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Transformation

Can the AI buildout keep building?

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Key takeaways

- The AI infrastructure buildout remains on solid footing, with substantial room for additional investment, but it is entering a more mature phase where physical constraints such as power, labor and supply chains may increasingly shape the pace of expansion.
- Capital remains available to fund AI-related projects, but investors are becoming more selective, placing greater emphasis on project economics, monetization pathways and evidence of future returns.
- The long-term success of the AI buildout likely will depend less on how much is spent and more on whether that spending translates into productivity gains and sustainable economic value.

The buildout behind the buzz

AI often shows up in public conversation as a software story: chatbots, new search tools, coding assistants and image generators. But behind those applications is a much more physical story. AI depends on data centers, chips, servers, land, transmission lines, cooling systems, power availability and the capital needed to bring all of that online. The result is one of the most visible investment waves in the US economy today.

That visibility has naturally raised a bigger question: is the AI buildout happening too fast? According to BofA Global Research, AI-led capital spending is large and accelerating, but current levels are not yet outside historical precedent when scaled to the size of the economy (Exhibit 1). The nuance is that the economy did not enter this period from a low base. Business investment was already elevated before AI spending began to accelerate, which means the margin for error may be thinner than in earlier cycles.

According to BofA Global Research, that distinction matters. A spending boom does not become unsustainable simply because it is large. It becomes vulnerable when the investment being made runs ahead of the cash flows, utilization and productivity gains needed to support it. In other words, the AI question is not only about how much gets built. It is about how quickly the buildout turns into useful capacity, real demand and measurable economic value.

A familiar pattern, with a different starting point

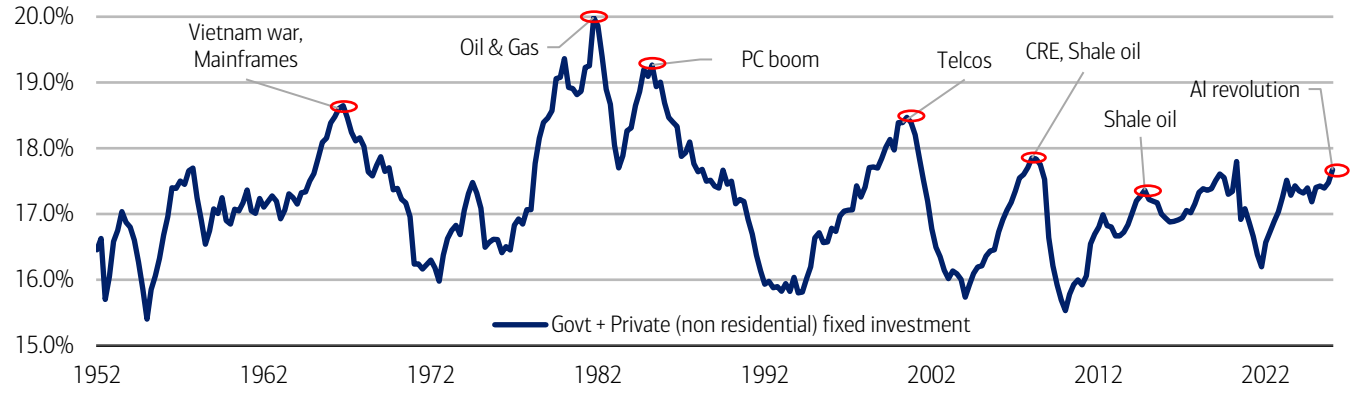
Major technologies often require major infrastructure before their full economic impact becomes visible. Railroads, telecommunications networks, energy infrastructure and earlier computing waves all demanded large upfront investment before the broader benefits were clear. Some of those cycles created durable gains. Others left behind excess capacity, financial stress and a long period of retrenchment.

The historical comparison is helpful because it separates excitement from scale. BofA Global Research notes that aggregate US non-residential fixed investment, including both public and private investment, has generally moved within a relatively narrow range over time and currently sits at 17.7% of GDP, slightly above its long-term average but still within previous peaks (Exhibit 1). Stripping out the government contribution, private non-residential investment is closer to the top of its historical range at 14.1% of GDP. That makes today's cycle unusual: the AI spending wave is building on an economy that was already investing heavily.

History also suggests that the size of an investment wave alone does not determine its success. Earlier infrastructure and technology buildouts ultimately proved durable when productivity gains, earnings growth or broader economic benefits emerged quickly enough to justify the spending. Periods where investment outpaced demand or profitability tended to face greater strain.

The implication is not that the buildout must stop. It is that the economy may have less cushion for cost overruns, delayed monetization or slower-than-expected productivity gains. Earlier cycles that began from a lower investment base had more room to absorb mistakes. This cycle begins on higher ground.

Exhibit 1: Aggregate US non-residential fixed investment currently sits at 17.7% of GDP
Aggregate US non-residential fixed investment, % of GDP



Source: BofA Global Research, US Bureau of Economic Analysis (BEA)
Note: PC = Personal computer, Telcos = Telecommunications, CRE = Commercial real estate, Govt = Government

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Capacity remains, but it is not unlimited

The broader economy still appears capable of supporting additional AI-related capital spending. According to BofA Global Research, the US could absorb roughly $400 billion in additional annual capital expenditure (capex) before reaching historical peaks, with estimates rising toward $700 billion in a more expansive scenario. That helps explain why the AI buildout can continue even as concerns about scale grow.

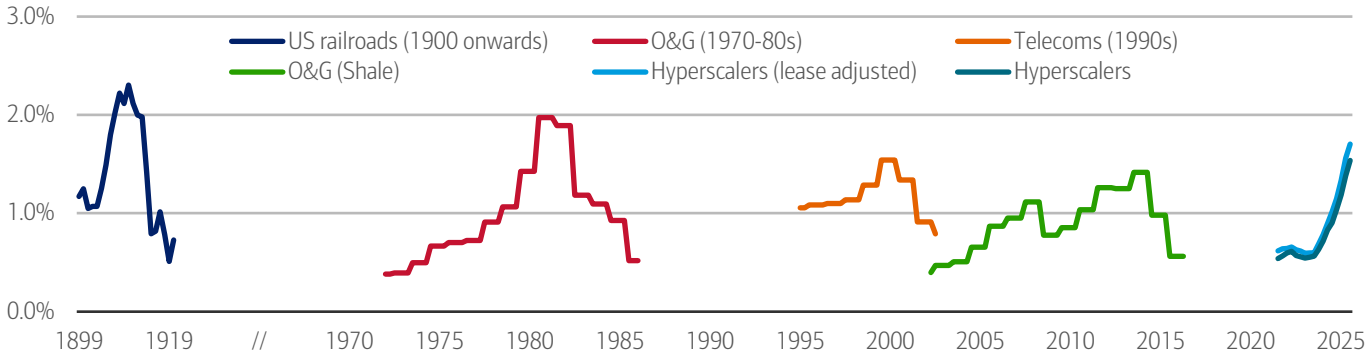
But there is a difference between what the economy can absorb and what one concentrated set of industries can sustain. When investment is spread across sectors, demands on labor, materials, power and capital markets is more diversified. When spending is concentrated, pressure can build faster. AI infrastructure requires not only money but also physical inputs: available land, construction labor, power connections, cooling capacity and equipment supply chains.

This is where the discussion shifts from dollars to constraints. Companies may have the financial capacity to spend, but projects can still face delays or higher costs if real-world bottlenecks emerge. The AI buildout ultimately depends on two forms of capacity at once: financial capacity to fund the projects and physical capacity to execute them.

The sector view: Late-cycle optics, mid-cycle fundamentals

Broader economic capacity does not mean every AI-related sector has the same runway. The picture looks different when spending is concentrated among a relatively small group of hyperscalers and infrastructure providers. By one measure, AI infrastructure spending relative to GDP is already near levels that have historically marked the upper end of concentrated investment cycles, according to BofA Global Research. By that lens, the cycle appears more mature, making resource constraints an increasingly important watchpoint (Exhibit 2).

Exhibit 2: Hyperscaler capex is late cycle, measured at a macro level
Sector capex as % of US GDP through each cycle's speculative build phase



Source: BofA Global Research, BEA, and National Bureau of Economic Research (NBER), Table C-1, Value of Road and Equipment, Capital Formation, and Capital Consumption, Steam Railroads, Annual Data, 1870–1950. In *Capital in Transportation, Communications, and Public Utilities: Its Formation and Financing*, by Melville J. Ulmer. Studies in Capital Formation and Financing, National Bureau of Economic Research. Princeton, NJ: Princeton University Press, 1960. And Table R-2: Flow of Goods to Consumers, Net National Product, and Gross National Product, Three Variants, 1929 Prices, 1919–1955. Table R-22: Annual Estimates of National Product and Major Components, Variants I and III, Regression Series, 1929 Prices, 1889–1918. Both tables in *Capital in the American Economy: Its Formation and Financing*, by Simon Kuznets and Elizabeth Jenks. Studies in Capital Formation and Financing, National Bureau of Economic Research. Princeton, NJ: Princeton University Press, 1961.
Note: O&G = Oil and gas, Telecoms = Telecommunications

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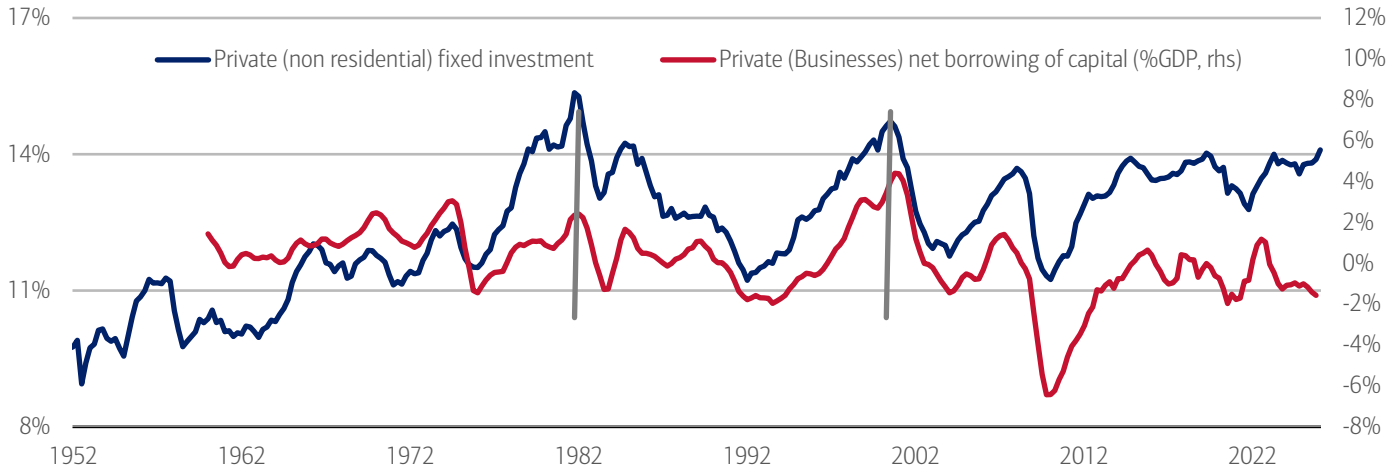
Yet the picture changes when spending is measured against the sales and earnings of the companies doing the investing. On those metrics, the cycle appears less stretched. BofA Global Research estimates a wide range of possible additional annual spending capacity, including roughly $85 billion through a macro-constraint lens, roughly $230 billion using a capex-to-sales lens and roughly $250 billion to $370 billion using a capex-to-earnings lens. The range is wide because each lens answers a different question.

The macro view asks how much of the economy's resources one investment theme can absorb. The company-level view asks whether the businesses behind that spending can support it with their own revenues and cash generation. Both perspectives are useful. Together, they suggest that the AI buildout may still have room to grow, but that the next phase is likely to be more constrained, more expensive and more dependent on proof points.

Funding: Available, but less automatic

Large infrastructure cycles do not move on ambition alone. They need capital. So far, the AI buildout has continued to attract financing through multiple channels, but the tone of the market has changed. The early phase was characterized by enthusiasm and broad investor willingness to fund projects linked to AI infrastructure. More recently, markets have begun to differentiate more sharply between issuers, project structures and expected cash-flow support (Exhibit 3).

Exhibit 3: Businesses relied on about 2-4% of external funds during the previous two mega-cycles (1980s and 1995-2000)
Businesses' fixed investments (y-axis left-hand side) and net borrowing (y-axis right-hand side (rhs))



Source: BofA Global Research, BEA
Note: Prior two peaks in private capex, % of GDP marked by gray vertical lines.

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According to BofA Global Research, risk premiums tied to AI-related debt have widened in parts of the market. This does not necessarily mean funding is unavailable. It means funding is becoming more disciplined. Markets can still clear new issuance, but investors are paying closer attention to project economics, tenant or cash-flow support, construction risk, regional exposure and the ultimate path to monetization. That is a normal transition in large capital cycles: early enthusiasm gives way to underwriting.

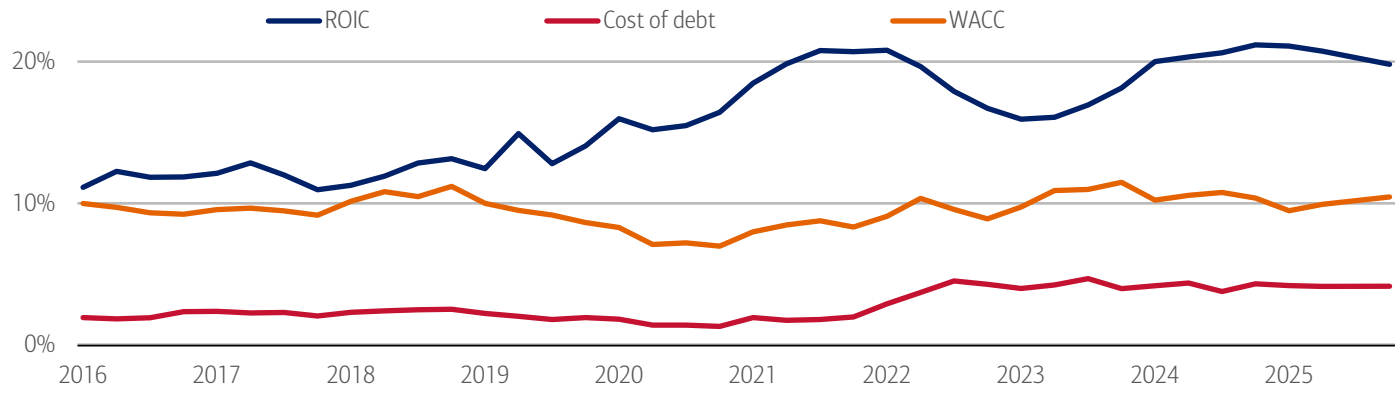
In practical terms, the next phase of the buildout may be less about how much money is available and more about where that money goes. According to BofA Global Research, projects with clearer demand, stronger economics and more credible paths to generating value may find it easier to attract capital than projects that rely primarily on the broader excitement surrounding AI.

The real test: Turning investment into value

Across the AI buildout, the central issue is monetization. Building capacity is only the first step. The infrastructure then needs to support products, services or productivity gains that generate enough economic value to justify the capital deployed. That process takes time, which creates a natural tension between near-term spending and longer-term payoff.

While comparisons to the late-1990s technology and telecom buildout are common, the underlying economics currently appear more supportive. BofA Global Research notes that today's hyperscalers are investing from a position of stronger cash flow, balance sheet strength and funding flexibility than many of their historical counterparts. The more important question is not whether spending is rising, but whether returns on that investment continue to justify the capital being deployed as the buildout matures (Exhibit 4).

Exhibit 4: Hyperscaler ROIC remain above the total cost of capital and the cost of debt
Returns on invested capital (ROIC), cost of debt and weighted average cost of capital (WACC)



Source: BofA Global Research, Bloomberg

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History suggests that investment cycles are most durable when productivity and earnings validate the spending. The personal computing era, for example, became more sustainable as productivity and broader economic growth helped absorb the investment. By contrast, other cycles became strained when leverage met underused assets, weaker pricing or slower demand than expected. The lesson is simple: capital expenditure is easier to finance when the benefits become visible before patience runs out.

For AI, the potential payoff is broad. The tools may help companies automate tasks, improve software development, enhance customer service, accelerate research and use data more efficiently. But potential is not the same as realized productivity. The buildout enters a more demanding phase when markets, businesses and policymakers begin looking for evidence that the infrastructure can translate into durable economic gains.

What the next phase may look like

The AI buildout is likely to continue, but the character of the cycle may change. According to BofA Global Research, the next phase may be less about whether companies can spend and more about how well that spending is targeted. Projects with clearer demand, stronger contractual support, better access to power and more credible monetization paths may be easier to fund. Projects with more uncertainty may face higher costs or closer scrutiny.

And this is not unusual: big infrastructure waves often begin with a broad narrative and then move into a sorting phase. The initial question is whether the technology matters. The later question is which projects, business models and funding structures can turn that technology into durable value. AI appears to be entering that second stage.

For the broader economy, the stakes are meaningful. If the buildout supports productivity gains, the spending could help expand capacity and improve efficiency across industries. If the payoff is slower or narrower, the cycle could still continue but with more volatility, more repricing and more pressure on weaker projects. The difference will depend on execution.

Bottom line

The AI infrastructure boom is not best understood as a simple bubble-or-no-bubble story. It is a large investment cycle with real economic foundations, substantial remaining capacity and increasingly visible constraints. The economy can likely support more spending, but the room for disappointment is narrower because investment is already started from a high base.

BofA Global Research points to a balanced conclusion: the buildout can continue, but the easy phase may be ending. Financial markets remain open, yet less automatic. Physical constraints are manageable, yet increasingly important. Company-level metrics suggest room for additional investment, yet future spending will need to be justified by monetization and productivity gains.

In plain terms, the AI buildout is still building. The next chapter will be about whether it can prove what it is building is worth the cost.

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