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ABC INTERNATIONAL
ABCI SECURITIES COMPANY LIMITED

Advanced Micro Devices, Inc. (AMD US)
Global AI technology sector
Oct 7, 2024

# Advanced Micro Devices, Inc. (AMD US)
# Reaching AI Inflection

- Well-positioned to capture AI tailwinds, backed by: 1) an accelerated GPU roadmap to an annual cadence; 2) full-stack product matrix with competitive pricing; and 3) ZT systems acquisition to strengthen AI edge
- Continuous share gain ahead in CPU (vs. Intel), thanks to deeper penetration of AI PCs and new lineup of Ryzen series
- We estimate AMD to deliver 23%/40% revenue/earnings CAGR in FY24E-26E, with margin expansion on stronger revenue mix
- Initiate with **BUY**; TP of US$ 186.3 implies 35x FY25E P/E

**Company Report**

**Initiation**
**Oct 7, 2024**
Rating (US): BUY
TP: US$ 186.3

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**AI giant with broad product portfolio and stronger AI exposure.** On its journey to an AI-focused ecosystem, AMD has prioritized AI strategy for stronger competitive positioning to embrace the AI boom. AMD holds a market share of approximately 9% in the data center market. Leveraging its ecosystem of "CPU + GPU + Networking", AMD is expected to step into data center's ramp-up and earnings acceleration pace.

**Data center: MI series upgrades to compete at the AI frontier.** Despite the tech gap between NVIDIA, we think AMD will still embrace broader adoption, supported by: 1) an accelerated GPU roadmap to an annual cadence; 2) full-stack product matrix with competitive pricing; and 3) M&A to strengthen AI edge. Moreover, NVIDIA's supply constraints could create opportunities for AMD to swiftly ramp up products as one of the few alternatives at competitive prices, in our view. For the Data Center segment, we modeled revenue at a 35% CAGR in FY24E-26E. AMD accelerates AI roadmap with upcoming MI325X in 4Q24, MI350 in 2025, and MI400 in 2026. We see high visibility for AMD's MI300, MI325 and MI350 upgrades to support its strong momentum with advanced performance.

**Client segment: share gain on product line and AI PCs tailwinds.** AMD has firmly established itself as a formidable competitor in the CPU market, challenging Intel's long-held dominance. We expect AMD's share gain to continue by leveraging its manufacturing advantage and aggressive architecture upgrades. As AMD demonstrated performance leadership in AI PCs with its Ryzen AI 300 series, we expect AMD to capture the AI PCs tailwinds, as well as benefit from the global PC market recovery. With new lineup of Ryzen series, we forecast Client revenue to grow at a 12% CAGR in FY24E-26E, during which Desktop CPU and Notebook CPU are expected to grow at 8.6% and 14.0% CAGRs.

**Embedded segment to bottom out, while Gaming softness well priced in.** Embedded business achieved sequential growth in 2Q24 for the first time after four consecutive quarters of softness. We expect the Embedded segment to bottom out, backed by inventory recovery in 2H24E and new product expansion. We forecast the segment to grow at a 13% revenue CAGR in FY24E-26E. Gaming challenges might linger into 2025 (forecasting revenue -16% YoY), due to game consoles demand softness and gaming GPUs inventory headwinds. However, we think the market has well anticipated this trend.

**Initiate with BUY, TP at US$ 186.3.** We set our DCF-based TP at 186.3 (implying 35x FY25E P/E, or 0.9x PEG), largely in line with its historical forward P/E mean but above industry average. Catalysts: 1) upcoming "Advancing AI 2024" event on 10 Oct; 2) MI300 and MI325 ramp; 3) earnings acceleration; and 4) M&A synergies.

**Risk factors**: 1) Demand uncertainty; 2) Competition pressure; 3) Supply chain vulnerabilities; 4) Macro uncertainty; 5) Geopolitical risks; and 6) Margin dilution.

## Results and Valuation

| FY ended Dec | FY22A | FY23A | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|
| Revenue (US$ mn) | 23,601 | 22,680 | 25,584 | 32,561 | 38,543 |
| Chg (%,YoY) | 43.6 | (4) | 12.8 | 27.3 | 18.4 |
| Adj. net profit* (US$ mn) | 5,504 | 4,302 | 5,508 | 8,657 | 10,831 |
| Chg (%,YoY) | 60 | (22) | 28.0 | 57.2 | 25.1 |
| Adj. EPS* (US$) | 3.50 | 2.65 | 3.36 | 5.27 | 6.55 |
| Chg (%,YoY) | 25.4 | (24) | 26.9 | 56.6 | 24.4 |
| Adj. P/E (x) | 48.8 | 64.5 | 50.8 | 32.4 | 26.1 |
| P/S (x) | 11.7 | 12.2 | 10.8 | 8.5 | 7.2 |
| ROAA (%) | 13.8 | 6.4 | 7.9 | 11.4 | 12.6 |
| ROAE (%) | 17.7 | 7.8 | 9.6 | 13.6 | 14.8 |
| Yield (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Source(s): Company data, Bloomberg, ABCI Securities estimates
Note: Adj. net profit* = Non-GAAP net income; Adj. EPS* = Non-GAAP EPS

| | |
|---|---|
| Price (US$) | 170.9 |
| Est. price return | 9.0% |
| Est. dividend yield | 0.0% |
| Est. total return | 9.0% |
| Last Rating &TP | N/A |
| Previous Report Date | N/A |

Source(s): Bloomberg, ABCI Securities estimate

**Key Data**

| | |
|---|---|
| 52Wk H/L (US$) | 227.3/91.1 |
| Total issued shares (mn) | 1,637 |
| Market cap (US$ bn) | 276.6 |
| 3-mth avg daily turnover (US$ mn) | 6,906.8 |

| Major shareholder(s) (%): | |
|---|---|
| The Vanguard Group | 9.10% |
| Blackrock | 8.06% |

Source(s): Bloomberg, ABCI Securities

**Price performance**

| | Absolute | Relative* |
|---|---|---|
| 1-mth | 27.21 | 16.96 |
| 3-mth | (3.50) | (1.49) |
| 6-mth | 0.59 | (9.13) |

*Relative to NASDAQ 100
Source(s): Bloomberg, ABCI Securities

**1-Year price performance (US$)**
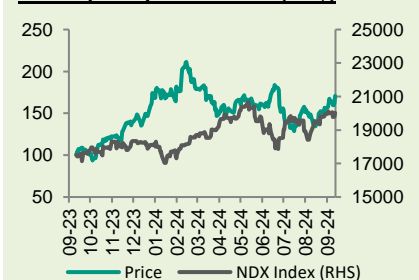


Source(s): Bloomberg, ABCI Securities

Note:
1) Market data as of Oct 7, 2024

# Table of Content

# Investment Summary

## Data Center: prioritizing AI strategy with stronger competitive positioning

AMD still trails NVIDIA with around 9% market share in the data center market in 2Q24, in terms of data center compute revenue (based on our calculation). Despite the tech gap between NVIDIA, we think AMD will still achieve broader adoption, supported by: 1) an accelerated GPU roadmap to an annual cadence; 2) full-stack product matrix and competitive pricing; and 3) M&A to strengthen AI edge. Moreover, NVIDIA's supply tightness or potential product delay could create opportunities for AMD to swiftly ramp up products as one of the few alternatives at competitive prices, in our view. For the Data Center segment, we modeled revenue at a 35% CAGR in FY24E-26E.

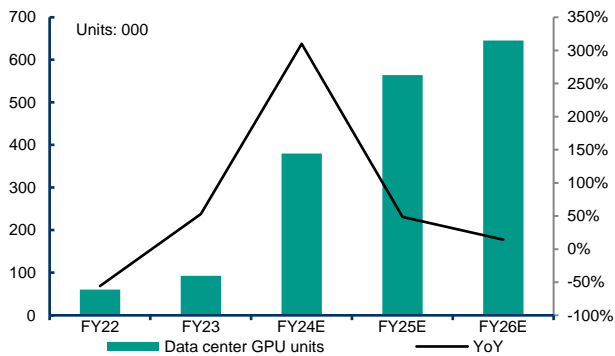**Exhibit 1: AMD's Data Center revenue estimates**
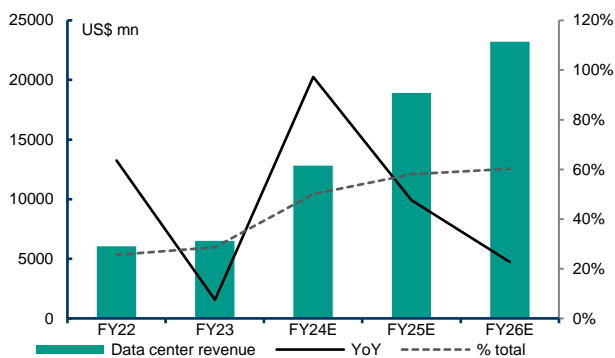


Source(s): Company data, ABCI Securities estimates

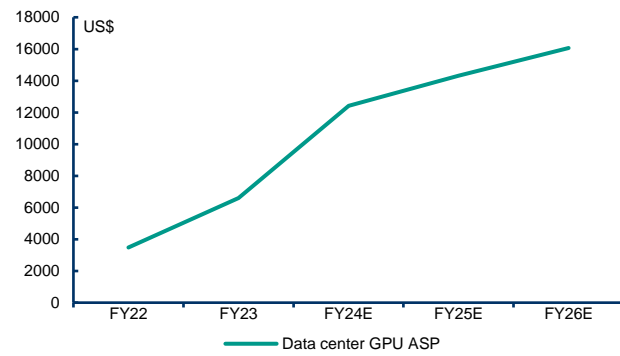**Exhibit 2: Data Center market share (by revenue)**
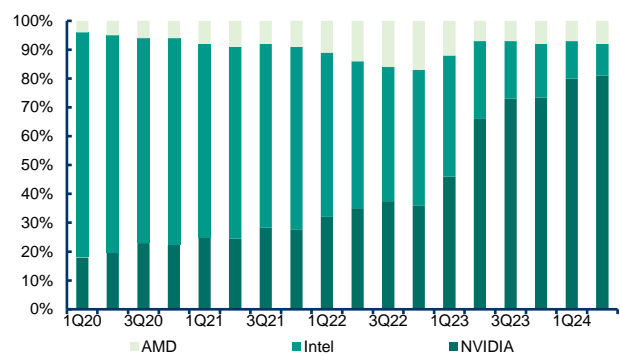


Source(s): Company data, ABCI Securities

**Exhibit 3: AMD's Data Center GPU units estimates**



Source(s): Company data, ABCI Securities estimates

**Exhibit 4: Data Center GPU ASP estimates**



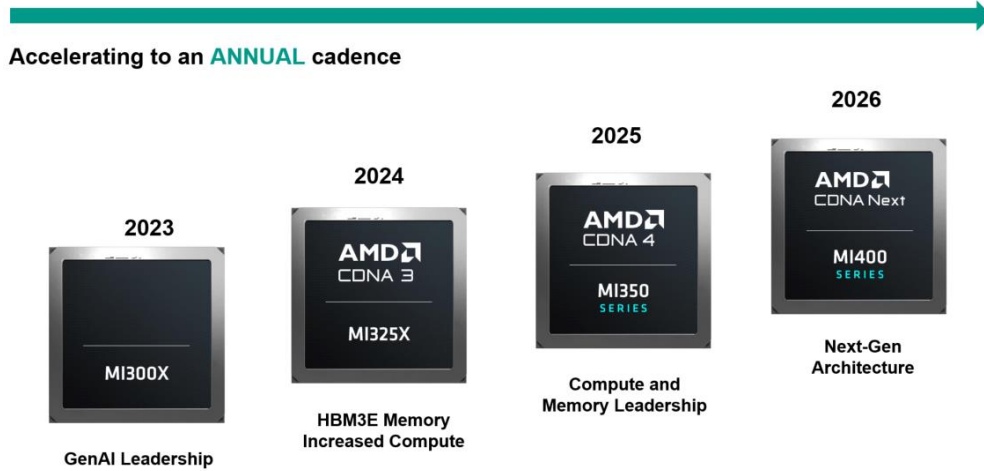Source(s): Company data, ABCI Securities estimates

## MI325X and MI350 series upgrades to compete at the AI frontier

We see high visibility for AMD's MI300X series to support its strong momentum with advanced performance. AMD launched its MI300X in Dec 2023 as its latest AI GPU flagship, delivering 192GB of HBM3 memory and 5.2 TB/s of memory bandwidth. Compared to H100, MI300X differentiated itself with instruction throughput and compute precision, with FP8 and FP16 TFLOPS performance reportedly 1.3 times that of H100. On top of that, AMD accelerates its AI roadmap with upcoming MI325X in 4Q24, MI350 in 2025, and MI400 in 2026, targeting product upgrades annually. MI325X's launch in 4Q24 would be short-term catalyst. MI325X will be competing against NVIDIA's H200, featuring up to 288GB of HBM3E memory and 6 TB/s of memory bandwidth. MI350 series, built on CDNA 4 architecture and 3nm-class process technology, will support FP4 and FP6 to boost AI performance and efficiency.

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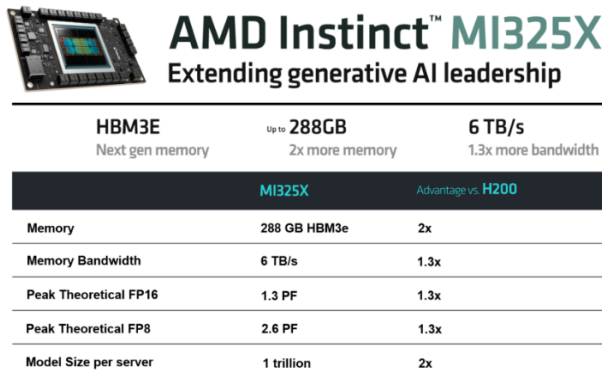Global AI technology sector
Oct 7, 2024

For data center GPU segment, we modeled Data Center GPU revenue to grow at a 48% CAGR in FY24E-26E. Data Center GPU units are projected to surge to 0.6mn in FY26E, at a 30.3% CAGR in FY24E-26E, while GPU ASP is estimated to grow at a 13.8% CAGR.
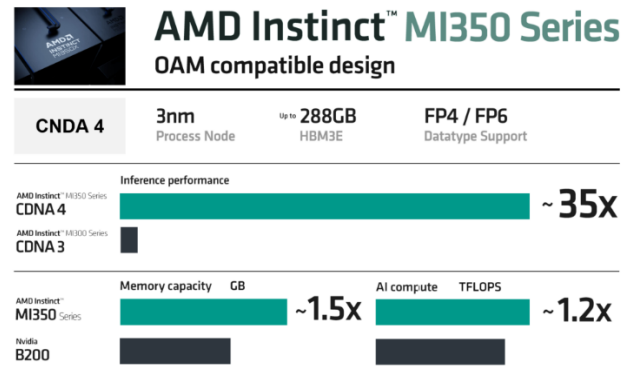
**Exhibit 5: AMD's roadmap of GPU architecture upgrades**

Accelerating to an ANNUAL cadence

2023 — MI300X — GenAI Leadership

2024 — AMD CDNA 3 — MI325X — HBM3E Memory Increased Compute

2025 — AMD CDNA 4 — MI350 SERIES — Compute and Memory Leadership

2026 — AMD CDNA Next — MI400 SERIES — Next-Gen Architecture

Source(s): Company data, ABCI Securities

**Exhibit 6: MI325X performance**

AMD Instinct™ MI325X
Extending generative AI leadership

| HBM3E | Up to 288GB | 6 TB/s |
|---|---|---|
| Next gen memory | 2x more memory | 1.3x more bandwidth |

| | MI325X | Advantage vs. H200 |
|---|---|---|
| Memory | 288 GB HBM3e | 2x |
| Memory Bandwidth | 6 TB/s | 1.3x |
| Peak Theoretical FP16 | 1.3 PF | 1.3x |
| Peak Theoretical FP8 | 2.6 PF | 1.3x |
| Model Size per server | 1 trillion | 2x |

Source(s): Company data, ABCI Securities

**Exhibit 7: MI350 series performance**

AMD Instinct™ MI350 Series
OAM compatible design

| CNDA 4 | 3nm Process Node | Up to 288GB HBM3E | FP4 / FP6 Datatype Support |
|---|---|---|---|

Inference performance
AMD Instinct™ MI350 Series CDNA 4: ~35x
AMD Instinct™ MI300 Series CDNA 3

Memory capacity GB — AMD Instinct MI350 Series: ~1.5x / Nvidia B200
AI compute TFLOPS: ~1.2x

Source(s): Company data, ABCI Securities

**Exhibit 8: Key GPU products comparison**

| Company | AMD | | NVIDIA | | | |
|---|---|---|---|---|---|---|
| Flagship GPU | MI300X | MI325X | B100 | B200 | H100 | H200 |
| GPU Architecture | CDNA3 | CDNA3 | Blackwell | Blackwell | Hopper | Hopper |
| Launch year | 2023 | 2024 | 2024 | 2024 | 2022 | 2023 |
| FP4 | | | 14,000 | 18,000 | | |
| FP6 | | | 7,000 | 9,000 | | |
| FP8/INT8 Tensor Cores (TFLOPS) | 5,230 | N/A | 7,000 | 9,000 | 3,958 | 3,958 |
| FP16/BF16 Tensor Cores (TFLOPS) | 2,615 | N/A | 3,500 | 4,500 | 1,979 | 1,979 |
| TF32 Tensor Cores (TFLOPS) | 1,307 | N/A | 1,800 | 2,200 | 989 | 989 |
| FP64 Tensor Cores (TFLOPS) | | | 30 | 40 | 67 | 67 |
| | 192GB | 288GB | 192GB | 192GB | | 141GB |
| GPU memory | HMB3 | HMB3e | HBM3e | HBM3e | 80GB HBM3 | HBM3e |
| GPU memory bandwidth | 5.2 TB/s | 6 TB/s | 8 TB/s | 8 TB/s | 3.35 TB/s | 4.8 TB/s |
| Peak TDP | 750W | 750W | 700W | 1,000W | 700W | 700W |
| Interconnect (GB/s) | 896 | N/A | 1,800 | 1,800 | 900 | 900 |

Source(s): Company data, ABCI Securities
Note: The launch year refers to the first year that the product was introduced to the public, not the shipment year

## Differentiating itself with full-stack product matrix and competitive pricing

**Full-stack product matrix with CPU+GPU+FPGA+DPU.** AMD's product portfolio spans high-end, mid-range, and low-end markets, catering to diverse model sizes and application requirements. For instance, AMD's EPYC CPUs excel for small to medium AI models and workloads where proximity to data matters. Its Instinct GPUs, however, are suited for large models and dedicated AI deployments that demand high performance and scalability.

**Exhibit 9: AMD powers the full range of Data Center workloads**
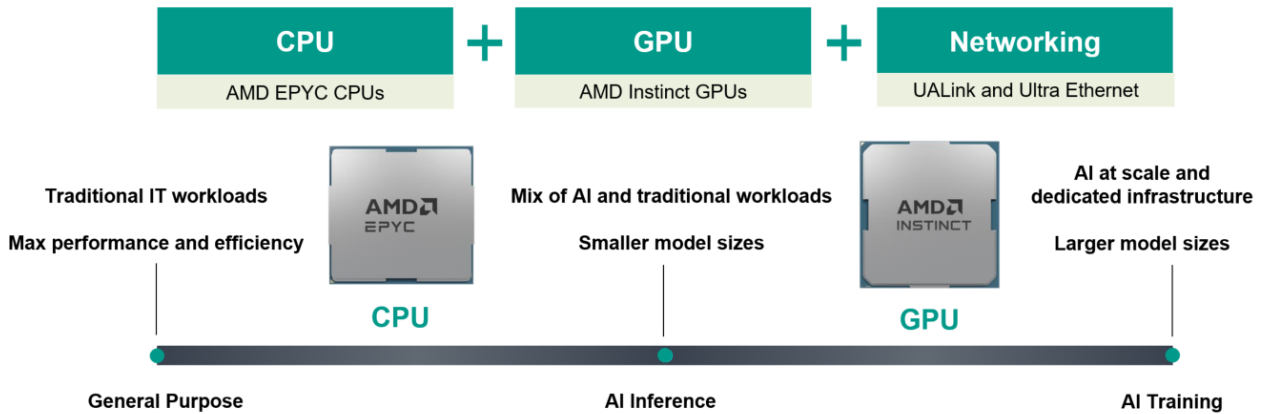


Source(s): Company data, ABCI Securities

For Data Center server CPU segment, we forecast server CPU revenue to grow at a 27% CAGR in FY24E-26E, boosted by 15% units CAGR. AMD outperformed with high-end server CPUs against Intel. According to Mercury data, AMD's market share of server CPUs climbed to 24.1% in 2Q24 (vs. 1.4% in 2Q18), while Intel's market share of server CPUs declined to 76% in 2Q24 (vs. 99% in 2Q18). We expect upcoming 5th-Gen EPYC "Turin" server CPUs to bring further upside.

**Competitive pricing strategy to capture diversified client needs.** AMD's GPU offerings, when compared to NVIDIA's lineup, often present a compelling value proposition in terms of cost-effectiveness and performance per dollar. For instance, the Instinct MI300 series, specifically the MI300A and MI300X, demonstrate AMD's strength in delivering exceptional performance at a competitive price. This cost-effectiveness makes AMD's AI chips attractive to businesses and organizations that require high-performance AI computing capabilities but are also budget-conscious.

**Exhibit 10: GPU unit price comparison (estimated)**
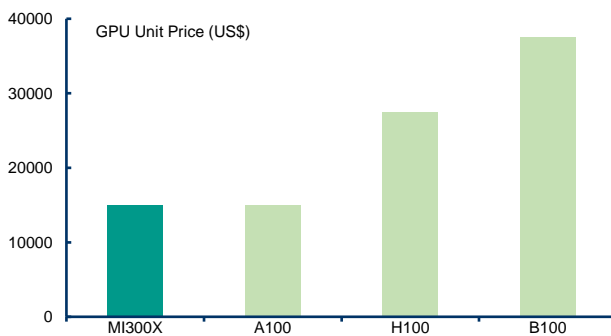


Source(s): Company data, ABCI Securities estimates

**Exhibit 11: GPU ASP comparison of AMD vs. NVIDIA**



Source(s): Company data, ABCI Securities estimates

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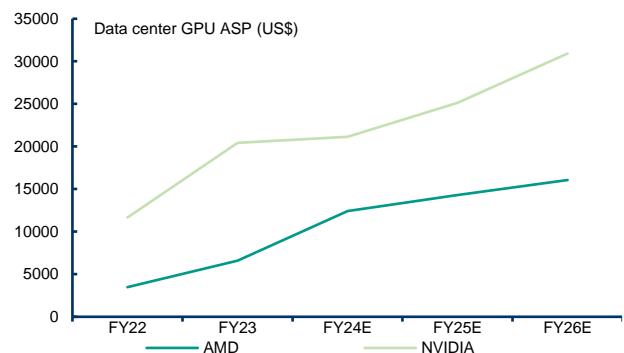
## Pioneering Chiplet-based technology and software enablement

**Chiplet-based design to deliver greater scalability and modularity.** AMD has differentiated itself with its self-developed Chiplet technology, first employed in its EPYC server CPUs in 2017. This approach enables AMD to optimize power consumption, enhance performance, and simplify design complexity. For instance, the Chiplet-based MI300A integrates multiple functional die (or chiplets) into a single package, enabling a more modular and scalable design. MI300A employs a mix of 3D and 2.5D chiplet packaging, leveraging technologies such as SoIC (System on Integrated Chips, 3D) and CoWoS (Chip on Wafer on Substrate, 2.5D). This results in a highly efficient package that integrates CPU, GPU, AMD InfinityCache, and HBM3 memory system into a single chip. Compared to NVIDIA's GH200, which uses an ARM architecture known for its energy efficiency and scalability, the inclusion of AMD's "Zen 4" CPU cores in MI300A offers strong performance for traditional x86 workloads.

**Exhibit 12: Products comparison of MI300A vs. GH200**

| Products | MI300A | GH200 |
|---|---|---|
| Advantages | • **Scalability and Modularity:** The chiplet-based design of MI300A enables greater scalability and modularity, allowing AMD to tailor the chip for specific workloads and markets.<br>• **x86 Compatibility:** The inclusion of Zen 4 CPU cores ensures compatibility with a vast ecosystem of x86 software, providing a seamless transition for existing workloads.<br>• **High Memory Bandwidth:** The integration of AMD InfinityCache and HBM3 memory system delivers exceptional memory bandwidth, crucial for data-intensive applications. | • **ARM Efficiency:** The ARM architecture provides exceptional energy efficiency, making GH200 suitable for scenarios where power consumption is a primary concern.<br>• **Heterogeneous Computing:** The combination of ARM-based CPU and NVIDIA GPU creates a powerful platform for AI and HPC workloads, offering high performance and flexibility. |

Source(s): Company data, ABCI Securities

**ROCm platform offering better flexibility and customizability.** AMD developed ROCm in 2016. It primarily supports AMD Radeon GPUs but also aims for cross-vendor compatibility, including support for x86 and ARM processors. Compared to NVIDIA's CUDA with limited scope for customization, ROCm offers greater flexibility and customizability for developers to write portable applications that can run on various hardware platforms. Although AMD's ROCm still trails CUDA in terms of performance, adoption and ecosystem support, AMD is actively working to bridge the gap through: 1) ensuring compatibility with CUDA, and 2) fostering a robust software ecosystem through both in-house development and strategic acquisitions.

**Exhibit 13: AMD's ROCm is committed to open-source innovation**



Source(s): Company data, ABCI Securities

## M&A to strengthen AI edge

AMD has consistently leveraged strategic acquisitions to enhance its Data Center footprint and capabilities, particularly in the realm of AI and high-performance computing. AMD completed its acquisition of Xilinx in 2022, a move that significantly bolstered its portfolio of CPU, GPU, FPGA, and adaptable SoC products. In 2022, AMD announced the acquisition of Pensando, a provider of high-performance and adaptable data center solutions. This acquisition allows AMD to optimize its offerings for cloud computing and enterprise, as well as advanced DPU solutions. In 2023 and 2024, AMD invested a dozen AI companies to expand its AI ecosystem, such as Silo AI, Mipsology, and Nod.ai.

In Aug 2024, AMD announced the acquisition of ZT Systems, a leading provider of hyperscale computing solutions for AI and general-purpose computing infrastructure. The transaction, with a purchase price of US$ 4.9bn, is expected to close in 1H25. We expect this strategic move to significantly expand the AI system capabilities of AMD's data center, accelerate deployment, enhance customer support, and refine the manufacturing strategy.

**Exhibit 14: ZT acquisition significantly expands AMD's AI solutions capabilities**
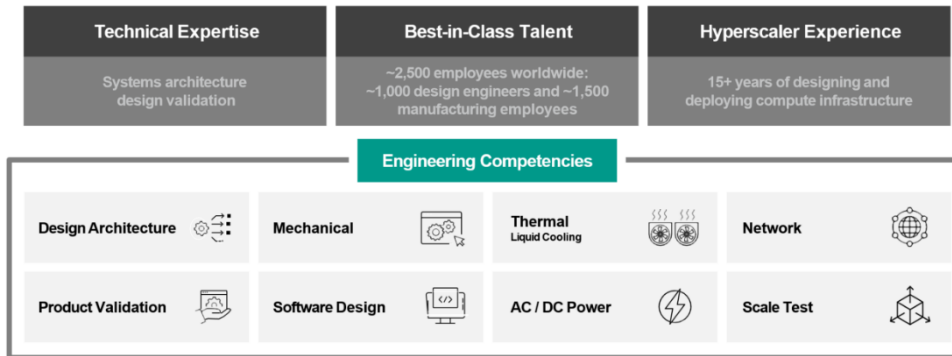


Source(s): Company data, ABCI Securities

**Exhibit 15: Synergies of ZT acquisition**



Source(s): Company data, ABCI Securities

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## Client Segment: Share gain on product line and AI PCs tailwinds

### Standing out in CPU market by leveraging manufacturing advantage and aggressive architecture upgrades

**Expecting continuous share gain in CPU.** AMD offers powerful and efficient CPUs and APUs for notebook and desktop PCs, as well as commercial workstations in the Client segment. It has firmly established itself as a formidable competitor, challenging Intel's long-held dominance (around 80% market share). According to Mercury data, AMD's market share of desktop and mobile CPUs climbed to 23% and 20% in 2Q24, respectively (vs. 12% and 9% in 2Q18), while Intel's market share of desktop and mobile CPUs decreased to 77% and 81% in 2Q24 (vs. 88% and 91% in 2Q18). Compared to Intel's frequent restructuring, we expect AMD to continue its share gain in CPUs, backed by its advancing manufacturing advantage (via TSMC), aggressive upgrades, and performance leadership in AI PCs.

**Exhibit 16: Desktop CPU and Mobile CPU market share of Intel vs. AMD (by unit)**
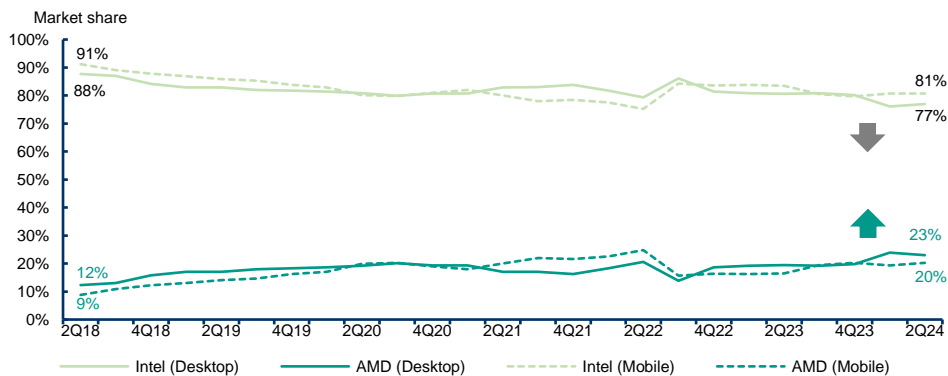


Source(s): Mercury, ABCI Securities

**Zen architecture introduction and aggressive upgrades to deliver higher performance.** AMD's CPU architecture has undergone significant updates since the introduction of Zen in 2017, followed by subsequent generations such as Zen 2, Zen 3, Zen 4, and now the newly launched Zen 5. Each iteration has refined the core design to deliver even higher performance, increased efficiency, and improved multitasking capabilities. Its recent product lineups, notably the Ryzen series, have reshaped the landscape by offering compelling performance-per-dollar ratios that appeal to consumers and OEMs.

**Exhibit 17: Zen 5 IPC uplift for PCs**
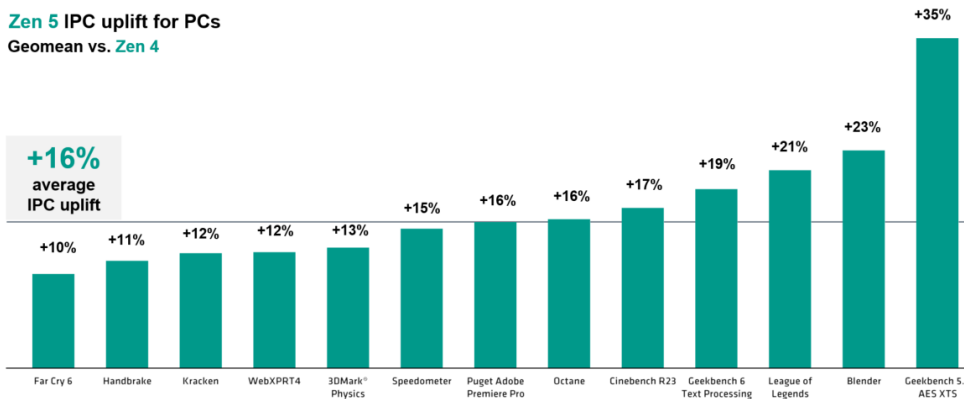


Source(s): Company data, ABCI Securities

**AMD vs. Intel: differentiating in manufacturing, pricing and core count.** Although Intel has a long-standing reputation for delivering premium CPU performance, AMD has made significant strides in recent years, differentiating itself in manufacturing, competitive pricing, and core count. **1) Manufacturing:** AMD's partnership with TSMC has enabled it to tap into more advanced manufacturing processes like 3nm and beyond, resulting in higher transistor densities, lower power consumption, and improved performance; **2) Core count:** AMD can deliver higher single-threaded and multi-threaded performance across a broad range of applications. This is particularly evident in gaming, content creation, and productivity tasks, where AMD's CPUs often outperform or match Intel offerings at similar price points. AMD's differentiated approach emphasizes core count, allowing for smoother handling of multi-threaded workloads alongside optimizations for specific workloads; and **3) Pricing:** AMD's products offer an attractive value proposition for budget-conscious users, compared to Intel.

## Well positioned to capture the AI PC tailwinds

We expect AMD to benefit from the PC refresh cycle and the growing traction of AI PCs. According to IDC, after seven consecutive quarters of decline, the global PC market experienced its second positive growth in 2Q24. Global PC shipments reached 64.9mn units in 2Q24, +3% YoY. Canalys forecasts that AI-powered PCs will account for 70% of the overall PC market by 2028, with over 15mn AI-capable PCs to ship by the end of 2025. As AMD demonstrated performance leadership in AI PCs backed by its Ryzen AI 300 series, we expect AMD to capture the tailwinds of AI PCs market with rising adoption.

**Exhibit 18: 3rd Gen AMD Ryzen AI with leadership performance for Copilot+ PCs**
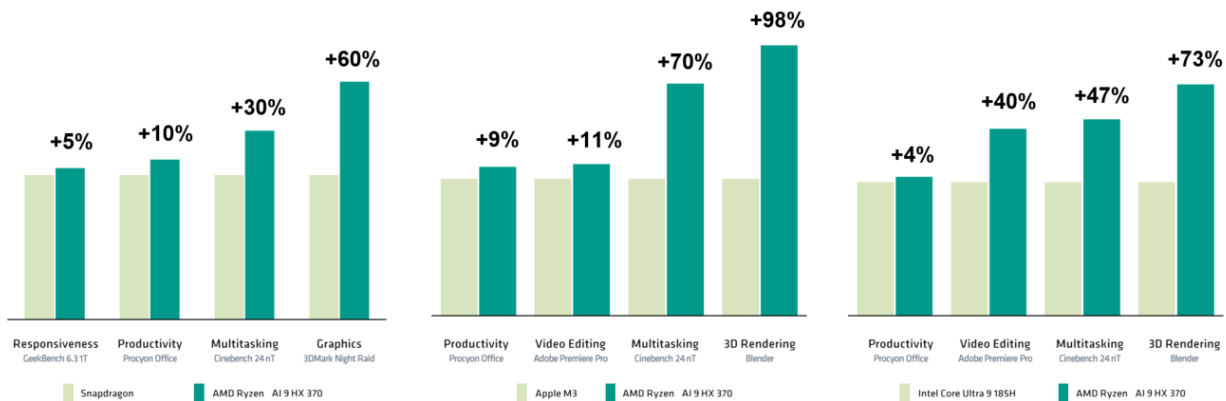


Source(s): Company data, ABCI Securities

**Exhibit 19: Quarterly PC shipments worldwide**
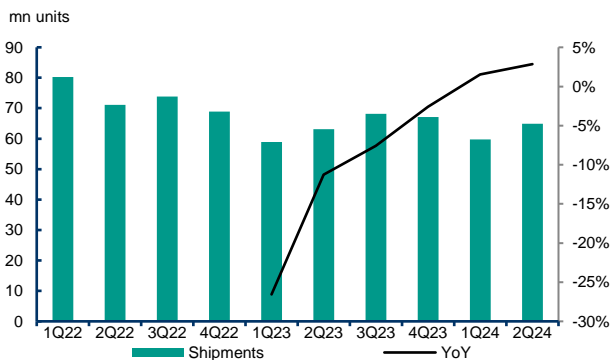


Source(s): IDC

**Exhibit 20: AI PC units and penetration trend**
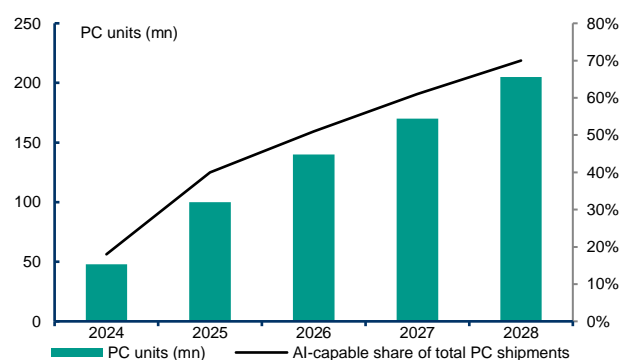


Source(s): Canalys

## Ryzen series continues to yield gains with new lineup

The Ryzen processors, powered by AMD's innovative Zen architecture, have enabled AMD to gain substantial market share away from Intel. By offering competitive performance at attractive prices, AMD has been able to attract customers who were previously loyal to Intel, particularly in the enthusiast and mainstream segments.

We expect AMD to continue reaping benefits from new products in the Ryzen series and the AI PC tailwinds. Client segment revenue surged by 49% YoY in 2Q24, primarily boosted by higher sales of Ryzen processors. We forecast the Client segment to deliver a 12% revenue CAGR in FY24E-26E, in which Desktop CPU and Notebook CPU would grow at 8.6% and 14.0% CAGRs, respectively.

**Exhibit 21: Product details of Ryzen series new lineup**

| Products | Details |
| --- | --- |
| AMD Ryzen AI 300 Series processors | the 3rd Gen AMD processor for AI PCs, with industry-leading 50 TOPs of AI processing power for Windows Copilot+ PCs. |
| AMD Ryzen 9000 Series processors | AMD Ryzen 9000 Series processors are based on "Zen 5" architecture, delivering leadership performance in gaming, productivity and content creation. |
| AMD Ryzen PRO 8040 Series and 8000 Series | AMD Ryzen PRO 8040 Series and 8000 Series mobile and desktop processors with cutting-edge performance, manageability and security features for today's enterprises. |

Source(s): Company data, ABCI Securities

**Exhibit 22: AMD's Client revenue estimates**
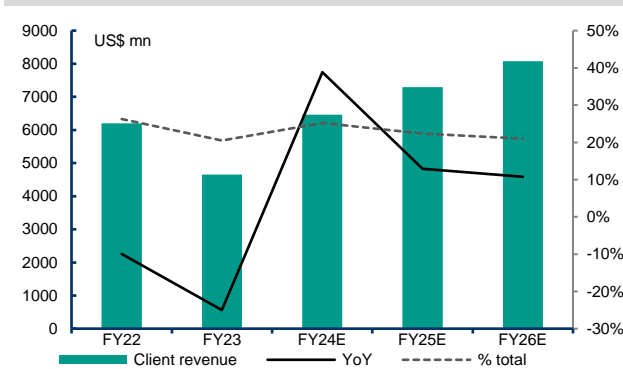


Source(s): Company data, ABCI Securities estimates

**Exhibit 23: Client CPU units estimates**
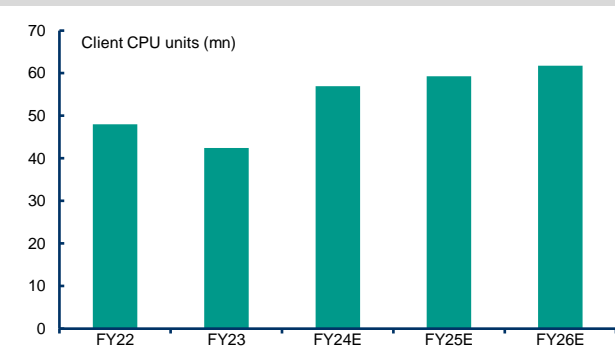


Source(s): Company data, ABCI Securities estimates

## Embedded segment to bottom out, while Gaming softness well priced in

### Embedded segment: Recovery in sight

**Acquiring Xilinx for Embedded expansion.** Embedded business contributed 23% of AMD's total revenue in FY23, in which AMD offers leading FPGAs, adaptive SoCs and SoMs, and embedded CPUs and GPUs for a broad set of markets. It has the highest profitability among the four segments, with OPM at 40% in 2Q24. Initially, AMD's Embedded business might have been a relatively more minor contributor. In Feb 2022, AMD acquired Xilinx in an all-stock transaction, marking a significant expansion for AMD in embedded and adaptive computing. As the largest player in FPGA with ~50% market share, Xilinx's FPGA business was then integrated into AMD's Embedded business. Following the acquisition, AMD launched the Embedded+ platform, which combines AMD Ryzen Embedded processors with AMD Versal adaptive SoCs onto a single integrated board, providing a holistic solution. As technology advances and market demands evolve, AMD's Embedded segment is gradually gaining prominence and finding widespread applications in diverse industries (e.g., industrial automation, automotive, commercial, healthcare, and remote digital gaming systems).

**Embedded business to continuously bottom out.** In 2Q24, Embedded business revenue declined by 41% YoY, primarily due to customers normalizing their inventory levels. Management guided Embedded to grow at a mid-single-digit level QoQ in 3Q24E as communication infrastructure will take longer to resume growth. Looking ahead, we expect Embedded business to bottom out, supported by inventory recovery in 2H24E and new product expansion (e.g., Alveo V80 accelerators, which deliver leadership capabilities in memory-intensive workloads). AMD has entered early access on next-gen edge AI solutions with more than 30 key partners on 2nd Gen Versal adaptive SoCs.

| Exhibit 24: AMD's Embedded core solutions | Exhibit 25: AMD's Embedded revenue estimates |
| --- | --- |





Source(s): Company data
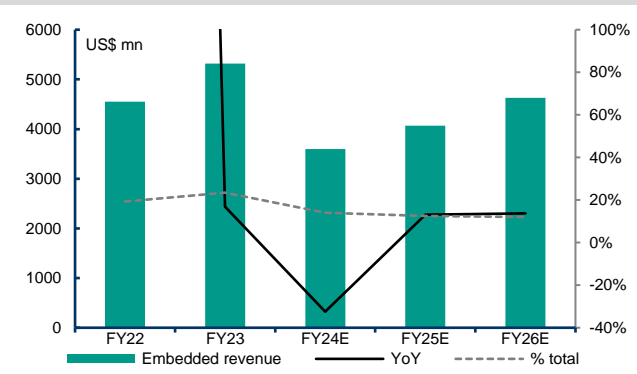
Source(s): Company data, ABCI Securities estimates

## Gaming: headwinds yet over, but well anticipated by the market

**Value-for-money propositions with enhancing performance to excel in the mid-to-low-end gaming market.** As a pioneer in gaming with a 12% market share in the high-end graphics cards market (based on 1Q24 data in JPR), AMD offers top-to-bottom desktop and notebook GPUs, game consoles, and semi-custom SoCs in Gaming segment. Compared to NVIDIA, AMD excels in the affordable and mid-to-low-end market segments with its value-for-money offerings. While NVIDIA has long been synonymous with ray tracing thanks to its RTX series of GPUs, AMD has been steadily narrowing the gap through its implementation, known as Radeon Ray Tracing (RRT). AMD's ongoing investments in R&D have led to noticeable improvements in ray tracing performance and compatibility across its GPU lineup, making it an increasingly viable option for gamers seeking top-tier visual fidelity without the premium NVIDIA pricing.

**Headwinds are yet to be over.** Gaming contributed 11.1% of AMD's total revenue in 2Q24. Its revenue declined 59% YoY in 2Q24, primarily due to lower semi-custom revenue. We expect challenges to linger into 2025 (forecasting revenue -16% YoY), attributable to softening demand for game consoles and GPUs inventory headwinds. However, we think this trend has been well anticipated by the market.

| Exhibit 26: AMD's Gaming revenue estimates | Exhibit 27: AMD's products with value for money |
| --- | --- |
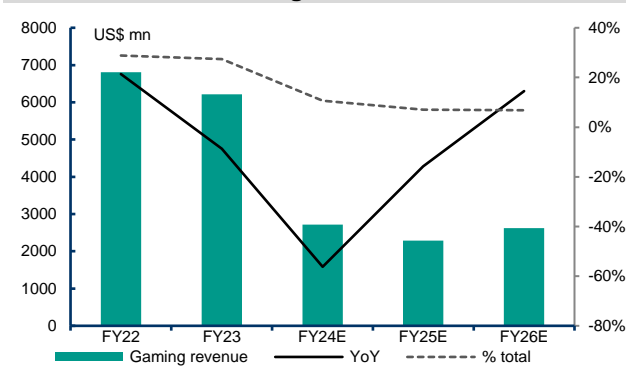


Source(s): Company data, ABCI Securities estimates

**Best Graphics Cards in Oct 2024 (by value for money)**

| Rank | Device | MSRP Price | 3DMark Graphics Score | Value for Money |
| --- | --- | --- | --- | --- |
| 1 | AMD Radeon RX 6750 GRE 12GB | US$289 | 12616 | 43 |
| 2 | Intel Arc A750 | US$289 | 12426 | 42 |
| 3 | Intel Arc A770 | US$329 | 13665 | 41 |
| 4 | AMD Radeon RX 7900 GRE | US$550 | 22323 | 40 |
| 5 | AMD Radeon RX 7800 XT | US$499 | 20026 | 40 |
| 6 | AMD Radeon RX 7600 | US$269 | 11002 | 40 |
| 7 | AMD Radeon RX 6650 XT | US$249 | 9893 | 39 |
| 8 | AMD Radeon RX 7700 XT | US$449 | 16999 | 37 |
| 9 | NVIDIA GeForce RTX 4070 SUPER | US$599 | 20981 | 35 |
| 10 | AMD Radeon RX 7600 XT | US$329 | 11291 | 34 |

Source(s): 3D Mark (Data is updated daily); Data as of 6 Oct 2024

# Financial Analysis

## Revenue Breakdown

**We forecast AMD's revenue to grow 13%/27%/18% YoY in FY24E/25E/26E,** in which Data Center will continue to serve as the key contributor. We believe Data Center, backed by industrial tailwinds and new product ramp, will be the main revenue driver in the long run. We anticipate 35%/12%/13% CAGRs for Data Center/Client/Embedded during FY24E-26E, while Gaming is projected to stabilize from FY26E onwards.

Key topline drivers come from:

**Data Center:** We expect a 35% revenue CAGR in FY24E-26E, mainly due to: 1) strong AI demand to continue; 2) ramp up of MI300 series and upcoming MI325 series; and 3) share gain in server CPU (vs. Intel), which is expected to embrace recovery ahead. We estimate AMD's data center GPU/ server CPU revenues to grow at 48.2%/26.7% CAGRs in FY24E-26E. Data Center GPU units are projected to surge to 0.6mn in FY26E, representing a 30.3% CAGR in FY24E-26E, while GPU ASP is estimated to grow at a 13.8% CAGR. We project server CPU units to grow at a 14.9% CAGR in FY24E-26E.

**Client:** We forecast a 12% revenue CAGR in FY24E-26E, in which Desktop CPU and Notebook CPU are expected to grow at 8.6% and 14.0% CAGRs. The CPU momentum is mainly driven by: 1) the global PC market recovery with refresh cycle and the proliferation of AI PCs; and 2) rising adoption of upgraded products (e.g., AMD Ryzen AI 300 Series, AMD Ryzen 9000 Series, AMD Ryzen PRO 8040 Series, and 8000 Series mobile and desktop processors).

**Embedded:** We expect a 13% revenue CAGR in FY24E-26E. Embedded business achieved sequential growth in 2Q24 for the first time after four consecutive quarters of softness. We expect the segment to bottom out, backed by inventory recovery in 2H24E and new product expansion (e.g., Alveo V80 accelerators, which deliver leadership capabilities in memory-intensive workloads).

**Exhibit 28: AMD's revenue and YoY growth estimates**
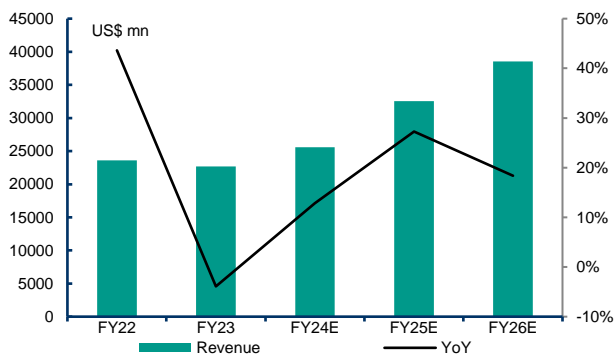


Source(s): Company data, ABCI Securities estimates

**Exhibit 29: Data center revenue and YoY growth estimates**



Source(s): Company data, ABCI Securities estimates

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Advanced Micro Devices, Inc. (AMD US)
**Global AI technology sector**
**Oct 7, 2024**
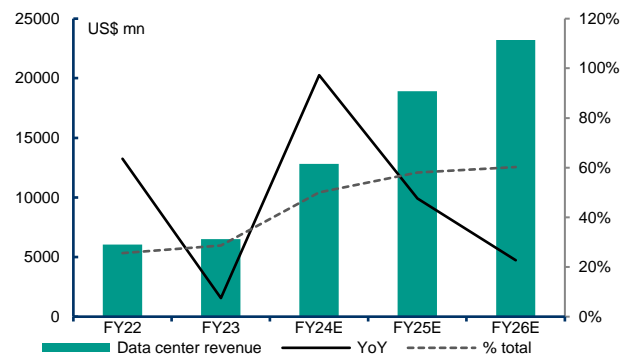
**Exhibit 30: Revenue mix**



Source(s): Company data, ABCI Securities estimates
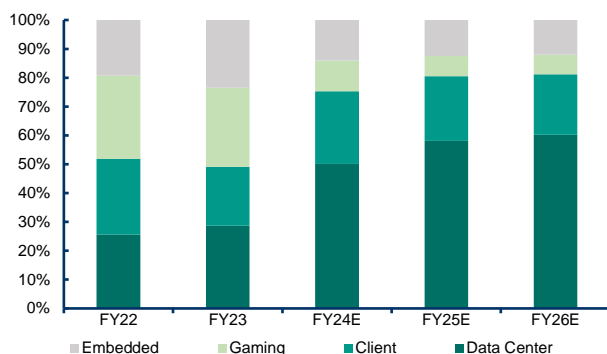
**Exhibit 31: Revenue mix in FY25E**
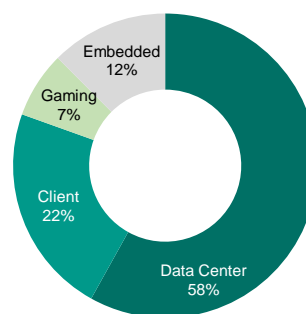


Source(s): Company data, ABCI Securities estimates

**Exhibit 32: Revenue driver estimates**

| US$ mn, Dec-YE | FY21 | FY22 | FY23 | FY24E | FY25E | FY26E | FY24E-26E CAGR |
|---|---|---|---|---|---|---|---|
| **Revenue** | **16,434** | **23,601** | **22,680** | **25,584** | **32,561** | **38,543** | **22.7%** |
| YoY | 68% | 44% | -4% | 13% | 27% | 18% | |
| | | | | | | | |
| **Data Center** | 3,694 | 6,043 | 6,496 | 12,812 | 18,912 | 23,218 | **34.6%** |
| YoY | NA | 64% | 7% | 97% | 48% | 23% | |
| % total | 22% | 26% | 29% | 50% | 58% | 60% | |
| **Client** | 6,887 | 6,201 | 4,651 | 6,458 | 7,291 | 8,078 | **11.8%** |
| YoY | NA | -10% | -25% | 39% | 13% | 11% | |
| % total | 42% | 26% | 21% | 25% | 22% | 21% | |
| **Gaming** | 5,607 | 6,805 | 6,212 | 2,719 | 2,291 | 2,622 | **-1.8%** |
| YoY | NA | 21% | -9% | -56% | -16% | 14% | |
| % total | 34% | 29% | 27% | 11% | 7% | 7% | |
| **Embedded** | 246 | 4,552 | 5,321 | 3,596 | 4,067 | 4,626 | **13.4%** |
| YoY | NA | 1750% | 17% | -32% | 13% | 14% | |
| % total | 1% | 19% | 23% | 14% | 12% | 12% | |

Source(s): Company data, ABCI Securities estimates

# Income Statement

**Better margin outlook with higher revenue mix from Data Center and Embedded business to bottom out**

AMD's adj. net margin slightly declined in FY23 due to increased operational costs, deceleration in Data Center revenue growth, declining momentum in Client and Gaming segments, and challenging market conditions. In 2Q24, its adj. net margin improved to 19.3%, +1.6ppts YoY, primarily on strong growth of Data Center and Embedded stabilization (with higher margins).

Looking ahead, we expect AMD's adj. NPM to improve to 22%/27%/28% in FY24E/25E/26E, thanks to: 1) robust Data Center growth to continuously boost GPM; 2) Embedded segment, which has the highest margin, to resume growth; and 3) operating leverage from R&D and SG&A. As such, we forecast its bottom line to grow at a 40% CAGR in FY24E-26E.

**Exhibit 33: Income statement**

| FY ended Dec (US$ mn, except per share data) | FY21 | FY22 | FY23 | FY24E | FY25E | FY26E | 24-26E CAGR |
|---|---|---|---|---|---|---|---|
| Revenue | 16,434 | 23,601 | 22,680 | 25,584 | 32,561 | 38,543 | 23% |
| Cost of sales | (8,505) | (12,998) | (12,220) | (11,969) | (14,356) | (16,745) | |
| Gross profit | 7,929 | 10,603 | 10,460 | 13,615 | 18,204 | 21,798 | 27% |
| R&D | (2,845) | (5,005) | (5,872) | (6,418) | (7,340) | (8,200) | |
| SG&A | (1,448) | (2,336) | (2,352) | (2,407) | (2,712) | (3,023) | |
| Others | (12) | 1,998 | 1,835 | - | - | - | |
| Operating profit | 3,648 | 1,264 | 401 | 4,790 | 8,152 | 10,575 | 49% |
| Non-GAAP operating profit | 4,069 | 6,345 | 4,854 | 6,210 | 9,607 | 12,119 | 40% |
| Pre-tax profit | 3,669 | 1,184 | 492 | 3,533 | 8,272 | 10,695 | |
| Tax | 513 | (122) | (346) | (492) | (1,070) | (1,407) | |
| GAAP net income | 3,162 | 1,320 | 854 | 3,055 | 7,202 | 9,287 | 74% |
| Non-GAAP net income | 3,435 | 5,504 | 4,302 | 5,508 | 8,657 | 10,831 | 40% |
| | | | | | | | |
| GAAP EPS (Diluted) | 2.57 | 0.84 | 0.53 | 1.87 | 4.38 | 5.61 | 73% |
| Non-GAAP EPS (Diluted) | 2.79 | 3.50 | 2.65 | 3.36 | 5.27 | 6.55 | 40% |
| | | | | | | | |
| **Margin Analysis** | | | | | | | |
| Gross margin | 48% | 45% | 46% | 53% | 56% | 57% | |
| Adj. operating margin | 25% | 27% | 21% | 24% | 30% | 31% | |
| Adj. net margin | 21% | 23% | 19% | 22% | 27% | 28% | |
| | | | | | | | |
| **Growth Analysis** | | | | | | | |
| Revenue | 68% | 44% | -4% | 13% | 27% | 18% | |
| Gross profit | 82% | 34% | -1% | 30% | 34% | 20% | |
| Adj. operating profit | 146% | 56% | -23% | 28% | 55% | 26% | |
| Adj. net profit | 118% | 60% | -22% | 28% | 57% | 25% | |

Source(s): Company data, ABCI Securities estimates
Note: Adj. net profit* = Non-GAAP net income; Adj. EPS* = Non-GAAP EPS; Adj. operating profit* = Non-GAAP operating profit

**Exhibit 34: ABCI estimates vs. consensus**

| US$ mn, Dec-YE | ABCI | | | Consensus | | | Diff (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | FY24E | FY25E | FY26E | FY24E | FY25E | FY26E | FY24E | FY25E | FY26E |
| Revenue | 25,584 | 32,561 | 38,543 | 25,603 | 32,863 | 39,492 | -0.1% | -0.9% | -2.4% |
| Gross profit | 13,615 | 18,204 | 21,798 | 13,610 | 18,104 | 22,379 | 0.0% | 0.6% | -2.6% |
| Adj. operating profit | 6,210 | 9,607 | 12,119 | 6,234 | 9,816 | 13,021 | -0.4% | -2.1% | -6.9% |
| Adj. net profit | 5,508 | 8,657 | 10,831 | 5,585 | 8,805 | 11,579 | -1.4% | -1.7% | -6.5% |
| Adj. EPS (US$) | 3.36 | 5.27 | 6.55 | 3.40 | 5.44 | 7.37 | -0.9% | -3.1% | -11.1% |
| Gross margin | 53.2% | 55.9% | 56.6% | 53.2% | 55.1% | 56.7% | +0.1ppts | +0.8ppts | -0.1ppts |
| Adj. OPM | 24.3% | 29.5% | 31.4% | 24.4% | 29.9% | 33.0% | -0.1ppts | -0.4ppts | -1.5ppts |
| Adj. NPM | 21.5% | 26.6% | 28.1% | 21.8% | 26.8% | 29.3% | -0.3ppts | -0.2ppts | -1.2ppts |

Source(s): Company data, Bloomberg, ABCI Securities estimates

**Exhibit 35: Quarterly financial forecast**

| (US$ mn) | 1Q22 | 2Q22 | 3Q22 | 4Q22 | 1Q23 | 2Q23 | 3Q23 | 4Q23 | 1Q24 | 2Q24 | 3Q24E | QoQ | YoY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Revenue | 5,887 | 6,550 | 5,565 | 5,599 | 5,353 | 5,359 | 5,800 | 6,168 | 5,473 | 5,835 | 6,717 | 15% | 16% |
| Gross profit | 2,818 | 3,028 | 2,354 | 2,403 | 2,359 | 2,443 | 2,747 | 2,911 | 2,560 | 2,864 | 3,575 | 25% | 30% |
| Operating profit | 951 | 526 | (64) | (149) | (145) | (20) | 224 | 342 | 36 | 269 | 1,331 | 395% | 494% |
| Adj. net profit | 1,589 | 1,707 | 1,095 | 1,113 | 970 | 948 | 1,135 | 1,249 | 1,013 | 1,126 | 1,488 | 32% | 31% |
| Adj. EPS (US$) | 1.13 | 1.05 | 0.67 | 0.69 | 0.60 | 0.58 | 0.70 | 0.77 | 0.62 | 0.69 | 0.91 | 32% | 30% |
| **Margin (%)** | | | | | | | | | | | | | |
| Gross margin | 48% | 46% | 42% | 43% | 44% | 46% | 47% | 47% | 47% | 49% | 53% | | |
| Operating margin | 16% | 8% | -1% | -3% | -3% | 0% | 4% | 6% | 1% | 5% | 20% | | |
| Adj. net margin | 27% | 26% | 20% | 20% | 18% | 18% | 20% | 20% | 19% | 19% | 22% | | |
| **Growth (%)** | | | | | | | | | | | | | |
| Revenue (YoY) | 71% | 70% | 29% | 16% | -9% | -18% | 4% | 10% | 2% | 9% | 16% | | |
| Revenue (QoQ) | 22% | 11% | -15% | 1% | -4% | 0% | 8% | 6% | -11% | 7% | 15% | | |
| Operating profit | 44% | -37% | NA | NA | NA | NA | NA | NA | NA | NA | 494% | | |
| Adj. net profit | 148% | 119% | 23% | -1% | -39% | -44% | 4% | 12% | 4% | 19% | 31% | | |

Source(s): Company data, ABCI Securities estimates

**Exhibit 36: Quarterly revenue breakdown forecast**

| (US$ mn) | 1Q22 | 2Q22 | 3Q22 | 4Q22 | 1Q23 | 2Q23 | 3Q23 | 4Q23 | 1Q24 | 2Q24 | 3Q24E | QoQ | YoY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue** | **5,887** | **6,550** | **5,565** | **5,599** | **5,353** | **5,359** | **5,800** | **6,168** | **5,473** | **5,835** | **6,717** | **15%** | **16%** |
| Data Center | 1,293 | 1,486 | 1,609 | 1,655 | 1,295 | 1,321 | 1,598 | 2,282 | 2,337 | 2,834 | 3,492 | 23% | 119% |
| Client | 2,124 | 2,152 | 1,022 | 903 | 739 | 998 | 1,453 | 1,461 | 1,368 | 1,492 | 1,729 | 16% | 19% |
| Gaming | 1,875 | 1,655 | 1,631 | 1,644 | 1,757 | 1,581 | 1,506 | 1,368 | 922 | 648 | 574 | -11% | -62% |
| Embedded | 595 | 1,257 | 1,303 | 1,397 | 1,562 | 1,459 | 1,243 | 1,057 | 846 | 861 | 921 | 7% | -26% |

Source(s): Company data, ABCI Securities estimates

# Balance Sheet

## Healthy cash position supported by sustainable profitability

AMD is projected to maintain a healthy cash position for its sustainable profitability. According to our estimates of PBT and changes in working capital, AMD has solid cash flow to support tech investment and M&A. By 2Q24, its cash and short-term investments reached US$ 5.3bn, while inventory increased sequentially to US$ 5.0bn. We anticipate that AMD will maintain cash positions of US$ 5.2bn/13.1bn/22.9bn in FY24E/25E/26E.

**Exhibit 37: Balance sheet**

| FY ended Dec (US$ mn) | FY21 | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|---|
| **Non-current assets** | **3,836** | **52,561** | **51,117** | **51,054** | **51,090** | **51,226** |
| PP&E | 702 | 1,513 | 1,589 | 1,664 | 1,760 | 1,956 |
| Others | 3,134 | 51,048 | 49,528 | 49,390 | 49,330 | 49,270 |
| | | | | | | |
| **Current assets** | **8,583** | **15,019** | **16,768** | **20,197** | **29,342** | **40,551** |
| Cash and cash equivalents | 2,535 | 4,835 | 3,933 | 5,218 | 13,093 | 22,905 |
| Short-term investments | 1,073 | 1,020 | 1,840 | 1,227 | 1,227 | 1,227 |
| Accounts receivable, net | 2,706 | 4,126 | 5,376 | 6,646 | 7,506 | 8,173 |
| Inventories | 1,955 | 3,771 | 4,351 | 5,720 | 6,131 | 6,860 |
| Others | 314 | 1,267 | 1,268 | 1,385 | 1,385 | 1,385 |
| | | | | | | |
| **Current liabilities** | **4,240** | **6,369** | **6,689** | **6,799** | **7,340** | **7,872** |
| | | | | | | |
| **Non-current liabilities** | **682** | **6,461** | **5,304** | **5,153** | **5,153** | **5,153** |
| Long-term debt | 1 | 2,467 | 1,717 | 1,719 | 1,719 | 1,719 |
| Other long-term liabilities | 681 | 3,994 | 3,587 | 3,434 | 3,434 | 3,434 |
| | | | | | | |
| **Total equity** | **7,497** | **54,750** | **55,892** | **59,299** | **67,939** | **78,752** |
| | | | | | | |
| **Debt Analysis** | | | | | | |
| Total debt | 1 | 2,467 | 1,717 | 1,719 | 1,719 | 1,719 |
| Total equity | 7,497 | 54,750 | 55,892 | 59,299 | 67,939 | 78,752 |
| D/E ratio | 0% | 5% | 3% | 3% | 3% | 2% |
| D/A ratio | 0% | 4% | 3% | 2% | 2% | 2% |
| Current ratio (x) | 2.0 | 2.4 | 2.5 | 3.0 | 4.0 | 5.2 |

Source(s): Company data, ABCI Securities estimates

# Cash Flow and Working Capital

### Growing FCF with Data Center expansion

AMD has delivered sustainable growth in the past few years, driven by increased tech investment and business expansion, along with margin enhancement (adj. OPM increased from 12% in FY18 to 21% in FY23) and FCF improvement (from US$ 276mn in FY18 to US$ 1.1bn in FY23). We attribute this growth to Data Center expansion with industrial tailwinds, coupled with decent margin of Embedded business. We expect FCF to reach US$ 3.2bn/7.9bn/9.8bn in FY24E/25E/26E.

**Exhibit 38: Free cash flow projections**
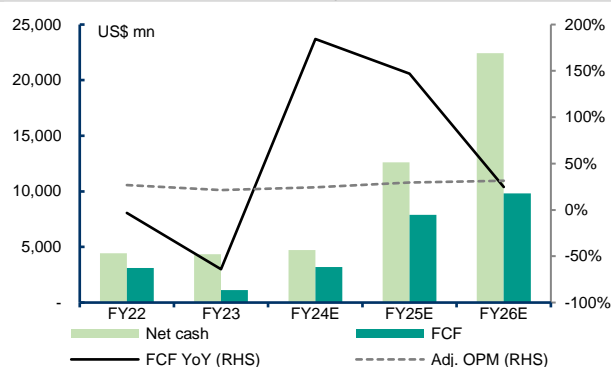


Source(s): Company data, ABCI Securities estimates

**Exhibit 39: Cash flow and working capital analysis**

| FY ended Dec (US$ mn) | FY21 | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|---|
| **Cash Flow** | | | | | | |
| Net income | 3,162 | 1,320 | 854 | 3,055 | 7,202 | 9,287 |
| Depreciation and amortization | 407 | 4,174 | 3,453 | 3,012 | 1,762 | 1,620 |
| Change in working capital | (774) | (1,846) | (3,049) | (2,661) | (729) | (865) |
| Others | 726 | (83) | 409 | 378 | 340 | 570 |
| **Operating cash flow** | **3,521** | **3,565** | **1,667** | **3,784** | **8,575** | **10,612** |
| | | | | | | |
| CAPEX | (301) | (450) | (546) | (596) | (700) | (800) |
| Others | (385) | 2,449 | (877) | (118) | - | - |
| **Investing cash flow** | **(686)** | **1,999** | **(1,423)** | **(714)** | **(700)** | **(800)** |
| | | | | | | |
| Repurchases of common stock | (1,762) | (3,702) | (985) | (580) | - | - |
| Increase (decrease) in debt | - | 679 | - | (750) | - | - |
| Proceeds from sales of common stock | 104 | 167 | 268 | 148 | - | - |
| Others | (237) | (408) | (429) | (603) | - | - |
| **Financing cash flow** | **(1,895)** | **(3,264)** | **(1,146)** | **(1,785)** | **-** | **-** |
| **Cash at period end** | **2,535** | **4,835** | **3,933** | **5,218** | **13,093** | **22,905** |
| **Free cash flow** | **3,220** | **3,115** | **1,121** | **3,188** | **7,875** | **9,812** |

Source(s): Company data, Bloomberg, ABCI Securities estimates

# Valuation

## Investment Thesis

We initiate **BUY** with a DCF-based TP of US$ 186.3, implying 35x FY25E P/E. AMD has prioritized AI strategy with stronger competitive positioning to embrace the AI boom. Leveraging its ecosystem of "CPU + GPU+ Networking", AMD is expected to step into data center's ramp-up and earnings acceleration pace. Despite the tech gap between NVIDIA, we think AMD will still embrace broader adoption, supported by: 1) an accelerated GPU roadmap to an annual cadence; 2) full-stack product matrix with competitive pricing; and 3) M&A to strengthen AI edge. Moreover, NVIDIA's supply tightness could create opportunities for AMD to swiftly ramp up products as one of the few alternatives at competitive prices. In our view, AMD's positive price drivers and catalysts would originate from: 1) upcoming "Advancing AI 2024" event on 10 Oct; 2) MI300 and MI325 series ramp-up to boost further growth; 3) continued share gains in CPU market (vs. Intel) with global PC market tailwinds and product upgrades; 4) a competitive business mix that drives margin improvement; and 5) business synergies from ZT systems acquisition.

## DCF valuation

We use DCF valuation as our primary method for tech companies with healthy long-term cash flow. Assuming a WACC of 12.2% and a terminal growth rate of 3%, our estimated TP is US$ 186.3, representing 35x FY25E P/E or 0.9x FY25E PEG.

**Exhibit 40: DCF valuation**

DCF Valuation (US$ mn)

| | FY24E | FY25E | FY26E | FY27E | FY28E | FY29E | FY30E | FY31E | FY32E | FY33E | FY34E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EBIT | 3,925 | 8,612 | 11,265 | 14,644 | 18,818 | 23,710 | 29,164 | 35,288 | 42,346 | 49,968 | 58,463 |
| Tax | (492) | (1,070) | (1,407) | (1,830) | (2,351) | (2,962) | (3,644) | (4,409) | (5,291) | (6,243) | (7,304) |
| D&A | 3,012 | 1,762 | 1,620 | 1,685 | 1,752 | 1,822 | 1,895 | 1,971 | 2,050 | 2,132 | 2,217 |
| Change in working capital | (2,661) | (729) | (865) | (848) | (831) | (814) | (798) | (782) | (766) | (751) | (736) |
| CAPEX | (596) | (700) | (800) | (840) | (882) | (926) | (972) | (1,021) | (1,072) | (1,126) | (1,182) |
| FCF | 3,188 | 7,875 | 9,812 | 12,812 | 16,506 | 20,830 | 25,645 | 31,047 | 37,267 | 43,980 | 51,458 |
| FCF Growth | 184% | 147% | 25% | 31% | 29% | 26% | 23% | 21% | 20% | 18% | 17% |
| PV | 3,188 | 7,020 | 7,797 | 9,075 | 10,423 | 11,725 | 12,868 | 13,887 | 14,859 | 15,632 | 193,912 |
| Terminal Value | | | | | | | | | | | 560,547 |

| Assumptions | |
|---|---|
| **WACC** | **12.2%** |
| **Long term growth** | **3.0%** |

| Equity Value | |
|---|---|
| **PV** | **300,388** |
| minus: Net debt (US$ mn) | (4,726) |
| minus: Minority interest (US$ mn) | 0 |
| Equity Value(US$ mn) | 305,114 |
| No. of shares (mn) | 1,638 |
| **Target Price (US$) based on DCF** | **186.3** |

| | | | WACC | | | |
|---|---|---|---|---|---|---|
| | ~ | 10% | 11% | 12% | 13% | 14% |
| | 1.5% | 230.0 | 199.4 | 171.1 | 155.1 | 138.7 |
| | 2.0% | 238.9 | 205.8 | 175.6 | 158.8 | 141.6 |
| Terminal growth rate | 2.5% | 249.0 | 213.1 | 180.7 | 162.8 | 144.6 |
| | 3.0% | 260.5 | 221.2 | 186.3 | 167.2 | 148.0 |
| | 3.5% | 273.9 | 230.4 | 192.5 | 172.0 | 151.6 |
| | 4.0% | 289.4 | 241.0 | 199.6 | 177.5 | 155.7 |
| | 4.5% | 307.7 | 253.1 | 207.5 | 183.5 | 160.1 |

Source(s): Company data, Bloomberg, ABCI Securities estimates

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ABCI SECURITIES COMPANY LIMITED

## Peer comparison

We selected 7 AI Chip-related companies, 6 LLMs & AIGC companies, 4 SaaS companies, 5 supply chain companies, and 4 China semiconductor companies for peer comparison. The industry multiple is currently trading at 28.2x 25E P/E, below our DCF-based multiple of 35x FY25E P/E. However, we think our valuation is reasonable as 35x P/E is largely in line with its 3-year historical forward P/E mean of 33x, and 0.9x FY25E PEG is far below the industrial average of 1.45x.

For global peers, we see NVIDIA and Intel as the most comparable ones due to their similar product portfolios of GPUs and CPUs. As a competitive challenger, AMD is pursuing NVIDIA by accelerating GPU upgrades with advanced performance and competitive pricing. Our DCF-based multiple of 35x FY25E P/E does not exceed NVIDIA's TP-implied multiple of 35.2x FY26E P/E, and 0.9x PEG is still below NVIDIA's multiple. Compared to Intel, we think AMD deserves a premium multiple, backed by: 1) continuous share gains in the CPU market with aggressive product upgrades; and 2) higher AI exposure and competitiveness with MI series ramp. For other AI-related peers, AMD stands out with full-stack products of "CPU+GPU+Networking", rising competitive position in data center, and above-industrial earnings growth (40% EPS CAGR in FY24E-26E, vs. industrial average of 22%).

**Exhibit 41: Peer comparison**

| Company | Ticker | Mkt cap (USD mn) | Currency | Price | PE | | | PS | | | 24-26E EPS CAGR | PEG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 24E | 25E | 26E | 24E | 25E | 26E | | |
| **AI Chips-related** | | | | | | | | | | | | |
| **AMD** | **AMD US** | **276,599** | **USD** | **171** | **50.8** | **32.4** | **26.1** | **10.8** | **8.5** | **7.2** | **40%** | **0.71** |
| NVIDIA | NVDA US | 3,064,288 | USD | 125 | 44.4 | 30.0 | 24.7 | 24.7 | 17.0 | 14.5 | 32% | 1.00 |
| Marvell | MRVL US | 63,588 | USD | 73 | 49.6 | 29.1 | 21.8 | 11.5 | 8.6 | 7.1 | 51% | 0.57 |
| ARM | ARM US | 147,296 | USD | 141 | 89.1 | 67.3 | 53.5 | 37.1 | 29.8 | 24.3 | 29% | 2.32 |
| Broadcom | AVGO US | 825,011 | USD | 177 | 35.0 | 27.3 | 23.7 | 16.0 | 13.6 | 12.1 | 21% | 1.27 |
| Qualcomm | QCOM US | 188,155 | USD | 169 | 16.5 | 15.1 | 13.7 | 4.9 | 4.5 | 4.1 | 10% | 1.57 |
| Intel | INTC US | 96,595 | USD | 23 | 91.0 | 20.3 | 12.0 | 1.8 | 1.7 | 1.6 | 175% | 0.12 |
| Apple | AAPL US | 3,448,298 | USD | 227 | 33.4 | 30.8 | 29.0 | 8.8 | 8.2 | 7.6 | 7% | 4.21 |
| Average | | | | | 51.2 | 31.5 | 25.6 | 14.5 | 11.5 | 9.8 | 27% | 1.47 |
| **LLMs & AIGC** | | | | | | | | | | | | |
| Meta | META US | 1,507,800 | USD | 596 | 27.1 | 23.5 | 20.5 | 9.3 | 8.2 | 7.3 | 15% | 1.57 |
| Alphabet | GOOGL US | 2,065,536 | USD | 167 | 20.7 | 18.3 | 16.3 | 7.1 | 6.3 | 5.7 | 13% | 1.44 |
| Amazon | AMZN US | 1,957,528 | USD | 187 | 32.7 | 26.7 | 22.0 | 3.1 | 2.8 | 2.5 | 22% | 1.22 |
| Microsoft | MSFT US | 3,092,590 | USD | 416 | 31.3 | 27.1 | 23.3 | 11.0 | 9.5 | 8.2 | 16% | 1.70 |
| Baidu | BIDU US | 38,733 | USD | 110 | 10.0 | 9.6 | 8.8 | 2.0 | 1.9 | 1.8 | 6% | 1.56 |
| Tencent | 700 HK | 570,758 | HKD | 478 | 18.8 | 17.0 | 15.4 | 6.1 | 5.6 | 5.1 | 10% | 1.64 |
| Average | | | | | 21.9 | 19.1 | 16.7 | 5.8 | 5.2 | 4.6 | 13% | 1.46 |
| **SaaS** | | | | | | | | | | | | |
| Salesforce | CRM US | 275,089 | USD | 288 | 27.9 | 25.2 | 22.2 | 7.3 | 6.7 | 6.1 | 12% | 2.07 |
| Snowflake | SNOW US | 38,454 | USD | 115 | NA | NA | NA | 10.9 | 8.9 | 7.2 | 35% | NA |
| ServiceNow | NOW US | 189,042 | USD | 918 | 65.8 | 54.3 | 44.1 | 17.3 | 14.3 | 11.9 | 22% | 2.44 |
| Datadog | DDOG US | 41,365 | USD | 123 | 69.2 | 55.9 | 42.3 | 15.7 | 12.8 | 10.3 | 28% | 2.01 |
| Average | | | | | 54.3 | 45.2 | 36.2 | 12.8 | 10.7 | 8.9 | 24% | 2.17 |
| **Chip design & Manufacturing** | | | | | | | | | | | | |
| TSMC | TSM US | 939,595 | USD | 181 | 27.6 | 21.6 | 18.0 | 10.7 | 8.6 | 7.4 | 24% | 0.91 |
| Synopsys | SNPS US | 76,672 | USD | 499 | 37.3 | 33.4 | 28.8 | 12.4 | 11.1 | 9.9 | 14% | 2.41 |
| Applied Materials | AMAT US | 166,505 | USD | 202 | 23.4 | 20.8 | 19.2 | 6.1 | 5.5 | 5.3 | 10% | 2.00 |
| MediaTek | 2454 TT | 61,078 | NTD | 1,230 | 19.5 | 17.4 | 14.7 | 3.8 | 3.3 | 2.8 | 15% | 1.15 |
| Cadence | CDNS US | 73,562 | USD | 269 | 45.7 | 39.9 | 32.9 | 15.9 | 14.0 | 12.4 | 18% | 2.24 |
| Average | | | | | 30.7 | 26.6 | 22.7 | 9.8 | 8.5 | 7.6 | 16% | 1.74 |
| **China Semi** | | | | | | | | | | | | |
| Zhongji Innolight | 300308 CH | 24,737 | CNY | 155 | 32.3 | 20.7 | 17.7 | 6.7 | 4.4 | 3.8 | 35% | 0.59 |
| NAURA Technology | 002371 CH | 27,690 | CNY | 366 | 33.9 | 25.4 | 20.0 | 6.5 | 5.0 | 4.0 | 30% | 0.84 |
| Hua Hong Semiconductor | 1347 HK | 6,917 | HKD | 28 | 65.4 | 31.8 | 22.7 | 3.4 | 2.7 | 2.3 | 70% | 0.45 |
| Cambricon Technologies | 688256 CH | 17,199 | CNY | 289 | NA | NA | NA | 88.4 | 47.4 | 29.3 | NA | NA |
| Average | | | | | 43.9 | 25.9 | 20.1 | 26.3 | 14.9 | 9.9 | 34% | 0.47 |
| **Total average** | | | | | **38.9** | **28.2** | **23.2** | **12.9** | **9.7** | **8.0** | **22%** | **1.45** |

Source(s): Company data, Bloomberg, ABCI Securities estimates
Note: NVIDIA's 24/25/26E multiple refers to FY25/26/27E data, as its fiscal year ends in Jan; Data as of 7 Oct, 2024

# Key Investment Risks

**Market demand uncertainty:** The demand for AMD's data center is highly correlated with the adoption of AI and cloud computing. Any slowdown in AI innovation or reduced spending by cloud service providers could significantly impact AMD's revenue streams.

**Competition pressure:** AMD faces intense competition from major rivals like Intel and NVIDIA, which can affect its market share and pricing power. As the semiconductor industry evolves, new entrants and existing competitors may introduce innovative products that challenge AMD's offerings, particularly in AI and high-performance computing.

**Supply chain vulnerabilities:** AMD relies on a complex supply chain for manufacturing its products, primarily through partnerships with foundries like TSMC. Any disruptions—due to geopolitical tensions, natural disasters, or logistical challenges—could hinder production capabilities and affect product availability.

**Product cycle uncertainty:** AMD's revenue can be heavily influenced by the success of its product cycles. Missed product launches or disappointing sales can have a significant impact on the stock price.

**Margin dilution on stepped-up investment:** Higher-than-expected R&D investment or M&A with lower return might drag AMD's profitability.

**Macroeconomic factors:** Economic downturns can reduce demand for AMD's products, as consumers and businesses may cut back on spending on new technology.

**Geopolitical risks:** Ongoing geopolitical tensions and trade disputes may continue to disrupt AMD's supply chain and limit its access to China markets.

**Technological risks:** The rapid pace of technological advancement in the semiconductor industry means that AMD must continually innovate to remain competitive. Failing to keep up with technological trends or encountering delays in product launches could result in lost market opportunities.

**Regulatory risks:** As a global player, AMD is subject to various regulatory environments that can impact its operations, including export controls and trade restrictions. Changes in regulations could affect AMD's ability to operate efficiently in key markets.

**Financial performance volatility:** AMD has experienced fluctuations in its financial performance, including recent earnings misses due to softer demand for PC chips. Any volatility in revenue and earnings in the future could lead to uncertainty regarding future growth prospects.

**Intellectual property issue:** The tech industry is heavily reliant on intellectual property. Any loss or theft of proprietary technology could hurt AMD's competitive position.

**DCF valuation risks:** The accuracy of the DCF model heavily relies on assumptions regarding future cash flows. If AMD's revenue growth does not meet expectations, the valuation could be significantly impacted. Furthermore, the choice of discount rate, WACC and terminal growth rate might affect DCF calculations.

# Financial Statements

**Consolidated income statement**

| FY ended Dec (US$ mn, except per share data) | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|
| **Revenue** | **23,601** | **22,680** | **25,584** | **32,561** | **38,543** |
| Cost of sales | (12,998) | (12,220) | (11,969) | (14,356) | (16,745) |
| **Gross profit** | **10,603** | **10,460** | **13,615** | **18,204** | **21,798** |
| R&D | (5,005) | (5,872) | (6,418) | (7,340) | (8,200) |
| SG&A | (2,336) | (2,352) | (2,407) | (2,712) | (3,023) |
| Others | 1,998 | 1,835 | - | - | - |
| Operating profit | 1,264 | 401 | 4,790 | 8,152 | 10,575 |
| **Non-GAAP operating profit** | **6,345** | **4,854** | **6,210** | **9,607** | **12,119** |
| Pre-tax profit | 1,184 | 492 | 3,533 | 8,272 | 10,695 |
| Tax | (122) | (346) | (492) | (1,070) | (1,407) |
| GAAP net income | 1,320 | 854 | 3,055 | 7,202 | 9,287 |
| **Non- GAAP net income** | **5,504** | **4,302** | **5,508** | **8,657** | **10,831** |
| | | | | | |
| GAAP EPS (Diluted) | 0.84 | 0.53 | 1.87 | 4.38 | 5.61 |
| **Non-GAAP EPS (Diluted)** | **3.50** | **2.65** | **3.36** | **5.27** | **6.55** |
| | | | | | |
| **Margin Analysis** | | | | | |
| Gross margin | 45% | 46% | 53% | 56% | 57% |
| Adj. operating margin | 27% | 21% | 24% | 30% | 31% |
| Adj. net margin | 23% | 19% | 22% | 27% | 28% |
| | | | | | |
| **Growth Analysis** | | | | | |
| Revenue | 44% | -4% | 13% | 27% | 18% |
| Gross profit | 34% | -1% | 30% | 34% | 20% |
| Adj. operating profit | 56% | -23% | 28% | 55% | 26% |
| Adj. net profit | 60% | -22% | 28% | 57% | 25% |

Source(s): Company data, ABCI Securities estimates

**Revenue of major segments**

| FY ended Dec (US$ mn) | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|
| **Data Center** | 6,043 | 6,496 | 12,812 | 18,912 | 23,218 |
| YoY | 64% | 7% | 97% | 48% | 23% |
| % total | 26% | 29% | 50% | 58% | 60% |
| **Client** | 6,201 | 4,651 | 6,458 | 7,291 | 8,078 |
| YoY | -10% | -25% | 39% | 13% | 11% |
| % total | 26% | 21% | 25% | 22% | 21% |
| **Gaming** | 6,805 | 6,212 | 2,719 | 2,291 | 2,622 |
| YoY | 21% | -9% | -56% | -16% | 14% |
| % total | 29% | 27% | 11% | 7% | 7% |
| **Embedded** | 4,552 | 5,321 | 3,596 | 4,067 | 4,626 |
| YoY | 1750% | 17% | -32% | 13% | 14% |
| % total | 19% | 23% | 14% | 12% | 12% |

Source(s): Company data, ABCI Securities estimates

**Consolidated balance sheet**

| FY ended Dec (US$ mn) | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|
| **Non-current assets** | **52,561** | **51,117** | **51,054** | **51,090** | **51,226** |
| PP&E | 1,513 | 1,589 | 1,664 | 1,760 | 1,956 |
| Others | 51,048 | 49,528 | 49,390 | 49,330 | 49,270 |
| | | | | | |
| **Current assets** | **15,019** | **16,768** | **20,197** | **29,342** | **40,551** |
| Cash and cash equivalents | 4,835 | 3,933 | 5,218 | 13,093 | 22,905 |
| Short-term investments | 1,020 | 1,840 | 1,227 | 1,227 | 1,227 |
| Accounts receivable, net | 4,126 | 5,376 | 6,646 | 7,506 | 8,173 |
| Inventories | 3,771 | 4,351 | 5,720 | 6,131 | 6,860 |
| Others | 1,267 | 1,268 | 1,385 | 1,385 | 1,385 |
| | | | | | |
| **Current liabilities** | **6,369** | **6,689** | **6,799** | **7,340** | **7,872** |
| | | | | | |
| **Non-current liabilities** | **6,461** | **5,304** | **5,153** | **5,153** | **5,153** |
| Long-term debt | 2,467 | 1,717 | 1,719 | 1,719 | 1,719 |
| Other long-term liabilities | 3,994 | 3,587 | 3,434 | 3,434 | 3,434 |
| | | | | | |
| **Total equity** | **54,750** | **55,892** | **59,299** | **67,939** | **78,752** |
| | | | | | |
| **Debt Analysis** | | | | | |
| Total debt | 2,467 | 1,717 | 1,719 | 1,719 | 1,719 |
| Total equity | 54,750 | 55,892 | 59,299 | 67,939 | 78,752 |
| D/E ratio | 5% | 3% | 3% | 3% | 2% |
| D/A ratio | 4% | 3% | 2% | 2% | 2% |
| Current ratio (x) | 2.4 | 2.5 | 3.0 | 4.0 | 5.2 |

Source(s): Company data, ABCI Securities estimates

**Consolidated cash flow statement**

| FY ended Dec (US$ mn) | FY22 | FY23 | FY24E | FY25E | FY26E |
|---|---|---|---|---|---|
| **Cash Flow** | | | | | |
| Net income | 1,320 | 854 | 3,055 | 7,202 | 9,287 |
| Depreciation and amortization | 4,174 | 3,453 | 3,012 | 1,762 | 1,620 |
| Change in working capital | (1,846) | (3,049) | (2,661) | (729) | (865) |
| Others | (83) | 409 | 378 | 340 | 570 |
| **Operating cash flow** | **3,565** | **1,667** | **3,784** | **8,575** | **10,612** |
| | | | | | |
| CAPEX | (450) | (546) | (596) | (700) | (800) |
| Others | 2,449 | (877) | (118) | - | - |
| **Investing cash flow** | **1,999** | **(1,423)** | **(714)** | **(700)** | **(800)** |
| | | | | | |
| Repurchases of common stock | (3,702) | (985) | (580) | - | - |
| Increase (decrease) in debt | 679 | - | (750) | - | - |
| Proceeds from sales of common stock | 167 | 268 | 148 | - | - |
| Others | (408) | (429) | (603) | - | - |
| **Financing cash flow** | **(3,264)** | **(1,146)** | **(1,785)** | **-** | **-** |
| **Cash at period end** | **4,835** | **3,933** | **5,218** | **13,093** | **22,905** |

Source(s): Company data, ABCI Securities estimates

# Disclosures

**Analyst Certification**

The analyst, Sophie Huang, primarily responsible for the content of this research report, in whole or in part, hereby certify that all of the views expressed in this report accurately reflect my personal view about the subject company or companies and its or their securities. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this report. I and/or my associates have no financial interests in relation to the listed company(ies) covered in this report, and I and/or my associates do not serve as officer(s) of the listed company (ies) covered in this report.

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**Definition of equity rating**

| Rating | Definition |
| --- | --- |
| Buy | Stock return rate ≥ Market return rate (~7%) |
| Hold | - Market return rate (~-7%) ≤ Stock return rate < Market return rate (~+7%) |
| Sell | Stock return < - Market return (~-7%) |

Stock return rate: expected percentage change of share price plus gross dividend yield over the next 12 months

Market return rate: average market return rate since 2005 (HSI total return index 2005-23 averaged at 7.4%)

Time horizon of share price target: 12-month

Stock rating, however, may vary from the stated framework due to factors including but not limited to: corporate governance, market capitalization, historical price volatility relative to corresponding benchmark index, average daily turnover of the stock relative to market capitalization of the stock, competitive advantages in corresponding industry, etc.

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