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Financing the AI boom: from cash flows to debt

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Financing the AI boom: from cash flows to debt

Key takeaways

- *Investment related to artificial intelligence (AI) is surging – both in nominal amounts and as a share of GDP – and currently accounts for a substantial share of economic growth.*
- *The size of anticipated investment needs will require firms to shift the source of financing from operating cash flows to debt, with private credit playing a rapidly increasing role.*
- *While macroeconomic and financial stability risks from the AI boom appear moderate, the boom's sustainability hinges on AI firms meeting high earnings expectations. The fact that equity prices have run far ahead of debt market pricing underscores this tension.*

Rapid advances in artificial intelligence (AI) appear set to reshape economies, industries and financial markets and AI firms have been a major driver of equity market developments over the past year (BIS (2025)). Yet AI-related innovations demand not only groundbreaking research but also substantial investment in infrastructure. At the heart of this transformation lies a surge in capital expenditures to build the physical infrastructure for AI, eg data centres, and related technological infrastructure such as computer servers, networking hardware, cooling systems, grid connections and power stations. These investments are key in supporting the enormous demand for computational resources and data storage facilities to train and operate AI models.

The need to finance these investments is causing a shift in sourcing the financing from cash flows to debt. Leading firms in the information technology (IT) sector have historically financed much of their investments internally out of operating cash flows. However, the scale of current and anticipated AI-related investment needs is now so vast that firms are seeking external sources of funding. They are therefore increasingly financing AI investment via debt, a shift that is not only reshaping corporate balance sheets but also raises important questions about credit standards and financial stability.

This Bulletin explores the AI investment boom. It first focuses on the boom's macroeconomic dimensions. It then examines the evolving financing landscape and highlights the interplay between the surging demand for AI infrastructure and the financial mechanisms that support it, in particular private credit. The Bulletin concludes with a discussion of the possible consequences if the current optimism regarding the future returns on AI-related capital expenditures turns out to be unfounded.

The macroeconomic dimension of AI investment

The rise of AI has triggered a wave of investment in the digital infrastructure needed to support its development and deployment. Much of this investment has occurred in the United States (Haag (2025)). Conveniently, this is one of the few jurisdictions with sufficiently detailed data to pinpoint AI-components of investment. Accordingly, in this Bulletin we focus on AI-related investment in the United States. The trends we document are likely to exist in other economies too, albeit to a lesser extent.[1]

AI-related investment takes a number of forms. The most direct is expenditures on data centres, which house the specific IT infrastructure needed to train, deploy and deliver AI applications and services. Such expenditures include the construction costs of building the physical facilities, as well as spending on IT and other electrical equipment needed for their operation, including servers and networking equipment. Beyond data centres, AI-related investment can also encompass IT manufacturing facilities, which produce the specialised chips and hardware that power these systems. Finally, advances in AI may also spur broader investment in IT products, for example if AI prompts businesses to upgrade their computer hardware or purchase new software.

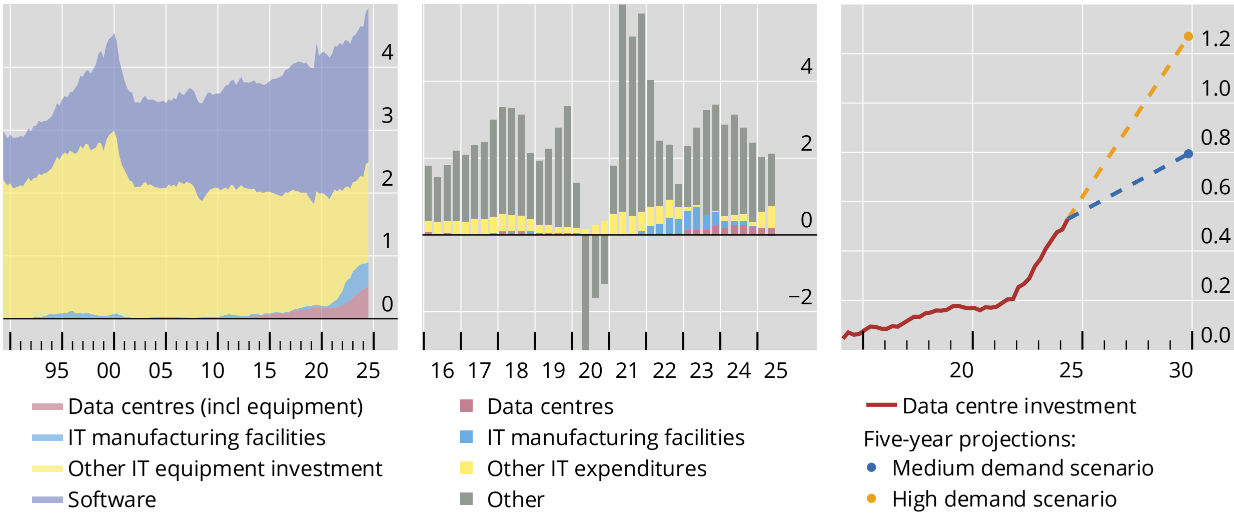
AI-related investment is growing and contributing materially to GDP growth

In per cent | Graph 1

A. AI-related investment accounts for a rising share of US GDP, ...[1]

B. ...has contributed materially to recent GDP growth...[2]

C. ...and is projected to rise further in the coming years[3]



[1] Data centre construction investment sourced from the US Census Bureau Construction Spending release. Data centre equipment investment is estimated to equal three times data centre construction investment, based on Noffsinger et al (2025). Other IT equipment investment is estimated as IT equipment investment in the US national accounts minus our estimate of data centre equipment investment. IT manufacturing facilities are sourced from the Computer/electronic/electrical manufacturing facility component of the US Census Bureau Construction Spending release. [2] Other IT expenditures include business investment in both hardware and software. [3] High demand scenario is based on the incremental growth in AI capacity in the "continued momentum" scenario in Noffsinger et al (2025). Medium demand scenario is based on the "Base Case" projections in IEA (2025).

Sources: Bureau of Economic Analysis; US Census Bureau; International Energy Agency; authors' calculations.

The macroeconomic impact of the AI investment boom has become increasingly relevant. Since 2022, AI-related investment has accounted for a rising share of US GDP (Graph 1.A). Initially, this investment reflected spending on domestic semiconductor manufacturing, spurred in part by the passage of the US Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act as well as by a desire to strengthen supply chain resilience and reduce reliance on foreign suppliers (blue area). More recently, the surge in demand for AI-powered applications has led to a sharp increase in data centre construction (red

[1] Beyond investments in data centres outside the United States (see eg the recent report by the Central Bank of Malaysia), the AI investment boom is also supporting exports and growth, especially in Asia, given the importance of the semiconductor industry (eg semiconductor demand played a prominent role in recent growth revisions by the Bank of Korea). Demand for raw materials required to support AI infrastructures, such as copper, is also likely to be a boon for producing countries.

area).[2] By mid-2025, expenditures on IT manufacturing facilities and data centres (including both equipment and construction costs) were equivalent to 1% of GDP. This, in turn, has seen total IT-related investment, including investment in other IT equipment and software, rise to 5% of GDP, exceeding its previous peak at the height of the dot-com boom in 2000. Unlike that earlier episode, which was driven almost entirely by spending by firms using IT products, the current boom is driven by IT-producing firms.

AI-related investment has emerged as an important driver of GDP growth in the United States. From a negligible contribution before 2022, expenditures on semiconductor manufacturing facilities and data centres have contributed on average 0.4 percentage points (pp) to GDP growth over the subsequent three years (Graph 1.B).[3] Total IT investment, which also includes spending by businesses on equipment and software to facilitate AI use, has accounted for almost half of GDP growth in recent quarters, helping to limit the negative adverse effects of trade tariffs on growth. These contributions could remain sizeable in the coming years. Analyst forecasts indicate that annual spending on data centres alone could increase by between $100 billion and $225 billion in the next five years. This would see data centre spending rise to between 0.8 and 1.3% of GDP, up from 0.5% today (Graph 1.C).

The financing dimension of the AI boom

The increasing importance of AI is already evident in the financial strategies of major IT firms. Firms that are currently driving the AI investment boom have historically operated with substantially less debt than other firms (Graph 2.A). Instead, they have relied on their highly profitable operations to generate the cash flows needed to fund investments. However, these companies have ramped up their capital expenditures significantly, with investments growing both in absolute terms and as a share of revenues (Graph 2.B). The sheer size of these actual and anticipated investments, combined with dwindling free cash flows in some cases, are testing the limits of expansion based on cash flows. Indeed, free cash flows have recently lagged capital expenditures in absolute amounts. Equity financing may in turn be neither timely nor cost-effective at the current juncture: AI valuations are volatile and concentrated, issuance windows are narrow, and new stock sales can be costly and dilutive for long-dated, asset-heavy projects.

As the need for AI-related investment grows, firms are increasingly turning to external sources of financing. Debt financing, through corporate bonds, leasing arrangements or loans, allows investors to spread costs over time and align financing maturities with the long economic life of data centre assets. Specific risks concerning construction, power availability and tenant concentration, however, mean that financing may fall outside the scope of traditional bank and bond financing (notwithstanding reportedly record bond issuance).

A particularly fast-growing source of external financing is private credit. Private credit typically refers to non-bank credit extended by specialised investment vehicles (funds) mostly to small or medium-sized non-financial firms. Deals are directly negotiated between lenders and borrowers, and lenders hold the loan on their balance sheets until maturity. Private credit is characterised by bespoke covenant structures, greater certainty, faster execution and more flexible renegotiation.[4] The ability to provide bespoke financing arrangements that accommodate construction and operational risks arguably make private credit well placed to fund large, asset-heavy AI projects.

[2] Investment in data centres includes spending on the building that houses the centre as well as the IT equipment inside it. A standard rule of thumb is that the physical structure accounts for one quarter of the spending on a new data centre and IT equipment accounts for the remaining three quarters (eg Noffsinger et al (2025)).

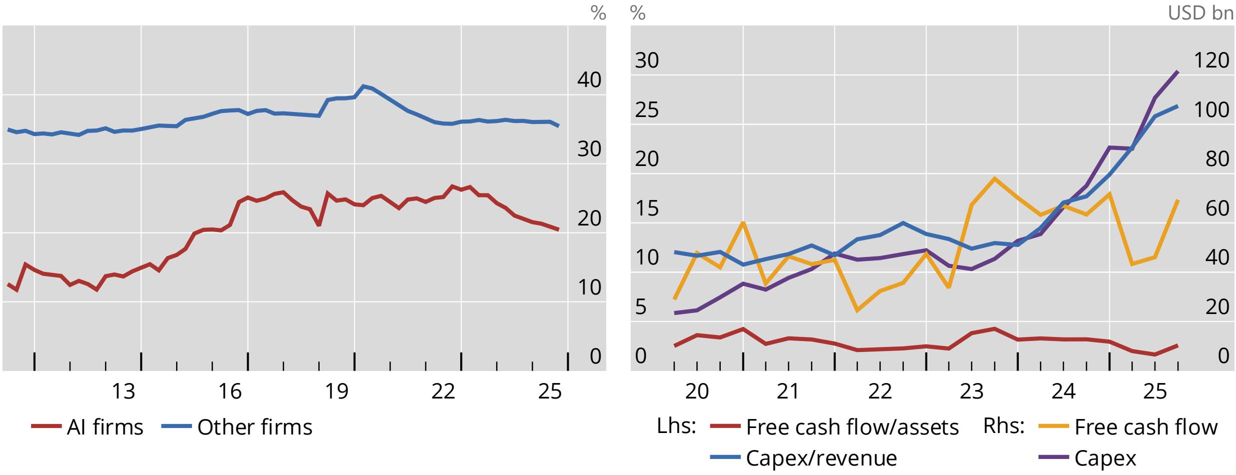
[3] These figures may overstate the net contribution of this investment to GDP growth, as some data centre equipment is imported.

[4] Private credit funds are mostly closed-end structures that lock in institutional capital for the life cycle of their loan portfolios (around four to eight years), mitigating liquidity and maturity transformation risks. The assets under management of such funds grew from around $100 billion in 2010 to over $2.2 trillion today (IMF (2024); Avalos et al (2025)).

Current capital expenditures for US AI firms point to growing financing needs[1] Graph 2

A. US firms currently investing in AI have historically operated with less debt than others[2]

B. But the capital expenditures of US AI firms have been growing substantially in recent quarters[3]



[1] AI firms comprise Alphabet, Amazon, Meta, Microsoft and Oracle. Non-AI firms are all other firms in the Capital IQ US data set, excluding banks, insurance companies, capital markets and other financial services firms as well as various real estate investment trusts. [2] Total debt relative to total assets. Weighted average by group, with weights given by total assets. [3] Capex = capital expenditures. Free cash flow is computed as operating cash flow minus capex. Ratios are averages weighted by total assets.

Sources: S&P Global Market Intelligence; Capital IQ; authors' calculations.

Lending by private credit funds to AI-related sectors has grown rapidly, both in absolute terms and as a share of total private credit volumes. Outstanding loan amounts have increased from near zero to over $200 billion today (Graph 3.A, grey bars). The share of private credit loans to AI-related companies has increased from less than 1% of total outstanding loan volumes to almost 8% (red line).[5] Extrapolating from projected AI-investment growth of 50–300% (Graph 1.C), we estimate that outstanding private credit to AI firms could reach around $300–600 billion by 2030.

The terms of private credit loans to AI-related companies do not differ markedly from those to companies in other sectors. Loans to AI-related companies are just as likely to be secured as those to other sectors (46% vs 48%) but are on average substantially larger ($169 million vs $90 million, Graph 3.B). Loans are similar in terms of maturity (4.7 vs 4.8 years) and rate spreads (6.2 vs 6.1 pp, Graph 3.C).

Exposure to AI-related sectors remains modest for the average private credit fund. To date, approximately 20% of all private credit funds invest in AI-related sectors, up from 5% in 2010 (Graph 3.D, red line). However, for the average fund, loans to AI-related firms still account for only about 5% of total volumes, up from close to 0% in 2010 (blue line).

Implications for financial stability and growth

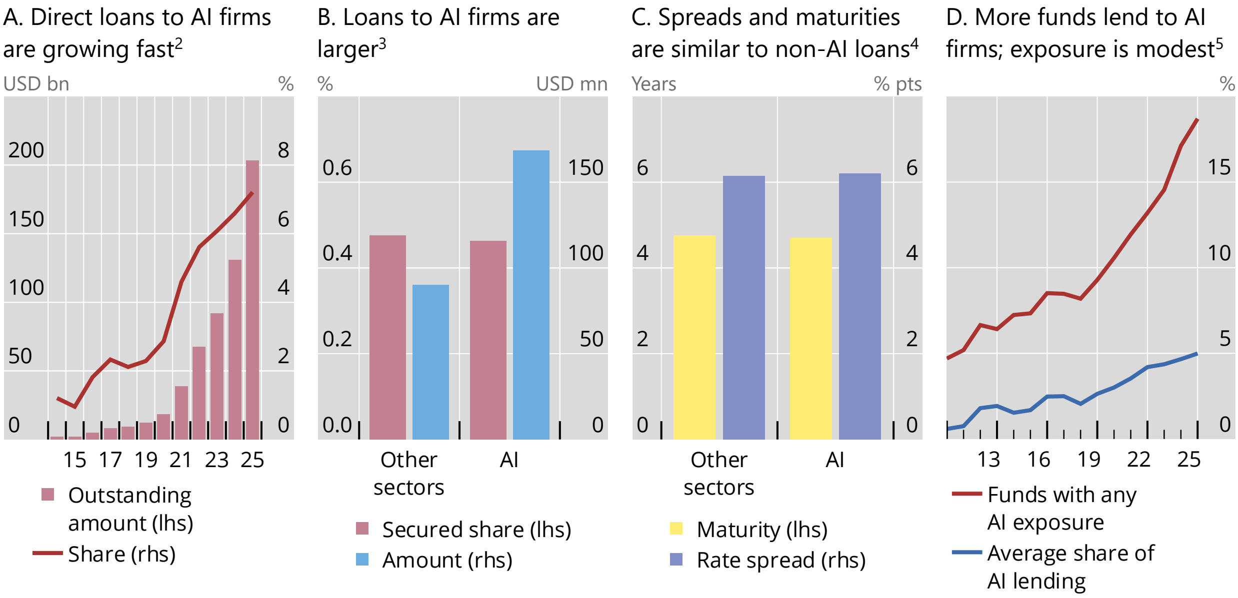
The increasing reliance on debt introduces vulnerabilities to the broader financial system. AI firms, traditionally reliant on internal cash flows and equity, now face higher leverage, which could amplify shocks and affect the health of financial intermediaries if expected returns on AI investments fail to materialise. This raises concerns about the potential for systemic spillovers, not least given the rapid growth of less transparent private credit markets and the circular financing within the AI ecosystem (Bloomberg (2025)). Moreover, some of the financing structures currently being set up to support AI investments might mask leverage by moving it off the balance sheet. Yet leverage does not disappear by being out of sight. Market

[5] Similar patterns emerge for originations. Funds originated over $40 billion in loans to AI-related companies in 2025, compared with about $3 billion in 2010. The share of AI-related direct loans has increased from close to 0% to about 4% in 2025.

commentary points to concerns by investors about the long-term value of collateral (eg data centres) underpinning some large-scale deals (Kim and Armstrong (2025)).

The long-term viability of the AI investment surge depends on meeting the high expectations embedded in those investments, with a disconnect between debt pricing and equity valuations. Failure to meet expectations could result in sharp corrections in both equity and debt markets. As shown in Graph 3.C, the loan spreads charged on private credit loans to AI firms are close to those charged to non-AI firms.[6] If loan spreads reflect the risk of the underlying investment, this pattern suggests that lenders judge AI-related loans to be as risky as the average loan to any private credit borrower. This stands in stark contrast to the high equity valuations of AI companies, which imply outsized future returns. This schism suggests that either lenders may be underestimating the risks of AI investments (just as their exposures are growing significantly) or equity markets may be overestimating the future cash flows AI could generate.

Private credit is a key source of funding for AI firms[1] Graph 3



[1] "AI firms" refers to firms operating in the Pitchbook-defined verticals "Artificial Intelligence", "Big Data" and "Cloud Tech". [2] Outstanding direct loan amounts to AI firms in billions of US dollars as well as share of total outstanding direct loans. [3] "Amount" is the size of the average loan. "Secured share" denotes the proportion of loans secured by collateral. [4] "Rate spread" is the annual rate over the London Interbank Offered Rate or the Secured Overnight Financing Rate. [5] Share of all private credit funds with loans originated to at least one AI-related company in a quarter (red line) as well as share of total outstanding loan volumes to AI-related firms over total outstanding loan volumes for the average fund (blue line).

Sources: PitchBook data; authors' calculations.

That said, to put the macroeconomic consequences into perspective, the rise in AI-related investment is not particularly large by historical standards (Graph 4.A). For example, at around 1% of US GDP, it is similar in size to the US shale boom of the mid-2010s and half as large as the rise in IT investment during the dot-com boom of the 1990s. The commercial property and mining investment booms experienced in Japan and Australia during the 1980s and 2010s, respectively, were over five times as large relative to GDP.

A collapse of AI investment could nonetheless weigh on GDP growth. The end of previous investment booms was associated with a slowdown in GDP growth of more than 1 pp on average (Graph 4.B). Notably, the largest contraction was after the US dot-com boom, even though the boom was small relative to GDP. Moreover, there is little evidence of investment booms translating into a sustained increase in GDP growth over the medium term, even if, like the US dot-com boom, they are driven by technological advances

[6] The difference in spreads remains insignificant when accounting for differences in loan terms (eg loan size, maturity, secured/unsecured) and borrower characteristics (eg location and age).

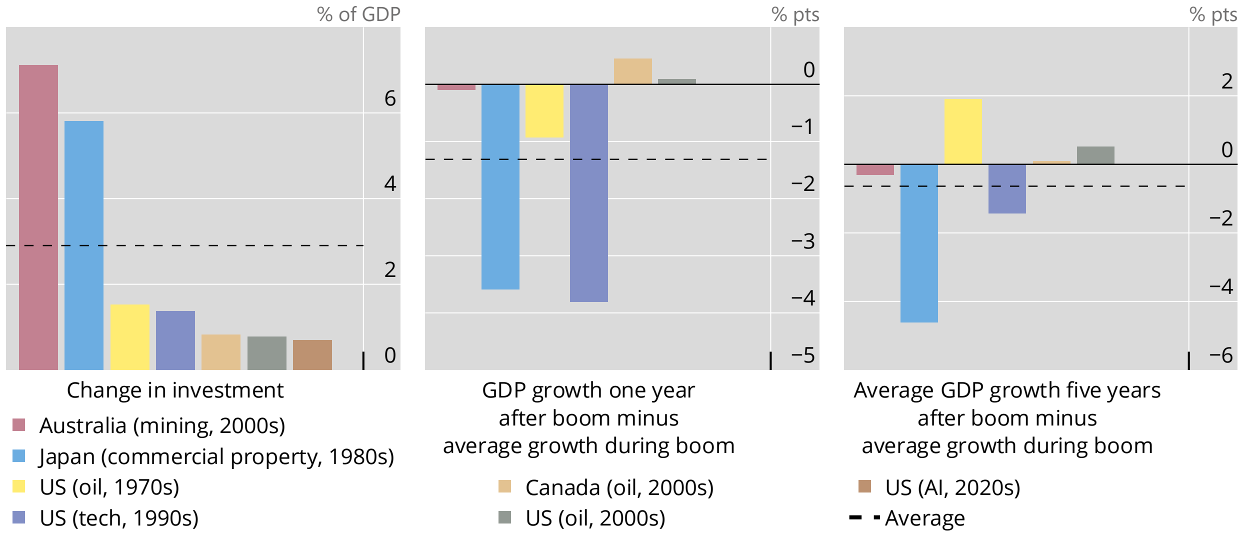
(Graph 4.C). If a decline in AI investment were to come with a significant stock market correction, negative spillovers could be larger than previous booms suggest. Investors have favoured US equities to gain exposure to AI firms and hidden leverage may lead to credit market spillovers. Overall, while AI may deliver a sustained boost to economic growth, it remains to be seen whether this potential will be realised.

Putting the AI investment boom into perspective | Graph 4

A. The AI investment boom is smaller than previous investment booms

B. The end of investment booms can be associated with GDP slowdowns…

C. …without necessarily increasing future growth



Timing and forms of investment for the identified investment booms are as follows: Australia, 2005–12, private gross fixed capital formation – mining private business investment; Canada, 2004–12, business gross fixed capital formation – mineral exploration and evaluation; Japan, 1984–91, private non-residential investment; US (oil, 1970s), 1974–81, private fixed investment in mining exploration, shafts and wells; US (tech, 1990s), 1994–2000, private fixed investment in information processing equipment and software; US (oil, 2000s), 2003–14, private fixed investment in mining exploration, shafts and wells; US (AI, 2020s), construction of data centres and IT manufacturing facilities.

Sources: US Census Bureau; US Bureau of Economic Analysis; Australian Bureau of Statistics; Statistics Canada; Japan Cabinet Office; authors' calculations.

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