



January 9, 2025

## Morning Briefing

---

### AI, Metals & Solar

---

Check out the accompanying [chart collection](#).

**Executive Summary:** Today, Jackie recaps takeaways from this week's Consumer Electronics Show—including Nvidia CEO Jensen Huang's insights about the future of artificial intelligence and the most notable of the many AI-enhanced high-tech gadgets unveiled at the convention. ... Also: Industrial metals appear to be a shiny new investment theme for the new year; their prices have started the year on a positive note for several reasons. ... And in our Disruptive Technologies segment, researchers have developed more ways to catch rays for solar power on the go.

---

**Information Technology: AI Invades CES.** Spotlighting the latest and greatest tech innovations, the annual Consumer Electronics Show, a.k.a. CES, is always a great way to kick off the new year. Many of the products showcased this year incorporate artificial intelligence (AI), making them “smarter.” So it was appropriate that the king of AI, Nvidia's CEO Jensen Huang, gave the [keynote address](#) on Monday.

Here are some of his notable comments and a few of the interesting AI-infused products that caught our attention:

(1) *Nvidia's massive breadth.* Nvidia may have started out as a semiconductor chip designer, but now it's also designing software and hardware, creating an entire ecosystem for companies adding AI to their products.

Nvidia's latest hardware offering is Project Digits, an AI supercomputer small enough to sit on a desk and connect to the laptop of a developer, engineer, or machine learning researcher. Users can run AI software on the supercomputer instead of paying to run AI programs in the cloud. Expected to hit the market in May, Huang described the supercomputer as a cloud platform that sits on your desk.

(2) *An AI agent for everyone.* Huang is convinced that AI agents will be used in every field to help people work faster and smarter. Knowledge workers will use AI research assistants

to digest complex documents. Software developers will use software security AI agents to scan software for vulnerabilities and suggest corrective actions. In labs, virtual AI agents will screen medical compounds. In factories, video analytics AI agents will monitor traffic and reroute workers when necessary. AI agents will assist employees in sales development, customer service, financial analysis, employee support—the list goes on.

AI agents will gain acceptance because they will provide a competitive advantage. All Nvidia software engineers will use AI to ensure they're coding fast enough, Huang noted in a [Q&A session](#) with analysts.

(3) *Welcome to the data factory.* Nvidia is collecting and organizing traditional data and using them to create synthetic data. Both traditional and synthetic data will be used to train AI agents and robots in Nvidia's "data factory." For example, the company developed the Nvidia Cosmos by having it watch 20 million hours of video about nature, humans, and anything to do with the physical world. Based on those real scenarios, it can also create synthetic data to create even more scenarios. It can then use its real and synthetic data to train robots that need to navigate in the world, whether working in a warehouse or driving an autonomous vehicle.

"The ChatGPT moment for general robotics is right around the corner," Huang said in the keynote. Robots could be the largest industry ever. Every person has a cell phone, but there may be more than one robot per person, especially in countries where the population is declining. Huang also believes that all cars will be autonomous, creating a huge demand for data centers.

For those concerned that the growth in the AI market has peaked, Huang noted that over the next four years computers and servers will need to be upgraded. AI will use software and provide services that haven't existed before. And AI will require "data factories" that don't exist. This will all be "capex heavy." The implication: no end in sight to Nvidia's continued stratospheric success.

Nvidia investors apparently weren't convinced, however, as the company's shares dropped 6.2% to 140.14 on Tuesday after hitting a record high on Monday ([Fig. 1](#)). The selloff might have reflected classic buy-the-rumor-sell-the-news thinking or investors might have been spooked by the backup in interest rates. Or perhaps it's just time for the shares to take a breather since they've climbed 185.4% over the past year.

The growth in the company's forward revenues and operating earnings have both been

remarkable, as has its ability to maintain a forward profit margin north of 55% ([Fig. 2](#), [Fig. 3](#), and [Fig. 4](#)). Nvidia's forward P/E of 32.6 is certainly higher than the S&P 500's forward earnings multiple of 21.6, but it looks reasonable relative to the company's expected forward earnings growth of 53.1% ([Fig. 5](#) and [Fig. 6](#)).

(4) *AI gadgets galore*. Beyond Nvidia, CES showcases gadgets that are fun, though not necessarily necessary. News that caught our eye included an item on the [Spicerr](#), a smart spice dispenser that eliminates the need for measuring spoons, "learns" users' flavor preferences, and tailors recipes and spices to match.

Robot vacuums have gotten smarter. The [Roborock Saros Z70](#) has an arm to move small objects out of its path, and the [SwitchBot K20+](#) has a platform that can carry a fan, a tray to deliver food, or a security camera.

We also thought [CortiSense](#) looked interesting. It can test spit to measure a person's cortisol levels to track stress, metabolism, and immune function. Also addressing health is Withings' [Omnia](#), an AI powered, full-length mirror in development that evaluates a person's weight, heart, and lungs. It can take an electrocardiogram and measure blood pressure, heart rate, Vo2 max, and sleep quality. Using this data, Omnia can make recommendations on how to improve one's health.

But the product that could really make a difference is the [LeafyPod](#), an AI-powered smart watering planter. Information entered into an app lets the planter know what type of plant it's holding, the season, and the planter's location. With a reservoir holding four weeks' worth of water, the planter adjusts watering based on how the soil and plant react to the first few watering sessions. It might just be enough to turn Jackie's brown thumb green.

**Materials: Starting the Year with A Bounce.** The prices of industrial metals are starting the year on a positive note. Some are benefitting from optimism that China's economic stimulus will work this time around, others from anticipated heightened demand thanks to planned increases in US hydrogen production and solid global car sales. In some cases, supply constraints are also supporting prices.

Here's how industrial metals have performed ytd and y/y through Tuesday's close: platinum (7.7%, 0.4%), copper (4.4, 9.6), tin (3.0, 21.9), palladium (2.1, -10.8), lithium (0.6, -18.8), steel (0.1, -34.9), lead (0.0, -6.1), aluminium (-1.5, 11.7), iron ore (-3.9, -30.3), and zinc (-3.9, 11.6) ([Fig. 7](#) and [Fig. 8](#)).

Let's take a look at what's driving the leaders early in this new year:

(1) *Tin*. Tin's strong gains last year continued into the first week of 2025 ([Fig. 9](#)). Demand for the metal—which is used in electronics (semiconductors and solar panels), chemicals and cars—has remained strong. Meanwhile, supply has faced disruptions in major producing countries Myanmar and Indonesia.

(2) *Platinum*. Platinum tops the leader board this year after stagnating in 2024 ([Fig. 10](#)). The metal is used in gasoline-powered cars' catalytic converters, in the production of hydrogen, in certain industrial processes (e.g., making glass and the manufacture of LED screens), and of course in jewelry.

Concern that the European Union would stop selling cars with combustion engines by 2035—forcing the adoption of electric vehicles (EVs)—is abating. BMW has begun to push back on that plan, arguing that it's no longer realistic and that it could increase the region's dependence on China's EV batteries. Demand is also expected to increase under the push during the Biden administration to encourage the production of hydrogen in designated regional hubs. Whether that program continues under President-elect Trump remains to be seen.

(3) *Copper*. The price of copper has shown signs of life, presumably on hopes that China's fiscal and monetary stimulus will keep the country's industrial production chugging along ([Fig. 11](#)). The commodity had been a beneficiary of China's new housing construction over the past decade. When that came to a halt in recent years, a major source of demand dried up.

Fortunately, copper is also used in many elements of the clean energy economy, including EVs and data centers. In addition, new supplies of the metal have been tight partially due to the closure a year ago of one of the world's largest mines in Panama. Its owner, First Quantum, was unable to agree to tax terms that appeased Panama's national government. A new Panamanian government may reopen negotiations this year.

**Disruptive Technologies: Here Comes More Sun.** When we think of solar energy, what leaps to mind are the large, clunky panels that typically sit on rooftops or solar farms. But scientists now have developed thinner and more flexible materials that can absorb and generate solar energy from the sides of buildings, car roofs, even the tops of beach umbrellas. Here's a quick look at some of the latest developments:

(1) *A solar paint job.* Mercedes-Benz is developing a paste containing solar cells that can be applied to a car's surface. The photovoltaic material is thinner than a human's hair and is 20% energy efficient. It generates energy both while the car is operating and when it's turned off.

"Solar paint has a high level of efficiency and contains no rare earths or silicon—only non-toxic readily available raw materials. It is easy to recycle and considerably cheaper to produce than conventional solar modules," a company November 22 [press release](#) states. When used on a mid-sized SUV, the paint can propel the car for about 20 miles a sunny day in Germany.

Each body panel covered with the novel paint must be wired into a power converter that sends the electricity to the battery or motor, explained a November 22 *MotorTrend* [article](#). The solar material is then covered by a "nanoparticle-based paint that allows 94 percent of the sun's energy to reach the photovoltaic coating ..."

(2) *Perovskite goes live.* We introduced perovskite in the August 1 [Morning Briefing](#), noting that it's more efficient than silicon, but unstable. First Solar acquired a European company focused on producing perovskite films in 2023, and last year it was awarded \$6 million by the Department of Energy to develop a perovskite film that's 27% efficient, topping the 20% efficiency of most solar panels.

It's not alone. US startups CubicPV, Caelux, Swift Solar, and Tandem PV each are working on perovskite-silicon thin films, and numerous universities are researching the area, a September 19 PV Magazine [article](#) reported.

Japan's Sekisui Chemical may be ahead of the pack. It plans to begin selling perovskite solar films via its existing facilities this year for use on roofs and the exterior walls of factories, warehouses, and other buildings, a December 26 *WSJ* [article](#) reported. The company also plans to mass produce perovskite solar cells through a subsidiary, in which the government-owned Development Bank of Japan will own a 14% stake. The government will subsidize half of the project's anticipated \$2 billion cost.

UK firm Oxford PV has reported that its residential-sized solar panels that use perovskite on silicon have achieved efficiency of 26.9%. The improved efficiency will reduce the number of solar panels used on a roof to provide the same output, which lowers the cost of the system and could mean that owners of roofs in partial shade now have solar options, a CleanTechnica [article](#) explained.

(3) *Solar at CES*. As solar materials become more flexible, they can be applied to a growing range of objects. At CES, Anker showcased its Solix Solar Beach Umbrella with perovskite solar cells that generate energy to chill sodas and sandwiches in the Solix EverFrost 2 Electric Cooler, a January 6 [article](#) in The Verge reported. The cooler, which can also run on batteries, has a price tag that ranges from \$699-\$1,000.

For those who can embrace their inner geek, there's EcoFlow's Power Hat. The wide-brimmed floppy hat is covered with solar cells that can charge a smartphone in three to four hours. The \$129 hat uses passivated emitter and rear contact monocrystalline silicon, The Verge [reported](#) on August 3.

Aptera unveiled its futuristic, two-seater car that runs on solar and battery power at CES. The three-wheeled car has solar cells covering its shell that provide up to 40 miles of solar-powered range each day and a battery that boosts the car's range up to 400 miles, a January 6 [article](#) in The Verge reported. Here's a [video](#) of the CES launch. Production and deliveries are expected by the end of this year.

---

## Calendars

**US: Thurs:** Wholesale Inventories -0.2%; Fed Balance Sheet; Barkin; Harker. **Fri:** Nonfarm Payroll Employment Total, Private, and Manufacturing 154k/133k; Average Hourly Earnings 0.3%/m/m/4.0%/y/y; Average Weekly Hours 34.3; Unemployment rate 4.2%; University of Michigan Consumer Sentiment Index 73.8; Baker Hughes Rig Count. (FXStreet estimates)

**Global: Thurs:** Eurozone Industrial Production 0.5%; Eurozone Retail Sales 0.4%; Germany Industrial Production 0.5%; Japan Household Spending -0.9%/m/m/-0.6%/y/y; China CPI 0.1%/m/m/-2.5%/y/y. **Fri:** France Industrial Production 0.0%; Italy Retail Sales 0.2%. (FXStreet estimates)

---

## Strategy Indicators

**S&P 500 Earnings, Revenues, Valuation & Margins** ([link](#)): The S&P 500's forward profit margin rose 0.1ppt w/w to a new record high of 13.6% during the January 2 week. It is now 3.3ppts above its seven-year low of 10.3% during April 2020. Forward revenues and earnings both rose w/w to new record highs too. The consensus expectations for forward

revenues growth rose 0.1ppt w/w to 5.7%, and is just 0.1ppt below its 23-month high of 5.8% during the August 1 week. It has gained 3.4ppts 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 unchanged w/w at 14.2%, just 0.1ppt below its 38-month high of 14.3% during the December 12 week. It's now 10.9ppts above its 31-month low of 3.3% during the February 16, 2023 week. That's 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 4.6% in 2024 (unchanged w/w) and 5.5% in 2025 (unchanged w/w) compared to a revenues gain of 2.2% in 2023. They expect an earnings gain of 9.9% in 2024 (unchanged w/w) and a 14.2% rise in 2025 (unchanged w/w) compared to an earnings gain of 2.5% in 2023. Analysts expect the profit margin to rise 0.5ppt y/y to 12.4% in 2024 (unchanged w/w), compared to 11.9% in 2023, and to rise 1.0ppts y/y to 13.4% in 2025 (down 0.1ppt w/w). The S&P 500's weekly reading of its forward P/E fell 0.8pt w/w to a 13-week low of 21.5, and is now 0.9pt below its 43-month high of 22.4 during the December 12 week. It's up 1.8pts from a 14-week low of 19.7 during the August 8 week and 6.2pts from a 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 dropped 0.10pt w/w to a 10-week low of 2.91 and is now 0.11pt below its December 12 record high. 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 Earnings, Revenues, Valuation & Margins** ([link](#)): During the January 2 week, forward revenues and earnings rose for all 11 of the S&P 500 sectors. This led to rising forward profit margins for all 11 sectors too. Eight of the 11 sectors posted record-high forward revenues this week. Industrials' forward revenues remains 2.9% below its early September record. Materials and Energy have been ticking higher recently but remain the biggest laggards at 5.5% and 14.5% below, respectively. These six sectors had record-high forward earnings this week: Communication Services, Consumer Staples, Financials, Industrials, Information Technology, and Utilities. Among the remaining five sectors, these three are less than 0.4% below their recent records: Consumer Discretionary, Health Care, and Real Estate. Forward earnings remains depressed for Energy and Materials, which have been stabilizing in recent weeks at 32.9% and 21.6% below their respective post-pandemic highs. Looking at the forward profit margin, these two sectors had record- or post-pandemic highs this week: Financials and Industrials. In recent weeks, the Communication Services, Consumer Discretionary, and Information Technology sectors were in that club.



Among the laggards, Energy's forward margin rose 0.1ppt w/w to 9.4% from a 34-month low of 9.3%, but that's down 1.5ppts since its six-month high of 10.9% in mid-June; Consumer Staples' 6.9% is just 0.2ppt above its seven-year low in March 2023; and Health Care's 8.7% is only 0.2ppt above its record low in April. 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 (27.0%, up 0.2ppt w/w and down from its 27.6% record high in September), Financials (19.7, up 0.1ppt w/w and down from its 19.8 record high in August 2021), Communication Services (18.6, a record high this week), Real Estate (17.2, up 0.1ppt w/w and down from its 19.2 record high in 2016), Utilities (14.4, up 0.1ppt w/w and down from its 14.8 record high in April 2021), S&P 500 (13.6, up 0.1 ppt w/w/ to a record high this week and in 17 of the past 18 weeks), Materials (11.2, up 0.1ppt w/w and down from a 20-month high of 11.6 in July and a 13.6 record high in June 2022), Energy (9.4, up 0.1ppt w/w from a 34-month low in late December and down from its 12.8 record high in November 2022), Industrials (11.3, up 0.1ppt w/w to a record high this week), Consumer Discretionary (9.3, down from its 9.4 record high in early December), Health Care (8.7, 0.2ppt above its 8.5 record low at the end of April and down from its 11.5 record high in February 2022), and Consumer Staples (6.9, down from its 7.7 record high in June 2020).

---

## US Economic Indicators

**ADP Employment** ([link](#)): "The labor market downshifted to a more modest pace of growth in the final month of 2024, with a slowdown in both hiring and pay gains," noted Nela Richardson, chief economist of ADP. "Health care stood out in the second half of the year, creating more jobs than any other sector." Private payroll employment was weaker than expected, rising 122,000 in December, below the consensus estimate of 140,000. Service-providing jobs increased 112,000 last month, while goods-producing jobs rose only 10,000. Within services-providing industries, education & health services (57,000) once again posted the largest gain, followed by leisure & hospitality (22,000), other services (13,000), financial activities (12,000), trade, transportation, and utilities (8,000), and information services (5,000), while professional and business services was the one outlier, cutting payrolls by 5,000. Within goods-producing industries, construction jobs continued to lead the pack, adding 27,000 jobs in December, while manufacturing (-11,000) and natural resources/mining (-6,000) industries cut jobs during the month. By size, large companies added 97,000 to payrolls last month, while medium-sized companies posted only a 9,000 increase and small companies only 5,000. According to the report, the yearly pay increase for job-stayers slowed to 4.6%, the slowest pace since July 2021, while the rate for job-changers was 7.1%, a slight decline from November.



---

## Global Economic Indicators

**Eurozone Economic Sentiment Indicators** ([link](#)): The Economic Sentiment Indexes (ESIs) for the both the *EU* (-1.7 points to 94.5) and Eurozone (-1.9 to 93.7) deteriorated in December. ESIs among the six largest EU economies were a mixed bag in December, with the top three Eurozone economies posting the largest declines on the ESI. France (-3.0 to 93.5) posted the largest drop, followed by Germany (-2.5 to 86.1) and Italy (-1.1 to 98.2), while Spain's (+0.9 to 102.9) improved slightly; ESIs for Poland (+0.1 to 99.2) and the Netherlands' (-0.2 to 100.1) showed little change. By sector, for the overall EU, industry (-2.2 to -13.1) confidence posted the biggest decline, followed by consumer (-1.0 to -13.4) and construction (-0.5 to -7.3) sentiment. Services (+0.6 points to 6.3) improved slightly, while retail trade (+0.1 to -2.8) sentiment was broadly stable.

**Germany Factory Orders** ([link](#)): Germany factory orders contracted unexpectedly in November, indicating that the manufacturing sector resumed its downturn. Manufacturing orders plunged 5.4% (vs the consensus estimate of a 0.2% downtick) after slumping 1.5% in July. The decline in orders mainly reflected a sizeable decline in large-scale orders, which includes aircraft, ships, trains, and military vehicles, which plunged 58.4% in November. Excluding large-scale orders, November billings edged up 0.2%. Foreign orders plummeted 10.8% in November, led by a 14.8% plunge in orders from outside the Eurozone, while billings from within the Eurozone dropped 3.8%. Meanwhile, domestic orders rose 3.8%. Overall orders dropped 1.7% y/y, in contrast to a 5.7% jump in October; consensus estimates expected a 1.9% y/y gain for November. By sector, both capital (-9.4%) and consumer (-7.1) good orders posted sharp declines, while intermediate (1.8) goods orders posted a modest increase.

---

Contact us by [email](#) or call 480-664-1333.

Ed Yardeni, President & Chief Investment Strategist, 516-972-7683  
Eric Wallerstein, Chief Markets Strategist, 201-661-3575  
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  
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

