

Macro Team

AI Bubble

3 November, 2025

Fall 2025





AGENDA

AI Value Chain

Hyperscalers driving AI Expansion

Telecoms Bubble

Telecoms Bubble Companies

Comparison

Macro Team

AI value chain

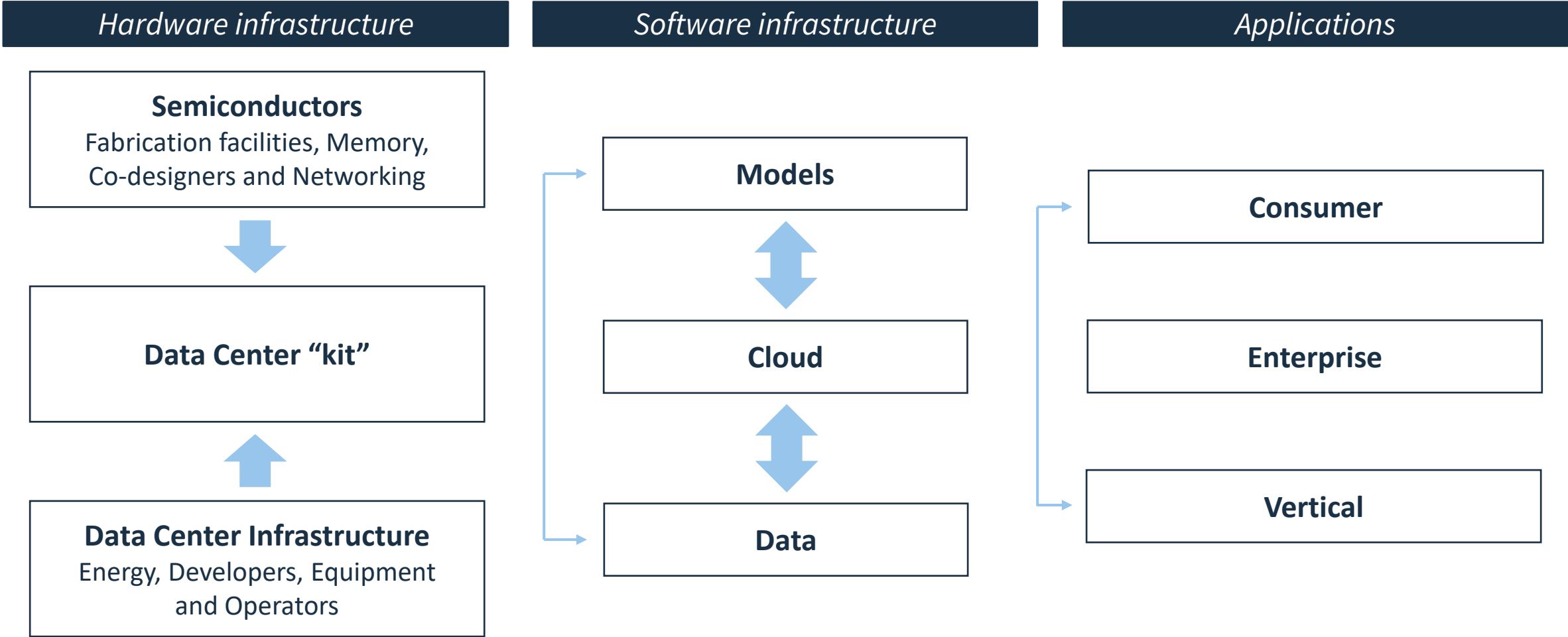
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Value chain breakdown

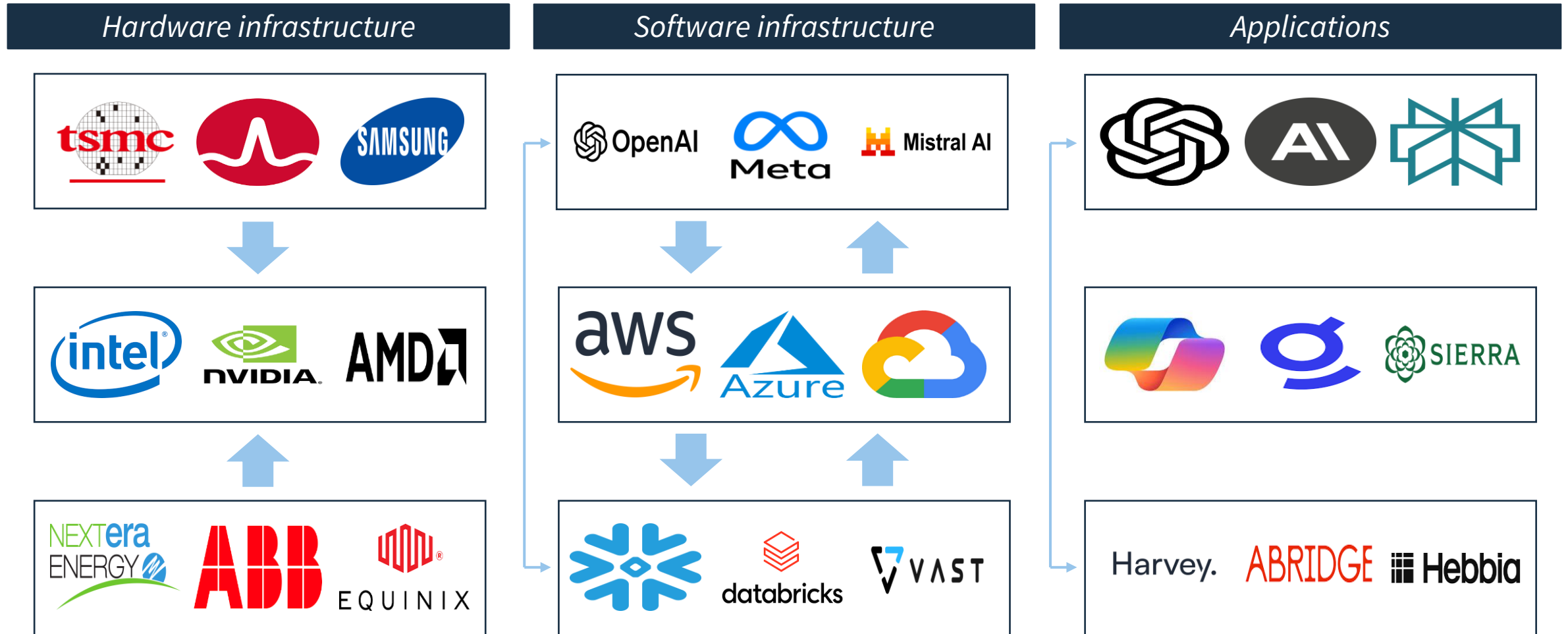
Every question asked to ChatGPT fuels a massive ecosystem



Sources: The Business Engineer

Main players

Alphabet, Meta, Microsoft and Amazon project CapEx to exceed \$380 Billion this year



AI stack overview

The scale of spending in the AI value chain is unprecedented in tech history

Hardware and software infrastructure

Applications

Chips and servers

- At the AI's infrastructure heart lies **GPUs and AI accelerators**
- This is the layer where most economic value concentrates

Model providers

- Here money comes from **API calls and usage fees**
- This layer alone has recorded explosive financial growth

End-User

- These apps offer **decision-making speed, productivity gains and convenience**
- These tools monetize directly through subscriptions, SaaS pricing models and enterprise licensing

Infrastructure enablers

- Infrastructure enablers ensure **data centers work smoothly**
- These range from energy suppliers to cooling providers

Cloud providers

- It is a capital-heavy layer that **delivers computing power**
- Model providers pay billions to lease cloud capacity



Macro Team

Hyperscalers driving AI

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Microsoft

While Personal Computing stagnates, Intelligent Cloud is expected to be MSFT's major revenue source by 2027 with a \$20 billion gap

Microsoft revenue sources

1. Productivity and Business Processes

- Generated **\$120.8 billion in revenues** in FY 2025
- Includes **Office, LinkedIn** and **Dynamics 365**

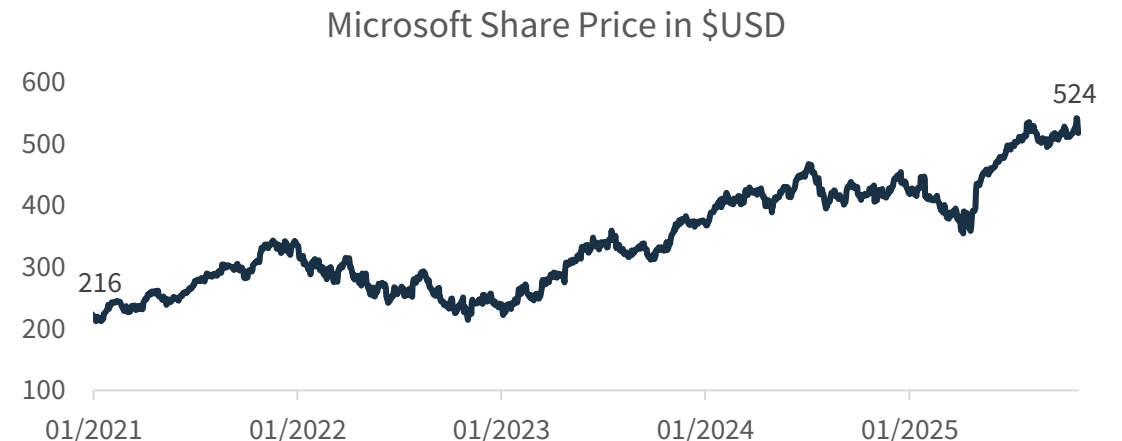
2. Intelligent Cloud

- Generated **\$106.3 billion in revenues** in FY 2025
- Includes **server products** and **cloud services**

3. Personal computing

- Generated **\$54.7 billion in revenues** in FY 2025
- Includes **Windows, Surface** and PC accessories, **Xbox** and search and news advertising

Metric	Q3 2023	Q3 2024	Q3 2025
Market Cap (bn \$)	2,300	3,100	3,800
Revenue (bn \$)	52.9	61.9	77.7
Net Income (bn \$)	18.3	21.9	27.8
Trailing P/E	30.2	35.3	36.8
Diluted EPS	9.7	11.8	14.1
Employees	221,000	228,000	220,000



Financial analysis

Solid financials, but Capex expansion raises concerns

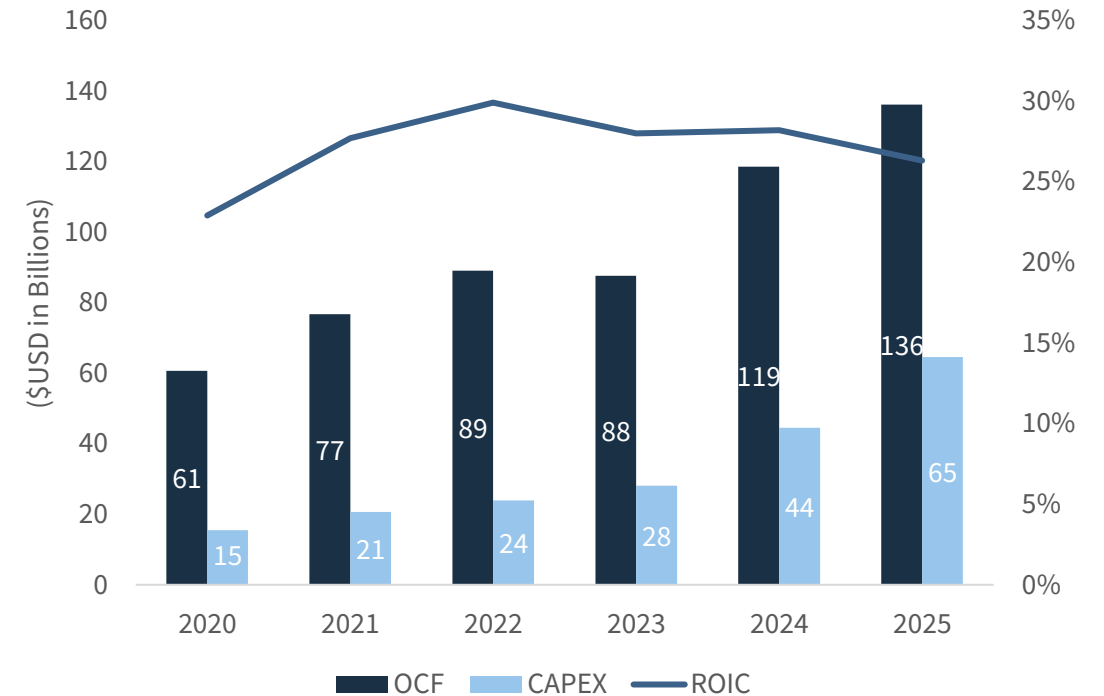
Condensed Income Statement

Billions \$	2020	2021	2022	2023	2024	2025	2026E
Revenues	143.0	168.1	198.3	211.9	245.1	281.7	325.2
YoY Growth		17.6%	18.0%	6.9%	15.7%	14.9%	15.4%
Gross Profit	96.9	115.9	135.6	146.1	171.0	193.9	219.8
Gross Margin	67.8%	68.9%	68.4%	68.4%	69.8%	68.8%	67.7%
EBITDA	65.8	81.6	97.8	102.4	131.7	162.7	193.8
EBITDA Margin	46.0%	48.5%	49.3%	48.3%	54.0%	57.8%	59.6%
EBIT	53.0	69.9	83.4	89.7	109.4	128.5	149.0
Operating Margin	37.0%	41.6%	42.1%	42.3%	44.6%	45.6%	46.0%

Net Income	44.3	60.7	69.5	73.3	88.1	101.8	118.1
YoY Growth		37.0%	14.5%	5.5%	20.1%	15.6%	16.0%
Profit Margin	31.0%	36.1%	35.0%	34.6%	35.9%	36.1%	36.3%

- Key drivers for the strong performance include **Azure cloud services** and **Microsoft 365 Commercial Cloud**

Operating CF and CapEx

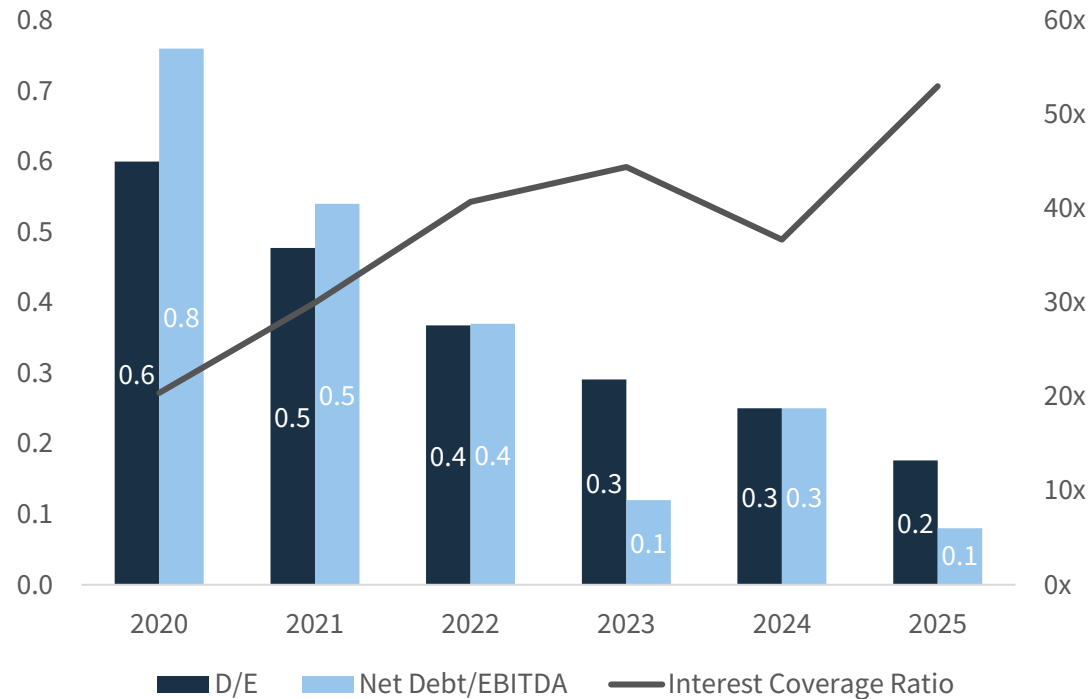


- CFO Amy Hood said on the earnings call that **CapEx growth would accelerate** in the current 2026 FY

Credit analysis

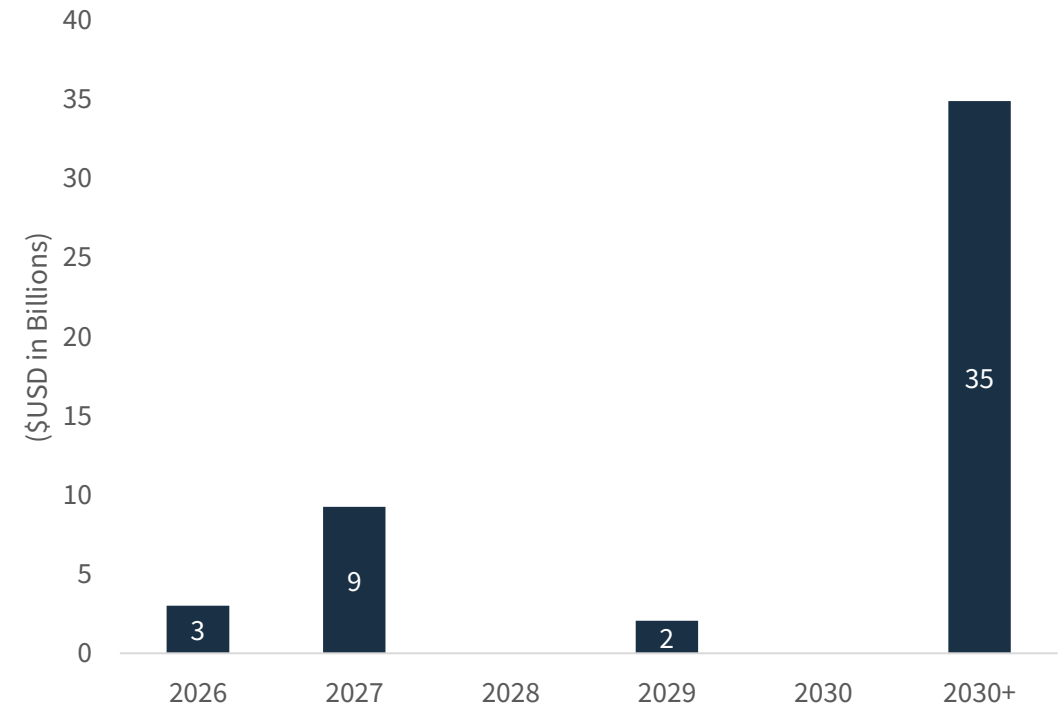
Will MSFT current \$46B Net cash position be challenged by AI Capex?

Leverage



- MSFT's D/E is traditionally larger than the IT sector average, but has steadily decreased over time

Debt Maturities



- Total debt stands at \$49B and it is down nearly 48% from 2018's peak, despite a rebound in 2024

AI investments

Microsoft is boosting investments in AI to keep up with demand

Capex breakdown

Last quarter finished with higher-than-expected **\$34.9 billion CapEx**

Short-lived assets:

- Half of the spend was on **GPUs and CPUs** to support increasing demand for Azure's cloud services

Long-lived assets:

- The other half includes \$11.1 billion of finance leases for large data centers sites

MSFT's data center footprint is expected to double over the next two years

Partnerships

OpenAI

Microsoft just announced a revised deal with OpenAI:

- **27% stake** in OpenAI which is worth **\$135 billion**
- Access to **AGI models and research** until 2032
- **End of Azure's cloud exclusivity** for OpenAI

OpenAI is laying the groundwork for an IPO that could value the company at up to \$1 trillion by 2026

Anthropic

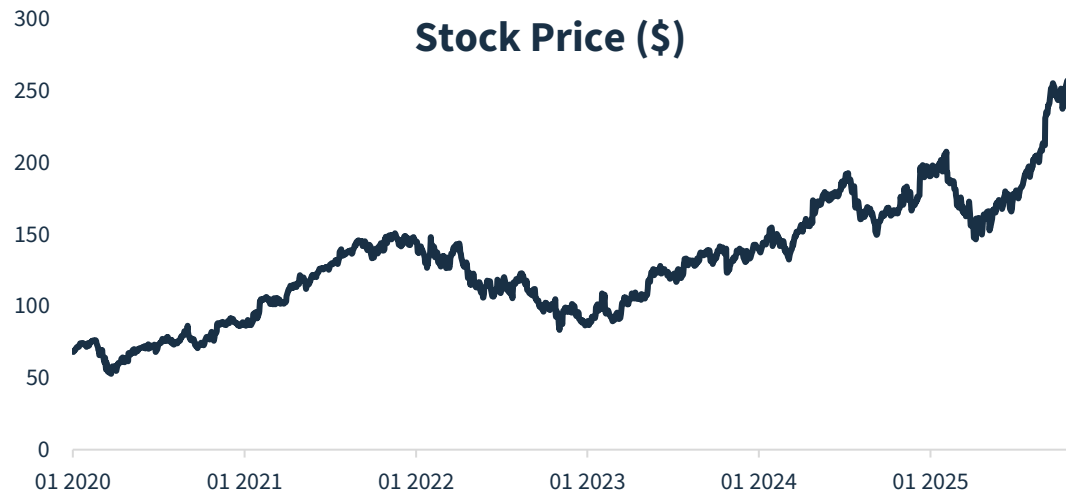
- Anthropic's LLM, Claude, **now integrates with Microsoft 365** and offers enterprise search

Alphabet 1/3

Strong Q3 earnings; AI-driven business expansion

Business Model

- **Core Business:** Google Search and Ads
- **Growth Drivers:** AI integration (targeted Ads, Gemini) and expansion of the **Google Cloud platform**
- **Emerging bets:** Waymo, DeepMind and Verily



Key Financial Data

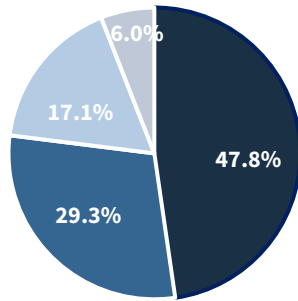
Metric (bn)	Q3 2022	Q2 2025	Q3 2025
Market Cap	1,425	2,133	2,936
Revenue	69.1	96.4	102.3
EBITDA	22.3	37.1	36.8
EBIT	17.1	31.3	31.2
P/E	19.0	26.8	28.9
Employees	186,779	187,103	190,167

- **Market Cap** rose **37.6%** from Q2 to Q3
- **Revenue** increased by **6.1%** QoQ, but **profit margin decreased** slightly
- **P/E Ratio** increased by **52.1%** over the past 3 years

Alphabet 2/3

Massive increase in CAPEX; accelerating AI integration

Revenue Breakdown



■ US & Canada ■ Europe ■ Asia & Pacific ■ Rest of the World

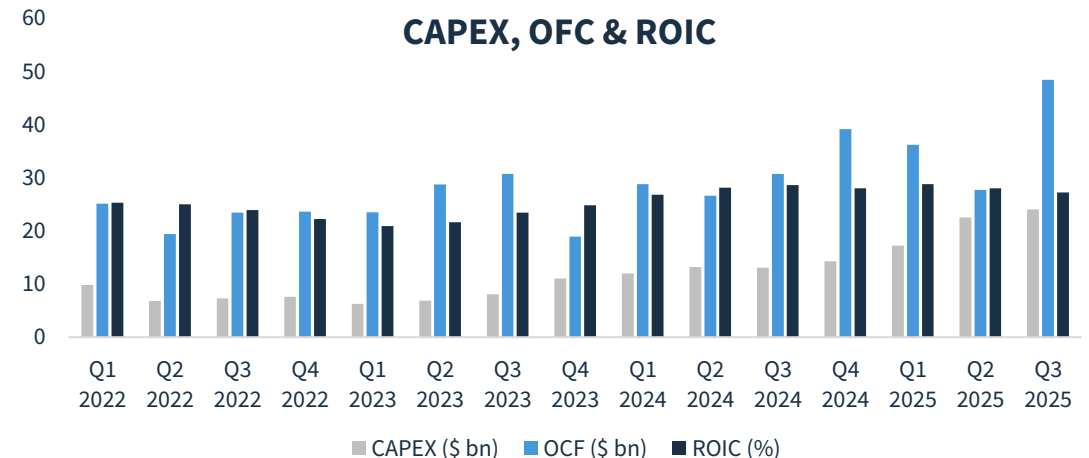
Metric	Q2 2025 (bn)	Revenue %	YoY % increase
Google Search	54.2	56.2%	11.8%
Google Network & Subscriptions	18.6	19.3%	10.7%
Google Cloud	13.6	14.1%	30.8%
Youtube Ads	9.8	10.2%	14%
Others	0.2	0.2%	-50%

Sources: Bloomberg, Alphabet Earnings Report

3 November, 2025

CAPEX & AI

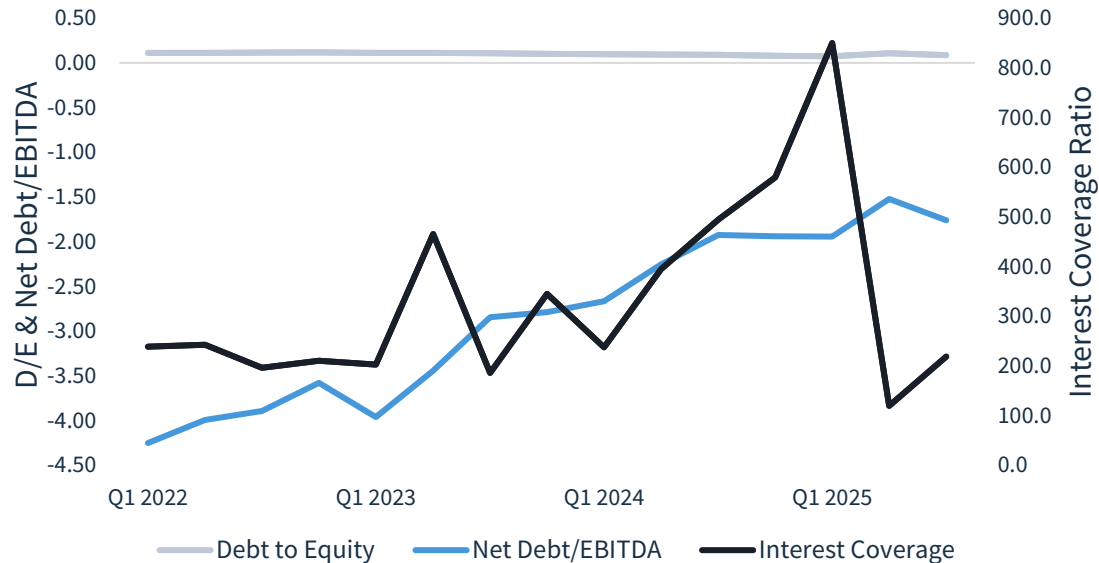
- **CAPEX** rose **208%** from Q3 2022 to Q3 2025
- Strong **Investments in Data-centers & AI infrastructure**
- **Gemini** integrated across Search and ad products
- Capex Intensity of Google Cloud increased



Alphabet 3/3

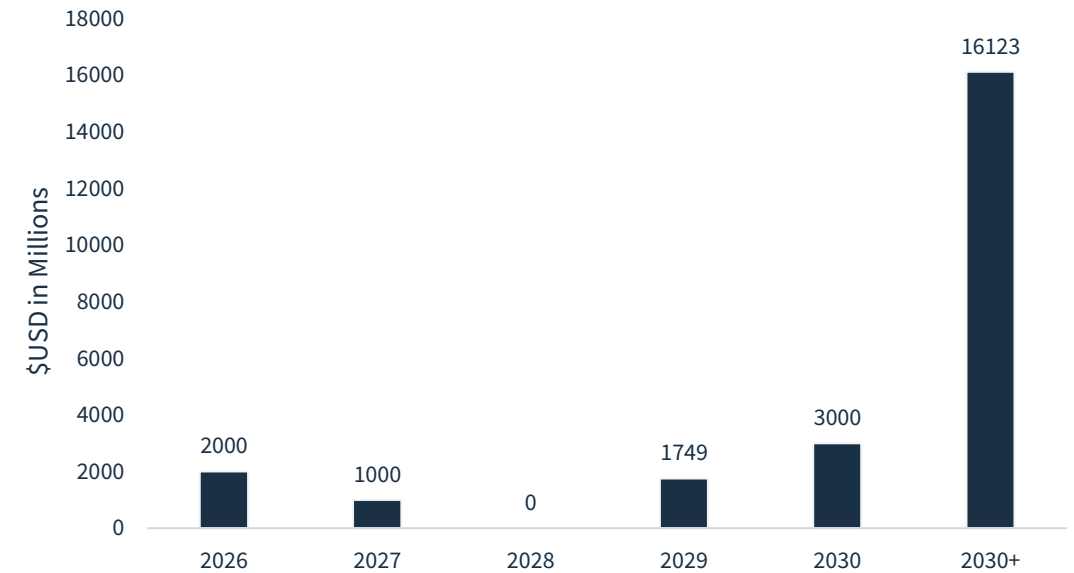
Strong liquidity; low and backloaded debt structure

Leverage



- **Cash** and marketable securities (\$98.5 bn) **exceed total debt** (\$33.7 bn) -> **negative net debt** (\$-64.8 bn)
- **Strong FCF** (\$24.5 bn in Q3) and very **high interest coverage ratio** (218.4), despite a declining trend

Debt Maturities



- Total Debt of \$33.7 bn (\$23.9 bn without leasing liabilities) -> **YoY increase of 36%**
- **No short-term debt** -> overall debt remains low and backloaded

Meta 1/3

Rapid AI-driven growth; slightly disappointing Q3 results

Business Model

- **Core Business: Digital ads** across Facebook, Instagram, Messenger and WhatsApp -> **~4 bn** monthly active users
- **Growth drivers: AI infrastructure & models**, messaging monetization (WhatsApp Business APIs), **e-commerce**
- **Emerging Bets: Reality Labs** (AR/Metaverse), Meta AI Integration across Apps, Open-Source Ecosystem (Llama3)



Sources: Bloomberg, Meta Earnings Report

3 November, 2025

Key financial data

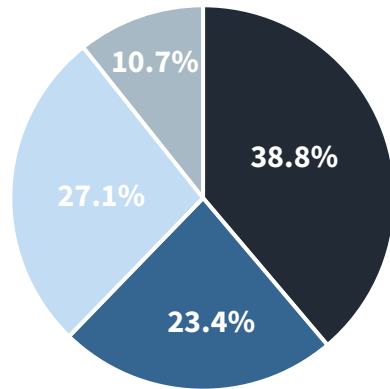
\$ billions	Q3 2022	Q2 2025	Q3 2025
Market Cap	361.9	1,860	1,840
Revenue	27.7	47.5	51.2
EBITDA	11.1	21.7	24.8
EBIT	17.4	20.4	20.5
P/E	12.8	26.7	26.5
Employees	87,314	75,945	78,400

- **Market Cap** rose by **over 400%** from Q3 2022 to Q3 2025
- **Revenue** grew **84.8%** over the past 3 years
- **P/E Ratio** increased by **107%** over the same period

Meta 2/3

AI integration across business areas; strong CAPEX in AI infrastructure

Revenue breakdown

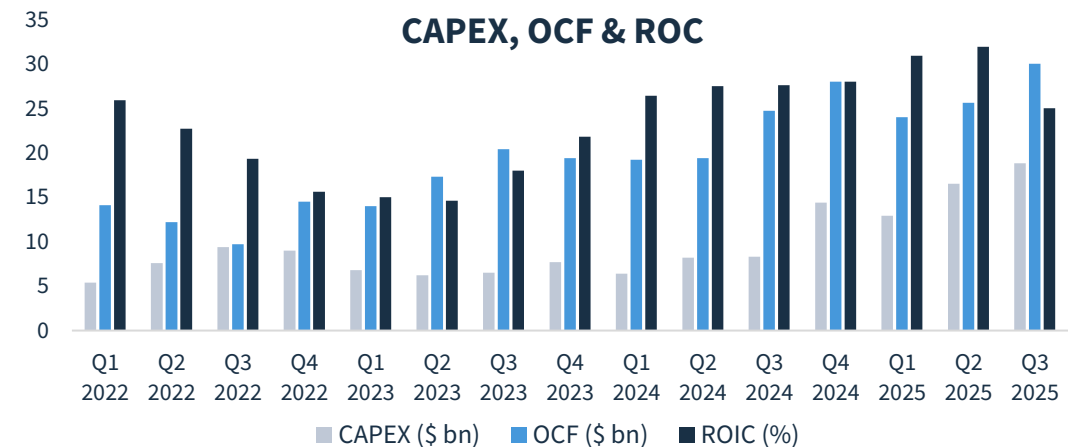


■ US & Canada ■ Europe ■ Asia & Pacific ■ Rest of the World

Metric	Q2 2025 (bn)	% of Revenue	YoY % Change
Advertising	46.56	98.1%	21.5%
Reality Labs	0.37	0.9%	5.7%
Other	0.58	1.0%	48.7%

CAPEX & AI

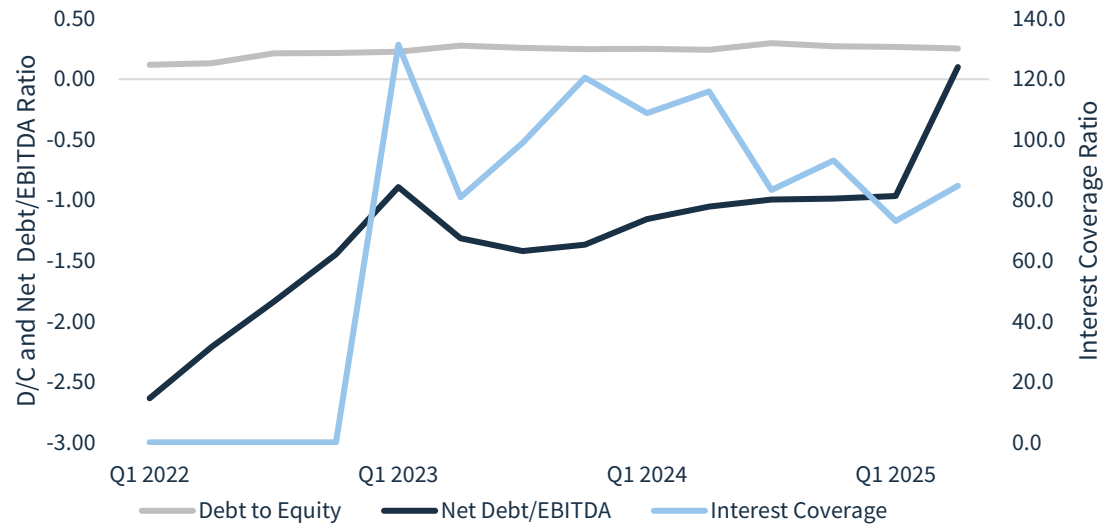
- **CAPEX doubled** between Q3 2022 and Q3 2025
- Major investments in **AI infrastructure, data centers** and **in-house AI chips**
- **AI integrated** across Meta's ecosystem (Llama 3, algorithms, Meta AI assistant)



Meta 3/3

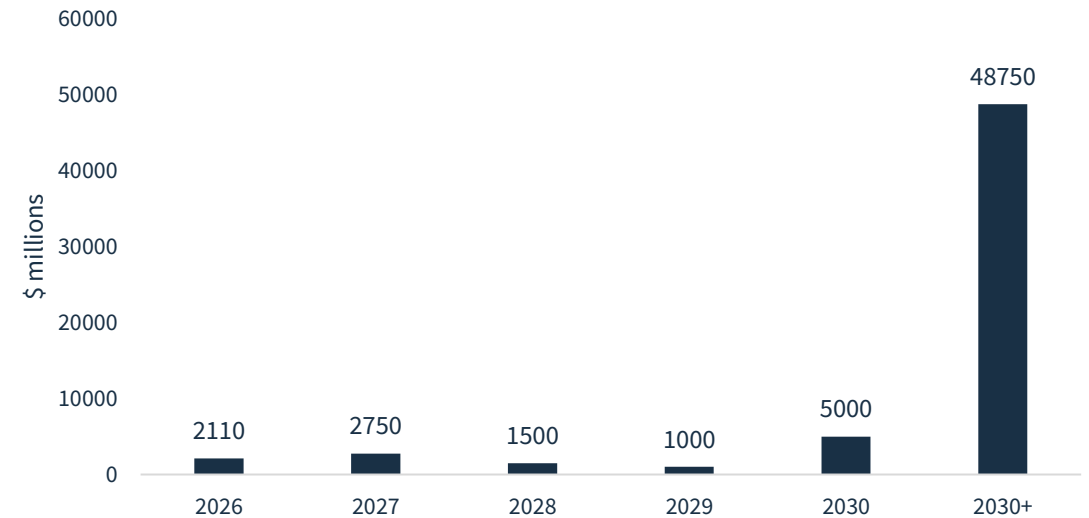
Backloaded debt to finance AI investments

Leverage



- **Net Debt** has steadily **increased** over the past 3 years, reaching a slightly positive **\$2.49 bn** in Q2
- **Debt to Capital Ratio** remains **stable** at roughly 20%
- **Interest Coverage Ratio declined** by 26.9% to **84.8** year on year, reflecting higher interest expenses

Debt Maturities



- **Total Debt of \$51.1 bn** in Q3 (\$28.8 bn without lease obligations) -> **Short-term debt of \$2.11 bn**
- On October 30, Meta announced a **new \$30 bn bond offering** (5 - 40 year maturities) => **not included in total debt of Q3**

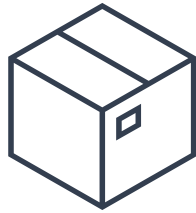
Amazon's Core Business Model

Since 1997 Amazon's business model has expanded to offer third-party sellers' products, technology solutions and media.



Consumers

- Amazon sells **millions of products** in online and physical stores
- Focus on **selection, price** and **convenience**
- Boosts customer experience with **Amazon Prime**, where it also offers **entertainment**



Sellers

- **Third-party sellers** can **sell products** and **fulfil orders** through Amazon
- Amazon offers sellers **programs** to **grow their businesses**
- Earns fixed fees, % of sales, interest or per-unit activity fees



Developers and Enterprises

- Serves **enterprises, governments** and other **institutions** through **AWS**
- Offers **compute, storage, database, analytics, machine learning** and other services



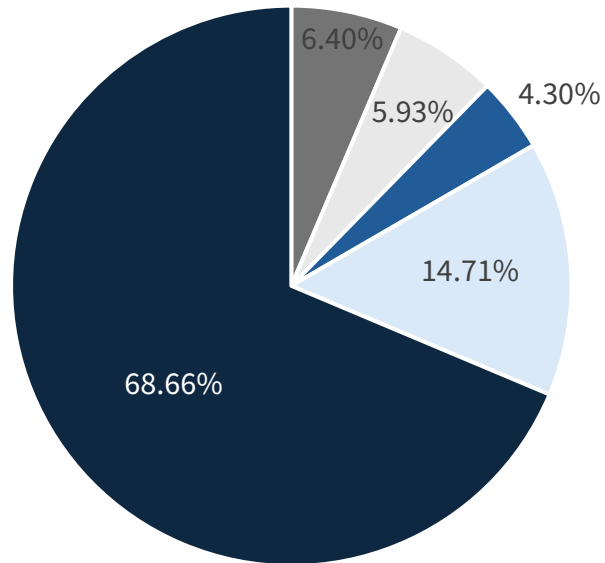
Advertisers

- Offers **sponsored ads, display** and **video advertising** on their platforms
- Advertising segment has been one of the **fastest growing** segments

Revenue Breakdown

Amazon is still very reliant on the US economy but is an increasingly more diversified business.

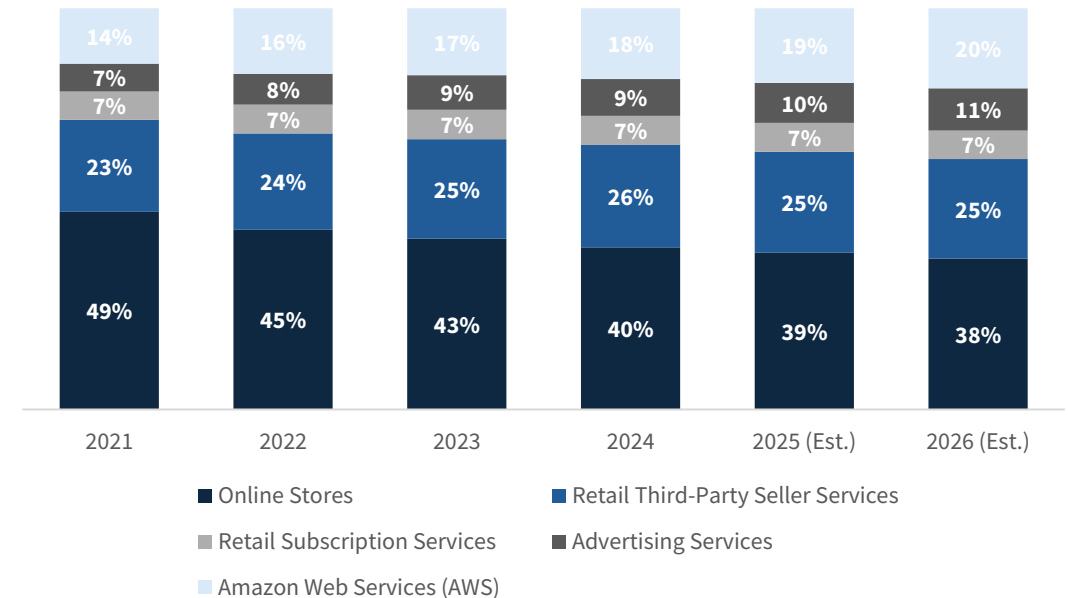
Revenue by Geography FY 2024



■ Germany ■ United Kingdom ■ Japan ■ Rest of World ■ United States

- The **US** remains the **most important market** for Amazon, having grown 10% YoY in 2024 to \$438B in revenues.

Revenue Breakdown by year and sector



- Amazon has become **less reliant** on its e-commerce business over the years.

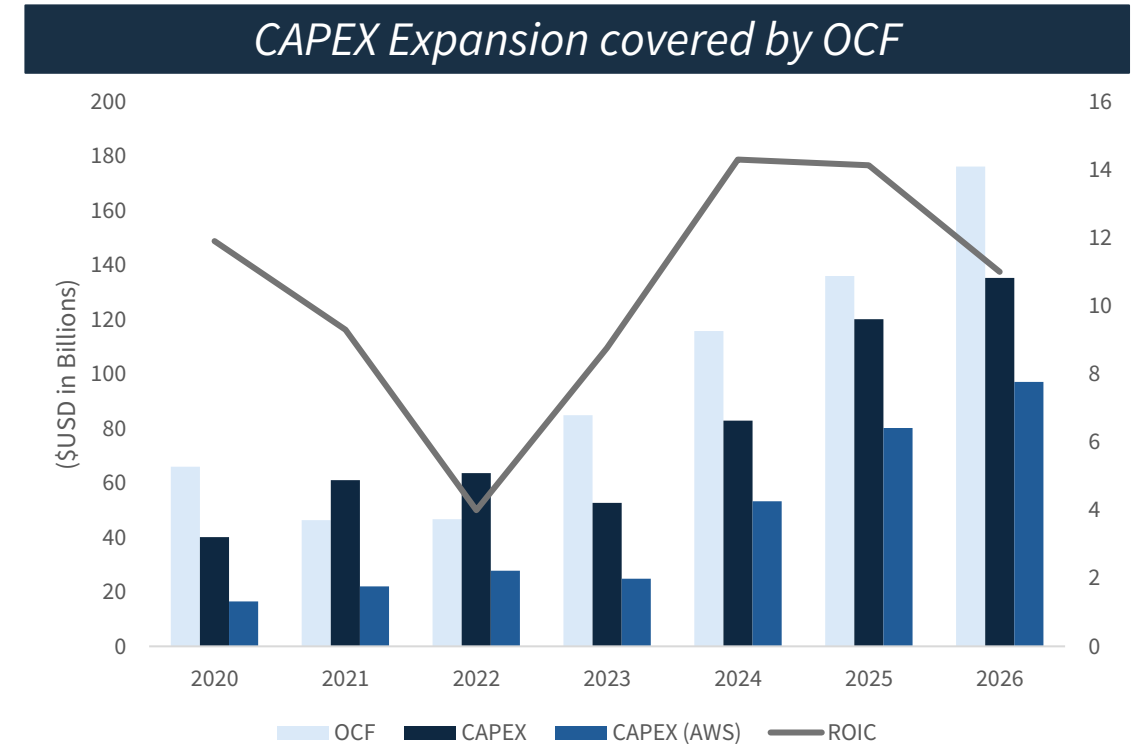
Financial Analysis

Amazon has continued to expand its profits and profit margins despite its side.

billions \$	2020	2021	2022	2023	2024	2025E	2026E
Revenues	386	469.8	513.9	574.7	637.9	710.7	787.5
YoY Growth		21.7%	9.4%	11.8%	11.0%	11.4%	10.8%
Gross Profit	152.7	197.4	225.1	270	311.6	356.5	399.7
Gross Profit Margin	39.6%	42.0%	43.8%	47.0%	48.8%	50.2%	50.8%
EBITDA	57.2	72	73.7	109.5	143.39	166.8	199.3
EBITDA Margin	14.8%	15.3%	14.3%	19.1%	22.5%	23.5%	25.3%
EBIT	22.899	24.879	12.248	36.852	68.593	80.82	99.042
EBIT Margin	5.9%	5.3%	2.4%	6.4%	10.8%	11.4%	12.6%

Net Income	21.3	34.1	22.8	48.7	76.6	89.5	103.1
YoY Growth		60.1%	(33.1%)	113.6%	57.3%	16.8%	15.2%
Margin	5.5%	7.3%	4.4%	8.5%	12.0%	12.6%	13.1%

- Amazon continues to see **steady** post-2022 **revenues growth** and **increasing profit margins**.
- Decrease in Net Income growth** in 2025 can be explained by **increase in Depreciation, R&D Expenses** and **tax rate**.

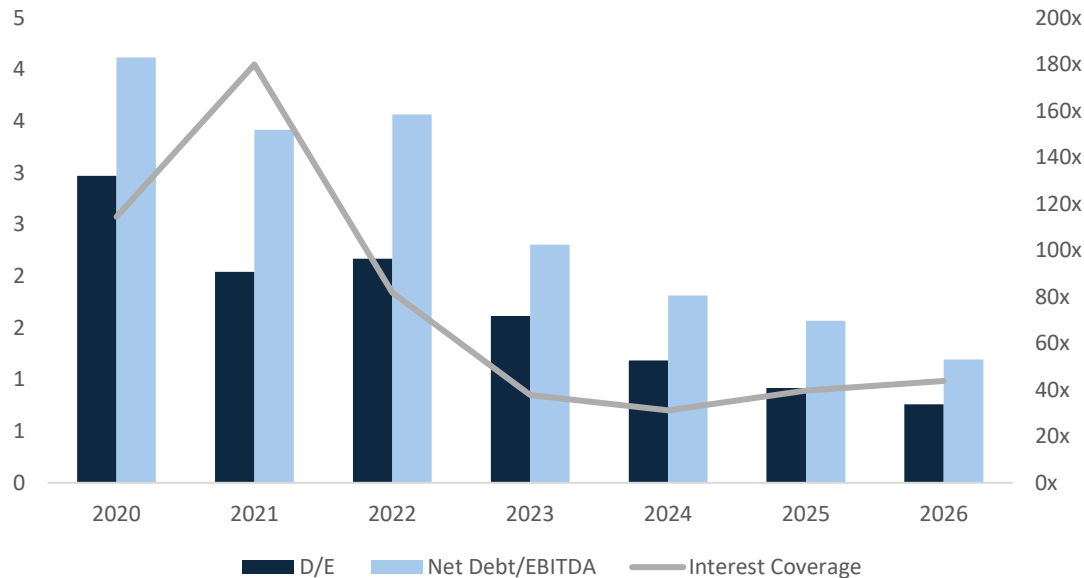


- Amazon's **CAPEX expansion**, which remains **smaller than OCF** has been increasingly due to **AWS CAPEX expansion**.
- Decrease in ROIC** in 2025 can be explained by **increases in Property & Equipment** and **decreases Net Income growth**.

Credit Analysis

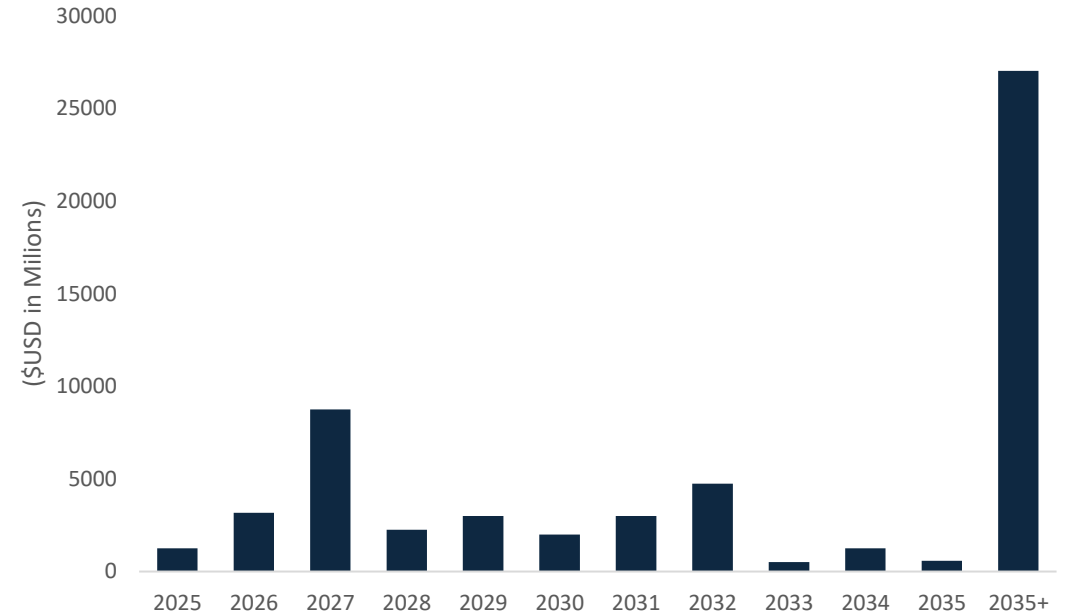
Amazon has a stable leverage position but will evaluate new credit opportunities if these arise.

Leverage



- **Accounts payable** have increased **~10% in 2025**, with **non-current liabilities** increasing only **~2%**.
- **EBITDA and Cash Position** have continued to **increase since 2019**.

Debt Maturities

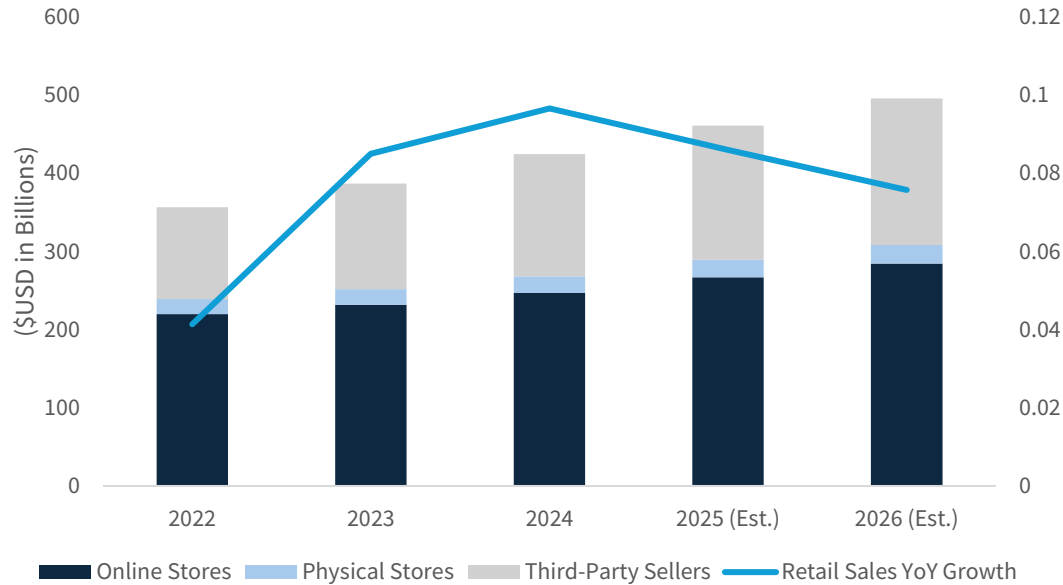


- Company guidance mentions **no debt target**.
- **Constant evaluation of opportunities** to repurchase, refinance or restructure debt or enter finance and operating lease arrangements.

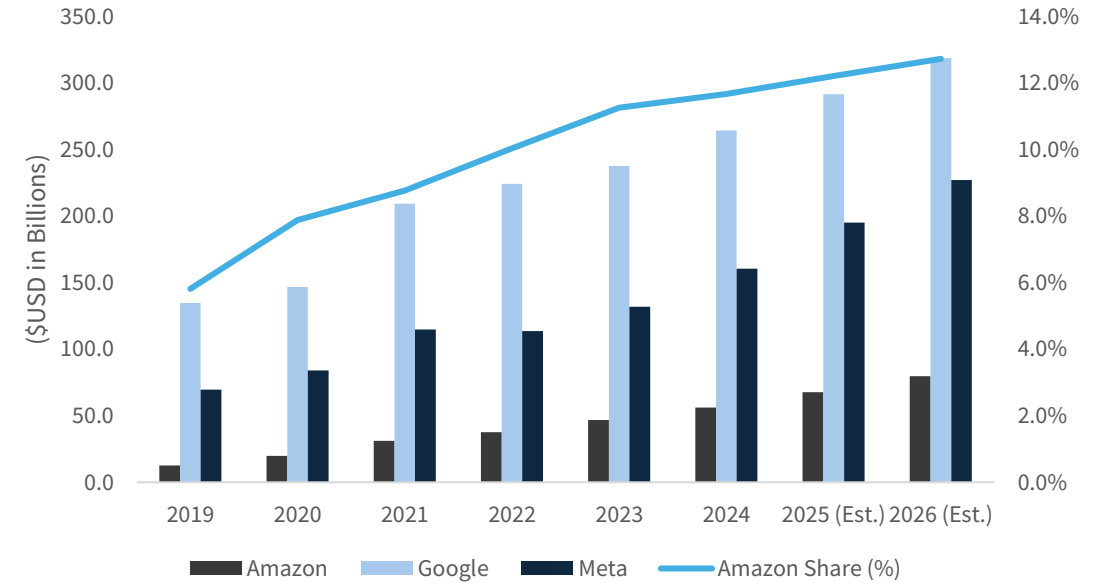
Amazon outlook

Retail sales estimates to remain strong and advertisement gap with Google and Meta to keep closing.

Marketplace and Logistics



Advertisement



- **Gross Merchandise Value** can hit **\$1.32 trillion** by 2030 from \$858 billion (est.) in 2025, despite pressure from competitors and tariffs
- Amazon continues to push for **category expansion, speed and convenience**

- Prime Video ads offers reach of **115 million US viewers**
- **High-teens growth rates** are expected, with revenue potentially surpassing **\$100 billion by 2028**
- **Competitive advantage** in being able to close the loop between **advertisement and purchase transaction** in retail ads

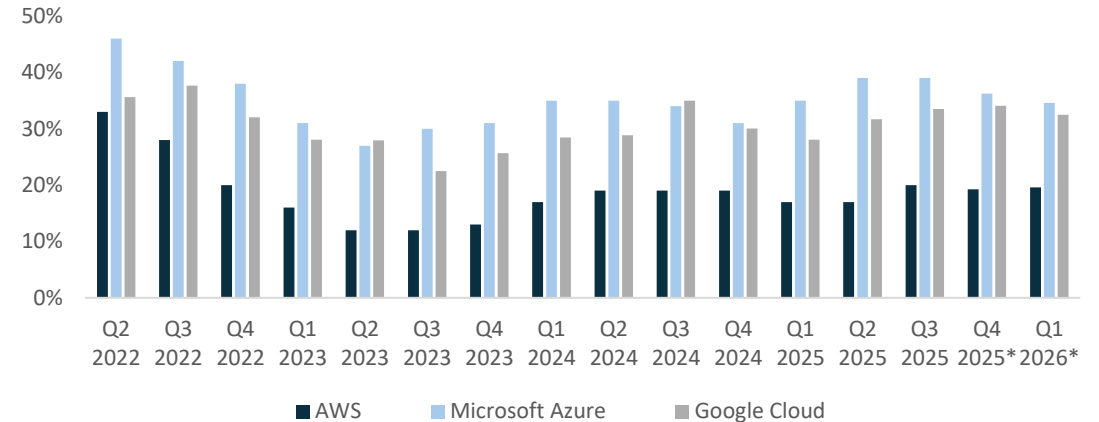
Amazon Outlook

The cloud business sector faces competition from faster growing competitors that host bigger LLMs.

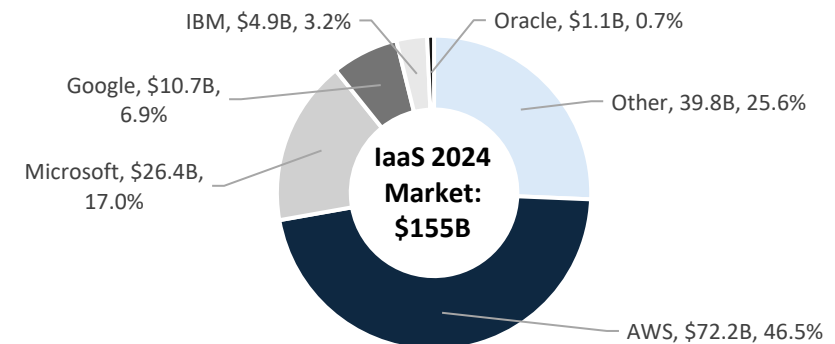
AWS

- AWS Cloud sales **growth acceleration slower** than Microsoft and Google due to its **relative size** and **lack of large AI applications** like ChatGPT.
- High market share puts AWS in good position to **capture AI-related sales** once corporations add AI capabilities to their applications and create new products.
- **Improving IT budgets** and companies' willingness to **shift to public cloud** remain catalysts.
- Increase in **capital spending** and **depreciation** in 2025 can reduce **AWS operating margin** by 100-200-bps
- AWS Q3 Revenues grew **20.2% YoY** on **strong AI** and **core infrastructure demand**

Increases in Cloud Sales YoY



IaaS Market Share



Amazon and AI

Amazon says it will benefit largely from implementing AI into its existing businesses and from selling AI products and services.

Guidance on AI from 2024 Annual Report

- "Generative AI is going to **reinvent every customer experience we know**, and enable altogether new ones about which we've only fantasized."
- "That's why there are **more than 1,000 GenAI applications being built across Amazon**, aiming to meaningfully change customer experiences in shopping, coding, personal assistants, streaming video and music, advertising, healthcare, reading, and home devices, to name a few.
It's also why AWS is quickly developing the **key primitives** (or building blocks) for AI development"

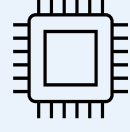
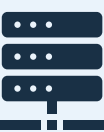



Amazon and AI

Amazon is well positioned across the AI value chain.

Improvements in Core Businesses

 <p>Alexa+ 2x more engagement 4x more purchases</p>	 <p>Rufus AI shopping assistant 60% more purchases</p>	 <p>“Help me decide” and “Interests” Improved selection</p>
 <p>Connect AI Contact Center \$1B Annualized Revenue</p>	 <p>Transform Improves migration times to AWS</p>	 <p>AI Inventory Management 20% more regional accuracy</p>

"Building Blocks" for AI

Hardware	 <p>Trainium2 AI Chip Multi-billion-dollar Business Fully subscribed</p>	 <p>Rainier DC Cluster 2.2 GW > OpenAI/ Oracle Texas Campus</p>	 <p>3.8GW Capacity Added More than any cloud Provider (in last 12 months)</p>
	Software	 <p>Amazon Nova Amazon’s own Foundation models (text, image, voice)</p>	 <p>Amazon Bedrock AWS Service Access, build, deploy models at scale</p>

- Amazon’s **e-commerce** and **AWS** sectors are set to benefit from **internal implementation** of AI.
- Amazon is also **well positioned** to **benefit from implementation** of **AI applications** in corporations, as AWS is the **main player in IaaS** and is rolling out **hardware** and **software solutions** to support AI training, development and deployment.

Macro Team

Telecom Bubble

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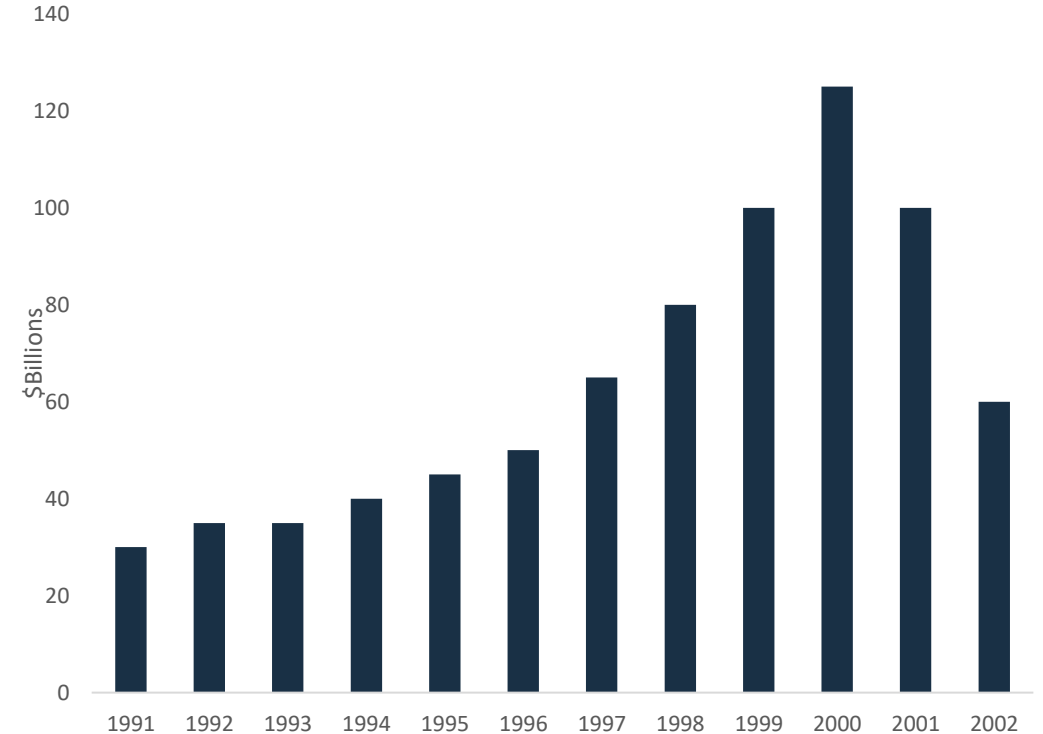
Policy & Capital

Deregulation and Financing as the fuel of the Telecom Boom

Regulatory Shock to competition

- The **Telecom Act of 1996** opened all market segments to full competition.
- Incumbent carriers (**ILECs**) were **required to lease network access** to new entrants (**CLECs**) at regulated wholesale prices.
- Within two years, **400+ new carriers** had entered the U.S. market.
- **Fed's 1998 cuts** (after the Asian & LTCM crises) made financing even cheaper.
- **Rating agencies** treated telecom debt as *investment-grade*, pulling in pension and insurance money.
- Telecom became the “**safe**” way to profit from the technological boom.
- **1996–2001**: \$500 B in bonds + \$200 B in equity issued; **CAPEX hit ~500B**, double early-1990s levels.

CAPEX by publicly traded carriers



Source: FRED

3 November, 2025

The Expansion Frenzy

Financial pressure and new technology created overcapacity

Incentives and Market Behaviour

- Markets began **rewarding revenue growth**, not profit, forcing firms to expand at any cost.
- With **high fixed costs and low margins**, scale became the only survival logic.
- Soaring valuations made **equity a takeover currency**, piling debt upon debt.
- Then **DWDM revolutionized fiber optics**, multiplying capacity overnight.
- The industry assumed **bandwidth was limitless**, and priced the future as if demand would never slow.
- Utilization crashed, price wars erupted, and **bandwidth costs fell over 90 % between 1998 – 2002**.

Summary of Telecommunications M&A Activity

Year	Nº of Mergers	Total Value (\$Billions)
1993	1	12.6
1994	0	0
1995	2	12.9
1996	3	56.3
1997	7	2.2
1998	23	62.9
1999	30	808.3
2000	27	507

The “New Economy” Illusion

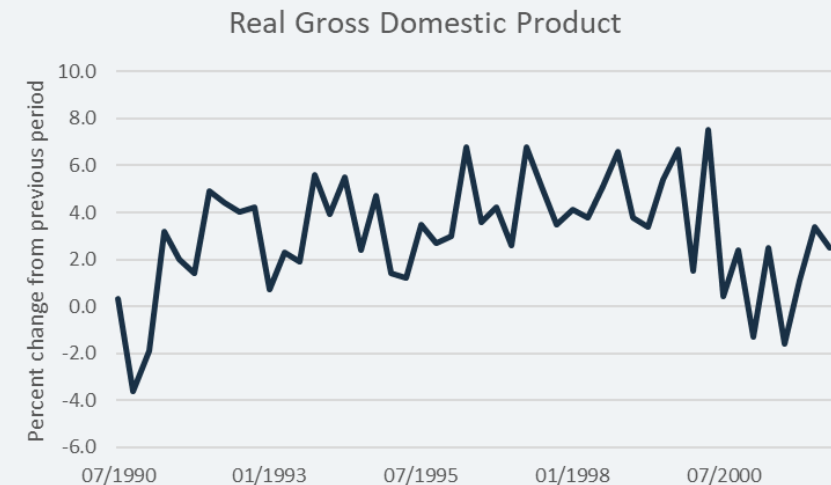
Productivity gains and financial engineering sustained the illusion of prosperity

Financial Engineering and Market Psychology

- **Vendor financing and financial engineering** such as capitalized expenses and capacity swaps temporarily inflated revenues.
- The belief in **self-sustaining growth** blurred the boundary between real productivity and speculative excess.
- These figures convinced markets that the economy had entered a **permanent high-growth phase**.
- **Investment far outpaced monetization**, leaving the industry with massive idle infrastructure.
- **Overconfidence became collective**, forming an echo chamber of bullish projections and self-referential comparisons.

Productivity & Macro Context

- During the late 1990s, U.S. productivity growth reached **10–13 % annually** in IT-intensive sectors.
- Real GDP was expanding at **4 % +**, twice its long-term average.



Bubble Burst: 2000–2002

The why and how of the bubble burst

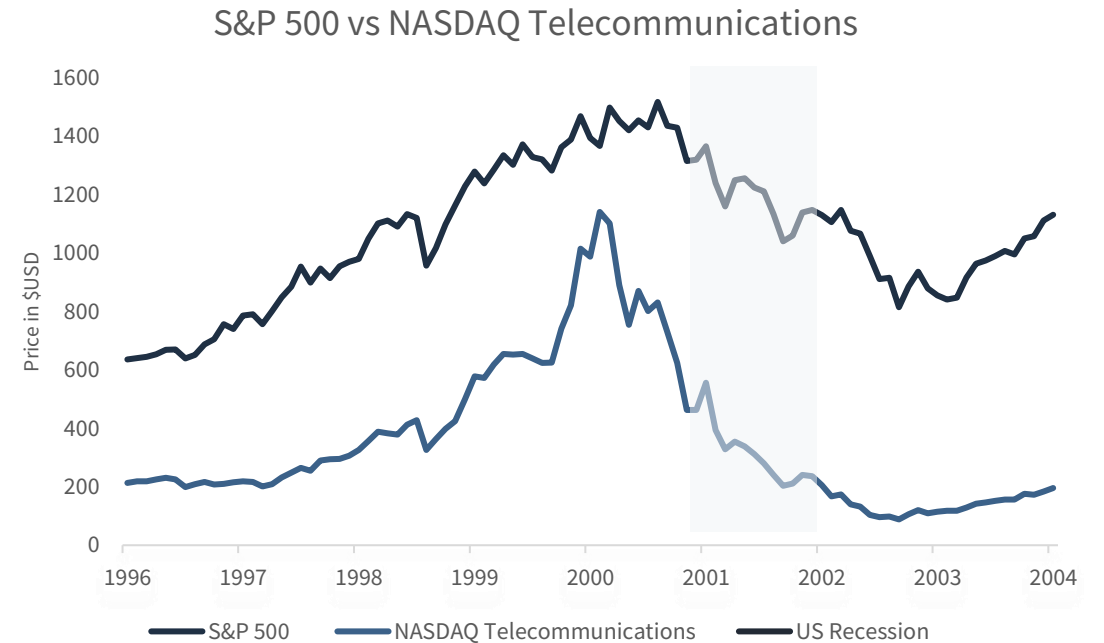
Why

- **Regulatory Uncertainty and Legal Reversals**
- **Massive Overcapacity in Fiber Networks**
- **Macroeconomic Weakness**
- **Collapse of Investor Confidence and Financing**

How

- **Market Valuations Crashed**
 - NASDAQ Telecom Index fell 62% in 2000
- **Realisation of overcapacity**
- **Regulatory and Economic Feedback Loop**

S&P 500 vs NASDAQ Telecommunications



Comparison of S&P 500 and NASDAQ Telecommunications performance (1996–2004), highlighting the effects of the Telecom bubble, NASDAQ decline post-2000 and the impact of the 2001 U.S. recession.

WorldCom

Fraudulent accounting by inflating revenues using capacity swaps

In Millions	1994	1995	1996	1997	1998	1999	2000	2001
Revenues	2,220.8	3,696.3	4,485.1	7,384	18,169	35,908	22,755	21,348
YoY Growth	50.6%	66.4%	21.3%	64.6%	146.1%	97.6%	-36.6%	-6.2%
Gross Profit	609.3	1,353	1,724.7	2,644	9,635	21,169	14,010	13,228
Margin	41.5%	44%	36.1%	33.3%	27.4%	36.6%	38.5%	35.8%
EBITDA	274	987.8	1,199.4	1,199	5,072	12,234	8,321	7,170
Margin	23.4%	20.5%	21.5%	21%	12.3%	26.7%	26.7%	27%
Net Income	-122.2	266.3	-2,213.4	244	-2,725	4,013	2,598	1,524
YoY Growth	-205%	317.9%	-913.2%	111%	-1216.8%	247.3%	-35.3%	-41.3%
Margin	6.3%	6%	-0.7%	7.9%	-5.5%	7.2%	-49.4%	3.3%
OCF	261.4	616.7	798.1	1,260	4,182	11,005	5,330 4,227*	6,605 2,845*
Capex	192.2	359.3	657.1	3,066	5,486	8,716	10,984	7,619
FCF	69.2	257.4	141.1	-1,806	-1,304	2,289	-5,654	-1,014

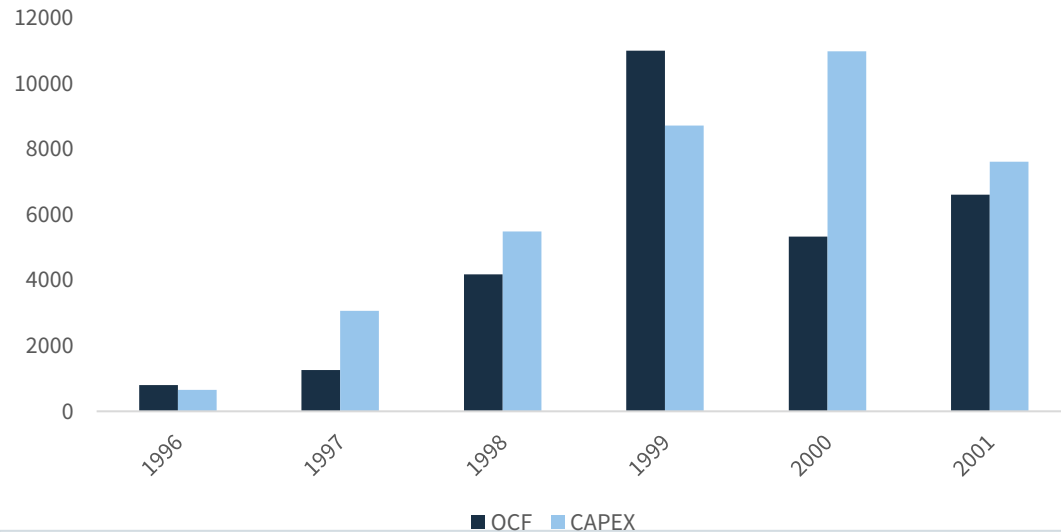
- **Negative net income in years 94', 96', & 98'** due to high operating costs & non-operating losses (write downs in assets and merger costs), depreciation and interest expenses.
- Negative NI in 00', & 01' due to **reduced demand for telecommunication services, pricing pressure, increasing competition, rapid technological change and excess network capacity.**
- Revenues grew 146% in 98' as it **acquired MCI** for 40B\$(MCI had \$19.7B revenues in 97').
- Revenue growth decreased in 2000-01 as **acquisition alternatives failed (i.e Sprint)** in rise of demand for end-to-end services.
- WorldCom employed **improper accounting methods** i.e. reduction of reported line costs and exaggeration of reported revenues in 2001 and early 2002.

(*): Recalculated OCF following the SEC fraud investigation. Sources: Bloomberg, [SEC](#), [Washington Post](#)

WorldCom

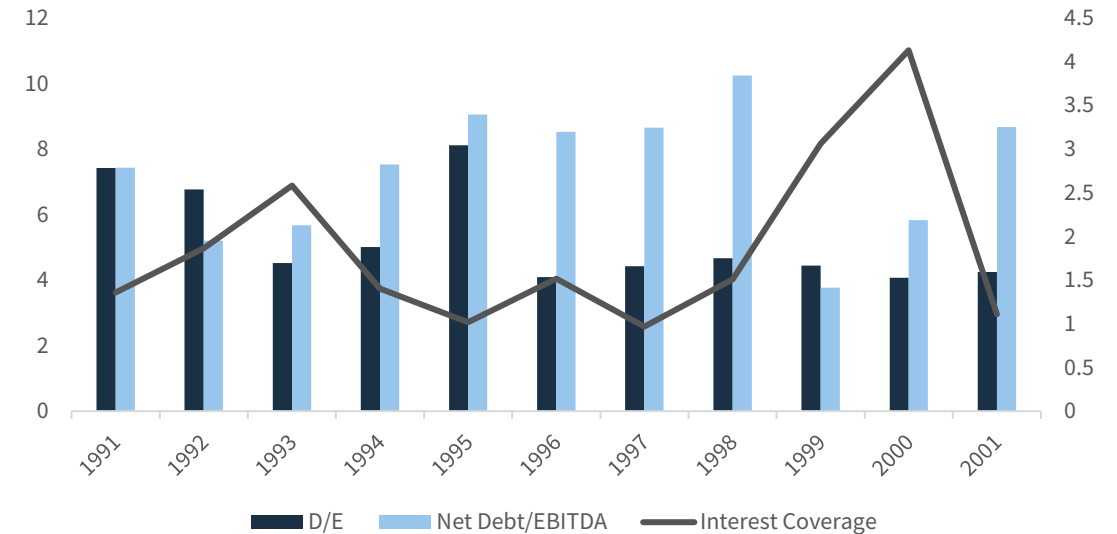
WorldCom acquired 15-20 companies in an acquisition frenzy from 97' to 99' absorbing backbone capacity, ISPs & fiber operators.

CAPEX



- CAPEX high starting in 1997 due to the **acquisition frenzy** marks expansion financed by debt and equity issuance, not operating strength.
- The **decline in OCF in 00'** occurred as Worldcom entered into **long-term contracts** to obtain the capacity for **customer demand** that never materialized.

Leverage



- Net Interest Coverage** remained small (1-4x), except for **1999 and 2000** due to **increase in earnings(possibly inflated)** and **50% decrease in interest expenses**, respectively.
- D/E ratio** decreased and **remained stable** due to increase in equity
- Net Debt/EBITDA** remained large (4-10x), **except for 1999 and 2000** when EBITDA increased 200% and 60% respectively.

AT&T

AT&T's financials reflect the position of a well-structured firm in the midst of the Telecom Bubble.

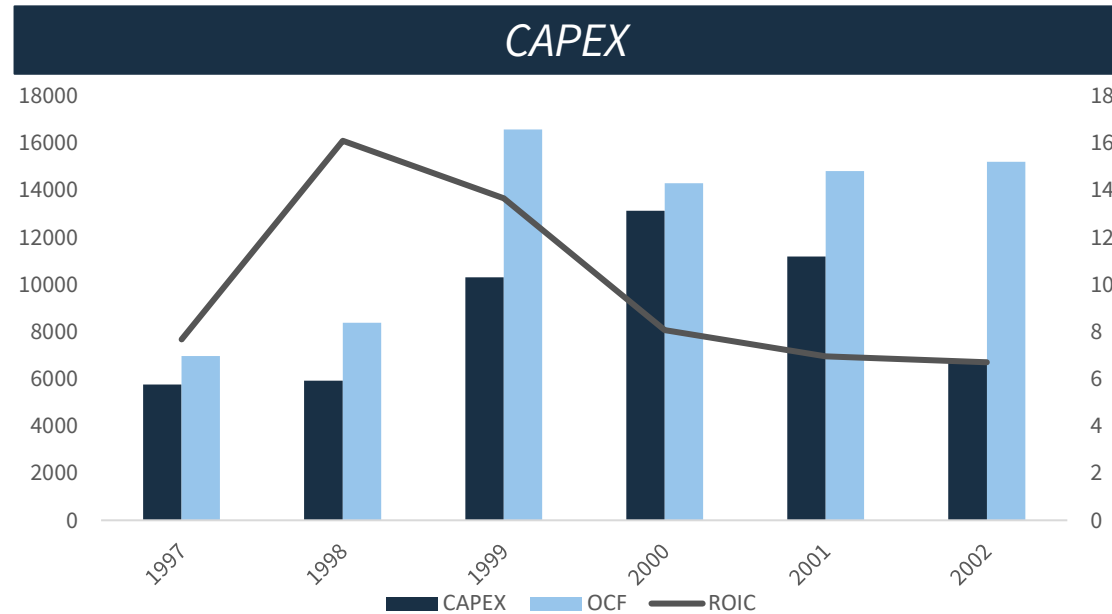
In Millions	1994	1995	1996	1997	1998	1999	2000	2001	2002
Revenues	21,006	21,712	23,486	24,856	28,777	49,489	51,476	45,908	43,138
YoY Growth	4.6%	3.4%	8.2%	5.8%	15.8%	72%	4%	-10.8%	-6%
Gross Profit	9,265	9,814	11,157	15,368	12,063	20,151	20,491	19,585	17,201
Margin	44.1%	45.2%	47.5%	61.8%	41.9%	40.7%	39.8%	42.7%	39.9%
EBITDA	8,774	9,154	9,945	8,011	11,991	20,066	20,420	19,541	17,171
Margin	41.8%	42.2%	42.3%	32.2%	41.7%	40.5%	39.7%	42.6%	39.8%
Net Income	2,800	-3,064	3,279	1,474	4,023	8,159	7,967	7,008	5,653
YoY Growth	-213.2%	-209.4%	207%	-55%	172.9%	102.8%	-2.4%	-12%	-19.3%
Margin	13.3%	-14.1%	14%	5.9%	14%	16.5%	15.5%	15.3%	13.1%
OCF	7,416	6,970	8,381	16,578	14,299	14,805	15,210	13,517	10,850
Capex	3,981	4,338	5,481	5,766	5,927	10,304	13,124	11,189	6,808
FCF	2,952	2,452	1,935	1,204	2,454	6,274	1,175	3,616	8,402

- Negative net income in 95' due to **extraordinary losses** (not driven by operating performance but by a mandated change in accounting regime).
- Decrease in Net Income in 97' despite increase in revenue due to **increase in operating expenses by 11%** (network expansion, maintenance, employee compensation, **local competition preparation costs** growth)
- Revenue growth in 99' following **strategic M&As** (e.g. Teleport).
- **Revenues declined post bubble in 01' & 02'** as revenue segments like network access and long-distance service experienced decreasing revenues.
- **Decline in roaming revenues** from other carriers, reflecting the continued **build-out of competitors' networks**.

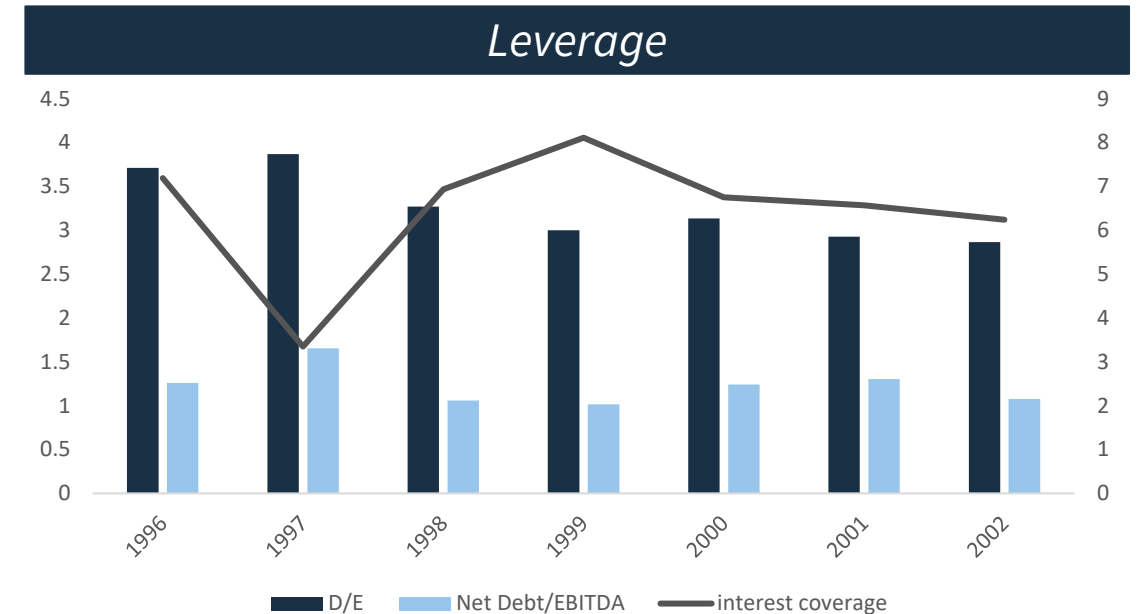
Source: Bloomberg, [SEC Filings](#)

AT&T

Diversified Telecom giant which survived the Telecom Bubble.



- OCF more than covers the CAPEX expansion.
- Increasing OCF through 97'-00' due to **increasing Net Income & non-cash expenses** and declines through 00'-01' due to decreasing Net Income following steep price declines in the long-distance market.
- Sharp **increase in ROIC** from 97'-98' as **growth in NOPAT was higher** than growth in invested capital due to higher EBIT margins. And **its decrease from 98'-02'** due to **massive increase in invested capital**.



- **Interest coverage slip in 1997** paired with higher D/E and Net Debt/EBITDA signals the **first shock of the competitive Telecom Act**.
- There are signs of structural decline despite the stability of the leverage ratios as interest coverage weakens in 97'.
- AT&T's incumbency provided **stable operating cash** that made leverage look harmless.

Global Crossing

Formed after the deregulation act with goal of owning the global fiber map.

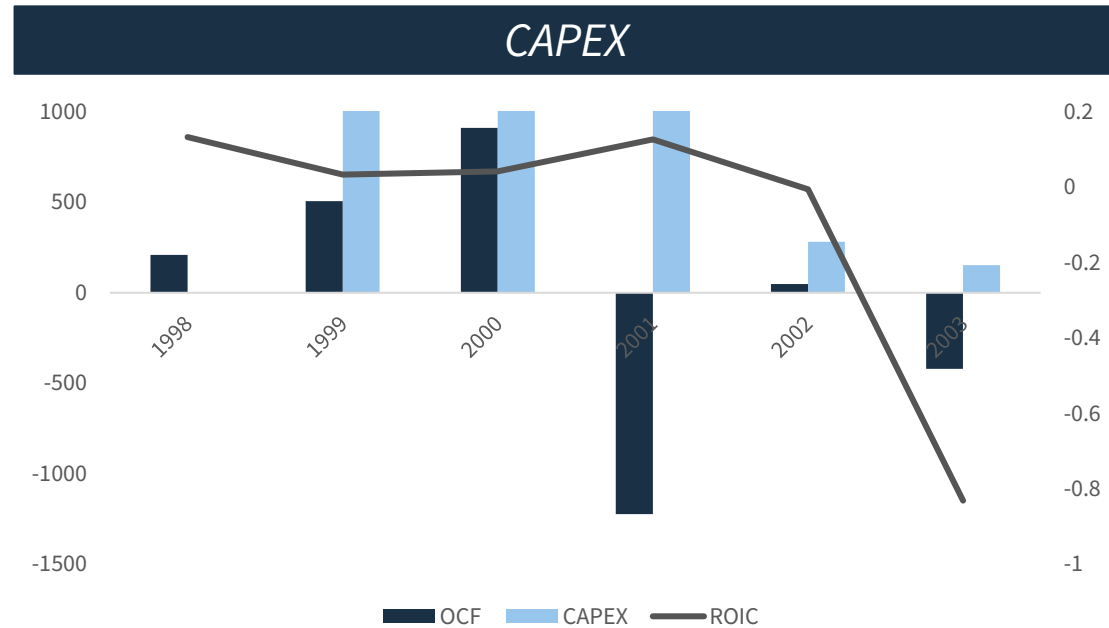
In Millions	1998	1999	2000	2001	2002
Revenues	424.1	1,664.80	3,789	3,659	3,116
YoY Growth	-	292.5%	127.6%	-3.4%	-14.8%
Gross Profit	245.6	814.3	1,927	1,507	911
Margin	57.9%	48.9%	50.9%	41.2%	29.2%
EBITDA	-19.2	244.5	-15	-573	-297
Margin	-4.5%	14.7%	-0.4%	-15.7%	-9.5%
Net Income	-87.9	-70.9	-1,667	-22,394	654
YoY Growth	-	19.3%	-2251.2%	-1243.4%	102.9%
Margin	-20.7%	-4.3%	-44%	-612%	21%
OCF	208.7	506.1	911	-1,224	49
Capex	0	1,770.92	4,289	2,643	281
FCF	208.7	-1,264.8	-3,378	-232	-572

- Global Crossing positioned itself as network builder, front loaded with capital and **revenue models dependent on trading bandwidth with peers.**
- Revenues grew as it **expanded** with massive new network segments across US, Asia, Europe, & Latin America.
- It **acquired Frontier Corp & GlobalCenter** in 99' which consolidated revenue growth.
- **Negative EBITDA & decreasing Net Income** due to high operating expenses.
- Global Crossing filed for **bankruptcy** in Jan 2002, with total assets \$22.4B & total debt \$12.4B.
- However, **assets** were recorded at book value whose **realizable value plunged** in the post bubble economy and shareholder's equity was wiped clean.

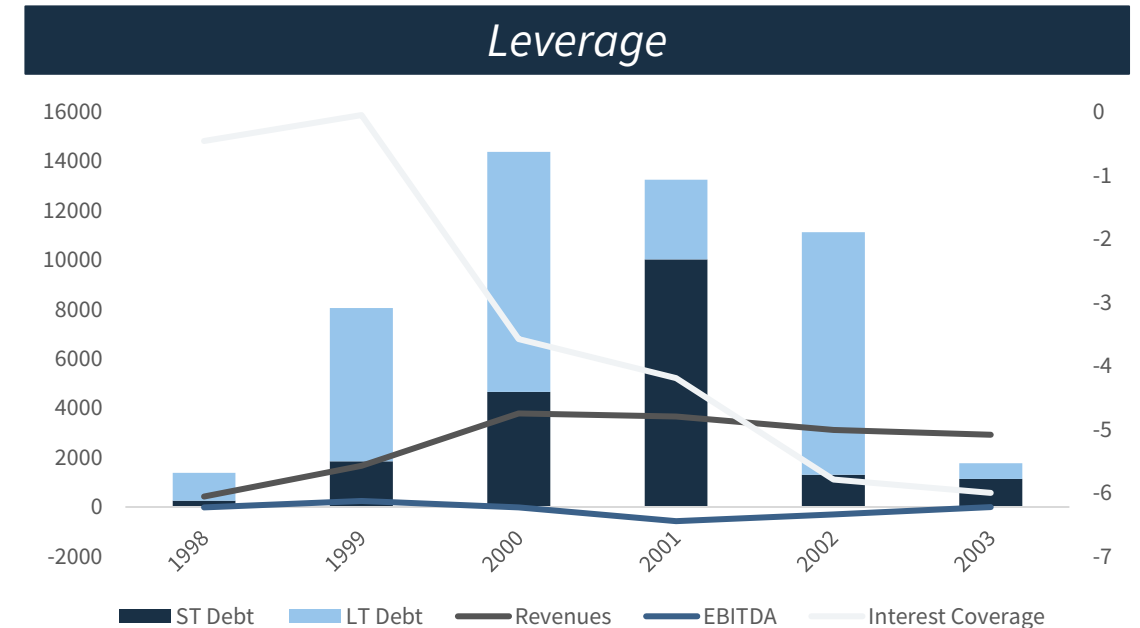
Revenue recognition under GAAP allowed to fully recognize deferred revenues under lump-sum-revenue.

Global Crossing

Global Crossing wasn't disrupted by the bubble collapse, it was created with the bubble and expired with it.



- The **declining ROIC** reflects the core problem with their business model, scale without the returns.
- Positive growing OCFs from 98'-00' due to **large non-cash addbacks** like D&A.
- Negative OCF in 01' due to **very high negative net income**.



- **Debt position** starts to **worsen from 1999** reaching a high in 2000. Revenues start falling from 2000 and EBITDA becomes negative.
- High debt burden and **declining interest coverage** ratio results in **bankruptcy** in 2002.
- Failure wasn't sudden fraud but **capital cycle crash** due to **overly optimistic consumer demand** and **aggressive accounting practices**.

Source: Bloomberg, [Annual Report 2002](#)

Comparison

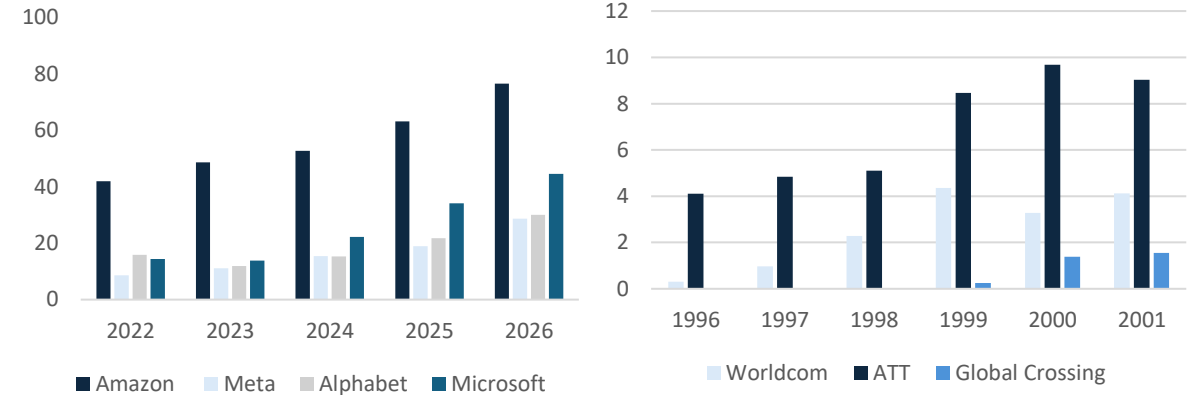
Continuation of revenue materialisation will be key for Hyperscalers.

Similarities

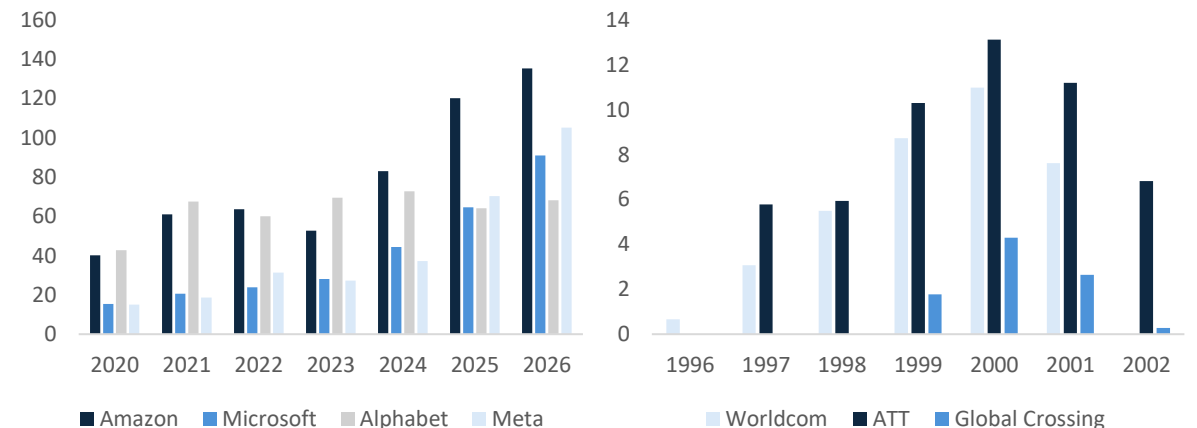
- **Promise of future revenues:** technological change that promises to **increase productivity** and **generate future revenues**.
- **High CAPEX:** technologies that require **costly infrastructure** and expansion based on **predicted future demand**.
- **Increasing depreciation costs:** with increased Property Plant & Equipment come **increased Depreciation & Amortization**.
- **Intense competition:** both Hyperscalers and telecommunication companies face/faced **heavy competition**.

- **Overcapacity:** **Heavy expansion** coupled with **technological changes** can lead to **oversupply**. Think an AI model that is 10x more efficient \Leftrightarrow DWDM, IP standards and expansion that multiplied supply of bandwidth by 100,000x.
- **Competition:** Rivalry between hyperscalers to host and sell AI products could **decrease prices** \Leftrightarrow decreases in long-distance voice prices due to competition.
- **Depreciation:** If Hyperscalers don't see **increases in revenues**, they will have to deal with **rapidly depreciating data-centers**

Increases in Depreciation and Amortization (\$USD in Billions)



Increases in CAPEX (\$USD in Billions)



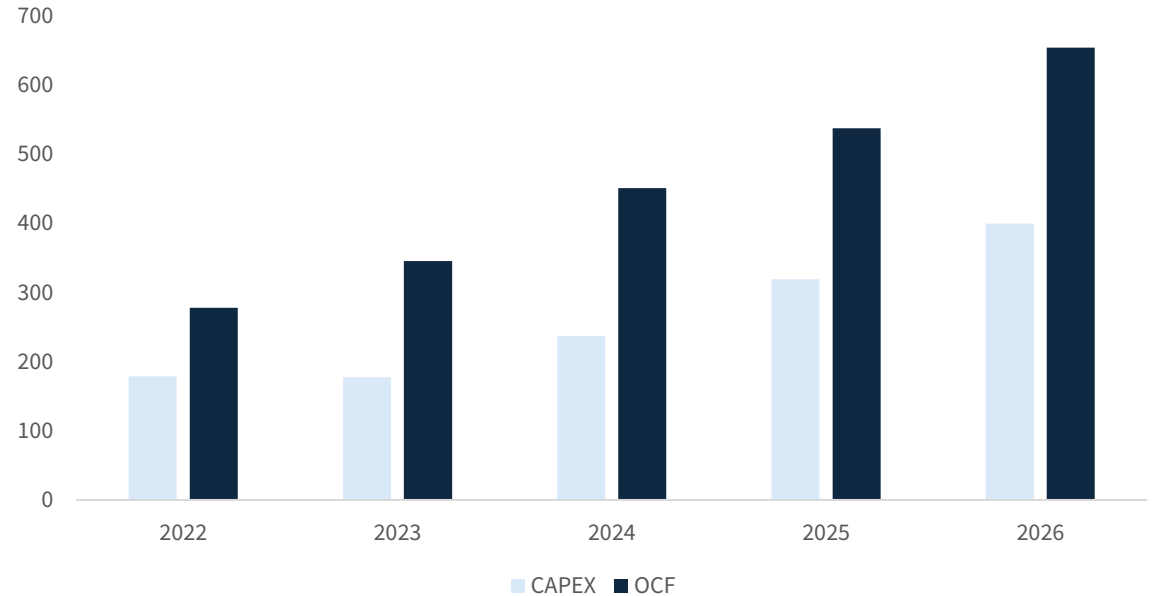
Comparison

Hyperscalers are more resilient and more diversified businesses that can scale more safely.

Differences

- More **transparent accounting system**: WorldCom and Global Crossing **inflated revenues** and **capitalized costs**. Hyperscalers are subject to more scrupulous accounting and reporting measures.
- **Non-acquisition revenue growth**: WorldCom relied heavily on acquisitions to grow revenues, Hyperscalers don't.
- **Less leveraged companies**: ALL the Hyperscalers have had OCF > CAPEX and have maintained low leverage ratios.
- **Diversified revenues**: telecommunication companies were only exposed to the telecoms business (**long-distance voice** and **internet**). Hyperscaler's business sectors range from e-commerce and advertisement to IT apps and cloud.

Cum. Hyperscaler CAPEX and OCF (\$USD in Billions)



- Hyperscalers are **not comparable** to WorldCom and Global Crossing. CAPEX expansion is **covered by OCF**. **Leverage ratios are low**. **Revenues are diversified** and don't rely on acquisitions for growth.
- AT&T is perhaps the **most comparable company**: A company that expanded heavily (**\$100B** in acquisitions, new technology and capacity 1997 - 2000) with **OCF > CAPEX** and that **maintained low leverage ratios**.

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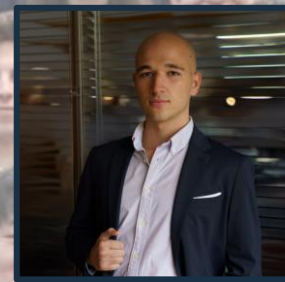


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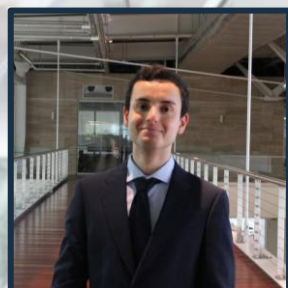


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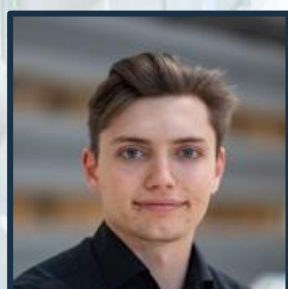


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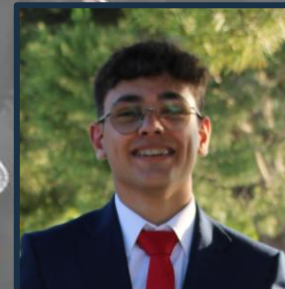


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Spring 2024

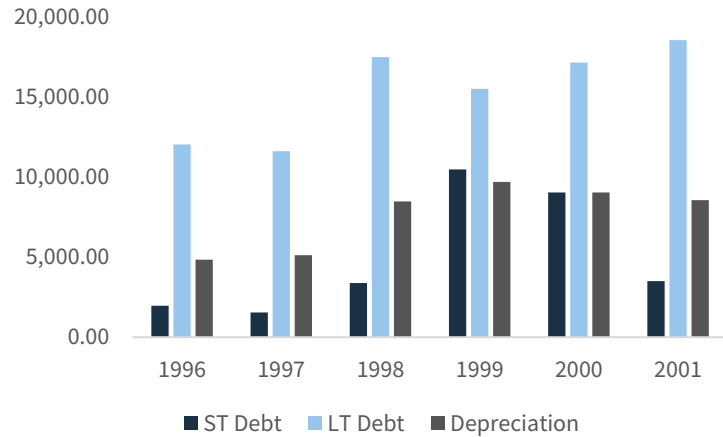
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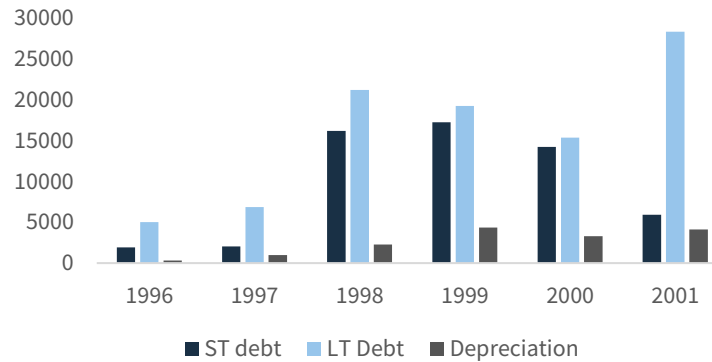
APPENDIX

Graphs supporting the evolution of financials of companies throughout the Telecom bubble.

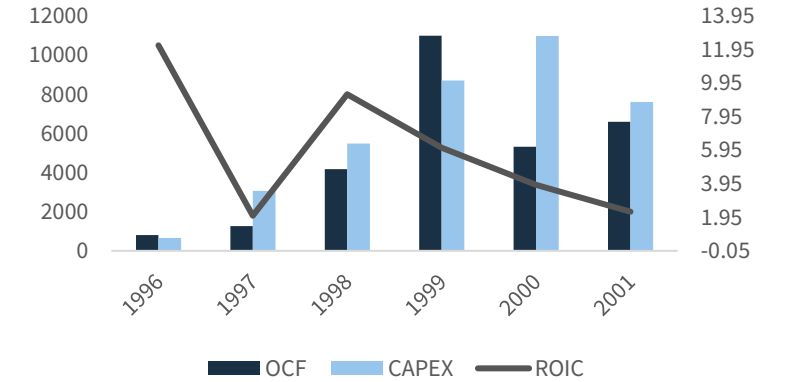
AT&T Debt & Depreciation Profile



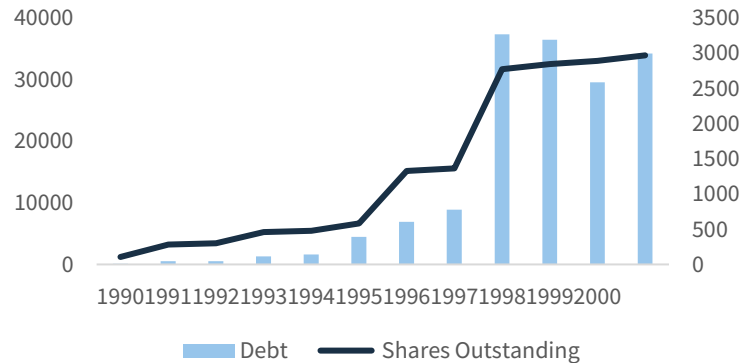
WorldCom Debt & Depreciation Profile



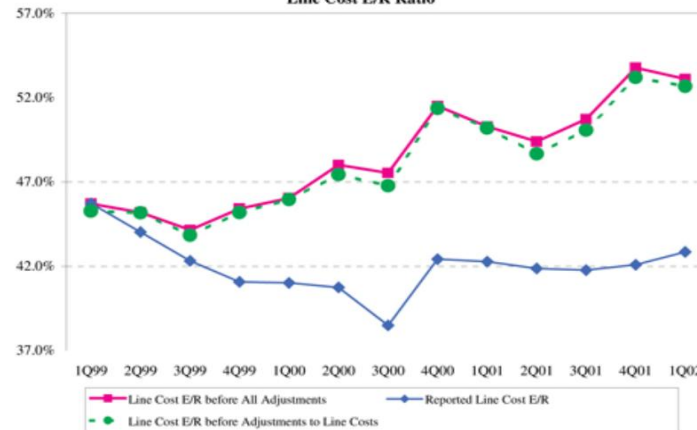
WorldCom



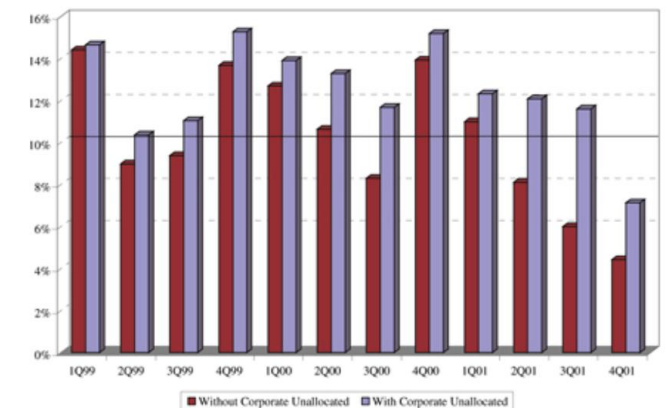
WorldCom's Currency for Acquisitions



Line Cost E/R Ratio

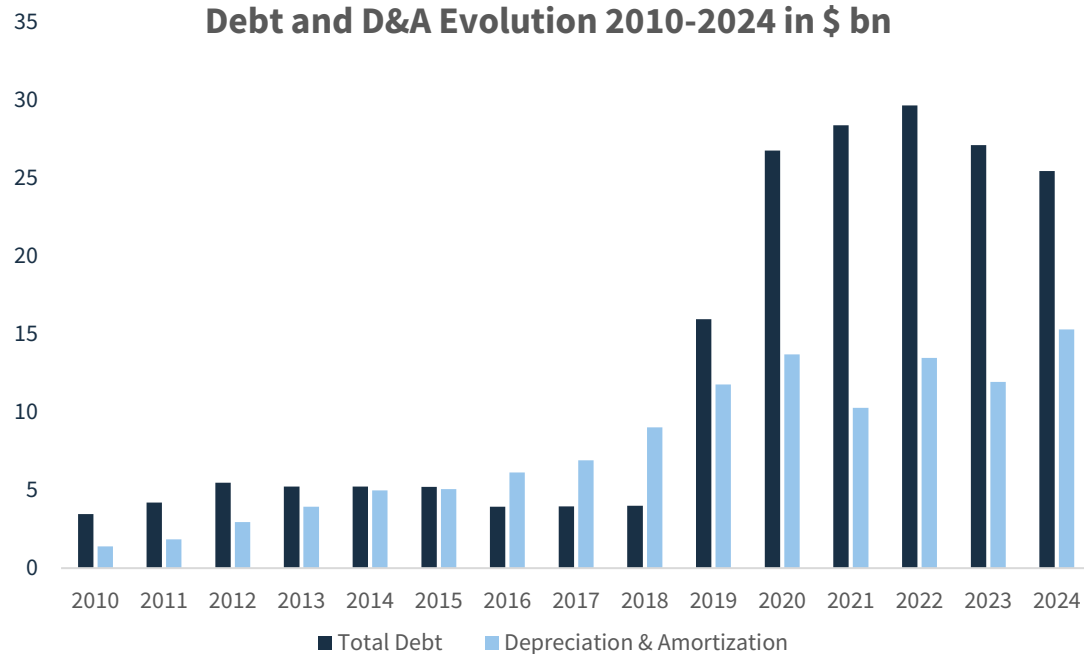


WorldCom Revenue Growth (with and without Corporate Unallocated)

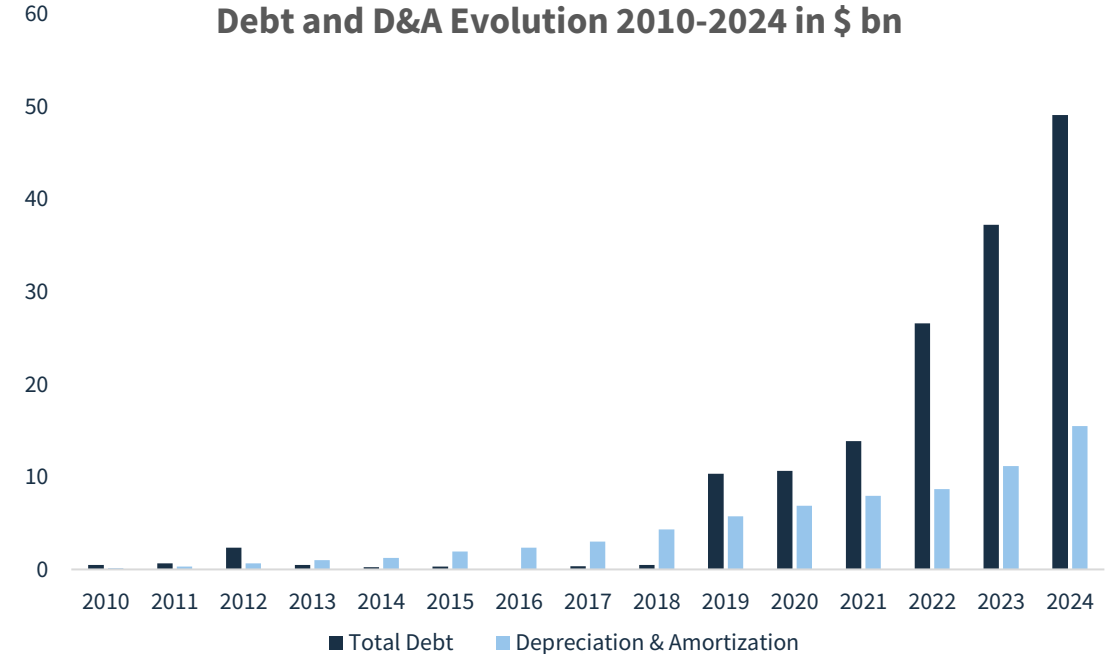


Evolution of Debt and D&A: Alphabet and Meta

Alphabet

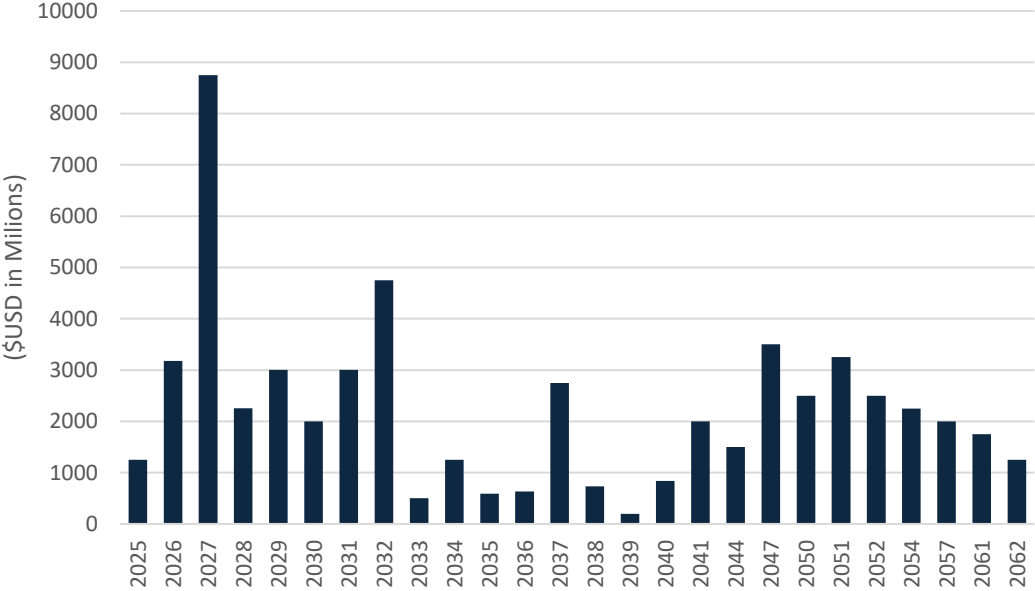


Meta



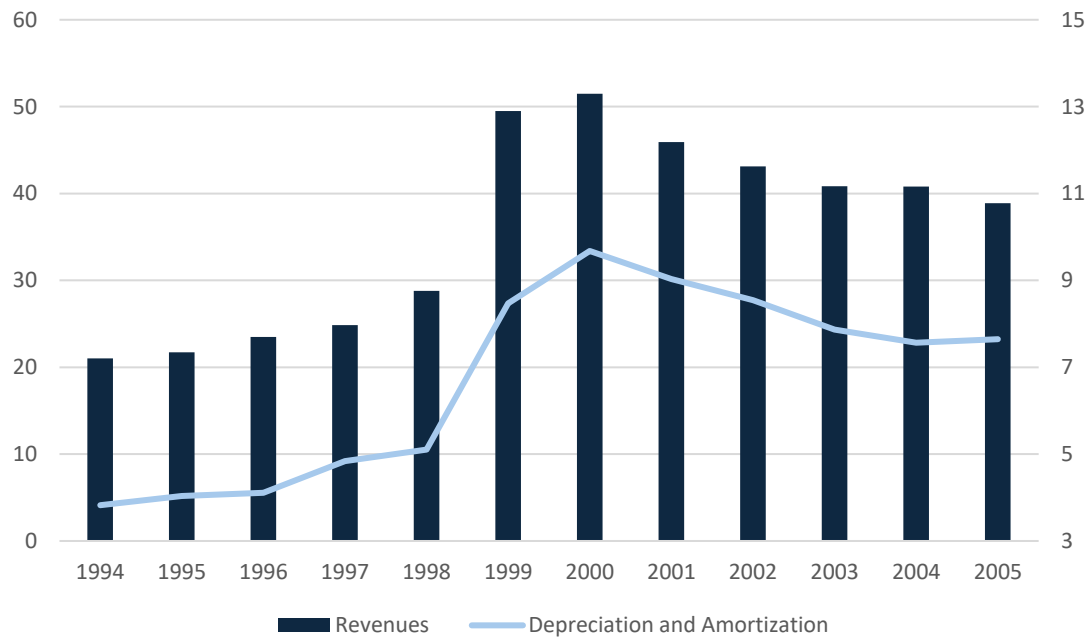
Amazon

Full Debt Maturities



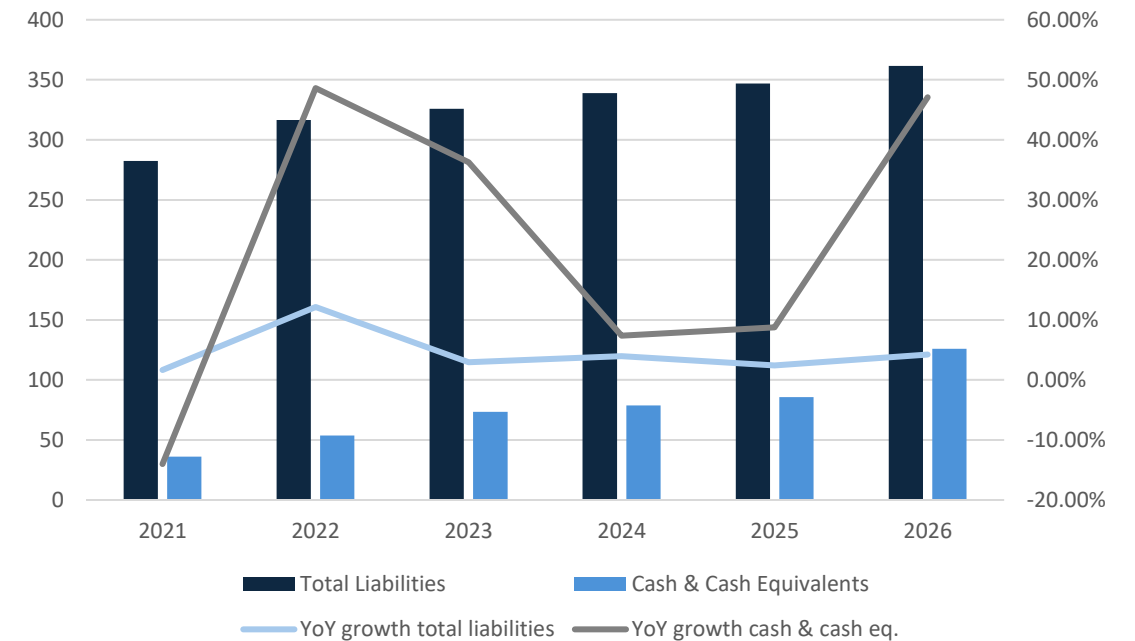
AT&T

AT&T Revenues and Depreciation (\$USD in billions)



Amazon

Total Liabilities and Cash & Cash eq. (\$USD in billions)



Evolution of Debt and D&A: Microsoft

MSFT's debt and D&A in \$USD

