Yardeni Research

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Morning Briefing

Nvidia, Data Centers & The MIT AI Report

Check out the accompanying chart collection.

Executive Summary: Nvidia investors were underwhelmed by yesterday's impressive earnings report with surging revenue growth; its shares sold off in after-market trading. Jackie looks at what's been driving the performance of the company and its stock. … Also: AI-related stocks have been surging, so why have data center REITs—which own the buildings where AI resides—been sinking? Read on. … And: some takeaways that investors may have missed in MIT's recent report on how generative AI is changing the ways companies do business. So far, the impacts have been disruptive mainly in tech and media, but the promise of future transformative effects remains.

Technology I: Nvidia's Growth Rolls On. Nvidia, the first company to sport a $4 trillion market cap, reported remarkably strong fiscal Q2 (ended July) results last night after the market closed, with revenue surging 56% y/y and adjusted EPS climbing 53% y/y. The semiconductor manufacturer generated $46.7 billion of revenue, slightly above the $46.0 billion analysts expected, and adjusted EPS of $1.04, beating analysts' $1.01 consensus.

The company's stock sold off slightly in aftermarket trading immediately after the release. Nvidia shares had priced in a solid amount of optimism, climbing 34.2% over the past three months. And the company noted that none of Nvidia's H20 chips were purchased in China, where the government has encouraged companies to buy only from domestic suppliers (more on that below).

Nvidia's adjusted gross margins came in a little light at 72.3%, down from 75.7% a year earlier. But the company expects revenue growth of more than 50% y/y in the current quarter, confirming that demand for its semiconductor chips used to drive the development of artificial intelligence (AI) isn't letting up.

Here's a look at what's driving the semiconductor giant's results:

(1) *Tech giants' big spending*. Although Nvidia's revenue growth has decelerated, it remains stronger than most other tech players', as Nvidia benefits from the boom in spending on new data centers. Its four largest customers—Microsoft, Google, Meta, and Amazon—plan collectively to spend more than $350 billion this year on data centers and another $400 billion in 2026 to support their AI businesses, the *FT* *calculated*. Nvidia generates about 40% of its revenue from those four companies.

(2) *Robots: the next frontier.* Nvidia introduced on Monday a robotics chip module, the Jetson AGX Thor, which is designed to be the "brains" of a robot. After AI, Nvidia sees making chips for robots as its next great opportunity. The new chips, which are based on the Blackwell graphics processor, will be available next month. Agility Robotics, Amazon, Meta, and Boston Dynamics are using the company's Jetson chips.

(3) *The China wildcard.* President Donald Trump temporarily banned Nvidia from selling all chips to Chinese customers—source of 13% of the company's revenue last fiscal year (ended January). That caused Nvidia to take a $4.5 billion charge in its April quarter associated with its inventory, purchase commitments, and related reserves. Subsequently, Nvidia agreed to pay the US government an amount equal to 15% of its sales to Chinese clients in exchange for a license to sell its H20 chips in China. While the H20 chips have less processing power than Nvidia's most powerful AI chips, the company is working on a more powerful chip for the Chinese market.

These efforts may be too little, too late: China's government recently announced plans to apply AI to economic and social enterprises to bolster its domestic chip, server, and AI solutions industries. And the country's chipmakers seek to triple China's AI processor output next year, the *FT* *reported*. Plus, Chinese regulators are encouraging domestic companies to buy only domestically designed and produced chips and to avoid the H20 chips in particular, which they claim have location tracking capabilities and can be shut down remotely by Nvidia (claims that the company denies).

The Information *reported* earlier this month that Nvidia ordered component suppliers to stop production related to its H20 chips. Cambricon Technologies—a leading Chinese chipmaker offering an alternative to Nvidia's chips—stands to benefit. Its H1-2025 revenues surged more than 4,000% y/y to $403.8 million, its best result since going public in 2020, an August 27 *article* in the *South China Moring Post* reported. The chipmaker's share price has more than doubled over the past month.

(4) *Some market metrics.* Nvidia's shares have risen 35.4% ytd through Tuesday's close,

outpacing the ytd gains of the S&P 500 (9.9%) and Nasdaq (11.6%) (*Fig. 1*). Even more impressive is the 974.1% return Nvidia shares have registered since the introduction of ChatGPT on November 20, 2022, almost double the gains of Meta (538.5%) and the S&P 500 (58.5%) over the same period (*Fig. 2*).

In the days prior to Nvidia's earnings report, at least 11 analysts raised their 12-month price targets on the stock, by an average of 3% to an average of $194, Bloomberg *reported*, with the highest at $240 (Cantor Fitzgerald's).

At 33.9, Nvidia's forward P/E is certainly higher than the S&P 500's forward P/E of 22.5. But as forward operating EPS have increased over the years, Nvidia's forward P/E has fallen from much higher levels, north of 50 (*Fig. 3* and *Fig. 4*). Looking ahead, analysts forecast earnings growth of 50.3% in fiscal 2026 and 36.9% in fiscal 2027.

Technology II: Watching Data Center REITs. Despite seemingly insatiable demand for access to data center servers to train AI programs, the stocks of data center REITs have sharply underperformed the broader market. Equinix shares have tumbled 17.1% ytd through Tuesday's close, Digital Realty Trust shares have slumped 5.3%, and the S&P 500 Data Center REITs industry index has lost 12.6% this year (*Fig. 5*).

Compare those sorry performances with the share-price soaring that other AI plays have done so far this year: Cloud access provider CoreWeave stock has more than doubled, surging 128.5%, while chip-maker Nvidia has gained 35.4% and AI services provider Oracle jumped 40.6% ytd.

Why have investors passed over data center REITs even though they own the buildings where the AI magic is made? Let's look at the investor concerns that have been tethering the upside potential of these stocks:

(1) *Concerns about new supply.* Many companies have been investing heavily in building more capacity to meet the surging AI demand. Nvidia's four biggest customers plan to spend more than $350 billion this year and $400 billion next on data center expansions (see Nvidia discussion above).

Equinix, the world's largest third-party data center provider, told analysts in June that it plans capital expenditures of $4 billion to $5 billion per year between 2026 and 2029, up from $3.3 billion this year, *Barron's* *reported*. Investors were unhappy with the REIT because the spending will weigh on its adjusted funds from operations, which it expects will grow 5% to 9% over the next five years, less than some investors had expected.

Industry spending on data center construction has more than tripled from $12.2 billion (saar) in June 2022 to $ 40.1 billion this June (*Fig. 6*). The spending has surged so dramatically that it almost equals the amount being spent on general office construction, which has been deflating since folks started working from home during the pandemic (*Fig. 7*).

The lackluster performance of the data center REITs shares may be signaling concerns about future overcapacity in data centers: If you build them, will there be enough demand to drive positive returns? Assuming there is enough demand, will the planned data centers be able to access enough electricity to even operate?

(2) *Skepticism about interest rates.* Another stock-price-tethering factor: today's high interest rates. High interest rates increase REITs' costs of capital. Both Equinix and Digital Realty have roughly $15 billion of net debt, and they rely on the fixed-income markets to partially fund new data centers.

The 10-year Treasury bond yield has fallen from a high of 4.79% in January to a recent 4.24%, and the Federal Reserve is widely expected to lower the federal funds rate this year. But the positive interest-rate news hasn't triggered a rally in REITs stocks, as might be expected (*Fig. 8*). Perhaps investors are concerned that if the Fed lowers short-term rates, long-term rates won't follow. The 30-year Treasury yield is already showing some resistance, with its yield at 4.91%, not far below its high this year of 5.08%, in May.

Disruptive Technologies: Beyond the MIT AI Report Headlines. Last week, the stock market sold off in part because an MIT *study* concluded that 95% of organizations that have invested in the use of generative AI (GenAI) systems to improve their operations or save costs have gotten zero returns on their investments. The reason: relatively few of the tools that companies evaluated were adopted. (Sixty percent of the companies studied have evaluated GenAI tools, 20% of which were piloted and only 5% adopted.)

"Most [Gen AI systems] fail due to brittle workflows, lack of contextual learning, and misalignment with day-to-day operations," the report states. "Most GenAI systems do not retain feedback, adapt to context, or improve over time." They lack memory and customization. The report seemed to confirm the worst fears about AI.

Investors looked past the report's findings that there are many areas, including technology and media, where AI tools are being used successfully, and programs like ChatGPT and

Copilot are enhancing individuals’ productivity.

Here are some of the more positive takeaways from the MIT report:

(1) *When AI works.* GenAI has resulted in measurable savings when used in customer support, software engineering, and administrative functions. It has reduced spending on business process outsourcing and curtailed the use of external agencies for back-office operations. In some cases, GenAI improved customer retention and sales conversion through automated outreach and intelligent follow-up.

GenAI has started to disrupt the technology and media industries but few other industries. In the tech sector, new AI entrants are writing code and changing workflows. In media, they’re creating ad content. In both areas, more than 80% of executives expect to curtail hiring.

AI has already resulted in the layoff of 5%-20% of customer support operations and administrative processing work. And AI proficiency has become a fundamental requirement for job candidates.

While less dramatic, the impact of AI is also being felt in professional industries, where there are efficiency gains; in healthcare, where documentation and transcription pilots are being used; and in financial services, which has benefited from AI in backend automation.

Successful AI programs identified include: voice AI for call summarization and routing, document automation for contracts and forms, and code generation for repetitive engineering tasks. Some of the highest returns on investment occurred in back-office operations and finance. Areas that struggled to use AI often involved complex internal logic, opaque decision support, or optimization based on proprietary heuristics.

The study concludes that pilot programs testing GenAI systems failed essentially because they didn’t result in structural change. However, it doesn’t address how much more efficient AI made users even in the absence of structural change.

(2) *Watching shadow AI.* While companies may be having a tough time integrating new AI programs, their employees are embracing AI for the masses, using programs like ChatGPT to assist in their work.

“Our research uncovered a thriving ‘shadow AI economy’ where employees use personal

ChatGPT accounts, Claude subscriptions, and other consumer tools to automate significant portions of their jobs, often without IT knowledge or approval. The scale is remarkable. While only 40% of companies say they purchased an official LLM subscription, workers from over 90% of the companies we surveyed reported regular use of personal AI tools for work tasks. In fact, almost every single person used an LLM in some form for their work."

The report concludes that companies would be wise to recognize the success of shadow AI and build on it, analyzing what tools deliver value. These programs are being used for simple work like drafting emails and basic analysis, but they do have limitations that make workers and companies unwilling to use them for mission-critical work.

One lawyer summed the problem like this: "[GenAI is] excellent for brainstorming and first drafts, but it doesn't retain knowledge of client preferences or learn from previous edits. It repeats the same mistakes and requires extensive context input for each session. For high-stakes work, I need a system that accumulates knowledge and improves over time."

(3) *AI programs continue to evolve.* Researchers see a future where an agentic web "can discover, negotiate and coordinate across the entire internet infrastructure, fundamentally changing how business processes operate. … In an agentic web, systems will autonomously discover optimal vendors and evaluate solutions without human research, establish dynamic API integrations in real-time without pre-built connectors, execute trustless transactions through blockchain-enabled smart contracts, and develop emergent workflows that self-optimize across multiple platforms and organizational boundaries." Humans will be replaced by autonomous systems that operate across the Internet in a networked economy.

While the report highlights GenAI's short-comings at the outset, investors, take heart: It concludes with a vision of the future in which AI systems are more capable and transformative than ever.

Calendars

US: **Thurs:** Real GDP & Price Index 3.0% & 2.0%; Headline & Core PCED 2.1% & 2.5% q/q; Initial Claims 231k; Pending Home Sales -0.3%; Kansas City Fed Manufacturing Index; Fed Balance Sheet; Waller. **Fri:** Personal Income & Spending 0.4% & 0.5%; Headline & Core PCED 0.2%m/m, 2.6%y/y & 0.3%m/m, 2.9%y/y; Consumer Sentiment 58.6. (Source: FX Street)

Global: Thurs: Eurozone Business & Consumer Survey 95.9; Eurozone M3 3.5%y/y; ECB Monetary Policy Meeting Accounts; Japan Unemployment Rate 2.5%; Japan Industrial Production -1.2%; Japan Retail Sales 1.6%y/y. **Fri:** Germany Retail Sales -0.4%m/m, 2.6%y/y; Germany Import Prices -0..3%m/m, -1.2%y.y; Germany Unemployment Change & Unemployment Rate 10k & 6.3%; France GDP 0.3%q/q; France CPI 0.5%m/m, 0.9%y/y; France Consumer Spending -0.2%; Italy GDP -0.1%q/q, 0.4%y/y; Italy CPI 0.2%m/m, 1.7%y/y; Japan Consumer Confidence 33.5; De Guindos. (Source: FX Street)

Strategy Indicators

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): During the August 21 week, the S&P 500's forward revenues rose 0.1% w/w to its fourth straight record high. Forward earnings rose 0.1% to a new record high too. The forward profit margin was steady for a fifth week at a record high of 13.7% and is now 3.4ppts above its seven-year low of 10.3% during April 2020. The consensus expectations for forward revenues growth was steady w/w at a 35-month high of 6.0%. It has gained 3.7ppts from its 33-month low of 2.3% during the February 23, 2023 week. That's down from a record high of 9.6% growth at the end of May 2021 and compares to 0.2% forward revenues growth during April 2020, which was the lowest reading since June 2009. The forward earnings growth forecast was steady w/w at a 20-week high of 12.3%, up 1.4ppts from its 15-month low of 10.9% during the May 29 week. From a longer-term perspective, that's a bit stronger than its 20-year average of 11.4% and slowing from a 38-month high of 14.3% during the December 12 week. That's also down from its 23.9% reading at the end of April 2021, which was boosted by the recovery from the pandemic to its highest reading since June 2010 and up substantially from its record low of -5.6% at the end of April 2020. Analysts expect revenues to rise 5.5% in 2025 (up 0.1ppt w/w) and 6.1% in 2026 (unchanged w/w), compared to a 4.9% rise in 2024. They expect an earnings gain of 11.0% in 2025 (up 0.2ppt w/w) and a 13.2% rise in 2025 (unchanged w/w) compared to 2024's earnings gain of 11.3%. Analysts expect the profit margin to rise 0.6ppt y/y to 13.1% in 2025 (unchanged w/w) and 0.9ppt y/y in 2026 to 14.0% (unchanged w/w), compared to 2024's 12.5%. Looking at valuation data as of August 21, the S&P 500's weekly forward P/E fell 0.3pt w/w to 22.2 from a 55-month high of 22.5, and is up 3.0pts from its 16-month low of 19.2 during the April 17 week. It's now 6.9pts above its 30-month low of 15.3 in October of 2022. It also compares to 23.1 in early September 2020, which was the highest level since July 2000, and to a 77-month low of 14.0 in March 2020. The S&P 500 weekly price-to-sales ratio fell 0.04pt w/w to 3.06 from a record high of 3.10. That's up from a six-month low of 2.22 during the October 26, 2023 week and compares to a 49-month low of 1.65 in March 2020.

S&P 500 Sectors Revenues, Earnings, & Margins (*link*): During the August 21 week, forward revenues rose for eight of the 11 S&P 500 sectors, and eight sectors also posted gains in their forward earnings. These seven sectors had post pandemic- or record-high forward revenues this week: Consumer Discretionary, Consumer Staples, Financials, Health Care, Information Technology, Real Estate, and Utilities. Also close to their highs are these three sectors: Communication Services, Industrials, and Utilities. Energy's remains depressed at 29.7% below its September 2008 record and 17.1% below its cyclical high in October 2022. Materials' has improved to a 12-month high to 4.2% below its June 2022 record high. These four sectors had record-high forward earnings this week: Communication Services, Financials, Information Technology, and Utilities. Health Care remains 2.3% below its April 3 record, and these four sectors are 1.1% or less below their recent record highs: Consumer Discretionary, Consumer Staples, Industrials, and Real Estate. Forward earnings remains depressed for the last two sectors, Energy and Materials, but have improved in recent months to 39.2% and 23.6% below their respective highs during 2022. Looking at the forward profit margin, two sectors rose w/w and one fell. These two sectors were at record highs: Financials and Information Technology. These four sectors remain close: Communication Services, Consumer Discretionary, Industrials, and Utilities. Energy and Materials are improving somewhat from their recent multi-year lows, but these two sectors are at or barely above cyclical or record lows: Consumer Staples and Health Care. Here's how the S&P 500 and its 11 sectors rank based on their current forward profit margin forecasts along with their record highs: Information Technology (27.7%, at a record high for a third week and for the first time since September, prior to low-margin Dell's addition to the index, which lowered the margin 1.3ppts then to 26.3%), Financials (20.8, up 0.1ppt w/w to a new record high), Communication Services (19.5, up 0.1ppt w/w and down from its 19.8 record high during the August 7 week), Real Estate (16.6, down 0.1ppt w/w from its 16.7 five-month high and down from its 19.2 record high in 2016), Utilities (14.7, 0.1ppt below its 41-month high during the July 10 week and 0.4ppt below its April 2021 record high), S&P 500 (13.7, at a record high for a seventh week), Materials (10.8, up 0.1ppt w/w to a seven-month high and up 0.4ppt from 51-month low in late February and down from a 20-month high of 11.6 in July 2023 and a 13.6 record high in June 2022), Consumer Discretionary (9.3, down from a record high 9.4 in early April), Energy (8.8, up 0.3ppt from a 55-month low of 8.5 during the during the May 15 week and down from its 12.8 record high in November 2022), Industrials (11.2, down from its 11.3 record high in early January), Health Care (8.1, at a record low and down from its 11.5 record high in February 2022), and Consumer Staples (6.7, a 21-month low and down from its 7.7 record high in June 2020).

Contact us by *email* or call 480-664-1333.

Ed Yardeni, President & Chief Investment Strategist, 516-972-7683
Debbie Johnson, Chief Economist, 480-664-1333
Joe Abbott, Chief Quantitative Strategist, 732-241-6502
Melissa Tagg, Senior Global Investment Strategist, 516-782-9967
Mali Quintana, Senior Economist, 480-664-1333
Jackie Doherty, Contributing Editor, 917-328-6848
William Pesek, Contributing Editor, 516-277-2432
Valerie de la Rue, Director of Institutional Sales, 516-277-2432
Mary Fanslau, Manager of Client Services, 480-664-1333
Sandy Cohan, Senior Editor, 570-228-9102