Yardeni Research

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Morning Briefing

On Chip Competition, P/Es & Preparing For Q-Day

Check out the accompanying chart collection.

Executive Summary: Nvidia no longer seems as competitively invincible as it once did. Jackie surveys the increasingly crowded AI chip playing field that could act like gravity to Nvidia's earnings growth. … Also: When a stock market goes a year with broad-based share price appreciation yet little change in valuation multiples, that's a strongly supported market. Earnings growth accounted for the advances in companies' and industries' stock prices enjoyed over the course of 2025. … And: Someday, quantum computers will be able to break today's encryption codes, but when "Q-day" will come is uncertain. The government is developing post-quantum cryptography standards that it would behoove companies to adopt ASAP.

Information Technology: Chip Wars. Earlier this week, Nvidia CEO Jensen Huang got up in front of the crowd at CES—billed as "the most powerful tech event in the world"—and delivered what they wanted. He noted that the company's latest offering, the Vera Rubin chip platform, is in production and will use less energy but be more powerful, cutting the cost of running the system to about one-tenth of Nvidia's current system, Blackwell. He also discussed the company's autonomous-driving software, a new line of business, and, of course, robots.

Yet in the wake of Huang's presentation, Nvidia shares barely budged. In fact, the stock is down 9.6% since its October 29 peak (*Fig. 1*). Despite Nvidia's leadership position in the hottest tech market, its shares are notably inexpensive relative to expectations for its fundamentals: Forward revenues, forward profit margin, and forward operating earnings per share each are at record levels (*Fig. 2*, *Fig. 3*, and *Fig. 4*).

Analysts' consensus forecasts imply forward earnings growth of an impressive 64.0%; over the next five years, growth is expected to remain elevated at 46.3% annually (*Fig. 5*). Despite these strong forecasts, the stock's forward P/E, at 25.2, is lower than its expected earnings growth (*Fig. 6*).

What gives? The shares may be taking a breather since they're up an astonishing 1,006% since OpenAI launched ChatGPT on November 30, 2022, outpacing the S&P 500's 70.2% gain over the same period, Joe calculates. More likely, the growing competition the chip company faces gives investors pause. AMD has woken up and started offering AI chips with lots of memory. Amazon, Google, and Microsoft have developed their own chips, which are being used by their cloud customers. Even Qualcomm and upstarts, like FuriosaAI out of South Korea, have taken on the market leader. They each have a long way to go before offering the complete hardware and software systems that have made Nvidia king of the AI hill. But the growing competition may mean Nvidia's growth decelerates from insane to merely strong.

Here's a look at what the competition is doing to spook Nvidia investors:

(1) *AMD awakes from its slumber.* AMD made its name by developing better CPU (central processing unit) chips than Intel. Then Nvidia and AI came along, and everyone clamored for GPUs (graphics processing units). Over the past year, AMD has played catch-up, introducing its own GPUs, dubbed "MI450," and it's scheduled to introduce Helios server racks in the second half of this year.

The company counts Oracle and OpenAI among its customers. OpenAI agreed in October to buy six gigawatts of AMD chips, either directly from AMD or through OpenAI's cloud computing partners, starting next year. AMD CEO Lisa Su said the deal would generate "tens of billions of dollars in new revenue" over the next five years, the *WSJ* *reported*. OpenAI will also receive warrants for up to 160 million AMD shares at one cent per share awarded in phases based on deployment milestones and AMD's stock price.

AMD chips offer superior memory to Nvidia's chips, are often priced more competitively, and use open standards. Investors appear to believe AMD is moving the right direction: Its shares have climbed 65.5% over the past year, surpassing Nvidia's 25.3% gain.

(2) *Google's making deals.* Google began using its tensor processing units, or TPUs, about a decade ago in its own operations. TPUs are application-specific integrated circuits designed for a particular computing task and offer an energy-efficient alternative to GPUs.

In 2018, Google began offering TPUs to its cloud customers. TPUs have been used by Google and by its customers to train and operate large language models. Anthropic announced that it will buy up to one million Google TPUs this year, and Google has reportedly been in talks to sell chips to Meta Platforms.

(3) *Amazon's in the fray.* Amazon introduced in December its latest AI chip, Trainium 3, and UltraServers, which contain 144 of the chips. Amazon *claims* the UltraServers allow companies to train larger AI models faster and serve more users at a lower cost.

Anthropic, which considers Amazon Web Services its primary cloud provider, has said it expects to use more than one million Trainium 2 chips by the end of 2025. It has worked with Amazon on developing chips but has not stated whether it will use the latest Amazon chip. In addition to using chips from Amazon and Google, Anthropic uses Nvidia chips.

(4) *Microsoft aims to go solo.* Microsoft's CTO Kevin Scott *said* in October that the company plans to mainly use its own chips in future data centers, reducing its reliance on Nvidia and AMD chips. In 2023, Microsoft introduced Azure Maia AI Accelerator for AI workloads and the Cobalt CPU. It's now reportedly working on the next generation of AI products. That said, Nvidia's Huang said Microsoft will be among its first customers using Rubin chips later this year and will have thousands of them in two data centers being built in Georgia and Wisconsin, *Wired* *reported*.

(5) *OpenAI.* In addition to striking an agreement with AMD, OpenAI signed a $10 billion deal with Broadcom to develop OpenAI's own chip. But that doesn't mean the company has turned its back on Nvidia. In September, Nvidia agreed to invest $100 billion in OpenAI, which would use the cash to buy Nvidia's chips and deploy up to 10 gigawatts of computing power in AI data centers.

Strategy: Remarkably Stable P/Es. The S&P 500's 16.4% gain last year owed more to earnings growth than it did to multiple expansion. The index's forward P/E barely expanded. It stands at 21.9 as of Tuesday's close, above its long-term average of 15.9 but only slightly north of its 21.5 multiple a year earlier.

The forward P/Es of the S&P 500 sectors also moved only marginally last year. Here's the performance derby for the S&P 500 sectors' forward P/Es as of last week and a year prior: Real Estate (34.7, 35.4), Consumer Discretionary (28.7, 28.4), Information Technology (26.0, 28.3), Industrials (23.5, 21.4), S&P 500 (21.9, 21.5), Communication Services (21.9, 19.2), Consumer Staples (20.7, 20.6), Materials (18.8, 18.0), Health Care (18.1, 16.5), Utilities (17.7, 17.1), Financials (16.3, 16.5), and Energy (15.5, 13.4) (*Table 1*).

Let's dive into some of the details behind the numbers:

(1) *Tech P/E dips.* Perhaps most surprising is the dip in the S&P 500 Technology sector's

forward P/E compared to last year, even though the sector's stock price index gained 23.3% in 2025. Tech industries that saw their forward P/Es contract over the past year include Application Software (31.6, 32.7), Systems Software (27.9, 31.0), and Semiconductors (23.4, 27.7), which was slightly offset by the jump in the forward P/E of the Semiconductor Equipment industry (29.5, 18.4).

(2) *AI helps Industrials.* The S&P 500 Industrials sector's forward P/E increased by 2.1 points. Construction Machinery & Heavy Trucks did the heavy lifting. That industry's forward P/E leapt to 22.6 as of Tuesday, up from 15.9 a year prior, thanks much to the excitement surrounding the construction of AI data centers that boosted Caterpillar shares by 70% (*Fig. 7*). The company's forward P/E increased with its good fortune to 28.0, up from 16.5 a year earlier (*Fig. 8*).

The Aerospace & Defense industry also grew more richly valued over the course of last year: Its forward P/E climbed to a near record high of 30.7 from 25.0 a year earlier (*Fig. 9*). Among the standout company contributors is RTX, with forward P/E expansion to 28.2 from 18.7 a year ago.

The industry is in President Trump's crosshairs and could face turbulence. On the one hand, President Trump issued an *executive order* yesterday that seeks to cap defense companies' executive pay, stock dividends, and share buybacks in an effort to prod the companies to hit delivery targets on time and invest in their factories to increase production. On the other hand, the President said yesterday that he'd like US military spending increased to $1.5 trillion in 2027, up from the $901 billion 2026 budget, to pay for his "Dream Military."

Transportation industries with multiples moving up over the past year include Rail Transportation (to 19.2 from 17.6), Air Freight & Logistics (15.5, 14.6), and Passenger Airlines (9.9, 9.3).

(3) *Tesla roars ahead.* The Automobile Manufacturers industry enjoyed the largest forward P/E surge in the S&P 500, rising from 44.1 a year ago to 61.6 as of Tuesday. Much of the credit goes to Tesla. Investors stopped focusing on declining electric vehicle sales and instead began dreaming about the potential for Tesla's humanoid robots. Tesla's forward operating earnings per share fell to $2.07 currently from $3.25 at the start of 2025, and its forward P/E soared to 208.8 from 132.8 (*Fig. 10* and *Fig. 11*).

Disruptive Technologies: Preparing for Q-Day. The rapid development of quantum

computers brings us ever closer to the day they can be used to break the encryption used by traditional computers to keep everything from digital signatures to emails and bank accounts safe. The tech community calls that day of reckoning “Q-day.”

The National Institute of Standards and Technology (NIST), a division of the Department of Commerce, has begun establishing new encryption standards already. This year, the NIST is expected to finalize PQC (post-quantum cryptography) algorithm standards that defend against hackers armed with quantum computers.

The folks at Juniper Research believe this will be one of the most important tech developments of 2026. The PQC standards will reduce uncertainty around vendor interoperability and future regulatory compliance, Juniper analysts *report*.

Juniper expects future encrypt processes to involve companies encrypting information twice, once using traditional methods and a second time using quantum-based encryption. This hybrid method provides a backup if one of the algorithms fails. It also allows companies to continue to use legacy systems and offers enterprises a “phased, low-risk migration path.”

The transition won’t be cheap. The Boston Group *estimates* that PQC transition costs will represent 2.5%-5.0% of companies’ annual IT budgets, and that transition foot-draggers will ultimately spend much more than those who plan ahead. Upgrading the billions of Internet of Things devices will be a particular challenge, in part because many have long shelf lives, like automobiles. But the company that doesn’t act could find its vehicles vulnerable to hackers looking to steal cars.

Here's are some more details about Q-day:

(1) *Timing is everything.* One unsettling aspect of Q-day, besides the notion itself, is that no one knows when it will arrive. Is it a few years off or more than a decade away? At least with the Y2K scare, people knew when the world’s computers supposedly would go haywire.

That said, there’s growing concern that the bad guys may be harvesting large amounts of encrypted data today with plans to hold it until they can use quantum computers to break the old encryption. The potential threat of this harvest-now-decrypt-later scenario implies it would be wise for companies to adopt PQC security measures today before quantum computers arrive on the scene.

Accordingly, the US government is *prodding* the public and private sectors to adopt PQC standards preemptively. It has mandated that all National Security Systems transition to PQC by 2030. In addition, any business that wants to work with the US government must implement PQC, especially for technology purchased after 2030. And the government will stop using any products relying on vulnerable encryption by 2035.

(2) *China goes its own way.* The NIST is leading the charge not just for the protection of US systems but also for those of most countries and institutions around the world. China, however, has opted to take another path.

Last year, the country's Institute of Commercial Cryptography Standards requested proposals for post-quantum encryption methods. Chinese officials are concerned that programs created by the US government will include "back doors" that grant US intelligence services access to data. US officials have the same concern about PQCs developed by Chinese organizations.

(3) *Companies tout their PQC bona fides.* Companies can use quantum readiness as a competitive differentiator, showing customers that they take security seriously.

A few examples: An October Google *blogpost* laid out the various ways the company has bolstered its quantum hacking defenses. Most human-initiated traffic on Cloudflare systems is protected by PQC encryption, reducing the threat of harvest-now-decrypt-later risk, a Cloudflare *blogpost* noted. Microsoft has a *Quantum Safe Program* to protect its infrastructure, products, and customer systems by embedding quantum-resistant cryptography. It expects to *complete* the transition by 2033. And in November, Amazon Web Services and Accenture *teamed up* to help large companies adopt PQC.

To be sure, tech consultants and merchants stand to profit. The global PQC migration market is expected to grow at a 20.6% compound annual rate through 2035, bringing the industry's value up to $12.4 billion, according to Future Market Insights.

Strategy Indicators

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): During the January 1 week, the S&P 500's forward revenues and earnings rose 0.6% and 1.3%, respectively, to new record highs. The forward profit margin rose 0.1ppt w/w to a new record high of 14.5%. The forward profit margin is now 4.2ppts above its seven-year low of 10.3% during April 2020.

The consensus expectations for forward revenues growth rose 0.1pt w/w to a 42-month high of 7.0%. From a longer-term perspective, that's well above its 20-year average of 5.2% and its 33-month low of 2.3% during the February 23, 2023 week. That compares to a pandemic-recovery boosted record-high 9.6% forward revenues growth at the end of May 2021 and 0.2% during April 2020, which was the lowest reading since June 2009. The forward earnings growth forecast rose 0.2ppt w/w to a 54-month high of 15.3%, up 4.4ppts from its 15-month low of 10.9% during the May 29 week. That's well above its 20-year average of 11.4%. That compares to 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 6.4% in 2025 (steady w/w at a new high) and 7.1% in 2026 (up 0.1ppt w/w to a new high), compared to a 5.0% rise in 2024. They expect an earnings gain of 13.1% in 2025 (steady w/w at a nine-month high) and a 15.6% rise in 2026 (steady w/w at a new high) compared to 2024's earnings gain of 11.7%. Analysts expect the profit margin to rise 0.8ppt y/y to 13.3% in 2025 (unchanged w/w at an eight-month high) and 1.0ppt y/y in 2026 to 14.3% (unchanged w/w at an eight-month high), compared to 2024's 12.5%. Looking at valuation data as of January 1, the S&P 500's weekly forward P/E fell 0.6pt w/w to 21.9. That's just 0.1pt above the 26-week low of 21.8 during the December 18 week and 1.4pts below the 25-year high of 23.3 during the October 30 week. That's now up 2.7pts from its 16-month low of 19.2 during the April 17 week. It also compares to 23.1 in early September 2020, which was then its 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 0.06pt w/w to 3.18 from an eight-week high of 3.23. That's up 0.05pt from a 10-week low of 3.13 during the November 20 week, and is now 0.10pt from its record high of 3.28 during the October 30 week. 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 January 1 week, it was a clean sweep as all 11 S&P 500 sectors posted gains in their forward revenues, earnings, and profit margins. These seven sectors had post pandemic- or record-high forward revenues this week: Communication Services, Financials, Health Care, Industrials, Information Technology, Real Estate, and Utilities. Consumer Discretionary is 0.2% below its November 6 record and Consumer Staples' would at a record high too, but is instead 3.8% below due to Drug Retail's exit in September. Energy's is ticking up again, but remains depressed at 28.6% below its September 2008 record and 15.9% below its cyclical high in October 2022. Materials' is improving faster now and is at a 35-month high of 2.9% below its June 2022 record high. These eight sectors had record-high forward earnings this week: Communication Services, Consumer Staples, Financials, Health Care, Industrials,

Information Technology, Real Estate, and Utilities. Forward earnings for Consumer Discretionary is just 0.9% below its December 4 record high, but remains depressed for Energy and Materials. From their respective highs during 2022, Energy's remains mired near a four-year low at 38.9% below while Materials' has improved to a 36-month high of 18.7% below. Looking at the forward profit margin, five sectors rose w/w and none fell. These two were at record highs: Industrials and Information Technology. These four sectors remain close: Communication Services, Consumer Discretionary, Financials, and Utilities. Among the five lagging sectors: Consumer Staples, Materials, and Real Estate are improving somewhat from their recent multi-year lows; Energy's is struggling to move higher; and Health Care's is still at a record low. 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 (30.0%, up 0.2ppt w/w to a new record high and up 2.3ppts since August when it made its first record high since September 2024 after low-margin Dell's addition to the index lowered the margin 1.3ppts from a record high 27.6% then to 26.3%), Financials (21.1, up 0.1ppt w/w to 0.1ppt below its 21.2 record high on December 18), Communication Services (19.7, down from its 19.8 record high during the August 7 week), Real Estate (16.6, down from its 16.8 eight-month high in early October and from its 19.2 record high in 2016), Utilities (14.9, up 0.1ppt w/w to a 59-month high and just 0.2ppt below its 15.1 record high in April 2021), S&P 500 (14.5, up 0.1ppt w/w to a new record high), Materials (11.3, up 0.1ppt w/w to a 16-month high and up 0.8ppt from 51-month low 10.5 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 (9.5, down from a 9.6 record high on December 4), Energy (8.7, up 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 (11.3, up 0.1ppt w/w to a new record high), Health Care (8.1, steady at a record low and down from its 11.5 record high in February 2022), and Consumer Staples (7.1, steady w/w and up 0.4ppt from a 21-month low of 6.7 during the 9/4 week just before Drug Retail's exit from the sector, and down from its 7.7 record high in June 2020).

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