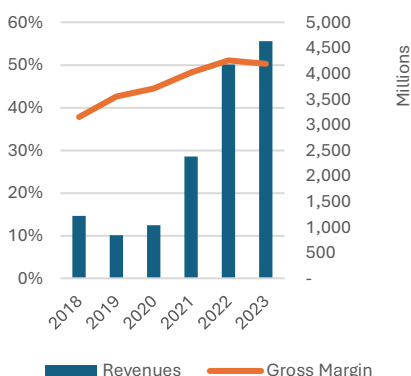
United States



China (Including HK)



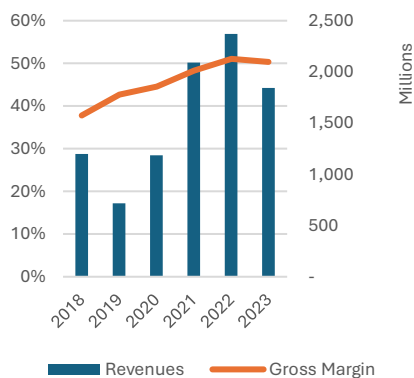
Japan



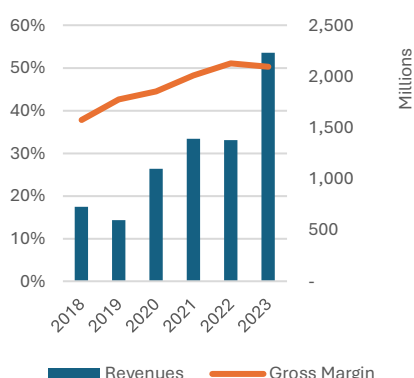
Europe



Taiwan



Singapore



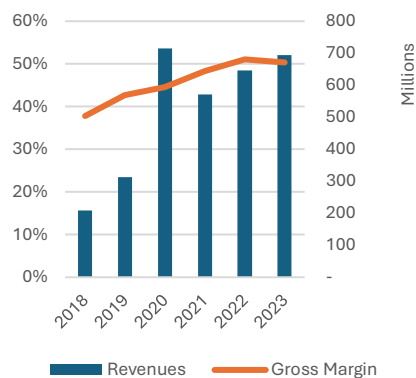
been integrally involved with sourcing and manufacturing there. Revenues in Taiwan were lower in 2023 due to fluctuations in manufacturing demand and increased competition in the region. Nevertheless, Taiwan still holds importance since AMD has partnerships with key suppliers like TSMC, enabling AMD to cater to global market demand effectively.

Revenues in the Other Countries region over the five-year period from 2018 to 2023 have been on an upward trend, as a result of AMD's pursuit of growth in new markets and large markets across numerous continents. These include a few more countries some of which are in Latin America and the Middle East and Africa where there is an increase in appetite for consumer electronics and business computing solutions. Not as big contributors as core markets, the steady revenue increase from these regions serves to underline AMD's attention to the creation of a diversified and resilient global portfolio, wherein smaller streams of revenues contribute to financial stability and long-term growth potential.

Delving into an analysis of general accounts, the increase has been steady with the exception of 2023 registering a CAGR of 28.49%. 2023 was characterized with revenue decline which chiefly was attributed to poor performance of Client and Gaming segments of AMD. The Client division experienced a change of negative 25%, primarily attributed to the decline in sales of Ryzen chips as a result of weak demand in the PC space thereby triggering inventory write downs throughout the supply chain. Alongside, Gaming division also faced a decline in revenue by 9% due to lower sales of semi-custom devices. However, growth was recorded in the Embedded and Data Center segments owing to sales of AMD Instinct GPUs, EPYC CPUs, and Xilinx embedded products which were sold for a whole year.

Overall, the company was able to improve its Gross Margin increasing consistently from 38% to 51% in 2022, having decrease slightly to 50% in 2023. This trend aligns with AMD's expansion in high-value segments like data centers, embedded solutions, and high-performance computing, which typically generate higher margins. The upward trajectory also suggests operational efficiencies and better product mix, especially with premium offerings like EPYC CPUs and Instinct GPUs. Regarding its EBIT margin there was an increase from 7% in 2018 to 22% in 2021, having only suffered a decrease in 2022 and 2023 due to increased expenses in research, development, and marketing, primarily from investments in AI and higher employee-related costs, as well as substantial amortization expenses related to the Xilinx acquisition.

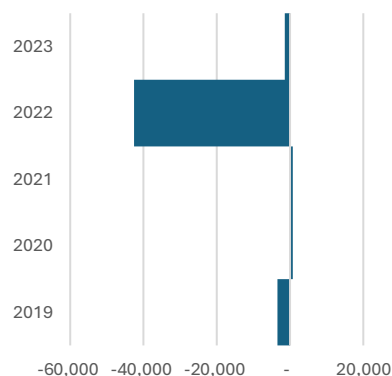
Other Countries



It is also important to mention the Equity Income in Investee account within AMD's income statement that primarily contains the consolidations of earnings from AMD's minority interests in joint ventures. This is particularly applicable to both the ATMP JV with Tongfu Microelectronics and the THATIC JV in China. This account represents or portrays AMD's portion of either profit or loss from such ventures, accounted for on the equity method but not consolidated into AMD's core books. That account had oscillated between 2018 and 2023, depending upon the year-end performance of the respective investees and the extent of AMD's involvement. For instance, in certain years-like that when THATIC JV faced operational setbacks or regulatory constraints-AMD had recorded minimum or no equity income due to limitations on funding further losses beyond its initial investment. This equity income reflected AMD's share of their profitability during periods when the ATMP JV was contributing positively; however, this was a smaller component of AMD's total earnings during those times. This account represents one of the many strategic partnerships entered into by AMD and how such partnerships have performed differently over time.

Moving to the balance sheet analysis of the past years, AMD was able to significantly increase its cash position adding 3.82 times the capital the firm has in 2018. However, this was accompanied by liabilities maintain a cash ratio close to 0.6 throughout the past 6 years. On the other hand, the current ratio increased from 1.8 to 2.5 from 2018 to 2023 suggesting an increase in assets. Therefore, as a result of the continuous growth and cash generation AMD has strategically decided to accumulate liquid assets having increase its marketable securities assets in 15.73 times. This allows the company to capitalize on short term investments without losing the flexibility of strategic capital expenditures such as investment in other companies or partnerships. When it comes to account receivables this account outpaced revenues growing at 4.66 times compared with 3.5 from revenues, this was mainly due to two factors, increase in unbilled accounts receivable, suggesting longer project cycles, and a higher concentration of receivables from key customers that represent a higher share in total sales having more bargaining power and better payable conditions. Inventories followed the same trend having grown 5.91 times, slightly faster than revenues but this is expected as AMD enlarges its portfolio of clients and expands its catalog of products.

Total Levered Free Cash Flow



On non-current assets, property plant and equipment register the second largest variation 4.79x increase, this is in line with revenue growth and the strategic investments to support expansion and enhance product offerings. Moreover, the company acquisitions brought new capabilities in data centers, embedded

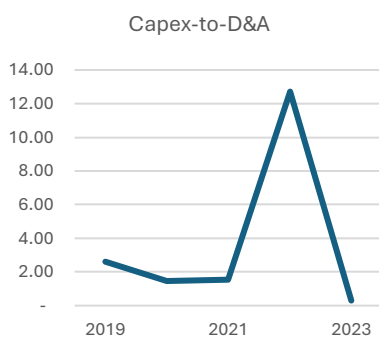
systems, and high-performance computing creating necessity of increase in physical assets and manufacturing capacity. The largest increase in the entire balance sheet was register in goodwill (83.95x) this was caused by several acquisition major ones were Xilinx, a leading provider of adaptive computing solutions, adding nearly \$22.8 billion in goodwill. This deal extended AMD's portfolio, especially in adaptive hardware platforms, and had been one of the factors that contributed to increased market reach and a diversified revenue stream in both the embedded and data center markets. The second deal was the Pensado acquisition that added further goodwill reflecting the forecasted synergies and increase in market opportunities of AMD's data center offerings.

When analysing current liabilities, it is important to mention that over the years AMD has chosen to have minimal amounts or even zero short term debt, as a result of their debt positing and low D/V. On accounts payable this grew approximately in line with inventories (3.22x vs 5.91x). However, creating a slight pressure on cashflow. Accrued liabilities and other current liabilities grew 4.76 and 18.63 times, respectively. The typical accruals in Accrued Liabilities are those expenses that have been incurred and not paid, which commonly consist of salaries, benefits, interest, and taxes. Other Current Liabilities usually combine short-term forms of liabilities, which are accounts like deferred revenues, warranty current liabilities, and present portions of long-term debt.

Regarding non-current liabilities, long-term debt net of current portion has been stable having increased only 1.54x, slower than total assets 20.42x, and even going to 1 million in 2021 due to a lot of convertible debt being executed caused by the good stock performance. However, this has created a strong financial position for AMD and is in line with their target low D/V. In 2022, AMD has reached its highest debt position which is explained by the two acquisitions made that year of Xilinx and Pensado. Long-term operating lease liabilities have grown 2.64 times from 2019 to 2023 which is below the total balance sheet growth in line with a low leverage strategy, the same can be said for other long-term liabilities that despite having grown 8.94 times are still in line with this strategy. The fluctuation in the deferred tax liabilities of AMD between 2018 and 2023 is most probably due to its recent acquisitions, particularly the acquisition of Xilinx, coupled with an increase in the related intangible assets, such as goodwill that was recognized upon acquisition and acquired intangibles. Such acquisitions give rise to the creation of additional temporary differences between book values and tax basis in said assets, which are accounted for by the amount of deferred tax liabilities. This correspondingly increased AMD's deferred tax liabilities, reflecting the amount of taxes that would result in future years and relating to the

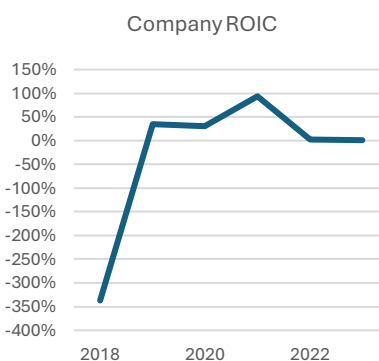
amortization or realization in various periods of the related tax benefit from such assets.

The equity portion of AMD's balance sheet has experienced a notable improvement from 2018 to 2023 consistent with the company's good performance, aggressive acquisitions and increased capital base. This increase in total equity was also the result of the total number of shares outstanding being raised due to AMD's issuance of additional shares during the period under consideration, especially when acquiring Xilinx and Pensando. The acquisition or merger processes incurred considerable goodwill and other non-current assets for AMD which also raised the equity position of shareholders in the business because the company financed the acquisitions through more issuance of stocks as opposed to incurring debts and so the company's balance sheet remained healthy. To add to this, AMD's retained earnings grew in tandem with the overall profits that the firm was able to generate which contributed towards increasing the equity level. This growth in equity is consistent with the low debt equity ratio approach adopted by AMD which focuses on maintaining flexibility in its capital structure without restricting its ability to grow on the road ahead.



The Capex-to-D&A ratio highlights AMD's investment strategy. Between 2019 and 2021, the ratio was stable at around 2x, suggesting balanced reinvestment. A sharp rise in 2022, peaking at over 12x, reflected significant investments, likely linked to acquisitions or expansion. However, the steep drop in 2023, with the ratio falling below 1x, signals potential underinvestment, as Capex no longer covers depreciation.

This decline could indicate AMD is not reinvesting adequately in maintaining or growing its asset base, raising concerns about future operational capacity. Instead, the company has accumulated substantial cash reserves, suggesting a focus on liquidity and financial flexibility. While this aligns with AMD's strategic shift toward R&D and partnerships, such as with TSMC, the underinvestment could hinder long-term competitiveness in the capital-intensive semiconductor industry.



Investors should closely monitor whether AMD's cash is deployed effectively for growth, acquisitions, or shareholder returns to sustain its future trajectory.

The company's ROIC shows a dramatic improvement between 2018 and 2019, rising sharply from negative levels to nearly 100%, suggesting significant efficiency gains or improved profitability driven by effective capital allocation. From 2019 to 2021, ROIC remains relatively stable but peaks around 2021,

indicating strong operational performance likely supported by AMD's acquisitions and growth in high-value segments like data centers and embedded systems.

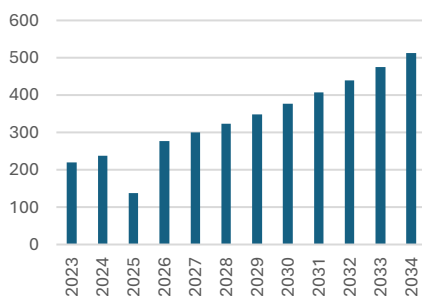
However, after 2021, the ROIC declines, returning to approximately 0% by 2022-2023, which could signal diminishing returns on recent investments, increased expenses, or challenges in maintaining capital efficiency. This decline aligns with rising R&D and marketing costs, as well as amortization expenses from acquisitions like Xilinx and Pensando.

The stagnation in ROIC post-2021 highlights the need for AMD to focus on improving capital allocation efficiency and generating higher returns from its recent investments to sustain long-term profitability.

The decline in AMD's Capex-to-D&A ratio and stagnating ROIC post-2021 suggest challenges in maintaining capital efficiency and asset reinvestment. While substantial investments in 2022 drove growth, the sharp drop in Capex relative to depreciation in 2023 raises concerns about underinvestment, potentially impacting future operational capacity. To sustain long-term profitability, AMD must effectively deploy its cash reserves and focus on generating higher returns from acquisitions and strategic partnerships to improve both ROIC and reinvestment levels.

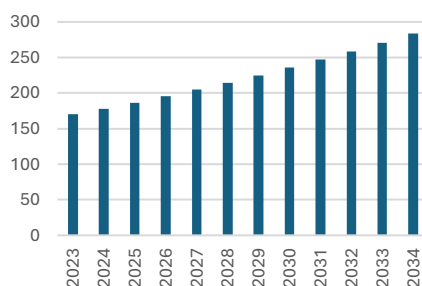
Industry Overview

Gaming market size



The market size of client segment in 2023 is estimated at \$114.06 billion and in 2034 the market size is expected to reach \$364.62 billion. The market size is expected to grow approximately 3.2 times from 2023 to 2034. The chart demonstrates a consistent upward trend, with market size increasing every year, driven by factors such as rising demand for cloud computing, growth in AI and machine learning applications, increasing use of data centers for hyperscale operations.

Embedded market size



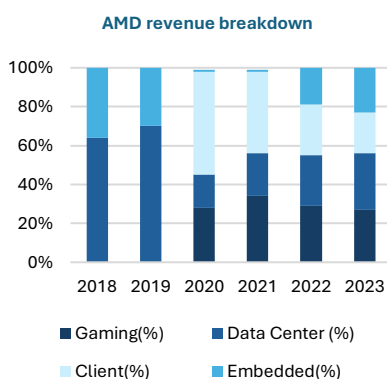
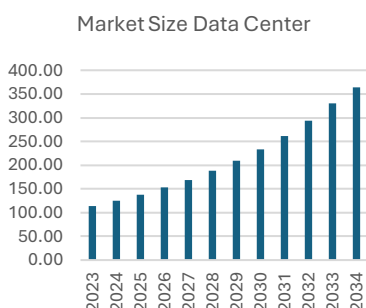
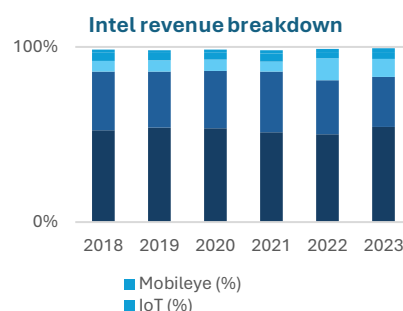
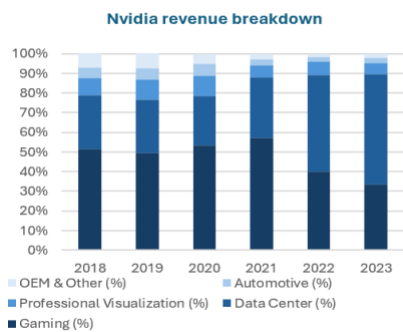
The market size in 2023 in the gaming sector was \$220.46 billion and expected market to grow to \$512.46 billion by 2034 with a CAGR of 7.97%. This steady growth reflects rising adoption of mobile gaming. AMD is well-positioned to benefit from sustained market expansion.

The embedded systems market size has a CAGR of 4.7%, indicating moderate growth. In 2023 is at \$170.04 billion and is projected to grow \$283.90 by 2034. AMD benefits as these technologies become more integral to modern devices and systems.

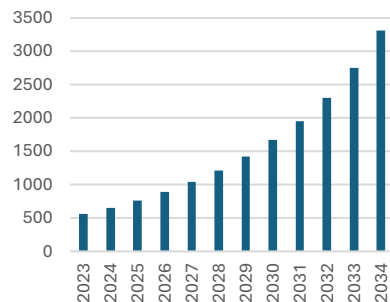
The client size begins at \$559.2 billion in 2023 and market grow to \$3,308 billion by 2034, with a CAGR of 17.54%, reflecting rapid and consistent growth over the 10-year period, driven by advancements in AI.

AMD main competitors are Nvidia and Intel, even though they define some segments differently. AMD combines CPUs, GPUs under broader categories and NVIDIA separating Professional Visualization and Automotive into standalone segments. Intel includes Mobileye and IoT as distinct revenue streams. Still, we can compare the segments and revenues between them. Data Center and Gaming are the most comparable segments across all three companies. In the Data center and cloud segments, all three companies target enterprise, AI, and cloud computing workloads. NVIDIA leads in AI GPUs, while Intel and AMD focus more on CPUs. Nvidia optimizes GPUs for AI, machine learning and data processing in cloud and data centers. AMD offers EPYC CPUs and Instinct GPUs for servers and AI applications. Intel provides Xeon processors and other server products for enterprise and cloud solutions. In the gaming segment, both AMD and NVIDIA are key players in the GPU market, while Intel has a smaller share. Nvidia leads with GeForce GPUs for PCs and gaming laptops. AMD supplies Radeon GPUs and custom silicon for gaming consoles like PlayStation and Xbox. Their main differences are in the Automotive market, with AMD’s minimal exposure, while NVIDIA and Intel have specific segments for this. Intel is leading with Mobileye, which specializes in ADAS and autonomous driving technologies. NVIDIA has a strong focus on autonomous driving and AI-enabled automotive platforms. AMD has Embedded and IoT solutions which includes workstation GPUs for professional visualization due to Xilinx. NVIDIA competes with this with a dedicated segment for workstation GPUs and professional 3D rendering. AMD includes embedded processors in its Enterprise, Embedded and Semi-custom segment, boosted with the acquisition of Xilinx. Intel offers IoT solutions for industrial, healthcare and retail. NVIDIA has minimal exposure but leverages GPUs for edge computing and IoT- related AI applications. Regarding to professional visualization, is mainly NVIDIA’s niche, even though AMD competes but in a smaller scale.

The graphs display Nvidia’s, Intel’s and AMD’s revenue from 2018 until 2023, showing the percentage contribution of each segment to the company’s total revenue. For Nvidia, we can clearly see that the Gaming segment is the most important, with consistently showing a large portion of NVIDIA’s revenue, contributing over 40% to 50% annually, with the largest contribution of 57% in 2021. Between 2021 and 2023, the proportion of revenue from gaming decreased, reflecting shifts in demand and competition, particularly during



Client market size



NVIDIA's expansion into Data Center and Professional Visualization. The second largest is Data Center, with a rapid growth passing the Gaming sector in 2021 onwards, indicating NVIDIA's strong positioning in AI, cloud computing, and enterprise markets. The other three segments have minimal impact on the revenue. Professional visualization kept 8-10% which corresponds to demand for GPUs in creative industries, 3D rendering, and AI design tools. Automotive revenue has grown incrementally with a maximum of 6% of revenue contribution. This reflects NVIDIA's efforts in autonomous driving and automotive AI solutions. While Intel generates revenue from gaming hardware (CPUs and GPUs), it does not report it as a separate segment. Gaming-related revenues are included in the Client Computing Group (CCG), alongside other consumer computing products. Client Computing has consistently been Intel's largest revenue contributor, representing over 55% of total revenue each year. The second largest is Data Center, that shows an upward trend of 35% in 2021. This growth reflects the increasing demand for Intel's server processors, particularly Xeon processors, in cloud computing, data centers, and AI workloads. The Network & Edge segment has a steady growth over the years with a small proportion of 5-10%, with Intel focusing more on network infrastructure and edge computing, likely due to the growing demand for 5G and edge processing solutions. IoT and Mobileye also have a small portion of Intel's total revenue, with 5% and 2% in 2021, respectively. Intel goal is to diversify, giving solution to industrial, healthcare, and smart home devices. With Mobileye acquisition, the goal is expanding into autonomous driving and AI-based automotive technologies. This separates them from AMD strategy. Unlike Intel and NVIDIA, AMD has minimal exposure in the automotive market, which could limit its ability to capitalize on the growing demand for autonomous driving technologies. Also, AMD does not have as many diverse business segments like Mobileye (autonomous vehicles) or IoT solutions. Comparing AMD's strategy with Intel and Nvidia, AMD has a competitive portfolio of EPYC CPUs and Radeon GPUs are gaining significant market share in data centers, gaming, and AI sectors, challenging competitors. Also has a strong position in the Gaming consoles, providing custom chips for leading gaming consoles, which secures strong revenue streams. AMD's growing portfolio for AI and cloud computing with EPYC CPUs and Instinct GPUs positions provide a high growth potential in Data Centers. We identify AMD main opportunities like leverage its growing GPU portfolio for AI, machine learning, and cloud applications, areas where NVIDIA has dominance and AMD is well-positioned to expand in the gaming GPU sector, particularly with Radeon and custom gaming chips. The main threats for AMD are geopolitical risks, like trade restrictions and supply chain disruptions, NVIDIA's rapid innovation in AI-focused GPUs and

Intel's expansion in cloud computing could threaten AMD's market share and chip shortage and the reliance on third-party manufacturers could challenge AMD's ability to meet demand.

ESG (Environmental, Social, Governance) Factors

Environmental, social, and governance (ESG) factors are essential to every business today. These criteria help companies minimize risks, build stronger relationships, and create value for their stakeholders. In the table on the left we can see assessment of AMD's risks. We identified four main risks that are high probability and have an Economic impact. The first one is the Macroeconomic risk, the fluctuations of global economic conditions like recession and inflation can affect demand of AMD's products, especially in consumer and data centers. The strong competition of Intel and Nvidia can limit AMD's price power and market share in CPU and GPU markets. AMD's dependency of partners like TSMC for chip manufacturing makes AMD vulnerable to disruptions in the supply chain. The last one is technology risk, the continuously innovation in the semiconductor industry that can lead to a loss of market share. Doing a company's detailed analysis on ESG performance, we can understand AMD's overall practices. Analyzing the Environmental, we used key factors with a metric and compared AMD's performance with the Industry average. Starting with the carbon emissions, AMD as implemented energy-saving initiatives but is still dependent on suppliers for manufacturing emissions. Specific values of reduction in CO2 emission are often general. Regarding the Energy efficiency, we note a lack on detailed public reporting of energy efficiency, even though TSMC company is known for its energy efficiency. AMD has focused on optimizing energy use in manufacturing and data centers recently. In the waste management, AMD has limited reporting available, with minimum information on waste reduction initiatives, while NVIDIA have specific waste reduction goals. For water usage, again the partnership with TSMC can help AMD, since TSMC has a detailed program for water conservation, while AMD does not detail. Comparing the sustainable products with eco-designs, AMD has limited focus on eco-friendly products, while NVIDIA has sustainable product offerings. When it comes to Environment, AMD has much room to improve. Analyzing the Social side, AMD has 20% women in leadership roles, while the tech industry average is 25%. AMD has a growing focus on gender diversity in leadership. In the workforce, AMD is improving with the diversity programs but still lags behind on Industry-leading companies like Microsoft, that have around 30% diversity in workforce.

ESG Key factor	Metric
Gender Diversity	% women leadership roles
Workforce Diversity	Ethnic
Employee Wellbeing	Employee satisfaction
Human Rights	Human rights practises

AMD Risks category	Probability
Macro risk	high
Competition risk	high
Supply chain risk	high
Tecnology risk	high
Cybersecurity risk	high
Regulatory risk	medium
Environmental risk	medium
Geopolitical risk	medium

ESG Key factor	Metric
Carbon Emissions	CO2 emissions (tons)
Energy Efficiency	kWh
Waste Management	Waste (kg)
Water Usage	(gallons)
Sustainable Products	% eco-designs

ESG Key factor	Metric
Board Composition	%independent directors
Executive Compensation	CEO/average employee
Shareholder Rights	voting rights
Transparency	financial details

On the Employee Wellbeing, AMD stands out with good employee benefits and work-life balance which indicates a positive work culture. AMD also follows strict human rights standards. AMD’s governance structure appears strong, with a 70% independent directors, compared with 75% average on tech industry. The CEO compensation compared with the average employee pay is 200:1 which is line with the other large tech firms. AMD has strong governance practice with shareholder rights and regular annual meetings and has a high transparency in quarterly reports similar to peers like Intel. Continued improvements in ESG reporting are needed.

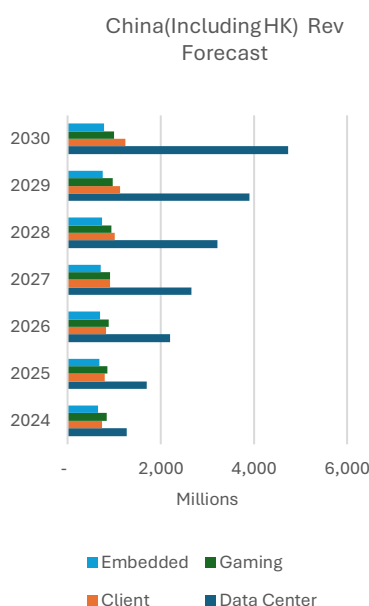
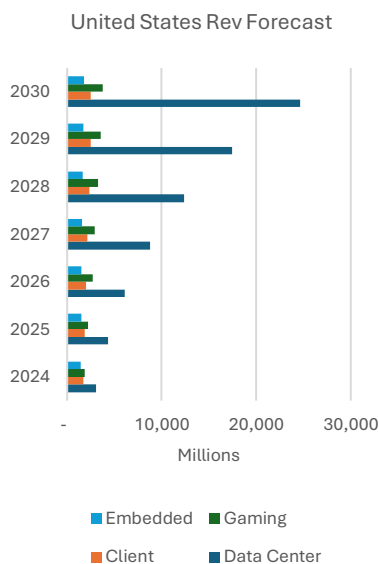
Forecasting and Projections

Our forecast methodology leverages historical data reflecting the mature nature of certain segments, while accounting for recent shifts in market dynamics and consumer behavior. The semiconductor industry is a cyclical industry. The industry cycles are driven by inventory as well as world economic growth. AMD has strategically positioned itself to capitalize on these shifts. The upcoming technological advancements, particularly in AI and the growing need for high-performance computing, suggest a robust demand trajectory. For valuation purposes, we reformulated over six years the Income Statement, Balance sheet and cash flow into core, non-core and financial.

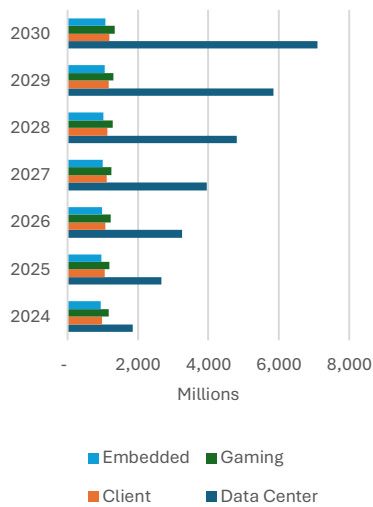
In the income statement, we considered most of the accounts as core. Accounts such as Amortization of acquisition-related intangibles and Licensing gain were considered core because they are directly related to the operational part of AMD and other income and cumulative-effect adjustments were considered non-core.

The forecast is for seven years and assuming a conservative view, 2027 is the year of growth stabilization for AMD in all main regions. During the growth phase we still maintain a conservative view, using the GDP growth projections, Inflation and digitalization of economies as the main drivers for these segments and the revenues to grow accordingly to them.

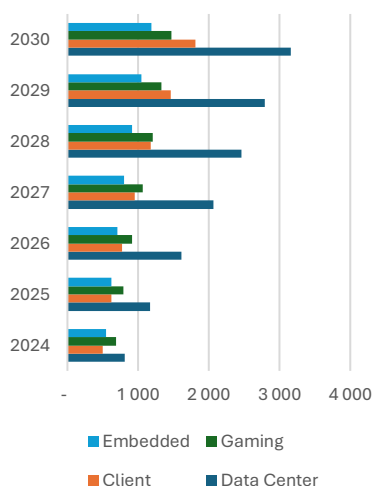
On the Income statement, the estimated growth for Client segment and Data center was mainly based on AI expected growth, semiconductors revenue worldwide, demand for personal computers and the chipsets demand worldwide. These two segments are where it is expected an higher revenue growth, mainly due to AMD raise of 2024 Data Center GPUs revenue outlook, for the 4th consecutive quarter. This was driven by increased adoption of its MI300X accelerator across cloud, strong demand for its Zen 5 notebook and desktop PC processors and OEM, AI customers and, more specifically, noted the increase in



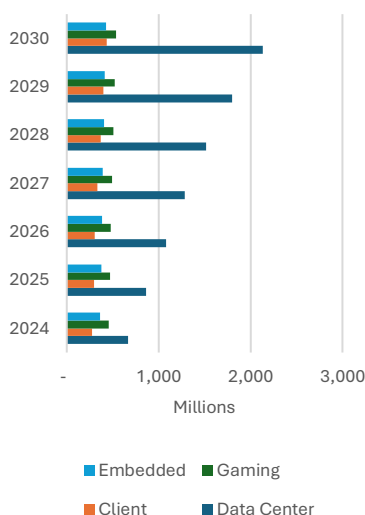
Japan Rev Forecast



Europe Rev Forecast



Taiwan Rev Forecast



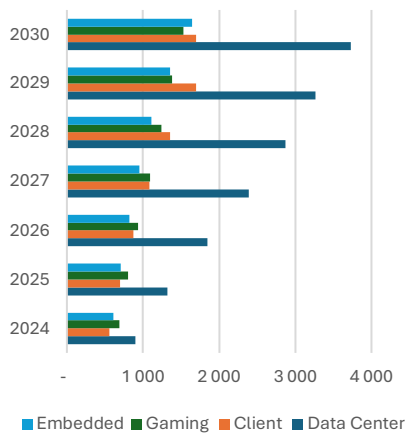
MI300X public cloud instances available in the quarter at the likes of Microsoft, Oracle Cloud and multiple AI specialized cloud provider.

For Data center segment, it was used an average of AI forecast growth and Revenue in semiconductors worldwide, which gave values between the 38% in 2025 to the 16% for 2029. We use this values as a base case, which would increase or decrease depending on the region. For the client segment, we input the average of demand for personal computers, chipsets demand worldwide and Europe aggregate chips demand. For the Gaming segment, we input the average of revenue in semiconductors worldwide and the forecast chip sales for consoles like PlayStation and Xbox. Lastly, we input the average of revenue of semiconductors worldwide for Embedded and used the average revenues of this segment, as we think that will maintain the stability from previous years.

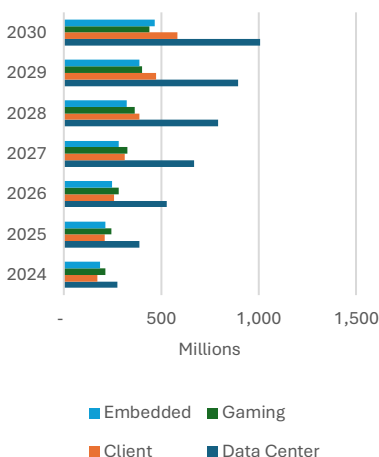
We expect a larger growth for North America in Data Center and Gaming, reaching 15% and 12% in the steady state of 2030, respectively. Following the second largest growth for these segments are in the Asia-Pacif region with a steady growth of 14% and 11% in 2030 respectively in China and 14% and 11% in Japan, respectively. The growth drivers for Asia-Pacific are mainly rise of cloud services, AI, machine learning and big data applications. China's investment in AI and cloud computing is pushing data center demand. The fact that major cloud providers like Google cloud, amazon web and Microsoft Azure are investing mainly in Asia, will drive rapid growth in cloud computing and data center demand. In North America, these cloud providers are also the main drivers. Data center market is expected to grow significantly due to increasing demand for cloud services and AI-driven applications. In Europe, we expect a lower growth but still significant, reaching 13% in steady state in 2030. The European Commission's Digital Strategy is aiming for cloud infrastructure growth and enterprise are continually adopting more AI. The increasing rollout of 5G networks in Europe will also enhance the demand for edge data centers. While Europe will continue to see robust growth, particularly driven by sustainability initiatives, regulatory support, and digital transformation, Asia-Pacific is likely to experience faster growth in the data center market due to factors like a larger market size, rapid cloud adoption, increased demand for AI applications, and hyperscale data center investments. AMD is well-positioned to benefit from data center growth, with its EPYC processors targeting high-performance servers.

For the Gaming segment, we also expect higher growth in the Asia-Pacific market. China and Japan mobile gaming and console gaming largest and fast-growing community remains strong and are the main drivers for this growth. China alone contributed to nearly 45% of the global gaming market. This aligns

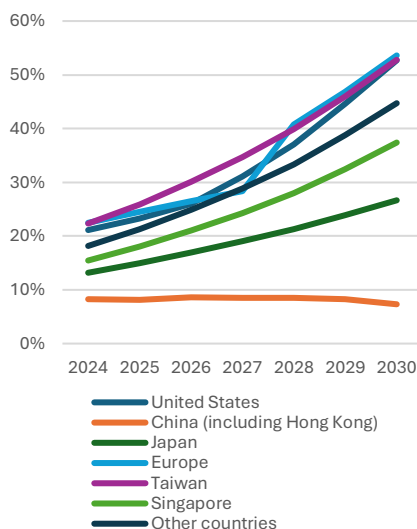
Singapore Rev Forecast



Other Countries Rev Forecast



ROIC per Segment



with AMD’s graphics and processing power offerings. United States and Europe already have a mature and high-value market for console and PC gaming, specially United States with the largest gaming market. The fast growth of platforms like steaming and esports drives the market. Europe also has a mature market, specially in the UK, Germany and France. We will continue to see gaming market growing due to rising of next generation gaming consoles and PC upgrades. AMD benefits from strong relationships with Sony and Microsoft, who incorporate AMD's Radeon GPUs and APUs into their consoles. Additionally, AMD's Radeon graphics cards continue to compete with NVIDIA in the high-performance PC gaming sector.

The Xilinx acquisition strengthens AMD's capabilities in FPGA and embedded processors for IoT, particularly in industrial automation, automotive, and healthcare applications. Like previous segments, we expect an higher growth on Embedded segment in 10% higher than the average of the value drivers in the Asia-Pacific region, followed by Unites States and then Europe. For the Asia-Pacific region, has an hub for manufacturing, industrial automation, and IoT applications, which heavily rely on embedded systems. AMD's Xilinx FPGAs and embedded processors align well with the rising needs of ADAS (advanced driver assistance systems) and in-vehicle computing which has the fastest growing market for Electric Vehicles. There is still strong competition from local players like Huawei and US-China tensions that could disrupt AMD’s operations and sales in China. This 16% growth steady state in Asia-Pacific region, followed by forecasted growth of 15% in US where there is a market saturation in some areas and heavy competition from Intel and NVIDIA in key segments. The growth is driven by embedded solutions adopted in IA, automotive and enterprise system. Initiatives like the CHIPS Act encourage local manufacturing and innovation in semiconductors. We expect 14% growth in Europe because it has slow growth cycles compared to Asia-Pacific and economic uncertainty and regulatory challenges. Still, we see opportunities in automotive and Industrial IoT markets and EU investments in smart energy and automation technologies.

AMD’s client segment has significant growth opportunities specially in the APAC region with rapid PC penetration as digitalization accelerates and has high population density with growing middle-class spending power. While mature, the U.S. market has seen stable demand for AMD-powered laptops and desktops due to performance and affordability. We expect a growth of 26% in 2030 in the US as AMD has solid brand recognition in the U.S., and its competitive products (like Ryzen processors) attract customers and access to mature, reliable distribution channels, which are offset by market saturation and slower growth

compared with the emerging economies. For Europe, we expect 24% growth due to strong demand for eco-friendly technology and infrastructure upgrades. Higher adoption of premium, high-margin systems compared to other regions which are offset by energy crisis that can constrain consumer spending and slower economic growth compared relative to APAC, which we projected a growth of 25%.

Although we recognize and value AMD's long-term focus on the High-Performance Computing market, which needs ongoing investment in R&D and SG&A, we anticipate that higher operating expenses — assuming other factors remain constant — will slow the pace of margin expansion in the near term. In our model, we forecast an increase of 10% in R&D until 2027, the year we expect it will stabilize. Though we still expect a solid expansion in margins over time. We assumed Research and Development, Marketing general and administrative, amortization and license gain as an average of the previous percentage of revenues of each year.

The balance sheet forecasting process was primarily conducted to assess the changes over time in the key assets that make up the operating net working capital, while also providing a reliable estimate for PPE, operating leases, goodwill, acquisition of intangibles and deferred tax assets and non-core business. Additionally, it served as a check to monitor the company's key liquidity and leverage ratios, including the Debt/Equity ratio (book value), Net Debt/EBITDA, Net Financial Debt/EBITDA after lease payments, current ratio, quick ratio, and cash ratio.

In the Core Unlevered FCF we can see a consistent forecasted growth, highlighting that AMD has a strong operational efficiency and the company's core business generates enough cash to sustain or grow without external financing. The biggest growth is 23% forecasted is in 2029 to 2030, mainly due to core growth in the United States of 33%. The non-core unlevered FCF will be negative, specially in 2029 and 2030, due to a negative variation of the Assets and Liabilities. This has a strong impact for shareholder's and investor's confidence and gives market a positive sentiment.

These projections assume AMD will keep operate with stable, low-risk balance sheet strategies, with minimal changes in working capital requirements, debt levels and capital expenditures. For cash and cash equivalents we assume a stable cash generation with modest growth of 2%, supporting operational needs and minor capital expenses. This reflects AMD's conservative cash management strategy to maintain liquidity for ongoing business and aligns AMD's low debt structure. Inventories is forecasted based on the Average Holding period, which

we expected to remain stable at 101 days, assuming AMD has optimized inventory levels to meet demand without overstocking. The account receivable was projected with an average of 66 days of historical Average Collection period, as we expect AMD to maintain consistent credit terms and collection practices with its costumers. Using the average of the historical payable period, we forecasted the Accounts payable, which suggests AMD stable relationship with suppliers, with no anticipated changes in payments or purchasing practices. The other accounts were forecasted in line with the revenue growth.

Analyzing the cash conversion cycle is crucial for assessing AMD's liquidity and short-term financial health. It serves as an important indicator of underlying cash flow risks and can be a useful driver when forecasting accounts receivable, accounts payable, and inventories.

In AMD's case, we observed a CCC of -16 days in 2018, indicating that it was able to convert its inventory and receivables into cash faster than it paid its payables. This suggest that AMD had an efficient working capital cycle.

Between 2019 and 2023, CCC continued to grow, reaching 149 days. This indicates that AMD's cash is tied up longer in working capital as it manages high inventory levels, grown substantially from 845 in 2018 to 4351 in 2023. This increase is likely to meet higher production demand, which increase the Average Holding period, which increases the CCC. The other significant change was in the Average collection period, going from 3 days in 2018 to 87 in 2023. This might be due to extended payment terms with key clients and the increase in the revenues.

In terms of capital structure ratios, the Debt/EBITDA ratio and solvency ratios raised concerns, increasing from 77% to 615% and 38% to 466%, respectively. The increase in the Debt/EBITDA ratio was driven by a rise in debt levels that outpaced growth in equity and EBITDA, pointing to a higher financial risk. These trends highlight the need for careful attention to AMD's liquidity and capital management strategies moving forward.

In the capital structure, there was a substantial decline in AMD's Return on Equity (ROE), Return on Assets (ROA), and Return on Invested Capital (ROIC) from 2018 to 2024. Return on Equity went from 27% in 2018 to 2% in 2023. One of the primary reasons is AMD's equity base expanded during this period, either through retained earnings or capital raising, but the company's net income growth failed to keep up with this expansion. As a result, ROE declined, particularly if the growth in net income was insufficient to offset the increase in equity, thereby diluting the return generated for shareholders. AMD's gross

margins and operating profits have likely faced pressure, despite strong growth in certain segments like Data Centers and Client.

The company's increasing operating expenses driven by higher R&D and SG&A spending, could have outpaced revenue growth in some areas, putting a strain on net income and driving down ROE. AMD's equity base likely expanded during this period, either through retained earnings or capital raising, but the company's net income growth failed to keep up with this expansion. As a result, ROE declined, particularly if the growth in net income was insufficient to offset the increase in equity, thereby diluting the return generated for shareholders.

The decline in ROA decline from 10% to 1% is largely explained by the following: Asset Base Expansion AMD had significantly ramped up its investments in capital expenditures, particularly in R&D and manufacturing infrastructure for next-generation chips. While these investments are essential for long-term growth, they have expanded the asset base substantially.

However, if AMD's revenue growth has not kept pace with the expansion of its assets, it results in a lower asset turnover, which reduces ROA. Despite AMD's focus on high-growth areas such as Data Centers and AI, these investments take time to generate revenue. In the short term, a growing asset base without immediate returns leads to a dilution of ROA, as the company's assets are not generating adequate returns.

The average holding period has increased significantly, particularly due to a rise in the average holding period of inventory, which has grown from 77 days in 2018 to 141 days in 2024. This suggests that AMD is taking longer to sell its products, which leads to a less efficient use of assets.

The ROIC decline from 178% to 2% is the most concerning. This was mainly due to AMD substantial capital investments in areas like new manufacturing processes, data center infrastructure, and advanced research. These investments, while essential for future growth, are capital-intensive and often have long payback periods. In the near term, if these investments are not generating proportional returns, it results in lower ROIC. Additionally, the margins from these investments may have been compressed due to increased operating expenses. The increase in debt financing has put additional pressure on ROIC. As AMD has taken on more debt, the cost of debt has risen, which requires the company to generate higher returns just to cover its interest expenses. This leaves less capital available for equity holders, thereby reducing the overall return on invested capital. A decline in operating income (EBIT) relative to invested capital—which includes both debt and equity—has been a key factor in

the decline of ROIC. Although AMD has made significant investments, particularly in next-gen technologies, the operating income growth has been slower than the rise in invested capital, leading to diminished returns on those investments. In the graph we can see an higher ROIC for Taiwan reaching 69% in 2030, followed by Europe and United States, both reaching 72% and 64% respectively in 2030. We forecasted the main regions for Invested capital are United States, Japan and China, with Europe coming in 4th. It was projected the higher revenue will come from the US, followed by Japan and Europe. The United States, Taiwan, and Europe are strong contributors to AMD's overall performance. These regions likely drive the company's growth. The reason why China's ROIC is around 10% is because of the projected invested capital in the region, which is not offset by the country's revenues.

Valuation Methods

VALUATION METRICS

Unlevered equity beta	1.60
Levered equity beta	1.63
Credit rating	A2 / A-
Debt beta	0.05
Unlevered beta	1.60
Corporate tax rate	21.00%
Market risk-premium	5.20%
Risk-free rate (US 10-year government bonds)	3.26%
Re	11.73%
Ru	11.56%
Rd	3.52%
WACC	11.55%

Several methods were executed to perform the valuation of AMD, assuming different probabilities and weights to each method, considering their properties and features. However, before delving into such methods it is important to explain the assumptions and calculations performed to get to the used discount rates and assumed capital structure.

Regarding the risk free rate this was obtain by taking a simple arithmetic average of the United States 10-year government bond for the period starting in February 2000 and ending in mid-September 2024, generating a value of **3.26%**. A reasonable value, considering the post-pandemic demand shift, increased energy and commodity prices, and the changed central bank policy stance, zooms into a view that interest rates could very much remain above their pre-pandemic levels. What this adds up to is persistent inflation, with central banks committed to maintaining elevated rates in order to manage inflation and financial stability. The strategic approach suggests that interest rates will not normalize back to ultra-low levels pre-pandemic at any point during the next decade.

The market risk premium was deducted by the weekly variation of S&P 500 after performing a simple arithmetic average, producing a standard market risk premium of 5.20% which can be backed by the high but not excessively high-interest rate environment, the relative attractiveness of equities against fixed-income investments may justify a lower MRP as investors rebalance risk-adjusted returns.

To calculate the levered equity beta, we did a linear regression using the return of AMD for the past 10 years and S&P's returns. We assumed the S&P as a

measure of the market. The resulted levered equity beta was 1.63, which we confirmed by doing the usual formula to obtain the beta (covariance of the return of S&P and AMD dividing by the variance of the return of S&P).

To de-leverage the equity beta the Hamada Equation was used assuming a tax rate of 21% and the levered beta previously mentioned (1.60), for this we consider a D/V of 2% to be constant, which is in line with historical company average.

YEAR	ENTREPRISE VALUE	D/V
2018	20914	0.113034
2019	54622	0.017795
2020	111080	0.005942
2021	173772	1.15E-05
2022	109364	0.045115
2023	241574	0.014215
2024	247524	0.02

$$\beta_{unlevered} = \frac{\beta_{levered}}{1 + (1 - T) \times \frac{D}{E}}$$

In relation to the debt Beta this was deducted from the credit rating currently standing at A2 and A- according to Moody's and S&P, respectively. Following the bellow table from a working paper developed by Stanford in 2009 we have assumed a 0.05 debt beta.

Average Debt Betas by Rating and Maturity

By Rating	A and above	BBB	BB	B	CCC
Avg. Beta	< 0.05	0.10	0.17	0.26	0.31
By Maturity	(BBB and above)	1-5 Year	5-10 Year	10-15 Year	> 15 Year
Avg. Beta		0.01	0.06	0.07	0.14

Source: S. Schaefer and I. Strebulaev, "Risk in Capital Structure Arbitrage," Stanford GSB working paper, 2009.

With respect to the unlevered beta following a weighted average beta model and again considering a 2% D/V and consequently a 98% E/V we arrived at an amount of 1.60, which is expected since the company is highly de-levered the inherent risk of its assets without considering its capital structure should be close to its levered beta.

Concerning the cost of equity, cost of unlevered equity and, cost of debt we have followed the traditional CAPM model using the presented formulas to arrive at the amounts of 11.73%, 11.56%, 3.52%, respectively. The cost of equity seems reasonable given the levered equity beta is 1.63 which indicates that AMD stock is more volatile than the market, the cost of unlevered equity as expected, and following the same theory behind the betas, is close to the cost of equity given the D/V is 2%, suggesting that the company's core operations carry a risk level close of that of the overall equity. Regarding cost of debt, the value shows AMD carries moderate risk premium over the risk-free rate and aligns with the credit

rating A2/A-, reflecting investment grade status with relatively low borrowing costs.

As a last step, we have executed the WACC formula and reached a value of 11.55%, this was regarded as reasonable given the mix of equity and debt of the enterprise, with a substantial portion of equity.

A 2% long-term terminal growth rate for AMD is reasonable and justified given its position in a mature, capital-intensive industry like semiconductors and broader economic considerations. While AMD has experienced significant growth in recent years driven by high-performance computing, AI, and data center demand, long-term growth is expected to stabilize as the company matures. A 2% rate aligns with the global economy's long-term real GDP growth and reflects conservative assumptions about AMD's ability to sustain growth in a highly competitive market. Factors such as market saturation, pricing pressure, and the cyclical nature of the semiconductor industry naturally constrain long-term growth to levels closer to economic fundamentals. Additionally, the 2% rate accounts for AMD's ability to maintain profitability and innovation while balancing capital efficiency over the long run. This conservative approach mitigates over-optimism and ensures a realistic valuation, providing a robust estimate of AMD's sustainable long-term value.

Accurately valuing a company such as AMD requires not only intrinsic value models but also relative value models. We have opted by executing various models starting with the APV with a predefined level of debt using the following formula for the terminal value.

APV – Predefined Level of Debt

Unlevered Enterprise Value	246,056
Tax Shield	588
Levered Enterprise Value	246,643
Net Debt	2,913
Levered Equity Value	243,730
Number of Shares Outstanding (in million)	1620.00
Implied Price per Share 2025	150.45
Share price today	126.91
Potential	18.55%

Subsequently, all the unlevered cash flows from each region were discounted using the unlevered cost of equity previously calculated amounting to a total of 246,056\$ million. After adding the tax shield and net debt we arrived at a levered equity value of 243,730\$ million which translates into 150.45\$ expected share price, showing a 18.55% appreciation potential.

For the APV model with constant D/V and for the DCF we have used a similar former to the previous model. However, instead of using the unlevered costs of debt as discount rate we used the WACC previously calculated with a value of 11.55%. Both valuation methods produced the same result with a levered enterprise value of 269,522\$ million and a levered equity value of 264,132\$

APV – Constant D/V & DCF	
Levered Enterprise Value	269,522
D/V	2%
Levered Equity Value	264,132
Number of Shares Outstanding (in million)	1620.00
Implied Price per Share 2025	163.04
Share price today	126.91
Potential	28.47%

EVA – Economic Value Added	
Levered Enterprise Value	206,724.19
Equity Value in year 0	56,942.23
Equity Value	263,666.42
Number of Shares Outstanding (in thousands)	1,620.00
Implied Price per Share 2025	162.76
Share price today	126.91
Potential	28.25%

EVA – Economic Profit	
Levered Enterprise Value	165,928
Equity Value in year 0	56,942
Equity Value	222,870
Number of Shares Outstanding (in thousands)	1,620
Implied Price per Share 2025	137.57
Share price today	126.91
Potential	8.40%

million assuming a D/V of 2%. The valuation suggested a future price of 163.04\$ per share, demonstrating a positive outlook with a maximum gain of 28.47%.

The Economic Value Added (EVA) models provide a comprehensive insight into AMD's ability to generate returns that exceed its cost of capital, highlighting the company's efficiency in value creation and its potential to enhance shareholder wealth.

Both the value added and economic profit model showed outstanding returns with the ROIC being higher than WACC and the ROE being higher than the cost of equity, this generated share price of 162.76\$ and 138.58\$, respectively. Showing again potential upside for AMD's stock (28.25% and 8.40%).

The respective valuation divergences between approaches are, for the most part, based on the method of projecting AMD's future cash flows, use of leverage, and economic profitability. To put it in other terms, given that AMD has low levels of debt outstanding with D/V = 2%, the effect of debt financing on the valuation of the company is small; hence, fairly similar valuations are obtained between leveraged and unleveraged approaches, as seen from the APV and DCF model. The EVA methods also suggest strong value creation, especially in the Economic Value Added approach, where AMD's return on invested capital consistently surpasses its cost of capital, highlighting the company's efficiency in generating surplus returns. This leads to a notably positive outlook, even with modest leverage.

In summary, all the valuation models indicate that AMD can create value and substantially appreciate its share price. Aggregately, the DCF, APV, Flow to Equity, and EVA methods suggest upside from the current share price. With such results and AMD's stable financial position with low debt, a BUY recommendation is appropriate. Cash flow-based models, in particular, confirm the belief of continuation in AMD's cash flow generation and efficiency in its operations. Different methodologies confirm that this is a strong valuation and justifies the positivity associated with AMD's stock.

Multiples Valuation

The following multiples analysis presents the AMD valuation against a set of peer companies by using common valuation multiples: EV/EBITDA, P/B, and P/EPS. This will be helpful in identifying AMD's market positioning with regard to profitability, asset efficiency, and earnings potential, when compared to similar companies in its industry. These various valuation multiples give us an implied share price, which locates the range in which AMD could be valued by setting

Implied share prices

	EV/ EBITDA	P/E	P/B
Average	159.79	283	382
1Q	84.76	127	127
Median	111.78	186	244
3Q	217.45	363	357

benchmarks against market averages and medians. The peer group selected consists of companies from the semiconductor and technology industries that are directly competing or in related markets. This diversified set of peers allows for a balanced view of AMD's operational performance, growth potential, and strategic positioning vis-à-vis its preferred peer set for the purpose of presenting a comprehensive comparison in tune with industry best practices and investor expectations.

The peers chosen were Nvidia (NVDA), Intel (INTC), Qualcomm (QCOM), Texas Instruments (TXN), Broadcom (AVGO), Micron Technology (MU), Taiwan Semiconductor Manufacturing Co (TSM), and Marvell Technology (MRVL). We chose NVDA since it is the leader in GPUs and AI technologies, and a direct competitor in high-performance computing. Included INTC due to being a significant competitor in CPUs and data center solutions, both companies are in PCs and enterprise computing. Selected QCOM for its strong presence in mobile processing and communication technologies, this aligns with AMD's aspirations in connectivity and embedded systems. Considered TXN since its focus is on analog and embedded processing solutions, its financial stability provides a good benchmark for AMD. Utilized AVGO for its market presence in the data centers and IoT sectors making it an appropriate peer. Referenced MU as it is the leading memory provider offering insights into the semiconductor market trends. Added TSM since is the largest semiconductor foundry and essential for supply chain and manufacturing cost comparisons. Lastly opted for MRVL due to its focus on data infrastructure and storage solutions, complementary to AMD's data center growth.

Company Name	Ticker	EV/EBITDA	P/B	P/EPS	Market Cap
NVIDIA Corporation	NVDA.US	44.63	48.75	54.19	2,840,000.00
Intel Corporation	INTC.US	10.40	0.80	39.46	91,810.00
Qualcomm Inc.	QCOM.US	16.36	7.62	21.57	187,930.00
Broadcom Inc.	AVGO.US	37.40	11.56	131.34	758,830.00
Texas Instruments Inc.	TXN.US	23.95	10.68	34.90	183,880.00
Micron Technology, Inc.	MU.US	15.84	2.22	10.05	98,390.00
Taiwan Semiconductor Manufacturing Co.	TSM.US	13.61	7.32	29.63	769,950.00
Marvell Technology Group	MRVL.US	68.30	4.44	22.15	63,030.00
Average		28.81	11.67	49.16	624,227.50
Max		68.30	48.75	131.34	2,840,000.00
Min		10.40	0.80	10.05	63,030.00

Sensitivity and Scenario Analysis

In our report, we conducted a scenario analysis to assess the potential outcomes for AMD's enterprise value under two distinct conditions, an optimistic scenario and a pessimistic scenario. This approach helps illustrate the range of possible valuations based on different assumptions about AMD's future performance and market conditions. For the pessimistic scenario, it was anticipated a lower growth and profitability across AMD's segments. Under this scenario, the total enterprise value is estimated at \$79.6 billion, leading to an implied share price of \$40.32. This valuation reflects a -71.34% potential from the current share price of \$140.71, indicating significant downside risk if AMD fails to meet growth expectations or faces unfavorable market conditions. As for the optimistic scenario, AMD achieves higher growth and profitability in its key segments. In this scenario, the total enterprise value is projected at \$433.1 billion, with an implied share price of \$205.85. This results in a potential upside of 46.29% from the current share price, reflecting confidence in AMD's ability to capitalize on market opportunities and maintain competitive strength.

To assess the robustness of the valuation under varying conditions, it was conducted a sensitivity analysis using two key inputs: the levered equity beta and the growth rate. The base values used were a levered equity beta of 1.63 and a growth rate of 2%. These variables were selected due to their significant impact on the valuation outcomes and their sensitivity to changes in market assumptions. It was created a sensitivity table for each valuation model applied in the analysis. In each table, the impact of adjusting the levered equity beta and the growth rate on the estimated stock price is presented. The levered equity Beta reflects the systematic risk of AMD's equity relative to the market. Changes in beta influence the cost of equity. Higher betas means an increase the cost of equity, reducing the stock price. The growth rate represents the assumed long-term growth in cash flows. Higher growth rates imply a more optimistic outlook, increasing the valuation. The tables highlight that the valuation is sensitive to changes in both the beta and growth rate, with fluctuations in stock price across each valuation model as these inputs vary. In the DCF model, the stock price ranges from approximately €106.53 (at the highest beta and lowest growth rate) to €295.94 (at the lowest beta and highest growth rate), indicating that the DCF model is quite sensitive to both parameters.

The APV model shows a broader range, suggesting that it may be slightly more sensitive to changes in these assumptions than the DCF model. The stock price

varies from around €99.76 to €278.44, indicating a notable impact from both beta and growth rate adjustments. Compared to DCF and APV, the FTE model produces a somewhat narrower range in price fluctuations. The stock price changes from \$139.05 to \$313.33 as beta and growth rates vary, reflecting a sensitivity to changes but less pronounced than in some other models. The range in the EVA model's stock price indicates sensitivity, though the extremes are more compressed compared to some other models. The stock price varies from \$119.75 to \$296.44 across the range of beta and growth rate inputs, showing that while sensitive, the EVA model is more stable relative to APV and DCF. The Economic Profit variation of the EVA model displays sensitivity which appears to be more moderate, suggesting that it may be less volatile in terms of stock price impact due to these factors. The stock price fluctuates between \$105.49 and \$253.93, indicating a lower sensitivity to parameter changes relative to the other models. Each model displays varying degrees of sensitivity, with APV and DCF showing the most pronounced impact from changes in beta and growth rates, while the EVA - Economic Profit model has the least sensitivity.

Additional Tests

As an additional step to assess AMD potential weekly returns, it was performed a Monte Carlo simulation based on the historical weekly cumulative returns of AMD. This approach consists of creating a multitude of scenarios to account for the variability and possible outcomes of AMD's weekly returns and helps in understanding the probabilities of various levels of performance. In each trial, it was forecasted AMD's weekly cumulative return by drawing from the historical return distribution of AMD. The simulation has a larger scope of results, as it simulates 10,000 trials incorporating AMD's past volatility and return tendencies. After running these trials, it was estimated the probability of security's weekly return for AMD greater than 10% is 9.74%.

The Monte Carlo simulation, together with the sensitivity analysis helps to analyze the possible scenarios and reward analysis of a 10% weekly return target based on historical data.

Investment Thesis and Conclusion

Key Findings

- Launch of its Ryzen processors in 2017, based on the Zen architecture. These processors competed directly with Intel's dominance in the CPU market, offering strong performance at competitive prices. Final Price Target and Investment Recommendation
- The ownership of the stock of AMD pertains to institutional, retail, and individual investors. Approximately 44.31% of the Institutional Investor's shareholding is further classified as owned by Institutional Investors, 0.54% for the Insiders and 55.15% for Other Public Companies and Individual investors.
- From 2015 onwards, AMD's return on stock price is higher than the return on S&P500. From 2015 to 2021, the stock price experienced remarkable growth. AMD went from years of financial losses to consistent profitability in 2017. In November 2021 stock price reached \$164.46.
- The total revenues of AMD have a constant and positive growth throughout the years. With a major growth in 2022 of 44%. From 2021 onwards, the operating profit decrease significantly, from 22% to 5%. This is mostly due to AMD's increase of 76% in Research and Development, a 53% increase on cost of sales and costs of Amortization.
- We identify AMD main opportunities like leverage its growing GPU portfolio for AI, machine learning, and cloud applications, areas where NVIDIA has dominance and AMD is well-positioned to expand in the gaming GPU sector, particularly with Radeon and custom gaming chips.
- AMD is well-positioned to benefit from AI, cloud computing, and gaming growth but faces strong competition from NVIDIA and Intel in these areas. NVIDIA is the leader in AI and gaming GPUs, while Intel has strong positions in CPUs, autonomous driving (Mobileye), and data centers. AMD's EPYC CPUs and Instinct GPUs are competitive, but its limited presence in autonomous driving and professional visualization may hinder its growth in certain markets.
- AMD improved its gross margin from **38% in 2018** to **51% in 2022** (slightly dropping to **50% in 2023**) driven by high-margin segments like data centers, while significantly increasing cash reserves and marketable securities to prioritize liquidity and flexibility, maintaining a low D/V ratio and minimal debt, alongside faster growth in receivables and inventories due to longer project cycles and an expanding product portfolio.

Conclusion

Advanced Micro Devices (AMD) has shown remarkable resilience and strategic adaptability in a dynamic and highly competitive semiconductor industry. Over the last five years, the company has leveraged its strong presence in high-margin segments, such as data centers, embedded systems, and AI hardware, to significantly improve its financial performance.

Gross margins increased from 38% in 2018 to 51% in 2022 before slightly softening to 50% in 2023. This improvement reflects AMD's successful product mix strategy, focusing on premium offerings such as EPYC CPUs and Instinct GPUs, which cater to high-demand sectors like cloud computing and artificial intelligence.

Regionally, AMD has remarkable growth across its core markets, particularly in the United States, which overtook China as its largest revenue contributor by 2023 due to regulatory and economic challenges in the latter. Europe and Asia-Pacific also demonstrated consistent revenue growth, with regions such as Japan and Singapore serving as strongholds for operational efficiencies and market access. Emerging markets in Latin America, the Middle East, and Africa, while smaller contributors, underline AMD's efforts to diversify its revenue streams and build a resilient global portfolio.

AMD's acquisitions of Xilinx and Pensando have been transformative, adding substantial goodwill and enhancing its capabilities in adaptive computing and data center solutions.

These acquisitions have not only expanded AMD's product offerings but also positioned it as a leader in innovation for high-performance computing. Additionally, partnerships with critical players like TSMC reinforce AMD's ability to manage supply chain complexities while scaling to meet global demand.

Financially, AMD has maintained sustainable capital structure, with low levels of debt and a strong focus on liquidity. The company's cash reserves and marketable securities have grown significantly, providing flexibility for future strategic investments.

While challenges such as a declining Capex-to-D&A ratio and stagnating ROIC have raised concerns about underinvestment, AMD's R&D focus ensures it remains at the forefront of technological advancements.

Furthermore, the Embedded and Data Center segments have consistently offset weaker performance in the Client and Gaming divisions, highlighting AMD's ability to pivot toward growth drivers even in challenging market conditions.

Valuation analyses indicate compelling upside potential for AMD's stock. Across models such as DCF, APV, and EVA, the implied share prices range from \$137.57 to \$163.04, reflecting a potential upside of up to 28.47% from current levels. This, combined with AMD's robust market position, operational efficiency, and focus on innovation, reinforces its attractiveness as an investment.

In conclusion, AMD is well-positioned to capitalize on emerging opportunities in AI, cloud computing, and gaming, while its strong financial foundation provides stability amidst industry cyclicality. While maintaining focus on strategic reinvestments will be key, AMD's growth trajectory and valuation metrics strongly support a **BUY** recommendation. Investors are advised to monitor the company's cash deployment, competitive landscape, and macroeconomic trends, but overall, AMD remains a strong candidate for long-term growth.

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Appendix

Financial Statements

Income Statement

Core Business-United States							2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues							1,327	1,764	2,294	4,656	8,049	7,837	9,748	12,535	15,998	19,863	23,813	27,727	32,361
growth yoy %								32.93%	30.05%	102.96%	72.87%	-2.63%	24.39%	28.59%	27.62%	24.16%	19.89%	16.44%	16.72%
Data Center							845	1,234	396	1,047	2,061	2,245	3,215	4,775	6,755	8,811	10,675	12,238	14,031
growth yoy %								46%	-68%	164%	97%	9%	43%	49%	41%	30%	21%	15%	15%
Client							-	-	1,219	1,951	2,115	1,607	1,976	2,499	3,134	3,926	4,987	6,292	7,938
growth yoy %										60%	8%	-24%	23%	26%	25%	25%	27%	26%	26%
Gaming							-	-	645	1,589	2,321	2,147	2,448	2,843	3,334	3,944	4,501	5,009	5,590
growth yoy %										146%	46%	-8%	14%	16%	17%	18%	14%	11%	12%
Embedded							482	530	34	70	1,552	1,839	2,109	2,419	2,775	3,182	3,650	4,187	4,802
growth yoy %								10%	-94%	107%	2127%	18%	15%	15%	15%	15%	15%	15%	15%
Cost of Sales							826	1,012	1,273	2,410	3,939	3,897	1,803	2,393	3,063	3,822	4,624	5,443	6,428
% of revenues							62%	57%	55%	52%	49%	50%	18%	19%	19%	19%	19%	20%	20%
Data Center													510	833	1,179	1,537	1,863	2,135	2,448
% of revenues													16%	17%	17%	17%	17%	17%	17%
Client													593	750	940	1,178	1,496	1,888	2,381
% of revenues													30%	30%	30%	30%	30%	30%	30%
Gaming													490	569	667	789	900	1,002	1,118
% of revenues													20%	20%	20%	20%	20%	20%	20%
Embedded													211	242	277	318	365	419	480
% of revenues													10%	10%	10%	10%	10%	10%	10%
Gross Profit							501	752	1,021	2,246	4,110	3,940	7,945	10,142	12,935	16,041	19,189	22,283	25,934
Gross Margin							38%	43%	45%	48%	51%	50%	82%	81%	81%	81%	81%	80%	80%
Expenses							409	586	700	1,213	3,679	3,801	3,486	4,754	6,449	8,006	9,598	11,176	13,044
Research and development							294	405	466	806	1,707	2,029	2,110	2,984	4,189	5,201	6,236	7,261	8,474
% of revenues							22%	23%	20%	17%	21%	26%	22%	24%	26%	26%	26%	26%	26%
Marketing general and administrative							115	197	234	410	797	813	960	1,235	1,576	1,956	2,345	2,731	3,187
% of revenues							9%	11%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Amortization of acquisition-related intangibles							-	(16)	-	-	1,210	971	431	554	708	878	1,053	1,226	1,431
% of revenues							0%	-1%	0%	0%	15%	12%	4%	4%	4%	4%	4%	4%	4%
Licensing gain							-	-	-	(3)	(35)	(12)	-	15	19	24	30	36	42
% of revenues							0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Core result before taxes							92	165	322	1,034	431	139	4,459	5,388	6,486	8,035	9,591	11,107	12,889
Equity income in investee							(0)	-	1	2	5	6	114	137	165	205	244	283	329
Result before taxes%							0%	0%	0%	0%	1%	4%	3%	3%	3%	3%	3%	3%	3%
Statutory Taxes							19	35	68	217	91	29	936	1,131	1,362	1,687	2,014	2,332	2,707
Result before taxes%							21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments							(11)	(8)	(4)	24	(64)	(108)	-	799	966	1,222	1,677	2,270	3,041
Result before taxes%							-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result							83	138	259	794	409	223	4,435	5,359	6,512	8,229	10,091	12,099	14,271

China (including Hong Kong)							2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues							1,319	1,736	2,329	4,096	5,207	3,417	4,231	5,404	6,845	8,443	10,072	11,688	13,593
growth yoy %								32%	34%	76%	27%	-34%	24%	28%	27%	23%	19%	16%	16%
Data Center							840	1,215	402	921	1,333	979	1,383	2,025	2,829	3,652	4,391	5,007	5,708
growth yoy %								45%	-67%	129%	45%	-27%	41%	46%	40%	29%	20%	14%	14%
Client							-	-	1,238	1,717	1,368	701	855	1,071	1,331	1,653	2,080	2,601	3,252
growth yoy %										39%	-20%	-49%	22%	25%	24%	24%	26%	25%	25%
Gaming							-	-	655	1,397	1,501	936	1,062	1,225	1,428	1,678	1,904	2,110	2,344
growth yoy %										113%	7%	-38%	13%	15%	17%	17%	14%	11%	11%
Embedded							479	521	34	61	1,004	802	931	1,082	1,257	1,460	1,696	1,970	2,289
growth yoy %								9%	-93%	80%	1538%	-20%	16%	16%	16%	16%	16%	16%	16%
Cost of Sales							821	996	1,292	2,120	2,548	1,699	781	1,012	1,305	1,648	1,981	2,319	2,721
% of revenues							62%	56%	56%	46%	32%	22%	18%	19%	19%	20%	20%	20%	20%
Data Center													219	337	495	671	806	919	1,048
% of revenues													16%	17%	17%	18%	18%	18%	18%
Client													256	321	399	486	624	780	976
% of revenues													30%	30%	30%	30%	30%	30%	30%
Gaming													212	245	286	336	381	422	469
% of revenues													20%	20%	20%	20%	20%	20%	20%
Embedded													93	108	126	146	170	197	229
% of revenues													10%	10%	10%	10%	10%	10%	10%
Gross Profit							498	740	1,037	1,976	2,659	1,718	3,450	4,392	5,540	6,795	8,091	9,370	10,872
Gross Margin							38%	43%	45%	48%	51%	50%	82%	81%	81%	80%	80%	80%	80%
Expenses							407	577	710	1,067	2,380	1,657	2,807	3,696	4,757	5,968	7,251	8,583	10,198
Research and development							292	399	473	709	1,104	885	916	1,228	1,555	1,919	2,289	2,656	3,089
% of revenues							22%	23%	20%	17%	21%	26%	22%	23%	23%	23%	23%	23%	23%
Marketing general and administrative							114	193	237	361	515	354	1,051	1,343	1,701	2,098	2,503	2,904	3,378
% of revenues							9%	11%	10%	9%	10%	12%	25%	25%	25%	25%	25%	25%	25%
Amortization of acquisition-related intangibles							-	(15)	-	-	783	404	423	540	684	844	1,007	1,169	1,359
% of revenues							0%	-1%	0%	0%	15%	12%	10%	10%	10%	10%	10%	10%	10%
Licensing gain							-	-	-	(3)	(23)	(5)	417	585	816	1,107	1,452	1,854	2,372
% of revenues							0%	0%	0%	0%	0%	0%	10%	11%	12%	13%	14%	16%	17%
Core result before taxes							92	163	327	909	279	60	643	695	783	827	840	786	674
Equity income in investee							(0)	-	1	1	3	2	135	146	164	174	176	165	142
Result before taxes%							0%	0%	0%	0%	1%	4%	21%	21%	21%	21%	21%	21%	21%
Statutory Taxes							19	34	69	191	59	13	135	145	164	174	176	165	142
Result before taxes%							21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments							(11)	(8)	(4)	21	(41)	(47)	-	115	125	140	148	151	141
Result before taxes%							-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result							83	136	263	699	265	97	758	820	923	976	991	927	795

Japan	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues	1,225	840	1,033	2,381	4,177	4,629	5,732	7,427	9,543	11,956	14,555	17,312	20,717
growth yoy %		-31%	23%	130%	75%	11%	24%	30%	28%	25%	22%	19%	20%
Data Center	780	588	178	535	1,070	1,326	1,874	2,744	3,832	4,948	5,949	6,782	7,733
growth yoy %		-25%	-70%	200%	100%	24%	41%	46%	40%	29%	20%	14%	14%
Client	-	-	549	998	1,097	949	1,158	1,557	2,074	2,757	3,729	5,002	6,708
growth yoy %				82%	10%	-14%	22%	34%	33%	33%	35%	34%	34%
Gaming	-	-	291	812	1,204	1,268	1,438	1,660	1,934	2,273	2,580	2,859	3,176
growth yoy %				180%	48%	5%	13%	15%	17%	17%	14%	11%	11%
Embedded	445	252	15	36	806	1,086	1,262	1,466	1,703	1,978	2,298	2,669	3,101
growth yoy %		-43%	-94%	136%	2160%	35%	16%	16%	16%	16%	16%	16%	16%
Cost of Sales	762	482	573	1,232	2,044	2,302	1,064	1,447	1,928	2,461	3,018	3,588	4,289
% of revenues	57%	27%	25%	26%	25%	29%	19%	19%	20%	21%	21%	21%	21%
Data Center							562	823	1,150	1,484	1,785	2,035	2,320
% of revenues							30%	30%	30%	30%	30%	30%	30%
Client							232	311	415	551	746	1,000	1,342
% of revenues							20%	20%	20%	20%	20%	20%	20%
Gaming							144	166	193	227	258	286	318
% of revenues							10%	10%	10%	10%	10%	10%	10%
Embedded							126	147	170	198	230	267	310
% of revenues							10%	10%	10%	10%	10%	10%	10%
Gross Profit	463	358	460	1,149	2,133	2,327	4,668	5,979	7,615	9,495	11,537	13,724	16,428
Gross Margin	38%	43%	45%	48%	51%	50%	81%	81%	80%	79%	79%	79%	79%
Expenses	378	279	315	620	1,909	2,245	3,238	4,195	5,391	6,754	8,222	9,780	11,703
Research and development	271	193	210	412	886	1,198	1,240	1,607	2,065	2,587	3,150	3,747	4,484
% of revenues	22%	23%	20%	17%	21%	26%	22%	22%	22%	22%	22%	22%	22%
Marketing general and administrative	106	94	105	210	413	480	860	1,114	1,431	1,793	2,183	2,597	3,108
% of revenues	9%	11%	10%	9%	10%	10%	15%	15%	15%	15%	15%	15%	15%
Amortization of acquisition-related intangibles	-	(7)	-	-	628	574	573	743	954	1,196	1,456	1,731	2,072
% of revenues	0%	-1%	0%	0%	15%	12%	10%	10%	10%	10%	10%	10%	10%
Licensing gain	-	-	-	(2)	(18)	(7)	565	731	940	1,177	1,434	1,705	2,040
% of revenues	0%	0%	0%	0%	0%	0%	10%	10%	10%	10%	10%	10%	10%
Core result before taxes	85	79	145	529	224	82	1,430	1,784	2,224	2,741	3,315	3,944	4,725
Equity income in investee	(0)	-	1	1	2	3	300	375	467	576	696	828	992
Result before taxes%	0%	0%	0%	0%	1%	4%	21%	21%	21%	21%	21%	21%	21%
Statutory Taxes	18	17	30	111	47	17	300	375	467	576	696	828	992
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(10)	(4)	(2)	12	(33)	(64)	-	215	268	334	411	497	709
Result before taxes%	-11%	-5%	-1%	2%	-15%	-78%	-15%	-15%	-15%	-15%	-15%	-15%	-15%
Core Result	77	66	117	406	212	131	1,645	2,052	2,558	3,152	3,812	4,536	5,434

Europe	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues	470	762	1,108	1,249	1,773	2,030	2,547	3,206	4,005	4,882	5,765	6,629	7,638
growth yoy %		62%	45%	13%	42%	14%	25%	26%	25%	22%	18%	15%	15%
Data Center	299	533	191	281	454	581	811	1,170	1,613	2,061	2,460	2,789	3,162
growth yoy %		78%	-64%	47%	62%	28%	39%	44%	38%	28%	19%	13%	13%
Client	-	-	589	523	466	416	504	625	770	948	1,182	1,464	1,814
growth yoy %				-11%	-11%	-11%	21%	24%	23%	23%	25%	24%	24%
Gaming	-	-	312	426	511	556	690	792	917	1,070	1,207	1,332	1,473
growth yoy %				37%	20%	9%	13%	15%	15%	17%	13%	10%	11%
Embedded	171	229	16	19	342	476	543	619	705	803	916	1,043	1,189
growth yoy %		34%	-93%	15%	3%	39%	14%	14%	14%	14%	14%	14%	14%
Cost of Sales	292	437	615	646	868	1,009	309	407	527	654	777	890	1,020
% of revenues	22%	25%	27%	14%	11%	13%	12%	13%	13%	13%	13%	13%	13%
Data Center							162	234	323	412	492	558	632
% of revenues							20%	20%	20%	20%	20%	20%	20%
Client							50	63	77	95	118	146	181
% of revenues							10%	10%	10%	10%	10%	10%	10%
Gaming							69	79	92	107	121	133	147
% of revenues							10%	10%	10%	10%	10%	10%	10%
Embedded							27	31	35	40	46	52	59
% of revenues							5%	5%	5%	5%	5%	5%	5%
Gross Profit	178	325	493	603	905	1,021	2,239	2,799	3,479	4,228	4,988	5,739	6,617
Gross Margin	38%	43%	45%	48%	51%	50%	88%	87%	87%	87%	87%	87%	87%
Expenses	145	253	338	325	810	985	967	1,293	1,721	2,239	2,064	2,373	2,735
Research and development	104	175	225	216	376	526	606	839	1,154	1,547	1,248	1,435	1,653
% of revenues	22%	23%	20%	17%	21%	26%	24%	26%	29%	32%	22%	22%	22%
Marketing general and administrative	41	85	113	110	175	211	251	316	394	481	568	653	752
% of revenues	9%	11%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Amortization of acquisition-related intangibles	-	(7)	-	-	267	252	113	142	177	216	255	293	338
% of revenues	0%	-1%	0%	0%	15%	12%	4%	4%	4%	4%	4%	4%	4%
Licensing gain	-	-	-	(1)	(8)	(3)	-	3	4	5	6	7	8
% of revenues	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Core result before taxes	33	71	155	277	95	36	1,271	1,506	1,758	1,990	2,924	3,366	3,883
Equity income in investee	(0)	-	1	0	1	1	11	13	15	17	25	29	34
Result before taxes%	0%	0%	0%	0%	1%	4%	1%	1%	1%	1%	1%	1%	1%
Statutory Taxes	7	15	33	58	20	8	267	316	369	418	614	707	815
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(4)	(3)	(2)	6	(14)	(28)	-228	-270	-315	-357	-524	-603	-696
Result before taxes%	-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result	29	60	125	213	90	58	1,243	1,472	1,719	1,946	2,859	3,291	3,797

Taiwan	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues	1,197	719	1,187	2,091	2,369	1,841	2,066	2,534	3,083	3,665	4,228	4,801	5,299
growth yoy %		-40%	65%	76%	13%	-22%	12%	23%	22%	19%	15%	14%	10%
Data Center	763	503	205	470	607	527	706	974	1,290	1,597	1,861	2,075	2,312
growth yoy %		-34%	-59%	129%	29%	-13%	34%	38%	32%	24%	17%	11%	11%
Client	-	-	631	876	622	378	312	376	451	540	655	789	789
growth yoy %				39%	-29%	-39%	18%	21%	20%	20%	21%	20%	0%
Gaming	-	-	334	713	683	504	560	630	716	818	908	989	1,078
growth yoy %				114%	-4%	-26%	11%	13%	14%	14%	11%	9%	9%
Embedded	434	216	17	31	457	432	489	554	627	710	804	949	1,119
growth yoy %		-50%	-92%	80%	1360%	-5%	13%	13%	13%	13%	13%	18%	18%
Cost of Sales	745	413	658	1,082	1,159	915	308	388	482	580	674	766	840
% of revenues	56%	23%	29%	23%	14%	12%	15%	15%	16%	16%	16%	16%	16%
Data Center							141	195	258	319	372	415	462
% of revenues							20%	20%	20%	20%	20%	20%	20%
Client							62	75	90	108	131	158	158
% of revenues							20%	20%	20%	20%	20%	20%	20%
Gaming							56	63	72	82	91	99	108
% of revenues							10%	10%	10%	10%	10%	10%	10%
Embedded							49	55	63	71	80	95	112
% of revenues							10%	10%	10%	10%	10%	10%	10%
Gross Profit	452	306	529	1,009	1,210	926	1,758	2,146	2,601	3,085	3,554	4,034	4,459
Gross Margin	38%	43%	45%	48%	51%	50%	85%	85%	84%	84%	84%	84%	84%
Expenses	369	239	362	545	1083	893	739	906	1,103	1,311	1,512	1,717	1,895
Research and development	265	165	241	362	502	477	447	548	667	793	915	1,039	1,147
% of revenues	22%	23%	20%	17%	21%	26%	22%	22%	22%	22%	22%	22%	22%
Marketing general and administrative	104	80	121	184	234	191	203	250	304	361	416	473	522
% of revenues	9%	11%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Amortization of acquisition-related intangibles	-	(6)	-	-	356	228	91	112	136	162	187	212	234
% of revenues	0%	-1%	0%	0%	15%	12%	4%	4%	4%	4%	4%	4%	4%
Licensing gain	-	-	-	(2)	(10)	(3)	-	3	4	5	6	7	8
% of revenues	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Core result before taxes	83	67	166	464	127	33	1,019	1,239	1,498	1,774	2,042	2,317	2,564
Equity income in investee	(0)	-	1	1	1	1	9	11	13	15	18	20	22
Result before taxes%	0%	0%	0%	0%	1%	4%	1%	1%	1%	1%	1%	1%	1%
Statutory Taxes	18	14	35	97	27	7	214	260	315	373	429	487	538
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(10)	(3)	(2)	11	(19)	(25)	-	183	222	269	318	366	415
Result before taxes%	-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result	75	56	134	357	120	52	996	1,212	1,465	1,735	1,996	2,266	2,507

Singapore	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues	728	597	1,096	1,389	1,380	2,231	2,762	3,528	4,469	5,513	6,576	7,696	8,604
growth yoy %		-18%	84%	27%	-1%	62%	24%	28%	27%	23%	19%	17%	12%
Data Center	464	418	189	312	353	639	903	1,322	1,847	2,385	2,867	3,269	3,727
growth yoy %		-10%	-55%	65%	13%	81%	41%	46%	40%	29%	20%	14%	14%
Client	-	-	583	582	363	458	558	699	869	1,079	1,358	1,698	1,698
growth yoy %				0%	-38%	26%	22%	25%	24%	24%	26%	25%	0%
Gaming	-	-	308	474	398	611	693	800	932	1,095	1,243	1,378	1,530
growth yoy %				54%	-16%	54%	13%	15%	17%	17%	14%	11%	11%
Embedded	264	179	16	21	266	523	608	706	821	953	1,107	1,351	1,648
growth yoy %		-32%	-91%	30%	1180%	97%	16%	16%	16%	16%	16%	22%	22%
Cost of Sales	453	343	608	719	675	1,109	419	551	713	890	1,071	1,256	1,391
% of revenues	34%	19%	27%	15%	8%	14%	15%	16%	16%	16%	16%	16%	16%
Data Center							178	260	363	469	564	643	733
% of revenues							20%	20%	20%	20%	20%	20%	20%
Client							112	140	174	216	272	340	340
% of revenues							20%	20%	20%	20%	20%	20%	20%
Gaming							69	80	93	110	124	138	153
% of revenues							10%	10%	10%	10%	10%	10%	10%
Embedded							61	71	82	95	111	135	165
% of revenues							10%	10%	10%	10%	10%	10%	10%
Gross Profit	275	254	488	670	705	1,122	2,343	2,977	3,757	4,623	5,505	6,440	7,213
Gross Margin	38%	43%	45%	48%	51%	50%	85%	84%	84%	84%	84%	84%	84%
Expenses	224	198	334	362	631	1082	1,418	1,811	2,294	2,830	3,376	3,951	4,417
Research and development	161	137	223	240	293	578	598	764	967	1,193	1,423	1,666	1,862
% of revenues	22%	23%	20%	17%	21%	26%	22%	22%	22%	22%	22%	22%	22%
Marketing general and administrative	63	67	112	122	137	231	272	347	440	543	648	758	847
% of revenues	9%	11%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Amortization of acquisition-related intangibles	-	(5)	-	-	207	277	276	353	447	551	658	770	860
% of revenues	0%	-1%	0%	0%	15%	12%	10%	10%	10%	10%	10%	10%	10%
Licensing gain	-	-	-	(1)	(6)	(3)	272	347	440	543	648	758	847
% of revenues	0%	0%	0%	0%	0%	0%	10%	10%	10%	10%	10%	10%	10%
Core result before taxes	51	56	154	308	74	39	925	1,166	1,462	1,793	2,129	2,489	2,796
Equity income in investee	(0)	-	1	1	1	2	8	10	13	15	18	22	24
Result before taxes%	0%	0%	0%	0%	1%	4%	1%	1%	1%	1%	1%	1%	1%
Statutory Taxes	11	12	32	65	16	8	194	245	307	376	447	523	587
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(6)	(3)	(2)	7	(11)	(31)	-	166	209	262	321	382	446
Result before taxes%	-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result	46	47	124	237	70	63	904	1,140	1,430	1,753	2,082	2,434	2,734

Other countries	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues	209	313	716	572	646	695	846	1,058	1,313	1,590	1,869	2,158	2,498
growth yoy %		50%	129%	-20%	13%	8%	22%	25%	24%	21%	17%	16%	16%
Data Center	133	219	124	129	165	199	274	389	530	670	793	894	1,008
growth yoy %		64%	-44%	4%	29%	20%	38%	42%	36%	26%	18%	13%	13%
Client	-	-	381	240	170	143	171	210	257	313	387	475	583
growth yoy %				-37%	-29%	-16%	20%	23%	22%	22%	24%	23%	23%
Gaming	-	-	201	195	186	190	214	244	280	325	365	400	441
growth yoy %				-3%	-5%	2%	12%	14%	15%	16%	12%	10%	10%
Embedded	76	94	10	9	125	163	187	215	246	282	324	388	466
growth yoy %		24%	-89%	-18%	1355%	31%	15%	15%	15%	15%	15%	20%	20%
Cost of Sales	130	180	397	296	316	346	75	94	116	141	166	191	221
% of revenues	10%	10%	17%	6%	4%	4%	9%	9%	9%	9%	9%	9%	9%
Data Center							24	34	46	58	69	78	87
% of revenues							9%	9%	9%	9%	9%	9%	9%
Client							15	19	23	28	35	43	52
% of revenues							9%	9%	9%	9%	9%	9%	9%
Gaming							19	22	25	29	33	36	40
% of revenues							9%	9%	9%	9%	9%	9%	9%
Embedded							17	19	22	25	29	35	42
% of revenues							9%	9%	9%	9%	9%	9%	9%
Gross Profit	79	133	319	276	330	349	770	964	1,197	1,449	1,703	1,967	2,277
Gross Margin	38%	43%	45%	48%	51%	50%	91%	91%	91%	91%	91%	91%	91%
Expenses	64	104	218	149	295	337	434	543	674	816	959	1,108	1,283
Research and development	46	72	145	99	137	180	183	229	284	344	404	467	541
% of revenues	22%	23%	20%	17%	21%	26%	22%	22%	22%	22%	22%	22%	22%
Marketing general and administrative	18	35	73	50	64	72	83	104	129	157	184	213	246
% of revenues	9%	11%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Amortization of acquisition-related intangibles	-	(3)	-	-	97	86	85	106	131	159	187	216	250
% of revenues	0%	-1%	0%	0%	15%	12%	10%	10%	10%	10%	10%	10%	10%
Licensing gain	-	-	-	(0)	(3)	(1)	83	104	129	157	184	213	246
% of revenues	0%	0%	0%	0%	0%	0%	10%	10%	10%	10%	10%	10%	10%
Core result before taxes	15	29	100	127	35	12	336	421	522	633	744	859	994
Equity income in investee	(0)	-	0	0	0	0	3	4	5	5	6	7	9
Result before taxes%	0%	0%	0%	0%	1%	4%	1%	1%	1%	1%	1%	1%	1%
Statutory Taxes	3	6	21	27	7	3	71	88	110	133	156	180	209
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(2)	(1)	(1)	3	(5)	(10)	-	60	-	75	-	133	-
Result before taxes%	-11%	-5%	-1%	2%	-15%	-78%	-18%	-18%	-18%	-18%	-18%	-18%	-18%
Core Result	13	25	81	98	33	20	329	412	511	619	727	840	972
Non-Core	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Other income (expense) net	-	(165)	(47)	55	8	197	198.97	200.96	202.97	205.00	207.05	209.12	211.21
Cumulative-effect adjustment to accumulated d	2	0	0	0	0	0	-	-	-	-	-	-	-
Non-Core result before taxes	2	(165)	(47)	55	8	197	199	201	203	205	207	209	211
Statutory Taxes	0	(35)	(10)	12	2	41	42	42	43	43	43	44	44
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	(52)	(37)	(1,470)	(350)	(202)	(213)	-216	-218	-220	-222	-224	-226	-229
Result before taxes%	-2621%	23%	3128%	-636%	-2521%	-108%	-108%	-108%	-108%	-108%	-108%	-108%	-108%
Non-Core Result	54	(93)	1,433	393	208	369	373	376	380	384	388	392	396
Financial	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Interest expense	-121	-94	-47	-34	-88	-106	92	99	106	115	126	139	155
Rd - Cost of debt	10%	19%	14%	11%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Net change in unrealized gains (losses) on cash f	-14	8	17	-20	-38	31	32	32	33	34	34	35	36
Non-Core result before taxes	(135)	(86)	(30)	(54)	(126)	(75)	(61)	(66)	(73)	(82)	(92)	(105)	(120)
Statutory Taxes	(28)	(18)	(6)	(11)	(26)	(16)	13	14	15	17	19	22	25
Result before taxes%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax Adjustments	28	18	6	11	26	69	13	14	15	17	19	22	25
Result before taxes%	-21%	-21%	-21%	-21%	-21%	-92%	-21%	-21%	-21%	-21%	-21%	-21%	-21%
Financing Result	(135)	(86)	(30)	(54)	(126)	(128)	61	66	73	82	92	105	120
Total Income	325	349	2,507	3,142	1,282	885	10,623	12,777	15,424	18,711	22,854	26,681	30,786

Balance Sheet

Core Business - Consolidated	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cash and cash equivalents	130	135	195	329	472	454	559	714	905	1,118	1,338	1,560	1,814
% of revenues	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Accounts receivable, net	4	1,859	2,066	2,706	4,126	5,376	5,017	6,410	8,128	10,042	12,011	14,010	16,402
Prepayment and receivables - related parties	52	20	10	2	2	9	66	66	66	66	66	66	66
Average Collection Period	3	102	78	60	64	87	1320	1,745	2,257	2,829	3,415	4,009	4,691
Inventories, net	845	982	1,399	1,955	3,771	4,351	101	101	101	101	101	101	101
Average Holding Period	77	93	94	84	119	141	-	-	-	-	-	-	-
Prepaid expenses	57	-	-	-	-	-	0%	0%	0%	0%	0%	0%	0%
% of Expenses	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other current assets	195	-	-	-	-	-	0%	0%	0%	0%	0%	0%	0%
% of revenues	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Prepaid expenses and other current assets	-	233	378	312	1,265	1,259	1,440	1,892	2,463	3,072	3,628	1,934	453
% of Expenses	0%	10%	13%	7%	12%	11%	11%	11%	11%	11%	11%	5%	1%
Accounts payable	528	988	468	1,321	2,493	2,055	1,040	1,375	1,777	2,227	2,689	3,157	3,694
Payables to related parties	533	213	78	85	463	363	80	80	80	80	80	80	80
Average Payable Period	96	113	37	60	93	78	4,712	6,192	2,239	2,792	3,298	3,869	905
Accrued liabilities	763	1,084	1,796	2,424	3,077	3,082	36%	36%	10%	10%	10%	10%	2%
% of Expenses	38%	48%	60%	57%	29%	28%	393	516	672	838	990	1,161	1,358
Other current liabilities	24	74	75	98	336	438	3%	3%	3%	3%	3%	3%	3%
% of Expenses	1%	3%	3%	2%	3%	4%	-	-	-	-	-	-	-
Deferred income on shipments to distributors	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%	0%
% of Income	0%	0%	0%	0%	0%	0%	2,191	2,679	9,065	11,202	13,414	13,327	17,403
Net Working Capital	-	566	870	1,631	1,376	3,267	5,511						
Property and equipment net	348	500	641	702	1,513	1,589	5,587	7,138	9,051	11,182	13,376	15,602	4,536
% of revenues	5%	7%	7%	4%	6%	7%	20%	20%	20%	20%	20%	20%	5%
Operating lease right (off) use assets	-	205	208	367	460	633	566	723	916	1,132	1,354	1,580	1,837
% of revenues	0%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Goodwill	289	289	289	289	24,177	24,262	24,262	24,262	24,262	24,262	24,262	24,262	24,262
% of revenues	4%	4%	3%	2%	102%	107%	21,363	21,363	21,363	21,363	21,363	21,363	21,363
Acquisition (related intangibles)	-	-	-	-	24,118	21,363	0%	0%	0%	0%	0%	0%	0%
% of revenues	0%	0%	0%	0%	102%	107%	366	366	366	366	366	366	366
Deferred tax assets	-	-	1,245	931	58	366	0%	0%	0%	0%	0%	0%	0%
% of taxes	0%	0%	461%	109%	74%	-161%	520	664	843	1,041	1,245	1,452	1,689
Long (term) operating lease liabilities	-	199	201	348	396	535	2%	2%	2%	2%	2%	2%	2%
% of revenues	0%	3%	2%	2%	2%	2%	1,676	2,141	2,715	3,355	4,013	4,681	5,443
Other long (term) liabilities	192	157	177	321	1,664	1,850	6%	6%	6%	6%	6%	6%	6%
% of revenues	3%	2%	2%	2%	7%	8%	49,947	51,046	52,401	53,910	55,463	57,040	45,232
Core non-current operating business	445	638	2,005	1,620	48,266	45,828							
Core Invested Capital	-	121	1,508	3,636	2,996	51,533	51,339	52,138	53,725	61,466	65,112	68,878	70,367
													62,635
Non-Core Business	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Investment: equity method	58	58	63	69	83	99	168	215	272	336	402	469	546
% of revenues	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%
Other non (current) assets	321	379	373	1,478	2,152	2,805	2,090	2,670	3,386	4,183	5,003	5,836	6,786
% of revenues	5%	6%	4%	9%	9%	12%	7%	7%	7%	7%	7%	7%	7%
Deferred tax liabilities	-	-	-	12	1,934	1,202	1,145	1,391	1,492	1,272	684	-	552
% of taxes	0%	0%	0%	1%	2479%	-530%	325%	325%	325%	325%	325%	325%	325%
Non-Core Invested Capital	379	437	436	1,535	301	1,702	1,112	1,494	2,166	3,248	4,722	6,858	8,744
Financial	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Excess Cash	949	1,331	1,400	2,206	4,363	3,479	4,470	5,712	7,242	8,948	10,703	12,484	14,517
% of revenues	15%	20%	14%	13%	18%	15%	16%	16%	16%	16%	16%	16%	16%
Marketable securities	78	37	695	1,073	1,020	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840
Current portion of long term debt, net	-	-	-	312	-	751	901	1,081	1,298	1,557	1,869	2,242	2,691
Short term debt	136	-	-	-	-	-	-	-	-	-	-	-	-
Long (term) debt net of current portion	1,114	486	330	1	2,467	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717
Financial Invested Capital	-	224	882	1,765	2,966	2,916	3,692	4,753	6,068	7,513	8,957	10,365	11,949
Shareholder Equity	35	2,827	5,837	7,497	54,750	55,892	56,942	59,972	69,700	75,873	82,556	87,589	83,327

Cash Flow Map

Core Business - United States	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	83	138	259	794	409	223	4,435	5,359	6,512	8,229	10,091	12,099	14,271
Depreciation	35	58	73	115	1,424	1,193	1,291	1,334	1,386	1,445	1,505	1,566	1,297
% of PP&E, ROA, Intangibles	5%	6%	6%	8%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Capex	152	107	178	18,104	357	2,663	1,934	2,131	2,279	2,365	2,438	-	2,560
NWC	376	179	-	72	645	775	1,159	171	2,257	759	788	-	1,454
Other Operating Asstes and Liabilities	-	9	-	288	130	756	-	61	163	203	227	234	237
Unleverd Free Cash Flow	-	322	334	674	-	17,672	4,283	4,424	3,307	6,408	8,209	11,021	16,402

Core Business - China(Including Hong Ki	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	83	136	263	699	265	97	758	820	923	976	991	927	795
Depreciation	35	57	74	101	921	520	563	582	604	630	656	683	565
% of PP&E, ROA, Intangibles	5%	6%	7%	7%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Capex	149	109	156	11,712	155	1,158	840	923	984	1,020	1,050	-	1,054
NWC	370	182	-	64	417	338	503	74	966	323	333	-	611
Other Operating Asstes and Liabilities	-	9	-	292	114	489	-	26	70	87	97	99	100
Unleverd Free Cash Flow	-	317	340	593	-	11,432	692	417	-	448	202	195	473

Core Business - Japan	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	77	66	117	406	212	131	1,645	2,052	2,558	3,152	3,812	4,536	5,434
Depreciation	32	28	33	59	739	705	763	788	819	853	889	925	766
% of PP&E, ROA, Intangibles	5%	3%	3%	4%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Capex	72	48	91	9,395	211	1,569	1,143	1,263	1,355	1,415	1,469	-	1,703
NWC	179	81	-	37	335	458	681	102	1,347	457	481	-	931
Other Operating Asstes and Liabilities	-	4	-	130	66	392	-	36	97	121	137	143	148
Unleverd Free Cash Flow	-	153	151	345	-	9,171	1,555	1,498	646	2,057	2,662	3,863	6,798

Core Business - Europe	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	29	60	125	213	90	58	1,243	1,472	1,719	1,946	2,859	3,291	3,797
Depreciation	12	25	35	31	314	309	334	345	359	374	390	406	336
% of PP&E, ROA, Intangibles	2%	3%	3%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Capex	66	52	48	3,988	92	693	499	546	579	598	614	-	574
NWC	162	86	-	19	142	201	303	44	565	187	191	-	7
Other Operating Asstes and Liabilities	-	4	-	139	35	166	-	16	42	51	56	57	64
Unleverd Free Cash Flow	-	139	162	181	-	3,893	1,204	1,233	916	1,498	2,404	3,033	4,300

Core Business - Taiwan	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	75	56	134	357	120	52	996	1,212	1,465	1,735	1,996	2,266	2,507
Depreciation	31	24	38	52	419	280	303	313	326	339	354	368	305
% of PP&E, ROA, Intangibles	5%	2%	3%	4%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Capex	62	55	80	5,328	84	594	435	469	493	506	519	-	327
NWC	153	93	-	33	190	182	246	35	435	140	140	-	5
Other Operating Asstes and Liabilities	-	4	-	149	58	222	-	13	33	39	42	42	41
Unleverd Free Cash Flow	-	131	173	303	-	5,201	964	1,023	847	1,399	1,662	2,079	2,856

Core Business - Singapore	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	46	47	124	237	70	63	904	1,140	1,430	1,753	2,082	2,434	2,734
Depreciation	19	20	35	34	244	340	368	380	395	411	428	446	369
% of PP&E, ROA, Intangibles	3%	2%	3%	3%	0%	1%	1%	1%	1%	1%	1%	1%	1%
Capex	51	51	53	3,104	102	756	549	603	643	666	688	-	656
NWC	127	86	-	22	111	221	328	48	631	211	218	-	9
Other Operating Asstes and Liabilities	-	3	-	138	39	130	-	17	46	57	63	65	66
Unleverd Free Cash Flow	-	109	160	201	-	3,030	861	877	534	1,248	1,562	2,135	3,301

Core Business - Other Countries	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	13	25	81	98	33	20	329	412	511	619	727	840	972
Depreciation	5	10	23	14	114	106	115	118	123	128	133	139	115
% of PP&E, ROA, Intangibles	1%	1%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Capex	27	33	22	1,453	32	233	169	184	195	201	207	-	183
NWC	67	56	-	9	52	69	100	14	185	61	62	-	2
Other Operating Asstes and Liabilities	-	2	-	90	16	61	-	5	14	17	18	18	21
Unleverd Free Cash Flow	-	57	104	83	-	1,418	316	333	248	473	580	756	1,137

Core Unleverd Free Cash Flow	-	1,229	1,423	2,381	-	51,817	9,874	9,805	6,050	13,285	17,273	23,361	36,482
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Non-Core Business	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Non-Core Result	54	-93	1433	393	208	369	373	376	380	384	388	392	396
Assets/liabilities Vriation	-	58	1	1,099	1,234	1,401	590	382	672	1,081	1,474	2,136	1,886
Non-Core Unleverd Free Cash Flow	-	151	1,434	706	1,442	1,032	962	5	292	697	1,086	1,744	1,491
Total Unleverd Free Cash Flow	-	1,380	1,434	706	1,442	1,032	962	5	292	697	1,086	1,744	1,491
Financial	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Financial Result	-135	-86	-30	-54	-126	-128	-61	-66	-73	-82	-92	-105	-120
Marketable Securities	41	-	-	-	-	-	-	-	-	-	-	-	-
Debt	-	764	156	17	2,154	1	150	180	216	260	311	374	448
Transactions with Shareholders	2,443	503	1,482	45,971	257	-	9,572	9,747	5,697	12,537	16,171	21,648	35,048
Financial Free Cash Flow	-	1,634	317	1,553	47,999	130	9,483	9,633	5,554	12,359	15,952	21,379	34,719
Total Levered Free Cash Flow	-	254	1,751	2,259	49,441	902	8,521	9,639	5,846	13,057	17,038	23,123	36,210

Valuation

APV - Predefined Level of Debt	2025	2026	2027	2028	2029	2030
United States	5,836.86	6,611.16	7,266.77	7,809.70	86,331.51	
China (including Hong Kong)	- 401.52	162.17	140.15	305.30	10,222.21	
Japan	578.75	1,652.28	1,916.80	2,493.70	41,120.79	
Europe	821.32	1,203.74	1,731.04	1,958.12	26,009.65	
Taiwan	759.51	1,123.97	1,197.07	1,342.27	17,276.09	
Singapore	479.06	1,002.47	1,125.14	1,378.13	19,965.84	
Other countries	222.19	380.19	417.39	488.01	6,875.67	
Non-Core	- 261.75	560.23	782.40	1,125.83	9,017.72	
Discounted Unlevered Free Cash Flow	8,034.40	11,575.74	13,011.95	14,649.40	198,784.05	
Unlevered Enterprise Value	246,056					
Tax Shield	588					
Levered Enterprise Value	246,643					
Net Debt	2,913					
Levered Equity Value	243,730					
Number of Shares Outstanding (in	1620.00					
Implied Price per Share 2025	150.45					
Share price today	126.91					
Potential	18.55%					

APV - Constant Level of D/EV	2025	2026	2027	2028	2029	2030
United States	124050	131865	138867	144815	149442	
China (including Hong Kong)	11634	13426	14775	16287	17695	
Japan	52616	58047	62695	67274	71181	
Europe	34794	37897	40775	43081	45023	
Taiwan	23738	25633	27194	28673	29905	
Singapore	26307	28811	30891	32897	34561	
Other countries	9195	10009	10692	11347	11902	
Non-Core	-12813	-14001	-14920	-15557	-15610	
Leverage Enterprise Value	269522	291688	310969	328817	344100	
Levered Enterprise Value	269,522					
D/V	2%					
Levered Equity Value	264,132					
Number of Shares Outstanding (in	1620.00					
Implied Price per Share 2025	163.04					
Share price today	126.91					
Potential	28.47%					

DCF	2025	2026	2027	2028	2029	2030
United States	124050	131865	138867	144815	149442	
China (including Hong Kong)	11634	13426	14775	16287	17695	
Japan	52616	58047	62695	67274	71181	
Europe	34794	37897	40775	43081	45023	
Taiwan	23738	25633	27194	28673	29905	
Singapore	26307	28811	30891	32897	34561	
Other countries	9195	10009	10692	11347	11902	
Non-Core	-12813	-14001	-14920	-15557	-15610	
Levered Enterprise Value	269522	291688	310969	328817	344100	
Levered Enterprise Value	269,522					
D/V	2%					
Levered Equity Value	264,132					
Number of Shares Outstanding (in	1620.00					
Implied Price per Share 2025	163.04					
Share price today	126.91					
Potential	28.47%					

EVA - Economic Value Added	2025	2026	2027	2028	2029	2030
Invested Capital	52,138	53,725	61,466	65,112	68,878	70,367
WACC	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
ROIC	19.8%	24.6%	28.3%	32.8%	37.5%	48.7%
Economic Profit	-	6,801	8,984	13,032	16,902	25,596
Discounted Economic Profit		6,097	7,220	9,388	10,916	173,102
Levered Enterprise Value	206,724.19					
Equity Value in year 0	56,942.23					
Equity Value	263,666.42					
Number of Shares Outstanding (in '000)	1,620.00					
Implied Price per Share 2025	162.76					
Share price today	126.91					
Potential	28.25%					

EVA - Economic Profit	2025	2026	2027	2028	2029	2030
Shareholders' Equity	56,942	59,972	69,700	75,873	82,556	87,589
Re	12%	12%	12%	12%	12%	12%
ROE	19%	22%	25%	28%	30%	37%
Economic Profit to Shareholders		5,923	7,756	11,120	14,213	20,818
Discounted Economic Profit		5,301	6,213	7,973	9,121	137,321
Levered Enterprise Value	165,928					
Equity Value in year 0	56,942					
Equity Value	222,870					
Number of Shares Outstanding (in '000)	1,620					
Implied Price per Share 2025	137.57					
Share price today	126.91					
Potential	8.40%					

Multiples

Company Name	Ticker	EV/EBITDA	P/B	P/EPS	Market Cap
NVIDIA Corporation	NVDA.US	44.63	48.75	54.19	#####
Intel Corporation	INTC.US	10.40	0.80	89.46	91,810.00
Qualcomm Inc.	QCOM.US	16.36	7.62	21.57	187,930.00
Broadcom Inc.	AVGO.US	37.40	11.56	131.34	758,830.00
Texas Instruments Inc.	TXN.US	23.95	10.68	34.90	183,880.00
Micron Technology, Inc.	MU.US	15.84	2.22	10.05	98,390.00
Taiwan Semiconductor Manufacturin	TSM.US	13.61	7.32	29.63	769,950.00
Marvell Technology Group	MRVL.US	68.30	4.44	22.15	63,030.00
Average		28.81	11.67	49.16	624,227.50
Max		68.30	48.75	131.34	#####
Min		10.40	0.80	10.05	63,030.00

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Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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