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AI & the Capex Cycle

Spend, Returns, and the Fault Lines — July 2026

LUGANO · ZURICH · SWITZERLAND

ROADMAP

HOW THIS ANALYSIS FITS TOGETHER

Five lenses on the same question: capex, the market it feeds, the historical signal, the return math, and the verdict

I	**THE SPEND**	Our internal model: AI-related capex has tripled in five years and is outrunning revenue and EBITDA. The build is real, accelerating, and concentrated.
II	**THE SYSTEM**	That spend funds a tight group of beneficiaries who convert it into roughly half of market earnings growth — and a large share of its return. The market leans on five balance sheets (Alphabet, Amazon, Meta, Microsoft and Oracle).
III	**THE SIGNAL**	Seven decades say rapid capex growth tends to disappoint. The twist this cycle: within tech, the performance leaders are the low-free-cash-flow spenders — an unprecedented and historically cautionary mix.
IV	**THE MATH**	Do the returns justify the outlay? The hyperscaler ROIC and subscription-pricing math works only on one condition — that capex eventually decelerates.
V	**THE VERDICT**	What is all this worth? Strip out the AI-inflated ROE and the index is priced for the cycle to continue — with little margin of safety if growth normalizes.

01

CHAPTER ONE

THE SPEND

An unprecedented capex build — and it is still accelerating.

01

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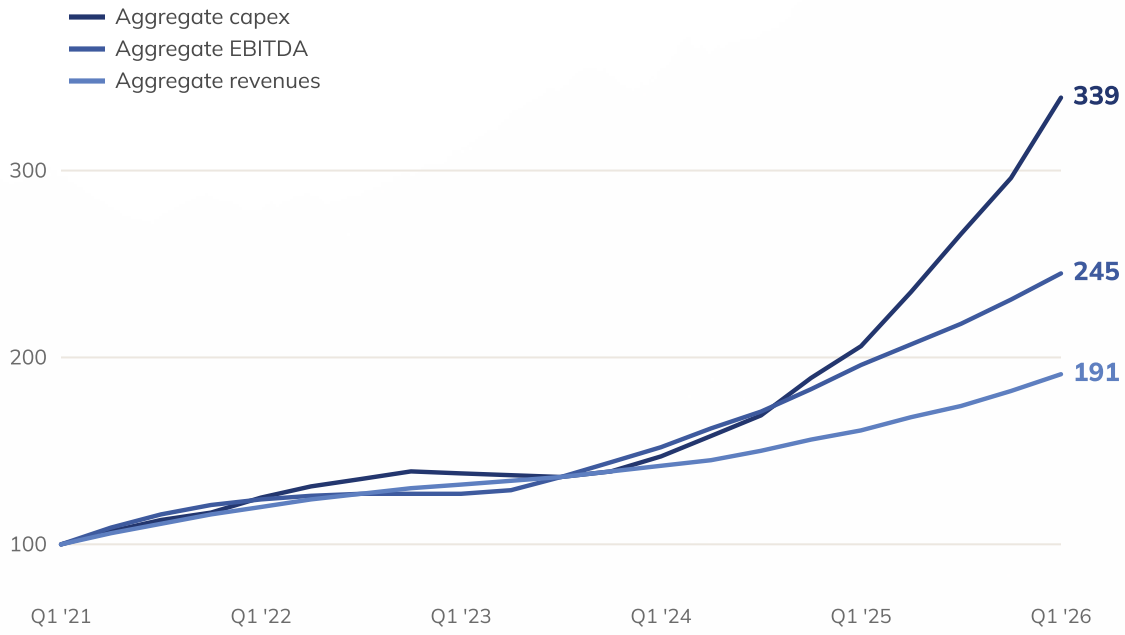
THE SPEND

An unprecedented capex build — and it is still accelerating.

SPEND OUTRUNS RETURNS

AGGREGATE T4Q SERIES INDEXED TO 100 AT Q1 2021



WHAT IT SHOWS

Capex (the upper, dark-red line) detaches sharply: it ends the period at 339 versus 245 for EBITDA and 191 for revenues. The gap widens from 2024, as spending accelerates into the AI build-out.

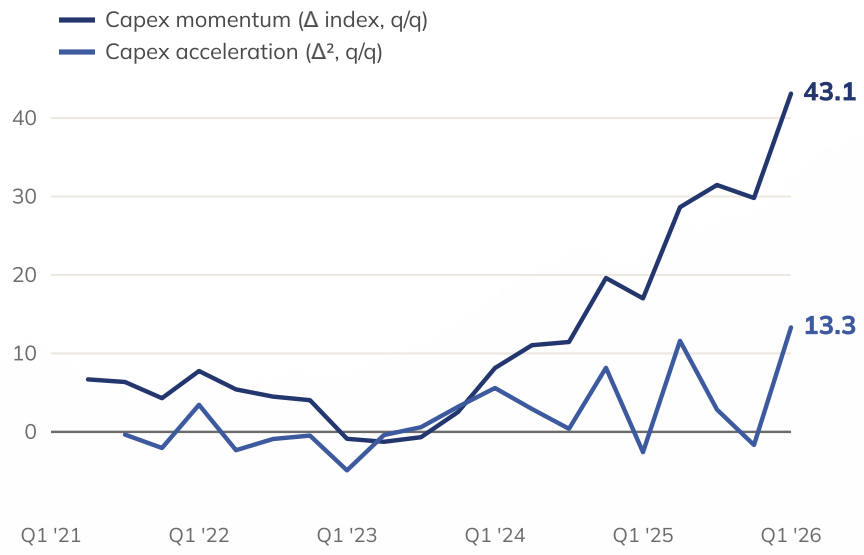
WHY IT MATTERS

Spending that runs at twice the pace of revenue foreshadows pressure on margins and free cash flow unless monetisation catches up. This is the central tension of the AI cycle.

Source: internal CAPEX_AI_Model — synthetic index sheets. Index = 100 at Q1 2021.

THE BUILD IS STILL ACCELERATING

SPEED (Δ) AND ACCELERATION (Δ²) OF THE SYNTHETIC CAPEX INDEX — AFTER A FLAT 2023, BOTH HAVE TURNED SHARPLY HIGHER



T4Q ending	Capex index	Momentum Δ	Accel. Δ²
Q1 21	100.0		
Q2 21	106.7	6.7	
Q3 21	113.0	6.3	-0.3
Q4 21	117.3	4.3	-2.0
Q1 22	125.1	7.8	3.5
Q2 22	130.5	5.4	-2.3
Q3 22	135.0	4.5	-0.9
Q4 22	139.0	4.0	-0.4
Q1 23	138.2	-0.9	-4.9
Q2 23	136.9	-1.3	-0.4
Q3 23	136.2	-0.7	0.6
Q4 23	138.8	2.5	3.2
Q1 24	146.9	8.1	5.6
Q2 24	158.0	11.1	2.9
Q3 24	169.4	11.5	0.4
Q4 24	189.0	19.6	8.2
Q1 25	206.0	17.0	-2.6
Q2 25	234.7	28.6	11.6
Q3 25	266.1	31.5	2.8
Q4 25	295.9	29.8	-1.7
Q1 26	339.0	43.1	13.3

WHAT IT SHOWS

After stalling through 2023, both the quarter-on-quarter change (momentum) and its rate of change (acceleration) have turned decisively positive — the index adds 43 points in the final quarter alone.

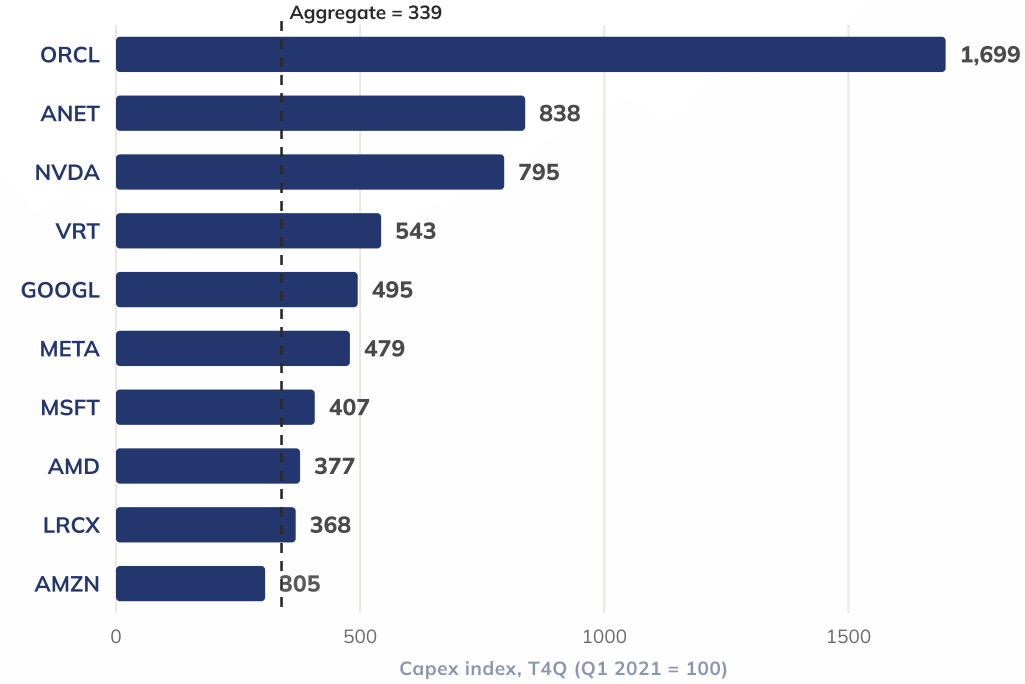
WHY IT MATTERS

The cycle is not maturing into a plateau; it is re-accelerating — extending the capex commitment further ahead of the returns that must eventually validate it.

Source: internal CAPEX_AI_Model. Momentum = q/q change in the synthetic capex index (1st difference); acceleration = change in momentum (2nd difference).

A NARROW BUILD

CAPEX INDEX, T4Q (Q1 2021 = 100) — TOP TEN NAMES IN OUR UNIVERSE



READING

Oracle (1,699), Arista (838) and NVIDIA (795) have multiplied capex far beyond the aggregate (339, dashed). Behind them sit the hyperscalers — Alphabet, Meta, Microsoft, Amazon — and the data-centre supply chain (Vertiv).

The spend is concentrated: a handful of names across cloud, silicon and physical infrastructure account for most of the acceleration — which sets up the dependency on the next slides.

Source: internal CAPEX_AI_Model — synthetic capex index (values at Q1 2026).

02

CHAPTER TWO

THE SYSTEM

A few balance sheets fund the spend — and the market runs on it.

THE SPEND THAT DRIVES THE MARKET

A few balance sheets fund the spend; high-operating-leverage beneficiaries convert it into earnings

Hyperscalers + Oracle

~30% of market-wide capex
~80% of its growth
the source of the cash

→

AI Spending Beneficiaries

high operating leverage
65-78% incremental margins
(semis / storage, Q4 2025)

→

The Market

~half of earnings growth
42% of 12-mo return
momentum and multiples

+174 pp
beneficiaries' outperformance vs market since start of 2024

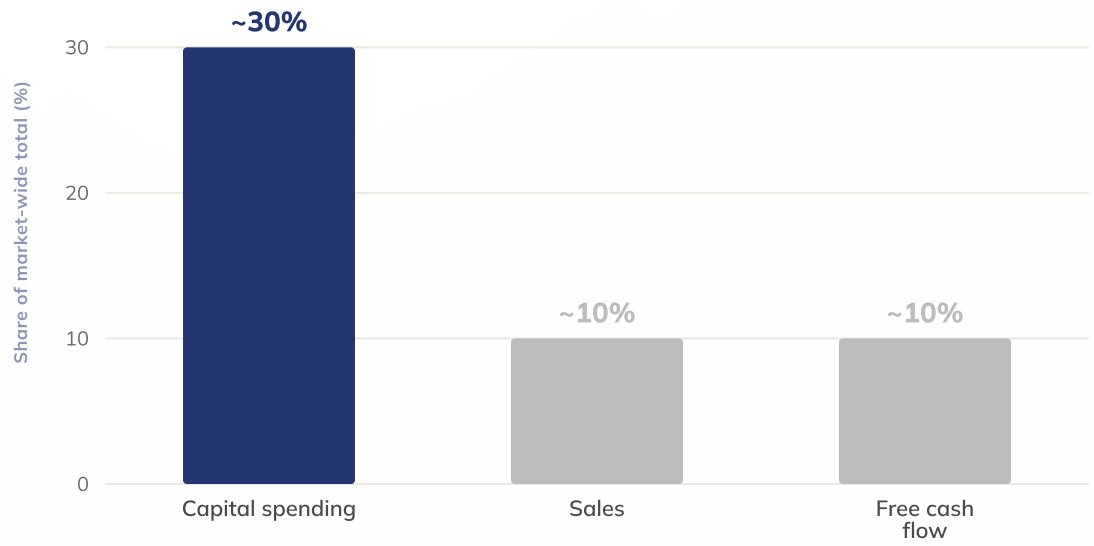
+42%
forward-P/E premium of the beneficiaries to the market

40%
of beneficiaries' 2026E earnings-growth contribution from 4 names: NVDA, MU, AVGO, SNDK

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026) and 'Concentrated Capex' (Jan 2026). Figures as reported.

LEANING ON FIVE BALANCE SHEETS

HYPERSCALERS + ORACLE: SHARE OF MARKET-WIDE TOTALS



AN IMBALANCE

Five companies now drive around 30% of market-wide capital spending while representing only about a tenth of its sales and free cash flow. Their capex share is set to rise toward a third over three years.

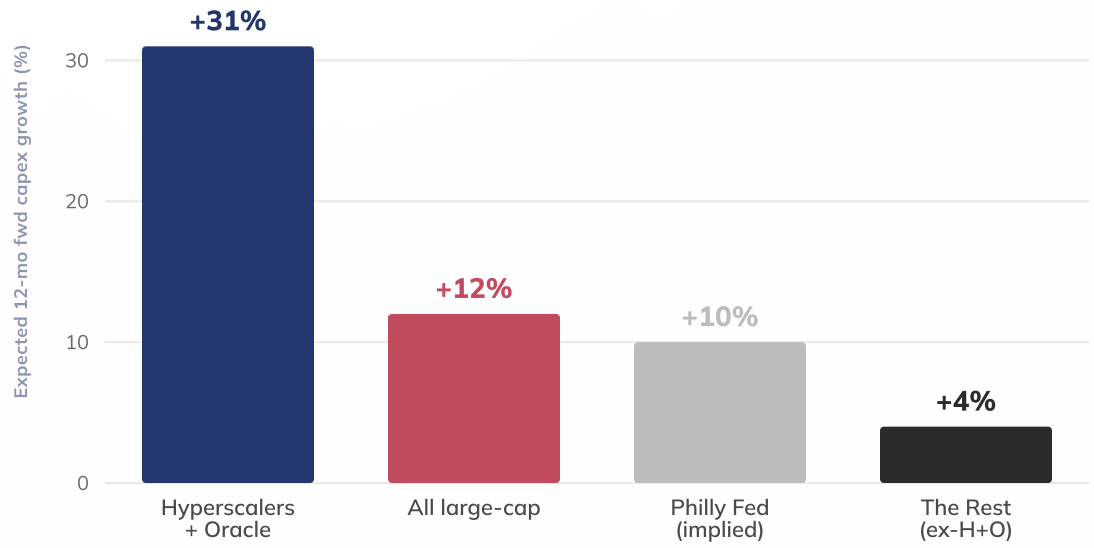
~2X

Their free-cash-flow margins are still roughly twice the rest of the market — even after the capex boom. The cushion is real, but the system's spend is highly concentrated.

Source: Empirical Research Partners, 'Concentrated Capex' (Jan 2026), Exhibit 6. Hyperscalers + Oracle; figures read from exhibit.

NO BROADENING BEYOND AI

EXPECTED TWELVE-MONTH FORWARD CAPEX GROWTH, LATE-2025



WHAT IT SHOWS

Strip out the five AI plays and aggregate capex growth is only about +4%. The headline +12% for all large-caps is almost entirely the hyperscalers; the broad market is not joining in.

THE KICKERS DON'T BRIDGE IT

OBBBA tax savings (~5% of capex) would add little — most firms say they will keep capex flat. Reshoring runs two-to-one against, and clean-energy investment has stalled. The boom stays localised.

Source: Empirical Research Partners, 'Concentrated Capex' (Jan 2026), Exhibits 14-16. Figures read from exhibits.

03

CHAPTER THREE

THE SIGNAL

History's verdict on big spenders — and how this cycle inverts it.

HISTORY'S VERDICT ON BIG SPENDERS

For seven decades, the highest-capex-growth cohort has tended to underperform afterwards

7 decades

Rapid capex growth = a poor omen

The top quintile of year-over-year capex growth has underperformed the market thereafter for most of the post-war era.

~ -13%

The 2000s, the worst stretch

The relative return to the high-capex cohort during the New Economy unwind — the cautionary precedent.

+10.4%

Hyperscalers since start of 2025

This cycle the big spenders have outperformed (unannualised) — bucking the long-run pattern, for now.

The pattern can break — but the burden of proof sits with the bulls. What separates a durable build from a destructive one is where the money comes from.

Source: Empirical Research Partners, 'Concentrated Capex' (Jan 2026), Exhibits 30-31. Equally-weighted; figures read from exhibits.

WHERE THE MONEY COMES FROM MATTERS

Self-funded capex is 'less bad'; the danger zone is high spend on a thin cash base

THE LESSON

History is kinder to big spenders that fund the build from existing cash flow. The cohort that pairs heavy capex with thin free cash flow is the one that has historically disappointed.

~30%

of the highest-capex-growth quintile (market-wide) also sits in the top free-cash-flow-margin quintile — above the ~20% random draw. The broad cohort is more self-funded than usual; the exception is tech.

Source: Empirical Research Partners, 'Concentrated Capex' (Jan 2026), Exhibits 32-34, 39. Conceptual; positions illustrative.

THIS CYCLE, THE THIN-CASH SPENDERS LEAD

An unprecedented run — and the opposite of the prior tech-investment boom

+113%

Last nine months: relative return of high-capex, LOW-FCF-margin tech

+311%

Cumulative outperformance of that same cohort — a record in the series

Where to be selective:

The names atop the high-capex / low-FCF screen pair uninspiring growth with, to our eye, little to get excited about. Their recent outperformance sits at odds with long-run evidence that companies spending heavily while generating little free cash have historically tended to underperform

THE NEW-ECONOMY ECHO

In 2000 there was a similar boom in high-investment tech — but it was led by the names with the HIGHER free-cash-flow margins. This time it is the thin-cash spenders out front. That inversion is the cautionary part.

If you are going to spend big, you want to self-fund. In tech, the market is — for now — rewarding the opposite.

Source: Empirical Research Partners, 'Concentrated Capex' (Jan 2026), Exhibits 34-35 and Appendix 1. Equally-weighted; figures read from exhibits.

04

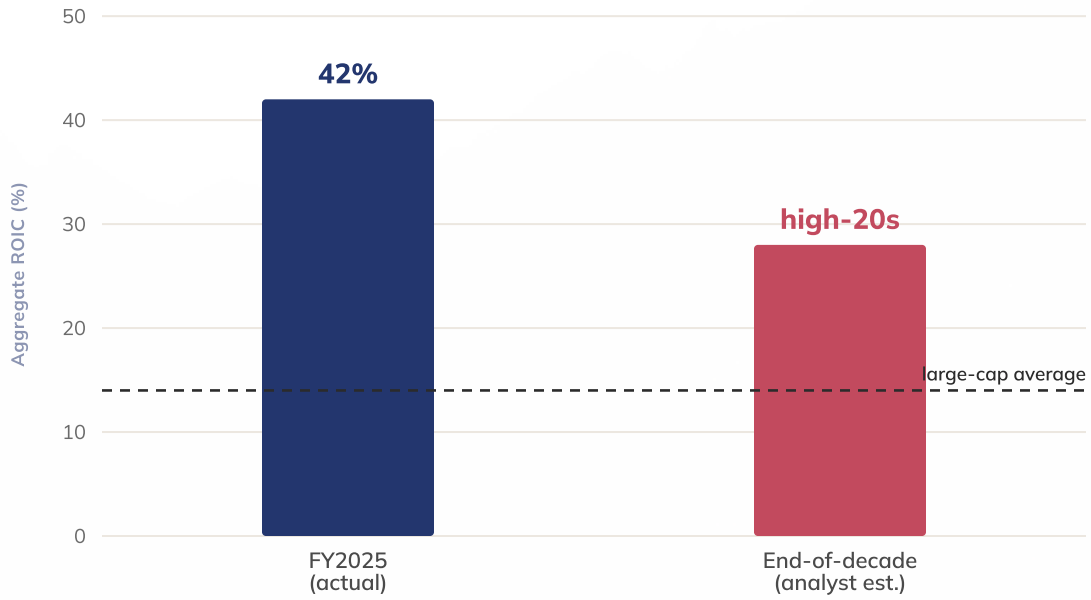
CHAPTER FOUR

THE MATH

The return test, the subscription price it implies, and why a slowdown cuts both ways.

THE RETURN TEST

BIG-FOUR HYPERSCALER AGGREGATE RETURN ON INVESTED CAPITAL (ALPHABET, AMAZON AWS, META, MICROSOFT)



FROM EXCEPTIONAL TO MERELY GOOD

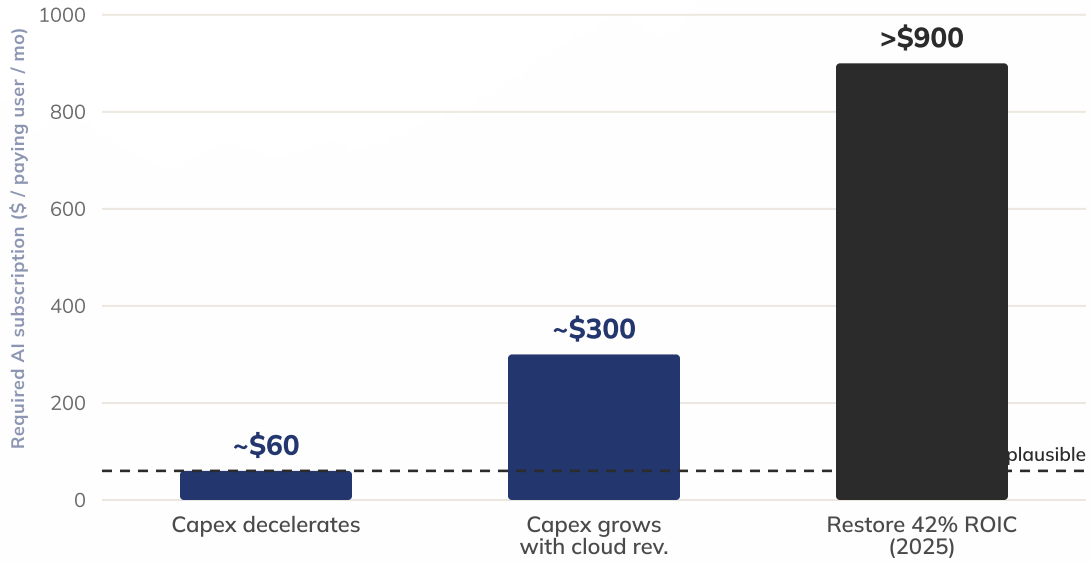
Analysts already model ROIC falling from 42% last year toward the high-20s by the end of the decade, as the build-out swells the capital base. Even that decline would still leave returns roughly double the large-cap average.

So the bar is high: hitting even the reduced ROIC implies AI is a genuine commercial success. The question is what subscriber economics that requires.

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026), Exhibit 10. ROIC = after-tax operating profit / (equity + LT debt - cash).

WHAT SUBSCRIBERS MUST PAY

MONTHLY AI SUBSCRIPTION PER PAYING USER REQUIRED TO HIT ANALYSTS' ROIC FORECASTS (2030E)



IT HINGES ON ONE VARIABLE

On a common base (3bn active users, 20% paying, hyperscalers keep 50%), the required price is plausible — around $60/month — ONLY if capex decelerates as analysts assume.

WHY IT MATTERS

If instead capex keeps growing with cloud revenue, the asset base balloons and the required price rises to ~$300/month. Restoring last year's 42% ROIC would take more than $900/month.

Today's top-tier plans (MS 365 + CoPilot ~ $60) sit right at the plausible end — and nowhere near the stress case.

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026), Exhibits 15-16, 23. Figures read from exhibits.

LEVERS AND LIMITS

What could make the math easier — and what could force the deceleration the model needs

LEVERS (support the returns)

Compute moat
Owning ~60% of cumulative AI compute could let the big four keep ~75% of subscription revenue — cutting the required price below ~$40/month.

Leverage
All four are lightly geared versus high-capex-to-sales peers; borrowing to fund capex could lift aggregate ROE back toward ~30%.

Enterprise mix
A 50/50 retail/enterprise split blends to ~$60/month at $30 retail and ~$90 enterprise — within today's pricing.

LIMITS (force a slowdown / hurt beneficiaries)

Funding
Hyperscalers are nearing the edge of their own free cash flow; private-credit appetite may cool.

Physical bottlenecks
Power, parts, land and labour constrain the pace of data-centre construction.

Politics
A cross-aisle backlash: higher power bills and job losses are a hard sell to voters.

Adoption sensitivity
If only 10% pay (not 20%), the required price jumps to ~$112/month — the assumptions are fragile.

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026), Exhibits 20-22, 27-28.

THE CONUNDRUM

The hyperscalers' best case is the AI Spending Beneficiaries' worst case

IF HYPERSCALERS SLOW THEIR CAPEX

HYPERSCALERS

BEST CASE

- Bending the cost curve lifts ROIC back toward analysts' targets
- The required subscription falls to ~$60/mo, not ~$300
- Spending below cloud-revenue growth is the path to satisfactory returns

AI SPENDING BENEFICIARIES

WORST CASE

- Their revenues are essentially driven by the hyperscalers' capex
- That spend has driven roughly half of market earnings growth
- They are priced at a +42% P/E premium for it to continue

The crux: the same lever that rescues hyperscaler returns removes the beneficiaries' growth engine. What is good for the spenders is bad for the firms they have been spending on.

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026), Exhibits 15-16, 23 and Conclusion (pp. 1, 10).

WHY A SLOWDOWN CUTS BOTH WAYS

One firm's capex is another's revenue — amplified by operating leverage and a full valuation

1

One firm's spend is the other's top line

Hyperscaler capital spending and the beneficiaries' earnings move together in analysts' models out to 2030. Cut the spend and you cut the revenue at its source.

2

Operating leverage works in reverse

Semis and storage converted 65-78% of each incremental sales dollar straight into earnings on the way up. The same leverage means a top-line slowdown drops just as fast to the bottom line.

3

Priced for continuation

The beneficiaries trade at a +42% forward-P/E premium, riding upgrades off hyperscaler capex. A deceleration would compress both earnings and the multiple — a double de-rating.

Why it matters for us: the beneficiaries have produced about 42% of the market's return and roughly half its earnings growth over the past year. A hyperscaler capex deceleration would be consequential for the whole index — not just for the cohort that feeds on the spending.

Source: Empirical Research Partners, 'Hyperscaler AI Revenue Expectations' (Apr 2026), Exhibits 5, 7, 9 and pp. 3, 10.

05

CHAPTER FIVE

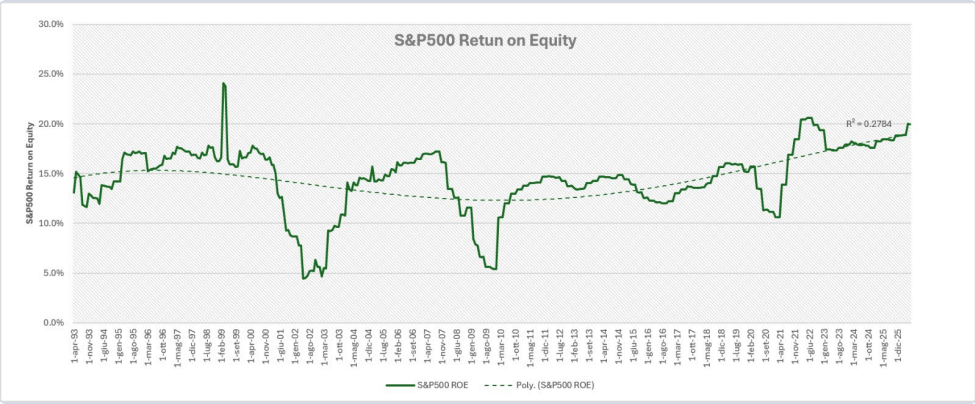
THE VERDICT

Earnings growth as a function of ROE — and what the index is discounting.

EARNINGS GROWTH IS A FUNCTION OF ROE

If the capex tailwind fades and ROE normalizes, what is the index actually pricing — and how much margin of safety is left?

$$\text{EPS growth} = \text{ROE} \times (1 - \text{payout}) + \text{buyback}$$



S&P 500 ROE ≈ 20% — near all-time highs; long-run trend ~13–15% (R² 0.28).

	ROE	EPS growth (G)
Today	20%	10.96%
Normalized	15%	8.22%

Retention ≈ 55% held constant, so growth scales linearly with ROE — a ~5pt ROE compression takes G from ~11% to ~8%.

TRANSMISSION

Hyperscaler capex ↓ → Beneficiaries' earnings ↓ → index ROE ↓ → EPS growth ↓

KEY POINT Today's ~11% EPS growth rests on a ROE near cyclical highs; mean-reversion toward the ~15% long-run ROE implies ~8% growth.

Source: Bloomberg; LFG+ZEST analysis. Growth identity per the EPS-growth decomposition.

I
II
III
IV
V

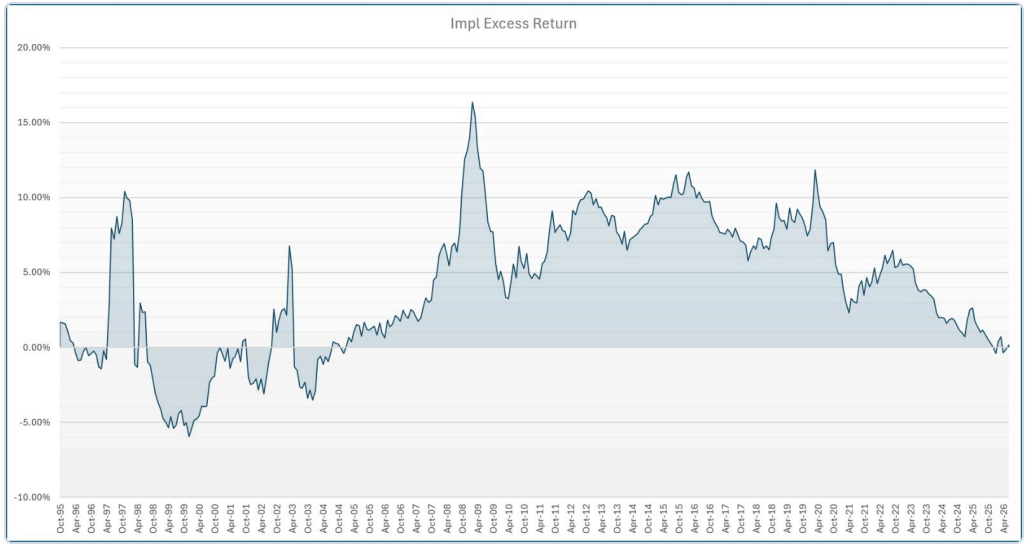
WHAT IS THE MARKET DISCOUNTING?

The verdict in numbers: what the index already discounts — and what a normalization would cost.

NORMALIZED P/E	7.50%	8.00%	9.00%	10.00%	11.00%	12.00%	12.50%
10	5,001	5,239	5,745	**6,294**	6,890	7,537	7,880
12	5,326	5,579	6,118	**6,703**	7,338	8,027	8,392
14	5,651	**5,920**	**6,491**	**7,112**	**7,786**	**8,516**	8,904
16	5,976	**6,260**	**6,865**	**7,521**	**8,234**	**9,006**	9,416
18	6,301	**6,601**	**7,238**	**7,930**	**8,681**	**9,496**	9,929
20	6,627	6,941	7,611	**8,339**	9,129	9,986	10,441
22	6,952	7,282	7,985	**8,748**	9,577	10,476	10,953

NORMALIZED EARNINGS GROWTH

Fair-value SPX by normalized P/E (rows) and earnings growth (columns). Highlighted: current vs. normalized bands.



Implied excess return ≈ 0% today — near 30-year lows. The market embeds the optimistic scenario with no risk-premium cushion.

CURRENT FAIR VALUE

7,521 – 8,234

G ≈ 10–11% · P/E 14–18

NORMALIZED (G ≈ 8%)

5,920 – 6,601

P/E 14–18

IMPLIED DOWNSIDE

−8% to −20%

vs. current levels

KEY POINT The index already prices the continuation of the AI capex cycle; with implied excess return near zero, normalized growth leaves no margin of safety.

Source: LFG+ZEST analysis. Fair-value matrix and implied excess return derived from the normalized ROE/growth framework.

Conclusions: The Fault Lines

01 **The spend is real and concentrated** AI-related capex has tripled in five years; five balance sheets carry ~30% of market-wide capex and ~80% of its growth — while the rest of the market grows at ~4%.

02 **The market runs on it** Beneficiaries convert that spend into roughly half of market earnings growth and 42% of its return, at a +42% forward-P/E premium. The dependency is acute.

03 **Returns hinge on deceleration** The subscription math works (~$60/month) only if capex slows; if it keeps pace with cloud revenue it needs ~$300, and restoring 42% ROIC over $900.

04 **The asymmetry is the point** Self-funders are cushioned; the thin-cash, high-capex cohort is priced for continuation and most exposed to any slowdown — exactly where seven decades counsel caution.

The cycle can keep compounding — but the margin for error is thinnest precisely where enthusiasm is highest.

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