

## Is Optimism for Artificial Intelligence Boosting Investment?

Aakash Kalyani and Huiyu Li

U.S. business spending related to artificial intelligence (AI) grew substantially in 2025 among publicly traded firms, which account for the bulk of overall investment. Analyzing sentiment data from quarterly company earnings calls can help infer current and evolving optimism towards AI. Public firm data show growth in capital spending and research and development funding has come entirely from the largest companies that are positive about AI. While market concentration among large firms raises some challenges, optimism measures suggest that AI investment will continue to contribute to future overall investment growth.

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Spending on information processing equipment, software, and data center construction accounted for one-third of all business investment in the third quarter of 2025, according to the latest data from the Bureau of Economic Analysis (BEA) at the time of writing. This was the highest share of total investment since 1947. It reflects an emerging dichotomy, where business investment in these categories is growing significantly faster than spending in other categories. Many analysts and media reports have pointed to the artificial intelligence (AI) sector as boosting investment and have raised concerns that U.S. economic growth may be overly reliant on AI-fueled investment (for example, see Putzier 2025).

However, there is no standard industry classification of the AI sector in official statistics. This makes it difficult to assess how much of the investment in information processing equipment and software is attributable to AI. In addition, data center investment, which can be attributed more directly to AI, is still only 1% of private nonresidential fixed investment according to the BEA.

In this *Economic Letter*, we use financial reports and earnings calls of U.S. public firms to provide more direct evidence of whether AI is boosting investment. Although there are only a few thousand public firms in the United States, they account for approximately 60% of overall nonresidential fixed investment and closely track the changes in overall investment in the BEA national accounts (Crouzet and Eberly 2019, Cloyne et al. 2023). Analyzing the text of earnings call discussions can help reveal business sentiment about AI and provide insights into whether companies are investing because of AI.

### AI sentiment among U.S. public firms

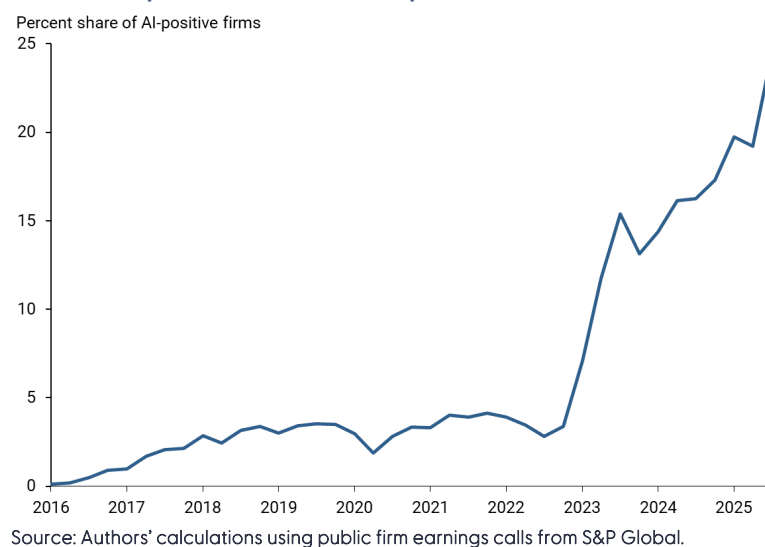
To measure the sentiment of each public firm towards AI in their quarterly earnings calls, we apply textual analysis techniques described in Hassan et al. (2025). In each call transcript, we identify sentences containing one or more of these phrases: AI, LLM (large language models), artificial intelligence, ChatGPT (various spellings), deep learning, language processing, learning algorithms, machine intelligence, machine

learning, natural language, neural network, reinforcement learning, supervised learning, and unsupervised learning.

We then measure the AI sentiment in the call as the difference between the number of positive and negative words mentioned in the sentences related to AI. We identify whether a word is positive or negative based on the widely used dictionary constructed by Loughran and McDonald (2011). To capture the importance of AI for the firm, we divide the AI sentiment measure by the total number of sentences in the call. Thus, high AI sentiment in a call means the associated firm is more positive and talks more about AI. We construct this measure for each public firm quarterly from the first quarter of 2012, which was the first appearance of discussion about AI, through the third quarter of 2025, the latest data available.

For each quarter, we characterize a firm as *AI positive* if its AI sentiment exceeds the average overall AI sentiment for the full sample period by one standard deviation. Figure 1 shows that the percent share of AI-positive firms increased from near zero in 2016 to almost 25% by the third quarter of 2025. This rise comes from an increase in both the share of firms discussing AI in earnings calls and the share of those AI-discussing firms that were positive about AI. Examples of AI-positive firms in 2025 included Microsoft, Meta, Amazon, Google (Alphabet), Nvidia, Apple, and Tesla.

**Figure 1**  
Percent of public firms that are positive about AI



The increase in Figure 1 is similar to the rising share of large firms (250 or more employees) that are using AI in the Census Bureau’s latest Business Trends and Outlook Survey. According to the February 2026 survey, approximately one-third of large firms are using AI.

### Investments by AI-positive public firms

Our data for U.S. investment comes from S&P Global Compustat, which is sourced from the 10-Q and 10-K regulatory filings to the Securities and Exchange Commission. We examine investment in plant, property, and equipment (CapEx) and research and development (R&D). For each quarter, we calculate the overall nominal investment for AI-positive and nonpositive firms and then calculate the log difference compared to the same quarter in the previous year.

The solid blue line in Figure 2 displays the difference in the nominal investment growth rate for AI-positive and nonpositive firms since 2022 expressed as percentage points, with shading indicating the 95% confidence band. The dashed green line is a smoothed trend fitted to the quarterly series. The figure shows that relative to nonpositive firms, AI-positive firms had lower overall investment growth in 2023 but have had higher growth since then. For the first three quarters of 2025, overall investment growth of AI-positive

firms was roughly 25 percentage points higher than that of nonpositive firms. We found a similar pattern for R&D investment (not shown), with AI-positive firms beginning to overtake other firms in the first quarter of 2024.

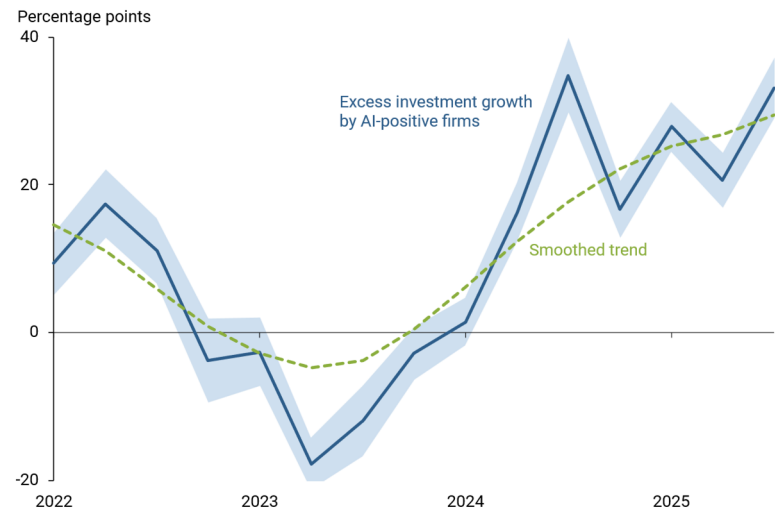
The contribution of AI-positive firms to overall investment growth also depends on their share of total business investment. To assess this, we separate total investment growth of U.S. public firms into the contributions from AI-positive and all other firms. We approximate overall investment growth by calculating the investment-weighted average of the investment growth rates for individual firms in both categories and overall.

Figure 3 displays total investment growth for all public firms (dashed green line) compared with the contribution to overall growth from AI-positive firms (solid blue line). Since 2024, capital investment accelerated for all public firms and for the group of AI-positive firms. The line for the AI-positive group rising above the overall line implies that all capital investment growth came from AI-positive firms. Other firms collectively had slightly negative growth since the first quarter of 2024. Likewise, for R&D, AI-positive firms accounted for all of investment growth since the first quarter of 2024.

### Dominance of mega firms

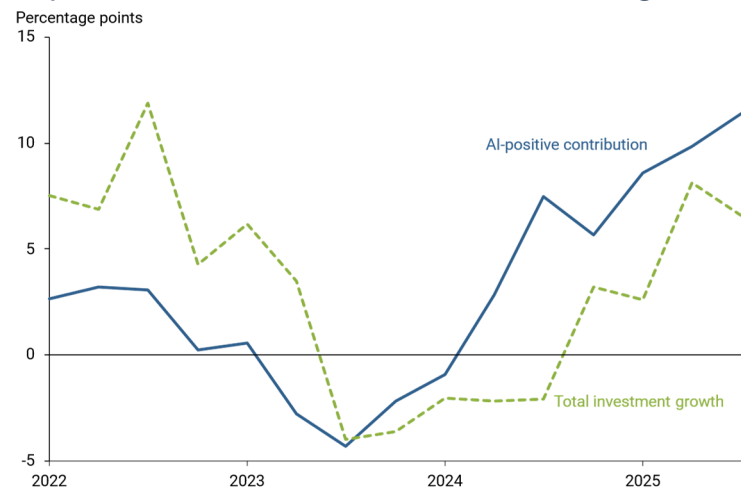
To measure how much AI-positive firms are contributing to investment growth, we break down total investment growth into contributions by the largest and smaller AI-positive firms (see Figure 4). We define the largest as those firms in the top 1 percentile of all firms by assets, though using other definitions leads to the same conclusion.

**Figure 2**  
Excess investment growth for AI-positive firms



Source: Authors' calculations using earnings calls and Compustat from S&P Global.

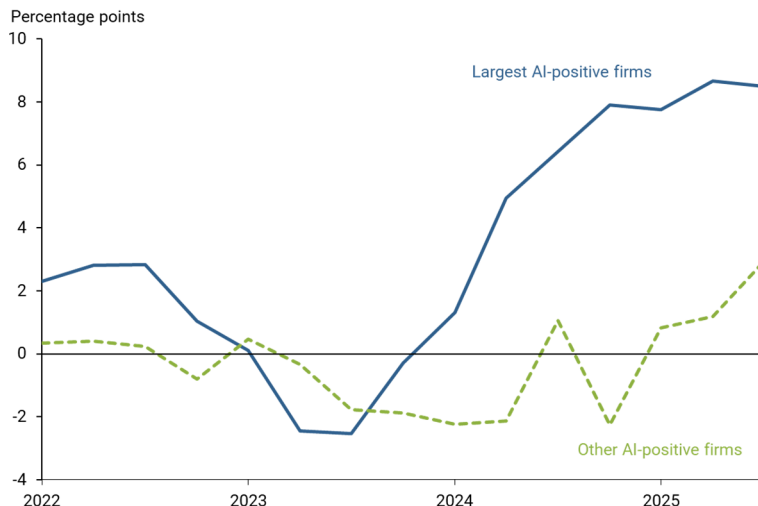
**Figure 3**  
AI-positive firm contributions to total investment growth



Source: Author's calculations using earnings calls and Compustat from S&P Global.

The figure shows that most of the contribution by AI-positive firms comes from the largest firms (solid blue line). Furthermore, the contribution of the largest AI-positive firms accelerated significantly since 2023, while the smaller AI-positive firms (dashed green line) did not. The largest AI-positive firms contributed 10 percentage points of the 11% growth of physical capital investment in 2025 from all AI-positive firms. Similarly for R&D, the largest AI-positive firms contributed 7 percentage points out of the 8% growth in 2025.

**Figure 4**  
Investment contributions of AI-positive firms by size



Source: Authors' calculations based on earnings calls for Amazon, Alphabet, Microsoft, and Meta, using Compustat from S&P Global.

These results show that many of the AI-positive firms did not increase investment significantly. In fact, most of the contribution by the large AI-positive firms came from Amazon, Alphabet, Microsoft, and Meta. According to the recent earnings calls of these firms, the growth in investment is in information technology infrastructure and data centers, fueled by a raising demand for AI infrastructure.

For example, Alphabet’s earnings call said, “With respect to CapEx in the third quarter [of 2025], our CapEx was \$24 billion. The vast majority of our CapEx was invested in technical infrastructure, with approximately 60% of that investment in servers and 40% in data center and networking equipment....In [Google Cloud Platform], we see strong demand for enterprise AI infrastructure....We’re continuing to invest aggressively due to the demand we’re experiencing from cloud customers as well as the growth opportunities we see across the company.” Similarly, Amazon’s earnings call for the third quarter of 2025 said, “Now turning to our cash CapEx, which was \$34.2 billion in Q3. We’ve now spent \$89.9 billion so far this year. This primarily relates to [Amazon Web Services], as we invest to support demand for AI and core services.”

The smaller AI-positive firms do not contribute much directly to investment growth. However, as mentioned in the earnings calls of the mega investing firms, this group’s demand for AI infrastructure services is creating incentives for investment growth among the largest firms. The earnings calls of these smaller firms suggest that they are using AI for innovation, developing products, and improving customer experience, among other uses. The broad range of applications mentioned in their calls reflect the general-purpose nature of current AI technology.

### Potential implications

Overall, our findings about the source of recent investment growth have several interesting implications. First, if the optimistic forecasts of demand for AI services over the coming years are not realized, the additional cost associated with investment in AI infrastructure will mostly be borne by a small set of large firms.

Second, smaller firms may be relying on the AI infrastructure provided by the largest firms because of the high fixed costs of such things as training AI models. This may increase the efficiency of AI technology growth by reducing redundancies of various fixed costs (see Brand, Demirer, and Dix 2025). However, the market power stemming from this concentration among the largest companies could also adversely affect the pricing of AI services, which could slow AI adoption and the resulting productivity gains.

## Conclusion

Investment growth was a bright spot of the U.S. economy in 2025. In this *Letter* we offer evidence linking AI as a major factor in that robust investment growth. In particular, we find that the strong overall investment growth came in large part from AI infrastructure investment by the largest firms. These firms appear to be investing in response to current and anticipated future demand for AI products and services from smaller AI-positive firms and from consumers. With the largest firms expressing optimism about demand going forward, AI is likely to continue as an important contributor to overall investment growth in 2026.

*Aakash Kalyani*

*Economist, Economic Research Department, Federal Reserve Bank of St Louis*

[Huiyu Li](#)

*Research Advisor, Economic Research Department, Federal Reserve Bank of San Francisco*

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