ZEFFER

INVESTMENT RESEARCH

THE CRACKS BENEATH THE AI BOOM

The hidden connections among economic growth, AI capital spending, falling inference prices, leveraged infrastructure, private credit and life-insurance balance sheets.

THE INVESTMENT THESIS

AI can win as a technology while parts of the financing system lose as investments.

SPECIAL REPORT / 21 OCTOBER 2026

PRODUCED BY ZEFFER EDITORIAL + ANALYSIS & RESEARCH TEAMS

With Professor Emeritus Mike Porter and Clifford H. Hawk

INDEPENDENT RESEARCH / GENERAL INFORMATION

ABOUT THIS PUBLICATION

The editorial desk

Independent financial research, evidence standards and limitations.

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AN EDITORIAL NOTE

The financial market is remarkably good at pricing what is visible, and rather less reliable at pricing what is inconvenient to measure. This report connects disclosed investment commitments, changing AI unit economics and the gradual migration of credit risk beyond traditional banks. The resulting hypothesis is important. It is not infallible.

We distinguish **observed facts** from **our interpretation**, and both from **illustrative stress tests**. A lively phrase is no substitute for a defensible chart. Where the data are incomplete, the reader should see the gap rather than a number invented to fill it.

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THE BRIEF

Technology success is not financial success

A testable framework for the next phase of the AI and credit cycle.

2.2%
US real GDP growth, Q2 2026 (annualized) [01]

$2.67T
Gartner 2026 worldwide AI spending forecast [06]

$1.4T
US private credit loans, latest Fed measure [18]

The market may be entering a **quality-discrimination phase**. Demand for AI is real. So are the financing obligations incurred to meet it. The distinction matters: a chipmaker can book the sale today, while its customer may spend years proving the return. Investors ought to ask whether capacity can be monetized quickly enough, and at margins sufficient to justify its cost of capital.

Three developments make this cycle unusual. First, the investment impulse is material to measured economic growth. Second, the unit price of intelligence is falling while model selection and routing make supplier substitution easier. Third, rising external financing connects data-center economics to credit investors, private funds and potentially insurers. The same technologies that expand demand can compress unit revenue.

This is a **conditional thesis**, not a prediction of collapse. The strongest hyperscalers have formidable cash generation; the US banking system remains comparatively resilient; and lower inference prices can stimulate more usage than they destroy in revenue. The rub is that marginal, debt-funded projects have far less room for forecasting error. [07][08]

THE INVESTMENT QUESTION

Follow the obligation, not the applause: who commits the capital today, and who must produce the cash tomorrow?

OUR BASE JUDGMENT

Selective repricing can persist without recession. The weakest financial structures may deteriorate while profitable technology leaders remain solvent and competitive.

WHAT WOULD CHANGE IT

A sustained acceleration in defaults, financing closures, falling AI capex and private-credit loss recognition would increase broader-contagion risk.

SOURCES [07], [08], [09]

OPEN LEAD SOURCE / imf.org

EXECUTIVE FINDINGS

Five findings that matter

Five evidence-led conclusions, with the uncertainties that matter.

01

AI investment is helping carry the expansion.

AI-related investment has contributed materially to recent US GDP growth. The precise share depends on broad categories that also include non-AI spending. A slower buildout would matter beyond technology shares.

02

Cheaper intelligence changes the revenue equation.

Inference prices are falling, open-weight models are gaining usage share in measured gateway data, and routing lets buyers substitute models. More consumption is likely; the revenue captured per unit is less certain.

03

The financing model matters more than the AI label.

Cash-rich platforms can fund mistakes. Debt-dependent infrastructure operators must refinance obligations and convert contracted demand into cash. The difference is becoming harder for markets to ignore.

04

The weakest credit may signal trouble first.

Selective pressure in speculative credit and AI-linked bonds merits attention. It is an early-warning hypothesis, not proof of broad contagion: higher-grade spreads, defaults and funding access must corroborate it.

05

Private credit and insurers are transmission channels, not a verdict.

Illiquid loans, valuation lags and insurer holdings deserve scrutiny. Long-dated liabilities, bank capital and strong anchor customers can also contain losses. The outcome depends on how shocks travel.

Bottom line: AI can be a technological success and a disappointing investment for some capital providers. The key test is whether realized cash flow catches up with the obligations already incurred.

SOURCES [04], [08], [09], [11], [15], [18]

OPEN LEAD SOURCE / stlouisfed.org

RESEARCH ARCHITECTURE

The research map

How the argument moves from economic dependence to investor action.

PART I / MACRO FOUNDATION [PP 06-09]

The economic cycle • AI and GDP • Inflation and bonds

PART II / INFRASTRUCTURE & CONTRACTS [PP 10-16]

Value chain • Grid power • Financing • Contract definitions

PART III / CHANGING ECONOMICS [PP 17-21]

Inference pricing • Open models • Routing • Project returns

PART IV / MARKET AND CREDIT VERDICT [PP 22-26]

Market signals • Private credit • Insurer-liability structure

PART V / TRANSMISSION & COUNTERWEIGHTS [PP 27-36]

Transmission • Insurers • Scenarios • Monitoring • Conclusion

EVIDENCE DISCIPLINE / Figures use disclosed observations and clearly labeled illustrative models. Cross-company comparisons are not normalized unless stated. No proprietary real-time bond or CDS feed was available for this analysis; qualitative market observations are attributed and should be refreshed before distribution.

PART I / MACRO

1. Still growing, but with less margin for error

Late-cycle vulnerabilities need not imply an imminent recession.

2.2%
Q2 2026 real GDP annual rate [01]

4.2%
September unemployment [02]

+29K
September payroll change [02]

Output is still expanding. BEA reported 2.2% annualized real growth in the second quarter of 2026, after 2.5% in the first. But September payrolls rose only 29,000 and unemployment was 4.2%. These observations fit a slower, uneven expansion better than either a booming economy or a verified recession. [01][02]

The financial cycle does not always keep time with the business cycle. Equities can remain buoyant as aggregate earnings grow, even while credit markets become choosier. If profits accrue to a narrow group of firms with strong balance sheets while employment growth slows and the marginal borrower faces higher refinancing costs, the aggregate indexes can conceal divergent conditions.

REASONS THE EXPANSION CAN CONTINUE

Consumer spending, large-cap profits and technology investment support demand. A supply-constrained buildout can keep spending high for longer than skeptics expect.

REASONS TO INCREASE SCRUTINY

A weaker hiring trend reduces shock absorption. Persistent inflation may restrict monetary easing just as capital-intensive investments require patient financing.

EDITOR'S WATCH / 29 OCTOBER 2026

BEA's first Q3 GDP estimate is scheduled for October 29. Compare the investment mix with upcoming Q3 corporate earnings and capex guidance before revisiting the slowdown-versus-resilience thesis. [32]

SOURCES [01], [02], [03], [07], [32]

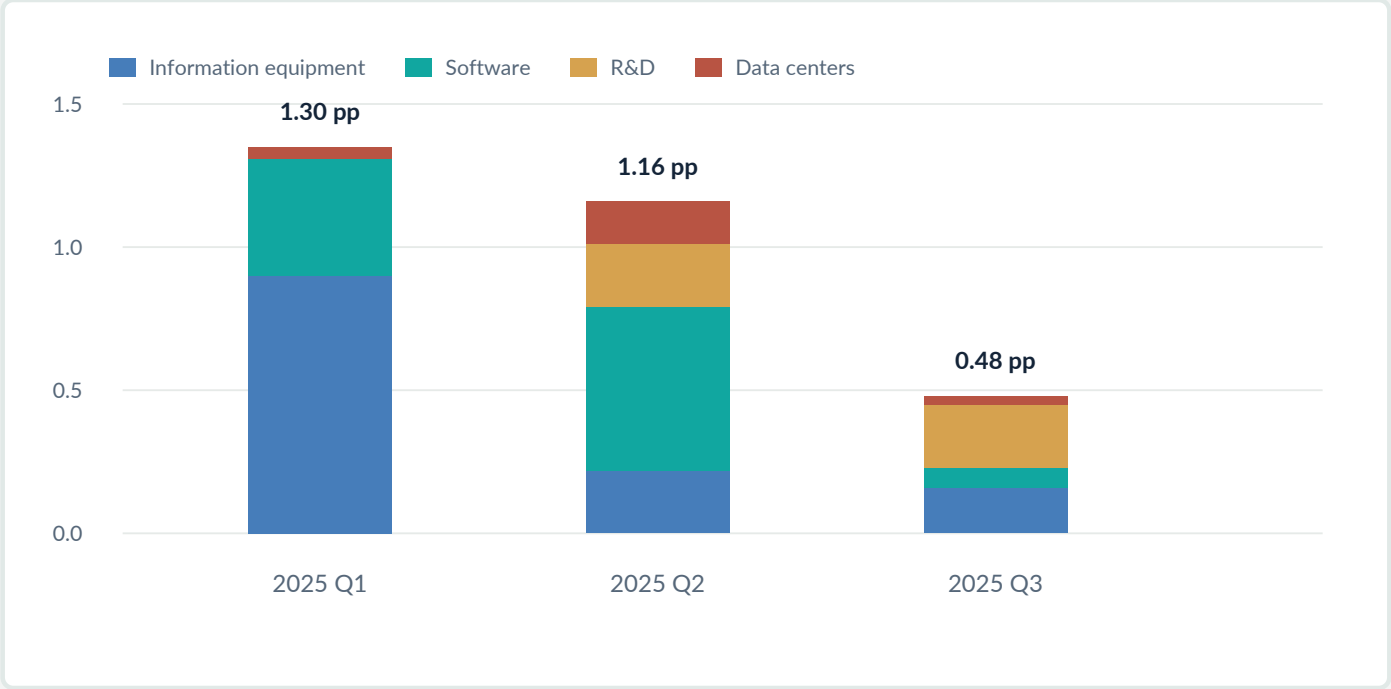
OPEN LEAD SOURCE / bea.gov

PART I / GDP

2. The GDP boost - and its limits

The contribution of an investment boom depends on its rate of growth, not merely its size.

AI exposure to GDP is frequently overstated because observers mix a share of GDP with a share of GDP *growth*. The St. Louis Fed analyzed broad AI-related categories: information-processing equipment, software, research and development, and data-center construction. These categories are not exclusively AI. They contributed 1.16 percentage points to Q2 2025 real GDP growth of 3.8% - about 30% of that quarter's increase. The combined contribution fell to 0.48 points in Q3 even though investment levels remained elevated. [04]



The catch. The contribution to GDP growth fades when the rate of expansion slows, even if the annual dollar amount of spending stays historically high. This creates a macro sensitivity to *deceleration* rather than only to project cancellations. The chart uses broad categories and must never be labeled an exact measurement of AI-only investment.

Source: Federal Reserve Bank of St. Louis, Jan 2026. Quarterly contributions in annualized percentage points. 2025 Q1 includes a negative 0.05 pp R&D; component that is not visible in the positive stacked bars. [04]

SOURCES [04], [05]

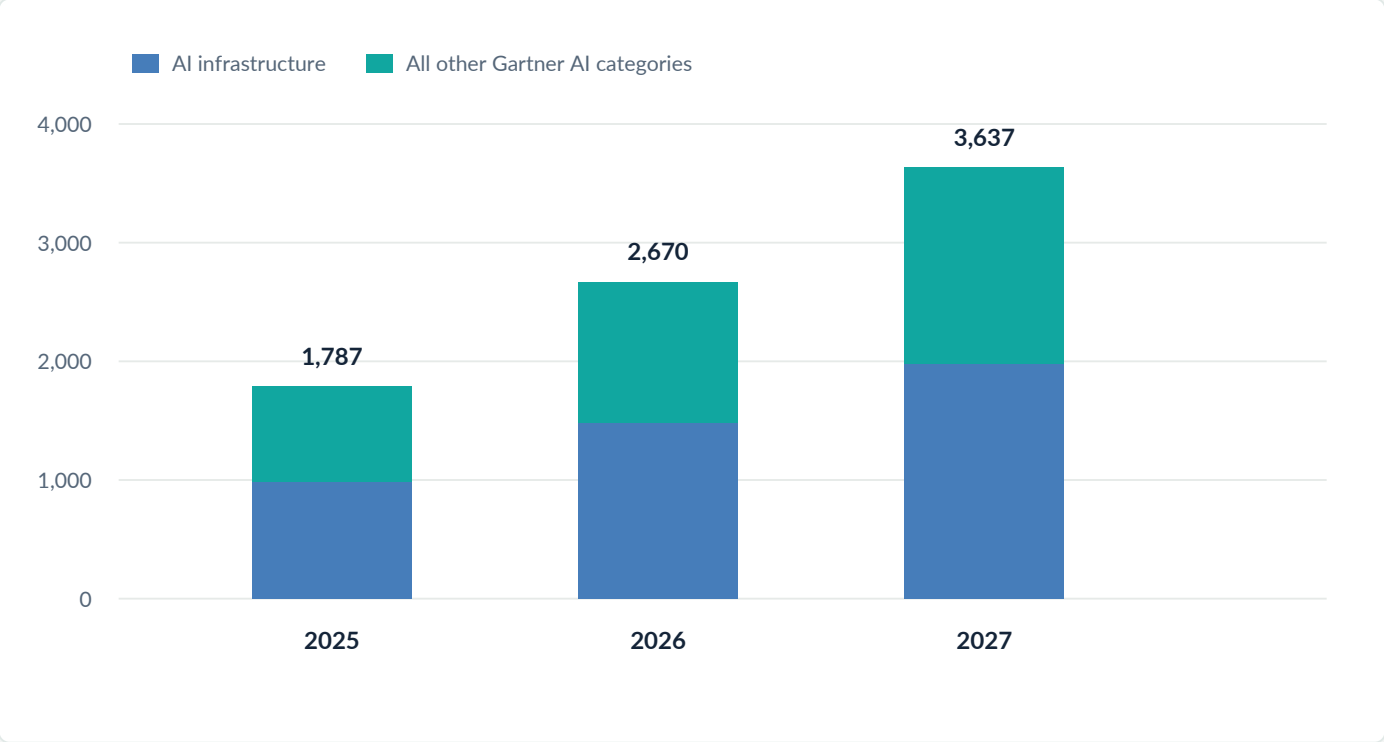
OPEN LEAD SOURCE / stlouisfed.org

PART I / GDP

3. The spending boom is not GDP

An enormous spending forecast is not the same as domestic GDP or AI revenue.

Gartner forecasts worldwide AI-related spending of $2.67 trillion in 2026 and $3.64 trillion in 2027, including infrastructure, software, services, security and other categories. Its forecast for infrastructure alone is approximately $1.48 trillion in 2026. These are global expenditure categories, not US GDP value added, and the definitions may overlap with existing IT spending. [06]



AN ANCHOR, NOT A GDP FRACTION

Goldman Sachs estimated major hyperscaler AI capex around 0.8% of US GDP in an earlier assessment. That is a narrower, US-focused investment metric, not comparable directly with Gartner's worldwide sum. [05]

THE SURPRISE RISK

A global investment wave can lift suppliers while lowering free cash flow at purchasers. The same transaction is excellent revenue for an equipment vendor and an uncomfortably large cheque for its customer.

Amounts above in US$ billions. Gartner forecast as of September 16, 2026; actual outcomes may differ. No claim is made that the forecasted global spend equals net new demand or US GDP. [06]

SOURCES [05], [06], [23]

OPEN LEAD SOURCE / goldmansachs.com

PART I / RATES

4. Inflation keeps the exit door half shut

A credit downturn with sticky inflation differs from a disinflationary recession.

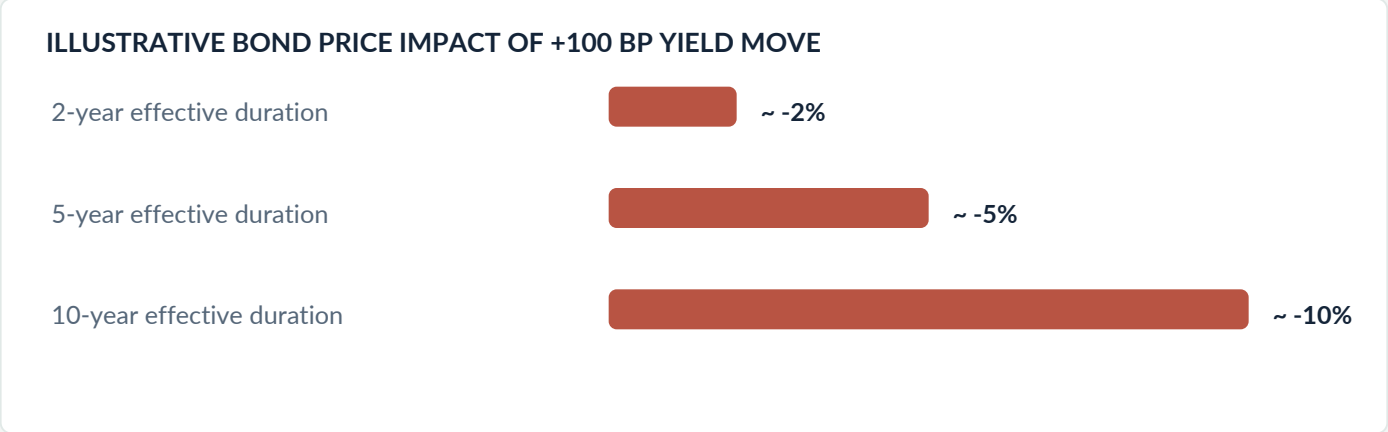
3.7%

September headline CPI / 12-month change [03]

2.6%

September core CPI / 12-month change [03]

The September 2026 CPI report showed headline inflation of 3.7% and core inflation of 2.6% year over year. September gasoline prices rose sharply. This mix matters to fixed-income investors: even if credit demand weakens, an inflation or fiscal shock can push Treasury yields higher and worsen refinancing terms. [03][07]



This uses the first-order relationship between duration and yield changes: approximate price change equals negative effective duration multiplied by yield change. It excludes convexity, carry, and credit-spread moves. It is **not** a prediction for Treasury returns. A recessionary flight to quality can lower yields; an inflation- or supply-led repricing can do the opposite.

Research question: are credit spreads widening while Treasury duration also fails to hedge? An answer requires daily market data and decomposition of risk-free yields, term premium and default premiums.

SOURCES [03], [07]

OPEN LEAD SOURCE / bls.gov

PART II / CAPEX

5. The supplier gets paid; the buyer gets a hurdle

Buildout revenue, contracted backlog and durable end-demand should not be confused.

A supplier can report superb results during a capacity boom while its customers watch free cash flow deteriorate. The supplier enjoys a sale; the customer inherits the depreciation schedule. For equipment makers, today's shipment is recognized as revenue. For the customer, the purchase creates a depreciating asset that must be paid for by future workloads. Recognition timing can make the ecosystem appear healthier in aggregate than its marginal project economics. [08]



Capital commitments happen upfront; usage and cash realization happen later.

THE RELEVANT ASSET LIFE

GPUs may become economically obsolete before buildings, land or energy infrastructure. Modeling all spending with one depreciation life exaggerates precision.

THE CRUCIAL CONTRACT TEST

Are customer commitments take-or-pay, cancellable, usage-based, capacity-constrained, or contingent on site availability? Backlog is not identical to collected cash.

SOURCES [08], [21]

OPEN LEAD SOURCE / imf.org

PART II / FUNDING

6. Two very different AI balance sheets

Balance-sheet financing capacity, not just AI exposure, determines resilience.

CASH-GENERATIVE HYPERSCALERS

Microsoft, Alphabet, Amazon and Meta operate diverse, large-scale cash-generating businesses; AI capex may still squeeze FCF or returns. The key risk is valuation and capital allocation, not necessarily near-term refinancing.

LEVERAGED PROJECT BUILDERS

Debt-dependent operators can require facility draws, refinancing or fresh equity before sites achieve full utilization. The key risk is a funding gap between construction obligations and cash collection.

The IMF describes a capital-intensive ecosystem increasingly reliant on external financing, with equity investments, debt, and future purchase commitments sometimes linked across the same firms. Such circular arrangements may be perfectly commercial, but they complicate assessments of independent end-demand and counterparty exposure. [08]

SEVEN QUESTIONS FOR EVERY AI INFRASTRUCTURE BORROWER

1 What percentage of capex is contractually committed versus discretionary?

2 How much is financed through recourse debt, asset-backed debt and leases?

3 What are the cash interest burden and nearest maturity walls?

4 Who bears the risk of construction delay and GPU obsolescence?

5 How concentrated are customer revenue and contracted backlog?

6 What financing depends on collateral values or availability?

7 Does equity remain available if debt pricing deteriorates?

SOURCES [05], [08], [15]

OPEN LEAD SOURCE / goldmansachs.com

PART II / PHYSICAL REALITY

Power is a credit variable

A financed data center without an energized connection cannot produce the planned cash flow.

Electricity availability can shift a project from an operating business into an expensive waiting room. The International Energy Agency estimated that around 20% of planned data-center projects could face delay if grid constraints are not addressed; this is a scenario estimate, not a confirmed default count. [25]

~20%

IEA estimate: share of planned projects potentially delayed [25]

4-8 yrs

IEA estimate: new transmission-line build time in advanced economies [25]

WHAT A LENDER SHOULD CHECK

01 GRID INTERCONNECTION

Queue status, signed agreement, energization date and upgrade costs.

02 POWER PURCHASE AGREEMENTS

Fixed-versus-indexed pricing, volume, tenor, curtailment, credit support and termination provisions.

03 CONSTRUCTION RISK

Who bears delay damages, power-shortfall exposure, idle hardware cost and extension risk?

04 COLLATERAL / DRAW CONDITIONS

Can debt be drawn before the site is energized? What happens to liens and reserves if commissioning slips?

Live illustration: Reuters reported on October 18 that Microsoft withdrew from a UK Nscale site project amid power-connection delays. The reported site-specific problem does not establish a failure of their wider partnership. [26]

SOURCES [25], [26], [24]

OPEN LEAD SOURCE / iea.org

PART II / CASE STUDY

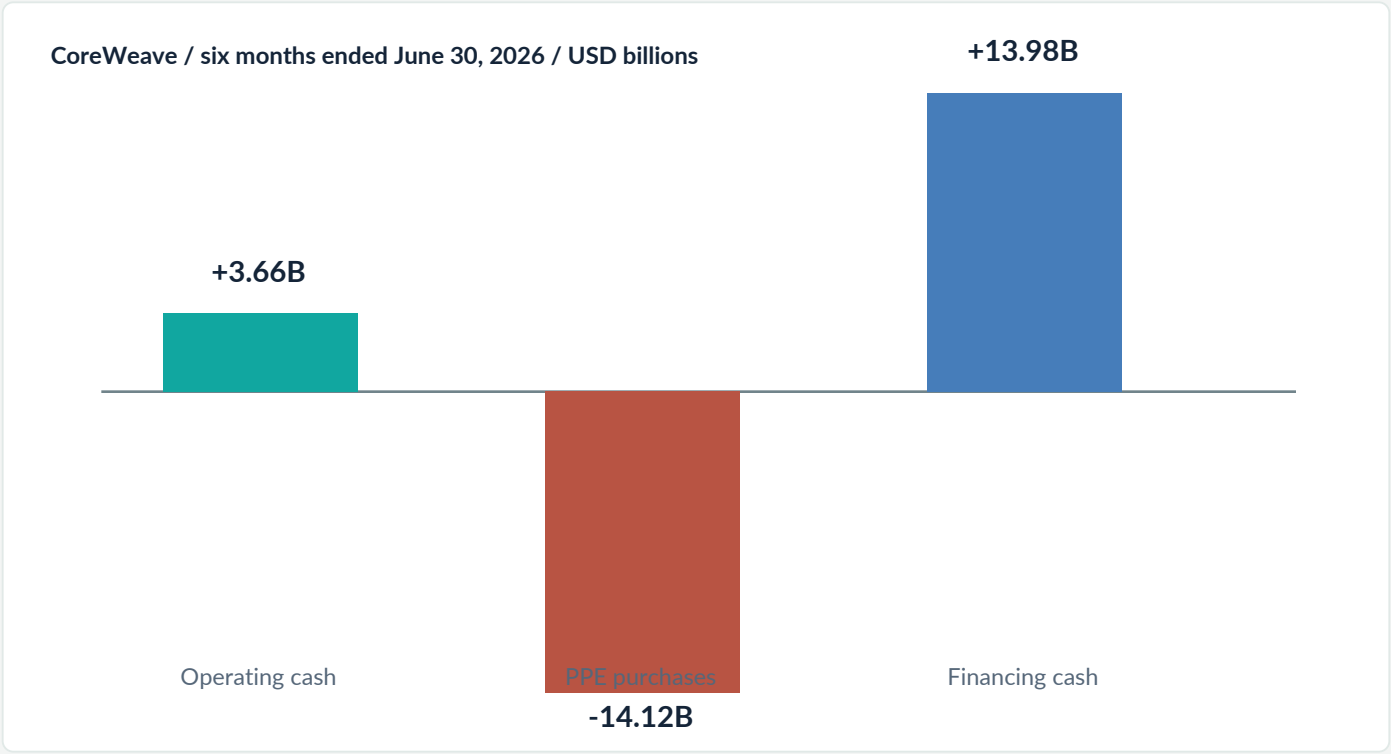
7. CoreWeave: growth and financing intensity coexist

Company financial statements reveal both demand and the capital structure needed to serve it.

$2.58B
Q2 2026 revenue [14]

$640M
Q2 net interest expense [14]

$35.6B
Debt at June 30, 2026 [15]



For the first six months of 2026, CoreWeave reported $3.66 billion of operating cash inflow, $14.12 billion of property-and-equipment purchases and $13.99 billion of net financing inflow. Q2 net loss was $626 million even as revenue grew to $2.575 billion; quarter-end company-defined revenue backlog was about $104 billion. The company also held $5.52 billion of cash and reported financing capacity. Its $9.69 billion deferred-revenue balance is a **service obligation**, not additional spendable cash; see the contract-accounting page. [14][15]

The chart depicts 6-month cash-flow statement line items, not GAAP free cash flow; additional investing cash flows are excluded from the red PPE column. Backlog includes future-revenue estimates subject to delivery and service-availability conditions; not unconditional collected cash. [14][15]

SOURCES [14], [15]

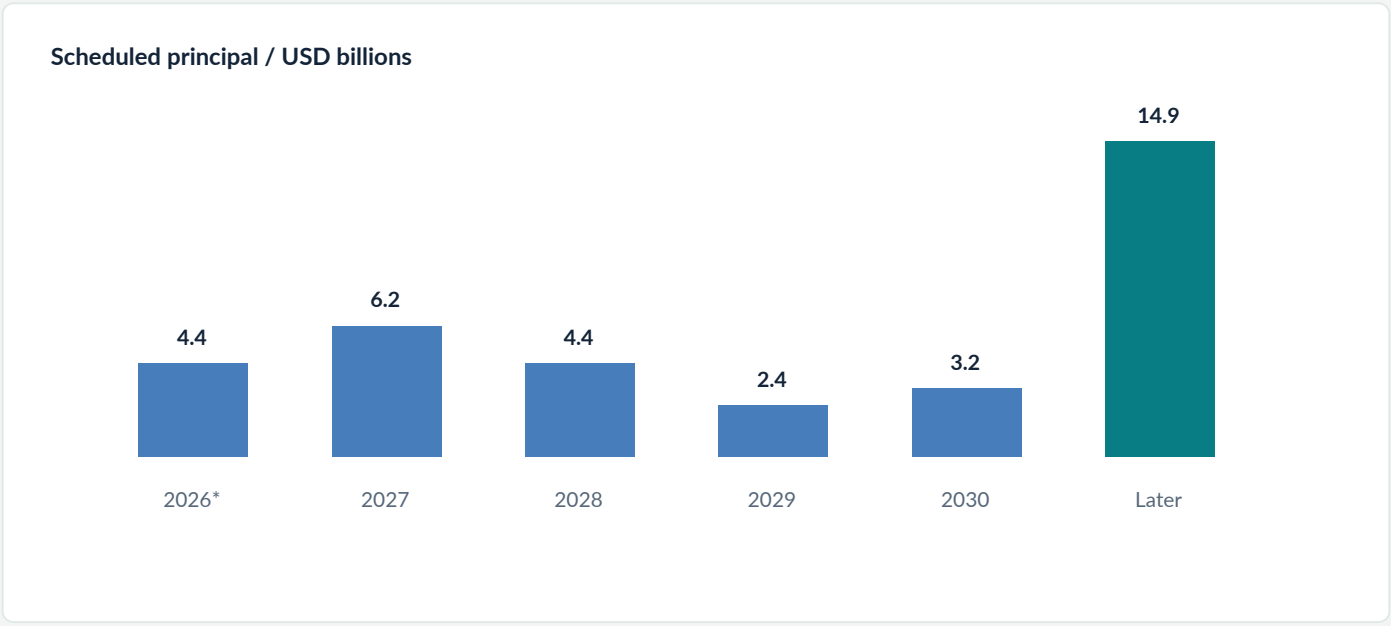
OPEN LEAD SOURCE / sec.gov

PART II / CASE STUDY

8. What the debt market is asking of AI infrastructure

The distinction between solvency, liquidity, and refinancing risk is crucial.

CoreWeave's June 2026 10-Q listed $35.551 billion of future principal payments, with approximately $4.413 billion remaining in 2026 and $6.184 billion in 2027. The same filing listed $15.553 billion of total liquidity including cash and availability under existing facilities; such availability is not unrestricted cash. The maturities are scheduled amounts, not a forecast of defaults. [15]



BOND-MARKET REPRICING

Reuters reported an AI-infrastructure CoreWeave bond yield move from roughly 9.7% to 15% during the October selloff, reflecting a sharp increase in demanded compensation. This is a reported episode, **not** a time-series constructed here. [16]

* 2026 means the remaining portion of 2026 as of June 30. Later includes 2031 and beyond. Sources: CoreWeave Form 10-Q and Reuters reporting. Financing stress can arise even when customers are growing. [15][16]

SOURCES [15], [16]

OPEN LEAD SOURCE / sec.gov

PART II / CONTRACT QUALITY

Backlog is not a bank account

Three different metrics should never be displayed as though they measured the same thing.

The legal character of a customer contract matters as much as its headline size. For CoreWeave, the $104B figure was **company-defined revenue backlog at June 30, 2026**, explicitly subject to service delivery and availability. Specific cancellation and payment remedies must be read in the underlying contracts, to the extent disclosed. [14][15]

CONTRACTED BACKLOG

Company-reported value of future revenue expected from customer contracts; definitions vary by issuer. May include remaining performance obligations and management estimates.

Binding extent: contract-specific. Delivery, availability, termination and variable-use conditions may apply.

TAKE-OR-PAY / MINIMUM COMMITMENT

A customer agrees to pay a minimum amount or reserved-capacity charge even if utilization is lower than planned. Collection remains subject to actual terms and creditworthiness.

Binding extent: a legal commitment if enforceable, but still subject to credit and performance risk.

REALIZED OPERATING CASH FLOW

Cash actually generated by operations in the reported period; includes working-capital effects, including movements in deferred revenue. It is not the same as revenue or free cash flow.

Binding extent: historical realized cash, not an estimate of future collection.

Contract terms and delivery conditions vary. Backlog is not unconditional take-or-pay or collected cash. [14][15]

SOURCES [14], [15] OPEN LEAD SOURCE / sec.gov

PART II / CONTRACT QUALITY

A contract is not cash; cash is not profit

A June 2026 case study in obligations, billings and available liquidity.

CoreWeave's June 30, 2026 Form 10-Q reports three materially different figures. They are not interchangeable, and they must not be added together. The SEC filing refers to the headline future-revenue measure as **remaining performance obligations (RPO)**. [15]

$103.7B

REMAINING PERFORMANCE OBLIGATIONS

Future contracted service value, including billed and unbilled obligations; expected recognition is conditional on delivery and possible credits.

$9.69B

DEFERRED REVENUE

Current plus noncurrent contract liabilities: consideration billed or received for performance not yet completed; not cash on hand.

$5.52B

CASH & EQUIVALENTS

Unrestricted reported balance-sheet cash at June 30, 2026. This is a stock of available cash, not the backlog or prepayment total.

THE WORKING-CAPITAL BRIDGE

For the first six months of 2026, deferred revenue provided a **$1.365B positive adjustment** in the operating cash-flow reconciliation. That helps explain cash timing, but it is not a second cash account or the same thing as the change in the balance-sheet liability. [15]

Credit implication: Advance billing or collection can support near-term liquidity while creating a duty to deliver computing capacity later. Compare RPO quality, deferred-revenue recognition, cash restrictedness, collateral liens and the future capex required to perform - without double-counting any customer dollar.

Figures: CoreWeave Q2 2026 Form 10-Q, balance sheet, Note 2 Revenue, and statements of cash flows. RPO includes both billed and unbilled consideration; the cash balance excludes separately disclosed restricted cash. [15]

SOURCES [14], [15]

OPEN LEAD SOURCE / sec.gov

PART III / MODEL ECONOMICS

9. Intelligence gets cheaper; the bill gets bigger

The debate is not price versus volume. It is the trajectory of spending per compute unit.

~1,000x

Reported fall in quality-adjusted AI capability price [09]

~90%

Open-source model price discount versus comparable closed models [09]

A 2026 Journal of Economic Perspectives study using OpenRouter data finds steep declines in prices for a fixed level of capability, rapid supplier entry and specialization. Falling prices are a gift to buyers; they are a trickier prospect for investors who underwrote yesterday's economics. These are market observations, not a direct forecast for each model's financial performance. Frontier models can still command substantial premiums for tasks where marginal quality matters. [09]

THE REVENUE IDENTITY

Revenue = billable work volume x realized unit price

Price falls 50%	Volume must double just to preserve token-billed revenue

Actual economics are more complex: cheaper models may require fewer inference operations, while reasoning and agents can increase token consumption per task. Price falls can be accompanied by enormous growth in total spending. Vercel's September data, for example, show both falling average price per token and sharply higher aggregate gateway spending. [11]

Source [09]: quality-adjusted OpenRouter comparisons, not measured price concessions in bespoke enterprise deployments. Regulated workloads, privacy, compliance, indemnity and fine-tuning can command premiums.

SOURCES [09], [11]

OPEN LEAD SOURCE / aeaweb.org

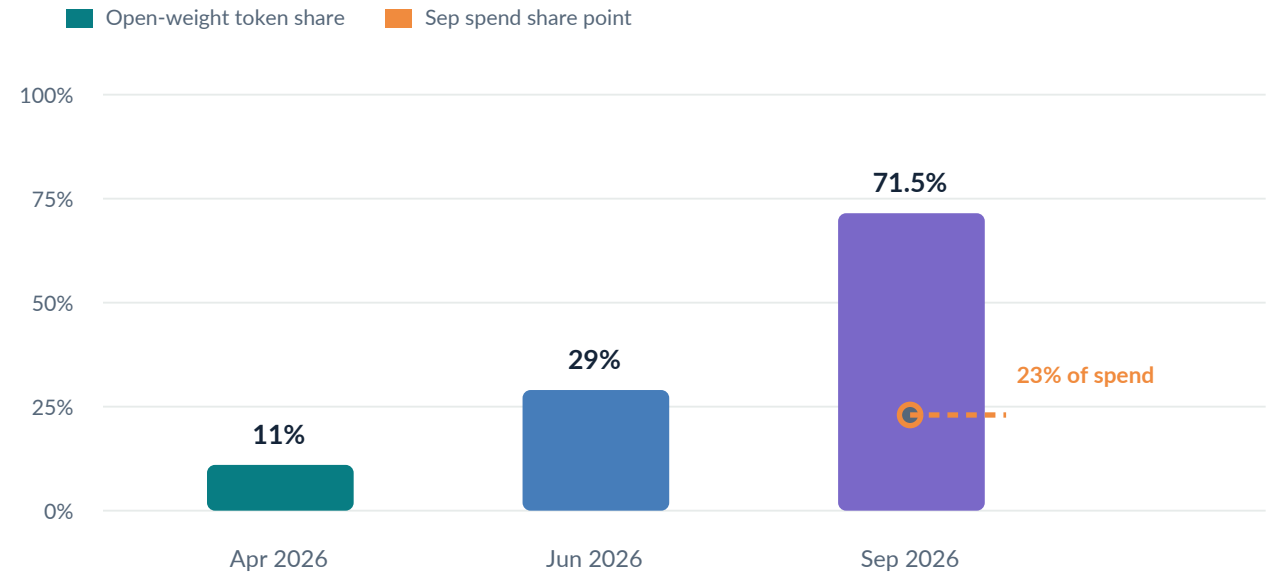
PART III / MODEL ECONOMICS

10. Open models win tokens, not all the dollars

But model volume and dollars tell very different stories.

On Vercel's AI Gateway, open-weight models rose from 11% of tokens in April 2026 to 29% in June and 71.5% in September. Yet September open-weight models represented approximately 23% of gateway spending. The sample reflects Vercel's own gateway, user mix and routing choices; it is not the entire enterprise AI market. [10][11]

VERCEL AI GATEWAY / TOKEN AND SPEND SHARES



WHAT THIS MEANS

Open-weight models can gain usage at low quoted cost, increasing buyer model-choice flexibility. Gateway token share is not enterprise revenue share.

WHAT IT DOES NOT MEAN

That frontier enterprise revenue is collapsing. Private Fortune 500 workloads, regulated data, custom hosting and negotiated contracts are poorly represented by public gateways.

Source: Vercel AI Gateway, measured April/June/September 2026. Token counts include cached and reasoning tokens; spending uses published list-price estimates. The October index revised classifications and earlier data may change. [10][11]

SOURCES [10], [11]

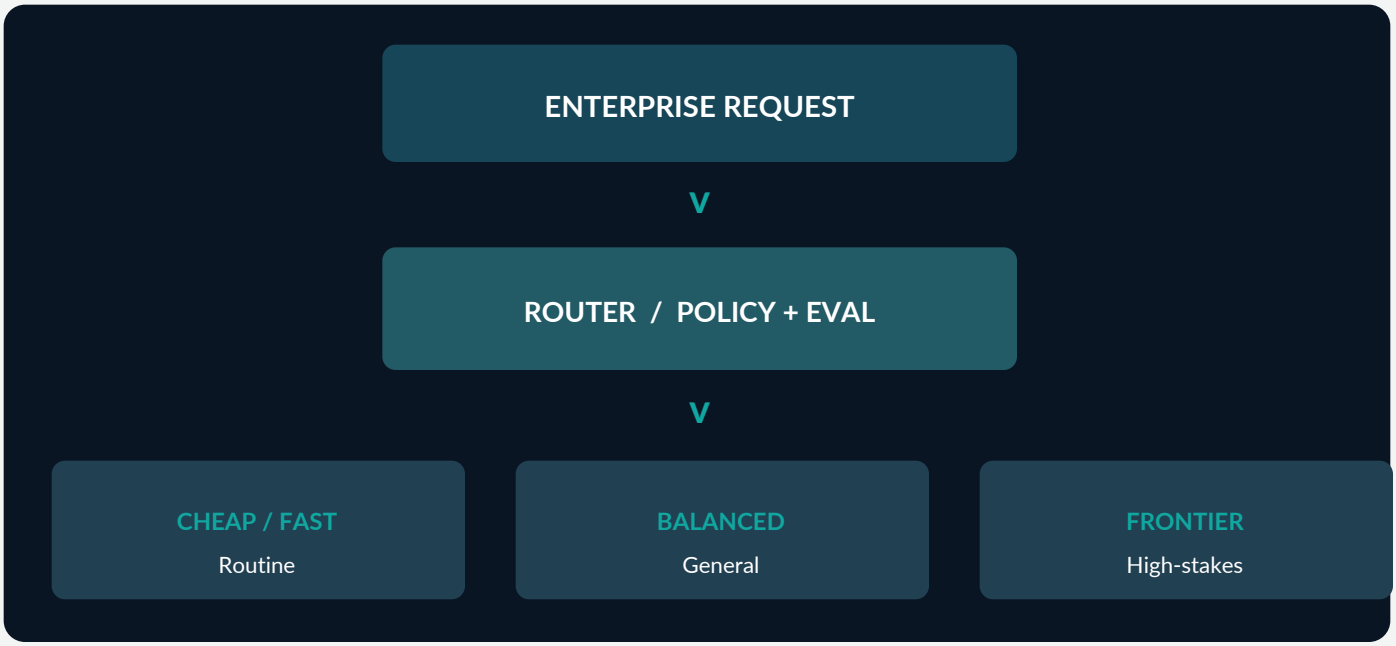
OPEN LEAD SOURCE / vercel.com

PART III / MODEL ECONOMICS

11. The model router is a new bargaining mechanism

Routing changes which supplier captures the next dollar of enterprise AI spending.

Task-based routing evaluates a request and sends it to a model meeting a chosen quality, cost, latency or availability target. AWS Bedrock and Microsoft Foundry offer routing functionality, with product-specific restrictions; this is evidence of a maturing market capability, not proof that every hyperscaler routes all requests at the physical network edge. [12][13]



Connected dot: the buyer can retain the workflow, guardrails and application while replacing the model underneath it. That can shift pricing power from model owners toward integrators, routers and customers. But it may also broaden adoption enough to expand the total compute market. The net effect on infrastructure returns is empirical, not automatic. [11][13]

SOURCES [11], [12], [13]

OPEN LEAD SOURCE / vercel.com

PART III / RETURN ON CAPITAL

12. What must a project earn to justify the buildout?

Hypothetical project economics, not an underwriting opinion on a specific issuer.

We model a hypothetical $100 billion infrastructure program with level annual cost recovery. The hurdle is the annualized investment cost plus annual operating expense. With a five-year economic life, 10% required return and $10 billion annual operating expense, the project needs about $36.4 billion of annual revenue before taxes and other omitted complexities. A shorter economic life creates a much higher threshold.

ANNUAL REVENUE NEEDED / $100B CAPEX + $10B ANNUAL OPEX

	3-year life	5-year life	7-year life
8% WACC	$48.8B	$35.0B	$29.2B
10% WACC	$50.2B	$36.4B	$30.5B
12% WACC	$51.6B	$37.7B	$31.9B

Base excludes new replacement or sustaining capex beyond the modeled initial $100B.

Method: Annual capital recovery factor = $r / [1 - (1+r)^{-n}]$. Required revenue = capex x factor + annual operating cost. This is an *unlevered economic hurdle*; the capital charge captures financing opportunity cost. Do not add the same interest expense again. Actual data-center underwriting needs separate asset vintages, utilization ramp, residual value, maintenance capex, power costs, taxes and contract terms.

Illustrative only. Adding truly incremental replacement/maintenance capex of $5B or $10B per year would raise the base $36.4B hurdle to $41.4B or $46.4B, provided those outlays are not already recovered in the initial $100B. GPU refresh cycles and residual values require separate vintage models. [15][21]

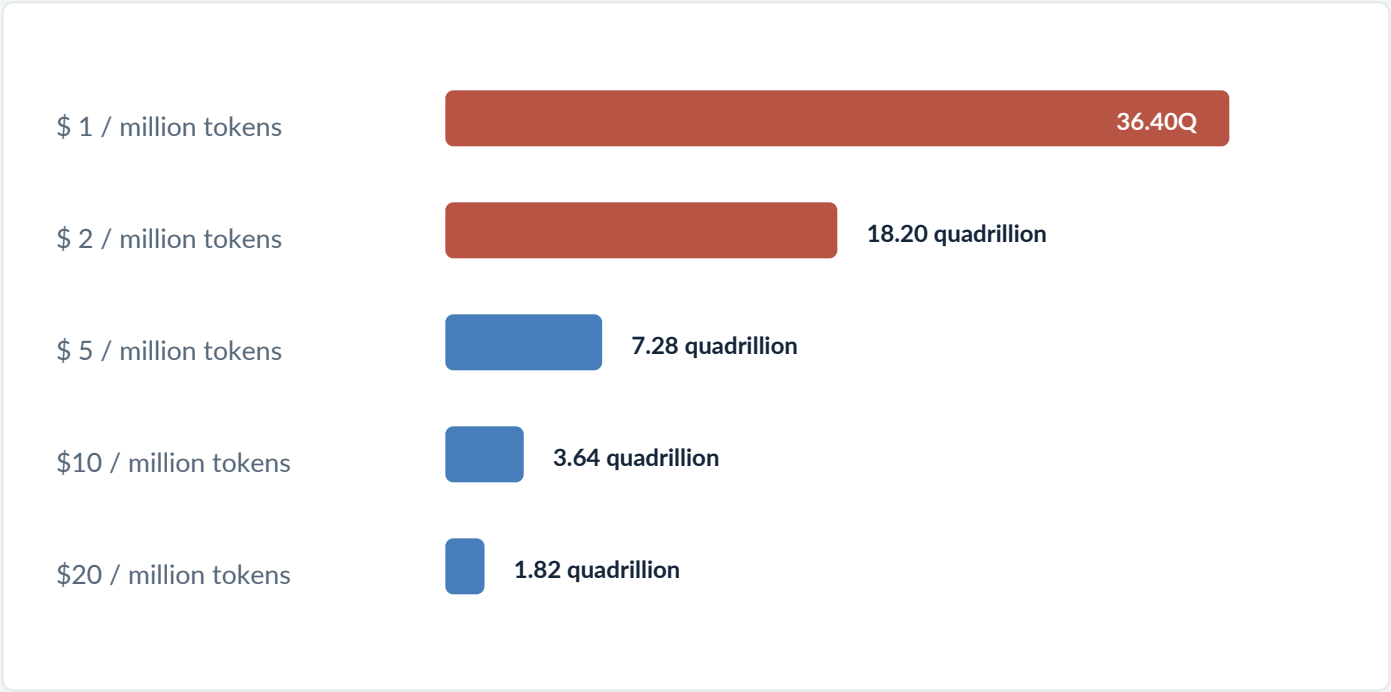
SOURCES [21] OPEN LEAD SOURCE / morningstar.com

PART III / RETURN ON CAPITAL

13. The implied usage hurdle: price is the denominator

The exercise exposes how much monetization must ultimately occur outside a simplistic token-billing model.

Take the preceding illustrative project's $36.4 billion annual revenue hurdle. If every dollar were collected as token charges at a blended realized revenue per million tokens, the billable volume requirement would vary dramatically with price. This is a **deliberately simplified sensitivity** - data centers are not all monetized through API tokens.



IMPORTANT

These are **not demand forecasts**. Input/output mix, discounts, non-token services, training, reserved capacity and infrastructure rentals make any single blended price inadequate for actual underwriting.

Illustrative math: US$36.4B revenue / (US$P per 1M tokens) = (36.4 / P) quadrillion tokens. Revenue is a cash-collection hurdle, not a measure of gross AI economic value.

PART IV / MARKET SIGNALS

14. The AI trade meets the bond market

Investors should compare bonds and stocks of the same economic risk, not just sector ETFs.

October reporting documents a sharp market repricing of some debt-funded AI projects. Bondholders collect coupons, not narratives. Reuters reported substantial CoreWeave bond weakness; the Financial Times described increasingly selective demand for AI project debt. This does not prove that CCC-rated credit in general is deteriorating faster than BBB credit: that requires a comparable dated spread series. [16][17][29]

GROUP A / CASH GENERATORS

Deep liquidity; diversified cash flows; discretionary capex; low dependence on refinancing. Principal risk: poor incremental returns and multiple compression. Examples to investigate: cash-rich cloud and platform incumbents.

GROUP B / EXTERNALLY FUNDED

Large contractual capex; elevated leverage; pledged collateral; uncertain conversion of backlog to free cash flow. Principal risk: cash shortfall, costly capital or dilution. Examples: leveraged neocloud and project-finance borrowers.

CROSS-ASSET TEST: AN IDENTICAL ISSUER

A credit-confirmed equity selloff is more informative than price weakness alone.

Bond yield / CDS	Does the price of default protection rise?
Equity implied volatility	Is equity financing becoming more punitive?
Debt maturity calendar	When does project cash need to refinance?
Realized FCF / backlogs	Is contracted growth turning into cash?

This report does not contain independently reconstructed daily market time series from a licensed feed. See monitoring framework for exact future series and lender metrics, and sources [22][31] for CCC and BBB index definitions.

SOURCES [16], [29], [22], [31]

OPEN LEAD SOURCE / reuters.com

PART IV / MARKET SIGNALS

15. Warning lights, not yet a fire alarm

The proper framing is convergence of vulnerabilities, not a claim that all lights are red.

A broad risk event needs more than unsettling headlines: typically a catalyst, leverage or constrained loss absorption, and a channel through which trouble travels. We see evidence of risk repricing at the weaker end of credit, while several system-wide cushions still appear intact. The grid below classifies observations as of this report's information cut-off.

QUALITATIVE RISK MONITOR

Editorial classification, not a numerical risk score

LOWEST-RATED CREDIT CCC spreads diverging while broader credit holds up	ELEVATED
AI INFRASTRUCTURE FUNDING Selective repricing of leveraged borrowers	ELEVATED
PRIVATE-CREDIT LIQUIDITY Some vehicles faced redemption limits	WATCH
INSURER ASSET COMPLEXITY Illiquidity and valuation transparency issues	WATCH
INFLATION AND TREASURIES 3.7% headline CPI; yield shocks still plausible	ELEVATED
BANKING SYSTEM Fed says banks remain sound and resilient	BUFFER

Upgrade-to-red test: repeated CCC widening accompanied by BB/BBB deterioration; worsening default and nonaccrual statistics; sizable confirmed private-credit writedowns; impaired insurer capitalization; funding withdrawals; and sustained capex cuts. **Downgrade-risk test:** profitable AI monetization, stable defaults, lower real yields and project-level cash generation.

SOURCES [03], [16], [18], [19]

OPEN LEAD SOURCE / bls.gov

PART IV / CREDIT SHADOW SYSTEM

16. Private credit: an alternative transmission channel

The concern is underwriting, liquidity and how quickly losses become visible - not a claim that every private loan is impaired.

$1.4T

US private-credit loans; latest Fed estimate [18]

~10%

Share of US nonfinancial corporate debt [18]

The Fed estimated private credit at roughly $1.4 trillion as of the second half of 2025, or about 10% of US nonfinancial corporate debt. The universe is heterogeneous: direct senior secured loans, asset-based lending, specialized finance, real assets and other strategies have very different risks. Some semi-liquid vehicles restricted redemptions amid elevated withdrawal requests; these are fund-level liquidity mechanisms, not defaults by all portfolio borrowers. [18]

DIRECT AI EXPOSURE

Lenders may finance data-center sites, equipment, acquisitions or companies with large fixed obligations. Loan performance depends on contracted cash flow, appraisal discipline and collateral liquidity.

AI DISRUPTION EXPOSURE

A lender may also own loans to mature software or services companies whose profitability could be pressured by AI competition. The same technology can generate new loans and impair older ones.

THE FIVE CREDIT QUALITY METRICS

01 Nonaccrual percentage
02 PIK interest share
03 Debt-service coverage / EBITDA adjustments
04 Fair-value marks versus comparable public debt
05 Amendment, extension and refinancing frequency

Source: Federal Reserve May 2026 Financial Stability Report. Private lending volumes and loan valuation conventions have definition and timing limitations; individual managers may differ materially. [18]

SOURCES [18], [20]

OPEN LEAD SOURCE / federalreserve.gov

PART IV / CREDIT SHADOW SYSTEM

17. Insurers: patient capital, less patient arithmetic

Patient liabilities help. But long duration does not make an asset worth what the ledger says it is.

Insurers are important buyers of private credit and structured assets. The Fed reported that leverage at the largest life insurers remained in the upper quartile of its historical distribution. The NAIC has adopted enhanced year-end 2026 private-credit reporting and stricter private-rating-rationale disclosure requirements; this improves the information expected to become available, not the precision of current estimates. [19][20]

HOW THE CAPITAL CHAIN WORKS



KEY IDEA: patient liabilities can stabilize holdings, but opaque marks and private ratings still deserve scrutiny.

POTENTIAL WEAK LINKS

Infrequent fair-value marks, affiliated asset origination, privately assigned ratings, reinsurance structures, concentrated sponsors and surrender-sensitive liabilities deserve asset-level examination.

STABILIZING DIFFERENCES

An insurer is not a deposit-funded bank. Many liabilities are long dated, and capital requirements, reserve regulation and cash matching can substantially reduce forced-sale risk.

No evidence here establishes that a named insurer is insolvent or that all privately rated assets are misrated. Company exposure tables require statutory filings, rating detail and reconciliation of accounting classifications.

SOURCES [19], [20]

OPEN LEAD SOURCE / federalreserve.gov

PART IV / INSURER LOOK-THROUGH

The surrender option matters

What is on the liability side determines how patient an insurer can afford to be.

Life insurers do not resemble banks with checking accounts. But some liabilities can accelerate when policyholders withdraw, surrender or exchange contracts. The stress scenario is a mismatch: obligations become payable sooner than private loans can be sold at reasonable prices. The Chicago Fed described why life insurers hold liquid assets against surrender-sensitive liabilities. [28]

FIXED DEFERRED ANNUITIES

Policyholders may have contractual surrender and partial-withdrawal rights. Surrender charges, market-value adjustments and guarantees can moderate but not eliminate liquidity risk. Rate-sensitive lapses deserve scenario analysis.

TRADITIONAL WHOLE LIFE

Cash value and policy loans can permit outflows, but protection motives, guarantees and product design often make behavior different from deposit-like savings or fixed annuities. Claims and lapses still matter.

STRESS TRANSMISSION: A LIABILITY / ASSET MISMATCH

1 POLICYHOLDER BEHAVIOR	Higher credited alternatives or confidence shocks increase surrender requests.
2 LIQUIDITY REQUIREMENT	Cash, saleable bonds, contingent borrowing and reinsurance terms determine flexibility.
3 PRIVATE-ASSET REALIZATION	Illiquid loans may require discounts, slower sales or asset-level pledges.
4 CAPITAL AND DISCLOSURE	Impairments or forced sales can pressure statutory ratios and ratings.

NAIC year-end 2026 disclosures are not yet available; surrender risk depends on each insurer and policy design. [20]

SOURCES [28], [20], [19]

OPEN LEAD SOURCE / chicagofed.org

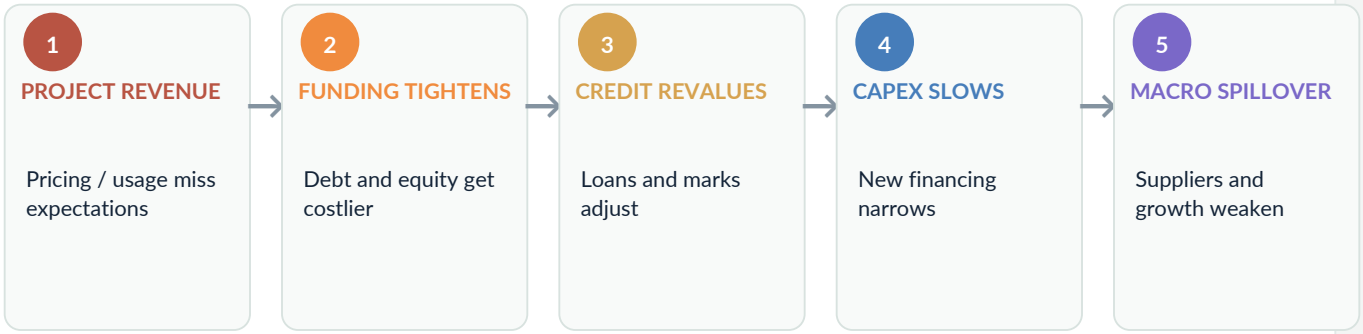
PART V / TRANSMISSION

18. The transmission chain: from project economics to markets

Losses become systemic only when there is a path that forces another balance sheet to react.

A serious warning needs a mechanism that can be disproved. Otherwise it is just an ominous adjective in a good suit. The downside chain is explicit: lower-than-expected project revenue, financing stress at marginal borrowers, credit revaluation, reduced new lending, lower capital spending and weaker growth. Every arrow is conditional - strong liquidity and committed financing can break it.

A SIMPLER MAP OF TRANSMISSION



Containment channels: profitable anchor customers, long contractual commitments, reserves, secured collateral, patient insurer liabilities, ample bank capital and lower risk-free yields.

SOURCES [07], [08], [18]

OPEN LEAD SOURCE / imf.org

PART V / RISK TIMING

The speed of the transmission

Illustrative sequences, not a calendar forecast for the next credit event.

Markets can reprice a bond in an afternoon. A privately held loan may not be marked down until the next valuation cycle. A data center financed with committed loans may continue building through both. Calendar time is therefore another form of liquidity risk.

DAYS / WEEKS

MARKET SIGNAL

Bond prices, CDS and equity funding react to new information quickly.

1-6 MONTHS

FUNDING TEST

Refinancing terms, draw conditions, covenant headroom and construction delays may bite.

3-12+ MONTHS

PRIVATE MARK

Quarterly appraisals, amendments, NAV and statutory disclosures may recognize pressure later.

6-24+ MONTHS

ECONOMIC SPILLOVER

Canceled projects, supplier orders and employment effects take longer to propagate.

THE CLOCK CAN SPEED UP OR STOP

The bands are **illustrative monitoring windows**, not historical averages or predictions. Distress can jump phases when borrowing covenants are triggered, secured funding vanishes, or customers terminate; committed liquidity, hedges, refinancing and strong anchor customers can break the chain.

Analyst rule: attach an event date, an observation date and a reporting lag to every red flag. Never present a quarterly private-credit mark as if it were a daily traded quote.

SOURCES [15], [18], [19], [29], [30]

OPEN LEAD SOURCE / sec.gov

PART V / TRANSMISSION

19. The two-sided AI credit portfolio problem

New infrastructure credit and legacy software credit can deteriorate for opposite reasons.

The same private-credit manager could lend to the new AI value chain while owning loans to businesses threatened by it. The first book may suffer from underutilized infrastructure; the second from lost customers, price compression or lower renewal rates as AI automates prior services. That is a conceptual portfolio-concentration issue, not a factual claim about any specific manager's holdings.

BOOK 1 / BUILDERS

Direct exposure: GPU lessors, data centers, construction, AI-linked acquisition debt. **Shock:** realized revenue or asset values disappoint. **Financial mechanism:** refinancing and collateral coverage deteriorate. **Indicator:** liquidity runway and interest coverage.

BOOK 2 / INCUMBENTS

Indirect exposure: traditional software, outsourced services, data vendors and automation-sensitive sectors. **Shock:** AI competition disrupts customers or pricing. **Financial mechanism:** EBITDA and debt coverage decline. **Indicator:** ARR retention and covenant headroom.

What would make this systemic? Correlation across portfolios, leverage at the fund level, banking relationships that supply facilities, insurer demand for debt assets, and forced financing retrenchment. What could prevent contagion? Highly collateralized positions, different loan maturities, differentiated customers, and low overlap across underlying borrowers.

THE RESEARCH GAP / Publish a look-through portfolio map linking lenders, insurers and final borrowers. Without borrower-level positions, assertions of correlated AI exposure remain hypotheses.

SOURCES [08], [18]

OPEN LEAD SOURCE / imf.org

PART V / HISTORY

20. History rhymes; it seldom photocopies

A new technology and a possible capital-allocation mistake can coexist.

1999–2002

WHAT RHYMES

Real internet adoption; telecom and technology overcapacity; equity value destruction.

WHAT DIFFERS

The modern AI cycle has larger cash-generative incumbents and different demand curves.

2006–2008

WHAT RHYMES

Early deterioration in low-quality credit and transmission through leverage and structured claims.

WHAT DIFFERS

Current bank capital and the collateral/reinsurance structures are not identical to pre-GFC housing finance.

2021–2022

WHAT RHYMES

Long-duration growth assets repriced under higher discount rates; speculative funding became scarce.

WHAT DIFFERS

The present debate includes tangible infrastructure and energy commitments, not only software multiples.

Historical comparisons are analytical analogies. They do not imply a probability of repeating prior recessions, defaults or market drawdowns.

PART V / COUNTERCASE

21. The evidence against a broad crisis is substantial

The strongest counterargument is not optimism; it is financial capacity and demand elasticity.

The IMF's October 2026 financial stability assessment describes resilient markets supported by growth and corporate earnings, even as it warns of elevated vulnerabilities. The largest AI platform companies are generally profitable and may have the internal cash flow to sustain spending despite disappointing near-term returns. Banks also remain comparatively resilient. [07][08][19]

1 / Lower prices could increase the addressable market

The elasticity of demand for autonomous agents, enterprise automation and consumer uses could exceed efficiency-driven declines in compute per task.

2 / Infrastructure scarcity can persist

Power, grid connections, high-bandwidth memory and commissioning delays can protect contracted, energized capacity even as they strand late projects.

3 / Contracting and balance sheets matter

Long-duration purchase commitments, secured lending and profitable anchor customers can limit early cash-flow volatility.

4 / Selective defaults are not a systemic crisis

CCC borrowers are a small, risky subset of corporate credit. Wider BBB spreads, banking losses and private-market marks are needed for a contagion thesis.

SOURCES [07], [08], [11], [19]

OPEN LEAD SOURCE / imf.org

PART V / COUNTERWEIGHTS

A barbell, not a monoculture

Balance-sheet strength and state-backed capital can absorb shocks that sink marginal projects.

Treating every participant in AI as equally fragile is a category error. Cash-generative hyperscalers can defer construction, fund setbacks internally or renegotiate suppliers. Highly leveraged, single-purpose builders may have no such escape. Yet even state money is not a substitute for eventual economic utility.

END A: LIQUID PLATFORMS

Broad business cash flow, access to debt markets, discretionary capex and established customers can absorb forecast misses. The relevant investor question may be returns on capital and valuations more than survival.

END B: LEVERAGED BUILDERS

High initial costs, equipment replacement, site commissioning and secured debt concentrate downside. Project-level cash collection may lag contracted demand for years, and external credit may not remain cheap.

A THIRD CAPITAL SOURCE: SOVEREIGN AI

State-sponsored AI strategies, preferential energy access and national investment vehicles can extend funding horizons beyond ordinary private-sector return targets. Reuters reported in May 2026 that Saudi-backed Humain sought financing for data-center projects worth at least 20 billion riyals. Such commitments may stabilize construction demand, but they do not establish project profitability or guarantee repayment. [27]

Net assessment: strong sponsor liquidity and policy support cushion systemic spillovers; they can also defer recognition of low-return capital allocation. Monitor whose balance sheet bears each incremental dollar.

SOURCES [27], [08], [30]

OPEN LEAD SOURCE / reuters.com

PART V / SCENARIOS

22. Three possible paths for the next 6–12 months

These are conditional operating regimes, not probability-weighted forecasts.

BULL / PRODUCTIVITY CATCHES UP

Enterprise AI spending and utilization accelerate; credit spreads stabilize; hyperscalers monetize more workloads; weaker borrowers refinance.

Confirmation: Watch: unit economics, new AI revenue, stable CCC/BBB spreads, lower real yields.

BASE / SELECTIVE REPRICING

Profitable platforms continue investing but lending discriminates more sharply among debt-dependent providers. Stock performance and credit differ materially by cash-flow quality.

Confirmation: Watch: widening issuer dispersion, restrained capex growth, scattered private-credit stress.

BEAR / CREDIT-LED CAPITAL RETRENCHMENT

Underutilized capacity and tighter credit compress capex, hitting suppliers and growth. Equity and weaker-priority claims usually absorb loss first; secured recovery still depends on collateral value.

Confirmation: Watch: CCC spread acceleration into BB/BBB, failures to refinance, declining contracted utilization.

Probabilities should be assigned only after the investment committee agrees on quantitative thresholds, data lags, credit-cycle priors and the relevant forecast horizon. Descriptive scenarios avoid false precision in this report.

PART V / INVESTOR FRAMEWORK

23. Trade the balance-sheet structure, not a slogan

A quality rotation and a systemic crash require different portfolio responses.

CASH GENERATORS

Favor: Positive FCF through cycle; manageable leverage; customer pricing power; capex optionality.

Beware: Sensitivity to AI valuation risk remains even when solvency risk is low.

HIGH-GRADE CREDIT

Favor: Short/intermediate duration, prudent spread compensation, transparent fundamentals.

Beware: Watch real yields and Treasury volatility; high grade can lose value in a rates shock.

SPECULATIVE AI INFRASTRUCTURE

Favor: Funding runway, ranking of debt claims, lien scope and priority, customer guarantees, power access.

Beware: Equity and junior unsecured claims generally absorb losses first. Senior secured recoveries still depend on collateral value, prior liens and enforcement costs.

PRIVATE MARKETS / INSURANCE

Favor: Liquidity matching, reserve adequacy, private rating rationale, affiliated exposure.

Beware: Reported investment grade does not remove the need for look-through credit analysis.

Illustrative framework only. Security selection requires valuation, liquidity, taxes, mandate constraints and suitability analysis; this report offers no personalized allocation or trade recommendation.

PART V / MONITOR

24. The weekly risk monitoring checklist

Require several corroborating indicators before changing the risk assessment.

AREA	MEASURES / SOURCES	CADENCE
CREDIT	CCC vs BB/BBB OAS; defaults; distressed exchange rate ICE/FRED, ratings agencies	Weekly
AI FINANCING	Debt spreads; project delays; contracted vs realized cash Reuters, filings, pricing feeds	Weekly
AI MONETIZATION	Utilization; backlog conditions; cash collections; FCF Quarterly reports, disclosure	Quarterly
MODEL ECONOMICS	Realized price/token; open-weight share; routing share Gateway datasets, lab rate cards	Monthly
PRIVATE CREDIT	Nonaccruals, PIK, amendments, NAV, redemptions BDCs, funds, Fed reports	Quarterly
INSURANCE	Surrender risk, liquid assets, private-rating rationale NAIC / statutory filings	Quarterly
MACRO	CPI, employment, GDP investment, real yields BLS, BEA, Treasury	Monthly

SOURCES [22], [31], [15], [18], [20]

OPEN LEAD SOURCE / fred.stlouisfed.org

THE CONCLUSION

The bond market asks a different question than AI does

The technology can succeed while parts of the financing fail to earn their keep.

The technology need not disappoint for some of its financiers to do so. Companies are using far more inference, paying for agents and expanding workflows. But technological adoption does not settle the question of returns to capital. Financial claims are fixed in dollars and dates. Their repayment depends on margins, utilization and competitive pricing that remain uncertain.

Three observations make this period worth careful attention. AI-related investment has materially influenced recent GDP growth. Model alternatives and routing have increased purchasing flexibility, even while total AI consumption grows. And at the weakest end of corporate finance, investors are discriminating more aggressively among issuers with different balance sheets. [04][09][11][16]

We do not infer from these observations that a 2008-style crisis is imminent. Life-insurance liabilities are not conventional runnable deposits; the banking system has improved defenses; and cash-rich technology incumbents can absorb considerable reinvestment risk. Instead, the key downside hypothesis is **a financing shock at the margin that becomes macro-relevant if it curtails spending and credit provision**. [07][18][19]

THE INVESTMENT QUESTION

The most consequential AI trade may not be long AI or short AI. It may be long durable cash flow and short unjustified dependence on future capital.

ZEFFER VIEW / The next decisive evidence will come from credit migration, issuance terms, realized project cash flow and the spread between infrastructure growth and end-customer value captured. Until then, this is a developing risk map, not a completed verdict.

SOURCES [07], [08], [11], [18]

OPEN LEAD SOURCE / imf.org

APPENDIX A / METHODOLOGY

Definitions, caveats and calculation notes

A rigorous report is explicit about the things it does not know.

INFORMATION CUT-OFF

Public filings and sources dated on or before October 21, 2026. Q3 GDP is scheduled for October 29, so Q2 is the latest reported GDP data used here. Financial-market moves are attributed to reporting, not independently rebuilt price series.

GDP INTERPRETATION

Contributions from equipment, software, R&D; and construction reflect broad economic categories. They include non-AI expenditure, and annualized growth contributions differ from shares of GDP.

MODEL PRICING AND OPEN WEIGHTS

Quality-adjusted pricing depends on benchmarks. Vercel uses gateway-only traffic and estimated list-price spend, and OpenRouter skews toward developer-style workloads; neither describes all private, regulated enterprise deployments.

CREDIT MARKET SIGNALS

CCC/BBB are rating strata, not a claim that all AI-related issuers are CCC. Bond yields include rates, credit, liquidity and technical factors. No fabricated historical spread series is drawn.

PROJECT-RETURN SENSITIVITY

The $100B capex project is hypothetical. The base uses $10B annual opex with no incremental sustaining capex; the footnote shows additional $5B/$10B nonoverlapping scenarios. GPU refresh, salvage value, construction ramps and financing structures require issuer-level models.

INSURER EXPOSURE

Fixed annuities, traditional life and pension-related liabilities differ in surrender behavior. Holdings, capital and private ratings require insurer-level reconciliation; no specific impairment is asserted.

CASH-FLOW AND LIEN PRIORITY

Deferred revenue, RPO and unrestricted cash are distinct measures and may overlap economically. Equity, unsecured and secured creditor recoveries depend on contractual ranking, collateral, law, and costs; recovery order is not guaranteed.

Distribution note: Independent general research; not an offer, recommendation, or individualized investment advice. Third-party information has not all been independently verified. Financial statements, ratings, prices and forecasts change. Independent legal/compliance review is advisable before external client distribution.

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Primary research & reference documents

Numbered references are used throughout the text; hyperlinks open original source pages.

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Citation policy: Each bracketed ID maps to one source. Company metrics use filings; private market observations are explicitly attributed to news reporting. A link is provided for verification, not as a claim of Zeffer-independent certification.

ZEFFER / NEXT STEPS

Continue the research

Turn this analysis into a disciplined monitoring program - without confusing research with investment advice.

RESEARCH SUPPORT

Discuss tailored research questions with Zeffer Business Intelligence: credit-market monitoring, AI project underwriting, corporate balance-sheet comparisons, source validation and scenario work.

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