Yardeni Research

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Morning Briefing

On Semis, Leading Stocks & AI Designed Proteins

Check out the accompanying chart collection.

Executive Summary: The S&P 500 Semiconductors industry is rapidly growing earnings, buoyed by lofty demand for chips that enable artificial intelligence. But its valuations are lofty as well. Today, Jackie compares and contrasts the earnings prospects and valuations of two industry leaders, AMD and Nvidia. … Also: Semi stocks don't top the list of the S&P 500's best ytd performers, but several makers of the tech equipment AI runs on do. Like the semis, they sport historically high valuations reflecting their heady earnings prospects. ... And: How AI is being used to create proteins that will digest hard-to-degrade chemicals, like polyurethane.

Information Technology I: An Ascendant AMD. Nvidia and its CEO Jensen Huang may capture most of the headlines, but AMD has been the semiconductor stock to beat this year.

Granted, Nvidia shares have far outperformed AMD shares over long periods. Over the past three years, for example, AMD shares gained 326.5%, which pales in comparison to the 1,403.1% increase in Nvidia stock. Nvidia benefited from being the first to develop chips and software to train and run large language models.

But ytd through Tuesday's close, AMD has climbed 107.0%, more than twice the 48.0% gain in Nvidia shares over the same period and trouncing the S&P 500's 15.1% advance (*Fig. 1* and *Fig. 2*).

Both stocks lost ground during Tuesday's market selloff. AMD shares fell 4.7%, while Nvidia shares dropped 4.0%, both underperforming the S&P 500's 1.2% loss. The semiconductor stocks were hurt by news that hedge fund manager Michael Burry had purchased put options to bet against Nvidia and Palantir shares. Burry was famously portrayed in the film *The Big Short* for his successful big bet against the housing market before its 2008 crash. On Wednesday, AMD shares regained almost all of their losses, while Nvidia shares declined an additional 1.75%.

Let's take a look at these two stocks and the semiconductor industry that they dominate:

(1) *AMD reports earnings.* AMD reported on Tuesday Q3 earnings that beat analysts' consensus estimate. Revenue climbed 35.6% to $9.3 billion in the quarter, adjusted net income surged 30.7% to $2.0 billion, and adjusted EPS of $1.20 beat analysts' $1.17 consensus estimate.

AMD management now forecasts Q4 revenue of $9.3 billion-$9.9 billion, above the $9.2 billion analysts had targeted. Results should continue to improve given AMD's recent deals. Last month, OpenAI agreed to buy GPUs from AMD in 2026; the deal makes clear that AMD can compete with Nvidia in the market for AI chips and platforms. OpenAI also agreed to purchase roughly 160 million AMD shares, about 10% of the company. Separately, AMD landed a deal to sell up to 50,000 GPUs to Oracle.

CEO Lisa Su explained the importance of the OpenAI transaction on AMD's *earnings conference call*: "The partnership with OpenAI establishes AMD as a core compute provider for OpenAI and underscores the strength of our hardware, software, and full-stack solution strategy. Moving forward, AMD and OpenAI will work even more closely on future hardware, software, networking, and system-level road maps and technologies. … We expect this partnership will significantly accelerate our data center AI business with the potential to generate well over $100 billion in revenue over the next few years." Not addressed was how OpenAI would pay for the chips it promised to buy from AMD and others.

(2) *Dissecting P/Es.* It won't take much to spook investors in either of these stocks because they sport such high earnings multiples. AMD shares, which trade at 64.9 times the $3.85 a share the company is expected to earn this year, are more expensive than Nvidia shares, trading at 43.8 times expected EPS of $4.54 for the fiscal year ending January 31. AMD is also the more expensive of the two based on 2026 EPS estimates, though those valuations are more reasonable: 39.8 times $6.29 for AMD and 29.8 times $6.67 for Nvidia.

Arguably, such high multiples are justified given the companies' lofty earnings growth rates. AMD is expected to boost earnings by 63.4% next year, faster than the 46.9% earnings growth forecasted for Nvidia. AMD does benefit from a smaller base off of which its growth is calculated compared to Nvidia. And AMD has a much smaller market capitalization, $405.8 billion, compared to Nvidia's record-setting $5.0 trillion market cap (*Fig. 3*).

(3) *It's nice to swim in an expanding pool.* Both AMD and Nvidia are fortunate to be members of an industry that's growing rapidly. Global semiconductor sales increased to

$208.4 billion in Q3, up 15.8% compared to Q2, *according to* the Semiconductor Industry Association (SIA). In September, global sales hit a new record, surging 25.1% y/y and 7.0% m/m to $69.5 billion, based on a three-month moving average.

Outside of Japan, y/y sales grew around the world during September: Asia Pacific/All other (47.9%), America's (30.6%), China (15.0%), Europe (6.0%), and Japan (-10.2%) (*Fig. 4*). The optimistic SIA data are confirmed by the S&P 500 Semiconductor industry's growing earnings and climbing US industrial production of semiconductors (*Fig. 5*).

The S&P 500 Semiconductors stock price index has surged 48.4% ytd (*Fig. 6*). While this year's earnings are expected to come in slightly lower than what was expected at the start of the year, analysts have been revising upwards their 2026 earnings estimates for the past six months. After 49.1% earnings growth in 2024, analysts continue to call for sharp growth this year and next: 45.3% in 2025 and 42.5% in 2026 (*Fig. 7*).

The semiconductor industry got its latest dose of good news last night when Qualcomm reported fiscal Q4 (ended September) revenues and adjusted earnings that beat analysts' forecasts.

Demand should remain strong as cloud providers build out data centers. When Amazon reported Q3 earnings at the end of last month, it noted that AWS, Amazon's web services division, grew revenues 20.2% y/y to $33 billion. In addition to offering web services, the company also makes its own semiconductor chips and offers ancillary services to clients that help them build and deploy their own models, create AI agents, and write code, among other things. Since 2022, Amazon has doubled its data center capacity and plans to double capacity again by 2027.

"You're going to see us continue to be very aggressive investing in capacity because we see the demand. As fast as we're adding capacity right now, we're monetizing it. It's still quite early and represents an unusual opportunity for customers in AWS," Amazon CEO Andrew Jassy said on the October 30 *earnings conference call*.

The only downside to this story is the industry's heady forward P/E of 31.2 (*Fig. 8*). Its earnings multiple has been elevated for much of the last two years, with only a brief correction earlier this year. A more "normal" level for the industry's forward P/E has historically been between 10 and 25.

Likewise, the S&P 500 Semiconductors industry's share of the S&P 500's market

capitalization, currently 14.3%, has grown far faster over the past six months than has its share of the S&P 500's earnings, at only 10.1%. At many times over the past 20 years, the industry's earnings share has been higher than or equal to its market-cap share (*Fig. 9*).

Information Technology II: Overlooked Areas Rallying, Too. The S&P 500's ytd leadership board isn't what you might assume: Alphabet, Oracle, and Nvidia are not among the top 10 or even the top 20 best performing stocks so far this year. Their shares have only done well enough to be ranked the 39th, 40th, and 41st best-performing stocks in the S&P 500.

Topping the list are the companies that perform some of the workhorse tasks that make AI possible. Western Digital and Seagate Technology Holdings make hard disk drives, a product used for data storage that's been around for decades, and they're now a hot commodity thanks to the boom in AI data centers. Western Digital shares have climbed 237.7%, and Seagate shares have climbed 190.1% ytd through Tuesday's close. That makes them the second and third best performers in the S&P 500 this year.

In fourth place is Micron Technology stock, which has gained 218.0% ytd. Micron sells memory semiconductors. They are far less glamorous than the semis used to train large language models, but they're needed in data centers, so they're in demand. Lam Research shares have soared 115.7% ytd, making Lam the sixth best performer in the S&P 500.

Here's a look at the S&P 500 industries in which three of these four high performing stocks reside: Technology Hardware, Storage & Peripherals, and Semiconductor Equipment:

(1) *Weighed down by the laggards.* The S&P 500 Technology Hardware, Storage & Peripherals industry has trailed the S&P 500 this year, appreciating by only 9.8% ytd (*Fig. 10*). It's being held back by its largest constituent, Apple, up 7.8% ytd, as well as HP (-20.5%) and NetApp (-2.4%) (*Fig.11*).

Nonetheless, the index has recently broken out to a new high, and its 200-day moving average has hooked upward, helped by sharp gains in Western Digital and Seagate shares. The industry's forward revenues per share and forward earnings per share also have climbed to new record highs (*Fig. 12* and *Fig.13*). Analysts expect the industry's earnings will grow by 12.5% this year and 9.3% in 2026 (*Fig. 14*).

The only drawback to give investors pause is the industry's 30.9 forward P/E, which is bumping up against peak levels over the past five years. It's been exceeded only during the

years surrounding the 2000 tech bubble (*Fig. 15*).

(2) *Semi equipment is a winner!* The S&P 500 Semiconductor Equipment industry is the best performing industry in the S&P 500 Information Technology sector. It has risen 71.9% ytd, outpacing the sector's 26.9% gain (*Fig. 16*). Its stock price index and forward operating EPS both are at record-high levels (*Fig. 17* and *Fig. 18*). After rising by an expected 22.3% this year, earnings are forecast to grow another 9.1% in 2026 (*Fig. 19*). The industry's strong performance has left its forward P/E of 28.7 in record territory relative to the past 10 years (*Fig. 20*).

Disruptive Technologies: AI Creates Better Proteins. Using AI to create proteins isn't new. Alphabet's DeepMind introduced the AlphaFold system in 2018, shocking the world with its ability to predict the 3D folds that can make proteins' structure so complex and are closely linked to how they operate and function. AlphaFold's predictions have become increasingly accurate over the ensuing years. And in 2022, AlphaFold *released* a catalog of protein structure predictions for nearly all proteins known to man.

More recently, scientists used the AlphaFold catalog as a starting point in their *search* to create an enzyme to break down polyurethane. The material used in foam cushioning is difficult to recycle because the complex polymer used to make polyurethane is not easily broken down. In 2024 alone, 22 million metric tons of polyurethane were made. Finding a method to recycle this material would mean less of it would wind up in landfills.

The researchers turned to AI for help in understanding how proteins digest materials. Pythia-Pocket is a neural network that specializes in amino acids, and Pythia is another neural network that predicts whether a protein will form a stable structure. Researchers also developed a software program called "GRASE," which stands for "graph neural network-based recommendation of active and stable enzymes." In addition to understanding the structure of the protein, these programs helped the researchers focus on its function and how amino acids interact with the materials being digested, an October 31 *article* in ARS Technica reported.

After some trial and error, the researchers developed an enzyme that breaks down 98% of the polyurethane within eight hours. The researchers believe their AI-enhanced framework for discovering enzymes can be used by the chemical and polymer recycling industry.

Calendars

US: Thurs: Williams; Bowman; Waller. **Fri:** University of Michigan Consumer Sentiment 54.0; University of Michigan Inflation Expectations; Williams; Jefferson. (Source: FX Street)

Global: Thurs: Eurozone Retail Sales 0.2%m/m,1.0%y/y; Germany Industrial Production 3.0%; BoE Interest Decision 4.0%; Nagel; Villeroy; De Guindos; Schnabel; Bailey; Paulson. **Fri:** Elderson; Nagel; Pill. (Source: FX Street)

Strategy Indicators

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): During the October 30 week, the S&P 500's forward revenues rose 0.7% w/w and forward earnings gained 0.8%, both to new record highs as the forward profit margin remained steady at a record high of 14.0%. The forward profit margin is now 3.7ppts above its seven-year low of 10.3% during April 2020. The consensus expectations for forward revenues growth remained steady w/w at a 39-month high of 6.4%. From a longer-term perspective, that's well above its 20-year average of 5.2%. It has gained 4.1ppts 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 nine-month high of 13.5%, up 2.6ppts from its 15-month low of 10.9% during the May 29 week. That's a bit stronger than its 20-year average of 11.4%, and is just 0.8 ppts below its 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 6.1% in 2025 (up 0.2ppt w/w) and 6.5% in 2026 (up 0.1ppt w/w), compared to a 5.0% rise in 2024. They expect an earnings gain of 12.0% in 2025 (up 0.3ppt w/w) and a 13.9% rise in 2025 (unchanged w/w) compared to 2024's earnings gain of 11.6%. Analysts expect the profit margin to rise 0.7ppt y/y to 13.2% in 2025 (up 0.1ppt w/w) and 1.0ppt y/y in 2026 to 14.2% (up 0.1ppt w/w), compared to 2024's 12.5%. Looking at valuation data as of October 30, the S&P 500's weekly forward P/E rose 0.5pt w/w to a 25-year high of 23.3. That's now up 4.1pts 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 rose 0.07pt w/w to a new record high of 3.28. 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 October 30 week, seven of the 11 S&P 500 sectors posted gains in their forward revenues; seven posted gains in their forward earnings; and the forward profit margin rose for three sectors. These six sectors had post pandemic- or record-high forward revenues this week: Communication Services, Consumer Discretionary, Financials, Industrials, Information Technology, and Utilities. These two are less than 0.6% from their very recent record high revenues: Health Care and Real Estate. Consumer Staples' would be near a record high too, but is instead 5.4% below due to Drug Retail's exit in late August. Energy's is improving now from its three-year low in May, but remains depressed at 29.0% below its September 2008 record and 16.1% below its cyclical high in October 2022. Materials' has improved to a 27-month high to 3.6% below its June 2022 record high. These five sectors had record-high forward earnings this week: Communication Services, Consumer Discretionary, Financials, Information Technology, and Utilities. These four are less than 1.1% from their record highs: Consumer Staples, Health Care, Industrials, and Real Estate. Forward earnings remains depressed for the last two sectors, Energy and Materials, but have improved in recent months to 39.6% and 20.6% below their respective highs during 2022. Looking at the forward profit margin, three sectors rose w/w and one fell. Consumer Discretionary, Financials, and Information Technology were at record highs. These three sectors remain close: Communication Services, Industrials, and Utilities. Consumer Staples, Energy, Materials, and Real Estate are improving somewhat from their recent multi-year lows, but 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 (28.4%, up 0.1ppt w/w to a record high, its first since September 2024 when low-margin Dell's addition to the index lowered the margin 1.3ppts then to 26.3%), Financials (21.1, steady w/w at a record high), Communication Services (19.6, up 0.1ppt w/w and down from its 19.8 record high during the August 7 week), Real Estate (16.7, steady w/w at 0.1ppt below its 16.8 eight-month high in early October and down from its 19.2 record high in 2016), Utilities (14.8, at a 43-month high and 0.3ppt below its 15.1 record high in April 2021), S&P 500 (14.0, at a record high), Materials (11.1, up 0.1ppt w/w to a 10-month high and up 0.6ppt 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 (9.4, a record high for a sixth straight week), Energy (8.7, unchanged w/w and 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 (11.1, down 0.1ppt w/w to 0.2ppt below 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 (7.1, unchanged 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).

US Economic Indicators

ADP Employment (*link*): "Private employers added jobs in October for the first time since July, but hiring was modest relative to what we reported earlier this year," noted Dr. Nela Richardson, chief economic ADP. *Private payroll* employment added 42,000 jobs last month, following two months of weak hiring. The *service-providing* sector rose 33,000 last month, led by employment gains in trade, transportation/ utilities (47,000), education & health services (26,000), and financial activities (11,000). Meanwhile, declines were posted in information services (-17,000), professional & business services (-15,000), other services (-13,000), and leisure & hospitality (-6,000). *Goods-producing* jobs climbed 9,000, led by gains in natural resources/mining (7,000) and construction (5,000) employment, while manufacturing (-3,000) cut payrolls during the month. *By region*, the West (40,000) posted the biggest gain, followed by the Midwest (9,000) and South (6,000); the Northeast (-12.000) shed jobs. According to the report, the yearly pay increases were flat in October from the prior month, at 4.5% for *job-stayers* and at 6.7% for *job-changers*.

US Non-Manufacturing PMI (*link*): Economic activity in the service sector returned to expansion in October, climbing from the breakeven point of 50.0 in September to 52.4 in October—and is in expansion territory for the eighth time this year. The *business activity/production* (to 54.3 from 49.9) measure returned to growth, while the *new orders* (56.2 from 50.4) gauge posted an impressive gain, posting its highest reading since October 2024 (56.7). Meanwhile, the *employment* (48.2 from 47.2) measure contracted for the fifth successive month, though declined at a slightly slower pace. *Supplier deliveries* (50.8 from 52.6) measure posted its 11th straight month in expansion territory—indicating slower delivery performance. (Supplier deliveries is the only ISM PMI Reports Index that is inversed; a reading of 50.0 indicates slower deliveries, which is typical as the economy improves and customer demand increases.) On the *inflation* front, the *prices index* climbed to 70.0 last month, its first time at or above 70.0 since a reading of 70.7 in October 2022. The index has exceeded 60.0 for 11 consecutive months.

Global Economic Indicators

Germany Factory Orders (*link*): German orders in September posted the first gain since April. *German factory orders* climbed 1.1% in September, virtually double the consensus estimate of a 0.6% gain, following a revised 0.4% fall during August. Overall orders were 4.3% below a year ago. *Foreign demand* rebounded 3.5% in September, with orders from *within the Eurozone* climbing 2.1% and orders from *outside the Eurozone* jumping 4.3%. *Domestic orders* continued to contract, slumping 2.5% during the month. Driving September's gain were increases in orders for electrical equipment (9.5%), aircraft, ships, trains, and military vehicles (7.5), and autos (3.2). Meanwhile, there were declines in orders for metal products (-19.0%), following August's spike, while orders in metal production and processing (-5.6) also contracted. *By sector*, consumer (6.2%) and intermediate (1.4) goods orders posted gains, while capital goods held steady. *Excluding large-scale orders*, billings advanced 1.9% during the month. The economic ministry said it was difficult to conclude that an upswing was underway based on the recent data, cautioning "The order situation remains fragile in view of the ongoing geopolitical uncertainties and, most recently, uncertainties surrounding the supply situation for some products."

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