Yardeni Research

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Morning Briefing

Semis, Rails & Robots

Check out the accompanying chart collection.

Executive Summary: Not all semiconductor manufacturers are faring as well as the stats of the S&P 500 Semiconductors industry suggest, Jackie tells us. Many are experiencing a punishing inventory correction, particularly those that sell semis used in cars, PCs, cell phones, and industrial products. The good news is that inventories should be back to normal in a few more quarters, and share prices soon should reflect that. … Also: After a tough 2023, the railroad industry should return to growth this year; several growth engines are expected to help CSX gather steam. … In our Disruptive Technologies segment, a look at China's robotic ambitions and the concern they're raising on Capitol Hill.

Technology: Semis Correcting. From a top-down perspective, the semiconductors industry appears to be doing extremely well. Revenues are climbing, and artificial intelligence is creating demand for certain chips. Look a bit closer, and you'll find an inventory correction affecting most semiconductor chip makers. Fortunately, inventory corrections end eventually, and semiconductors stocks may perk up in anticipation of a recovery even if it's a few quarters away.

Here's a look at the semiconductor industry both from the top and the bottom:

(1) *Total sales growing.* The dollar value of total sales in the semiconductor industry continues to grow sharply. The Semiconductor Industry Association has *tallied* $149.9 billion of semi sales in Q2-2024, up 18.3% y/y and up 6.5% q/q (*Fig. 1*). Confirming that rosy picture, US semiconductor and related components produced rose 5.4% during the four months through June to record-high 141.0 (*Fig. 2*).

Like most industries, however, the semiconductor industry is not homogeneous. Its AI rockstar Nvidia posts soaring earnings every quarter. But most of the industry's companies are workhorses that sell semiconductors for cars, PCs, cell phones, or industrial products. And these companies—including ON Semiconductor and Texas Instruments—have been suffering through an inventory correction.

(2) *Watching prices.* The industry's inventory problems are more apparent when looking at semiconductor prices. Prices soared during the post-pandemic surge for goods and services, growing 6.6% at the peak in October 2022. Prices then grew more slowly and subsequently started declining. Prices for semiconductors and related devices fell 1.7% y/y in June, marking the seventh time in nine months that prices have fallen, according to Producer Price Index data (*Fig. 3*).

(3) *What ON had to say.* ON Semiconductor focuses on selling semiconductors used in auto and industrial markets. The company has been hit hard by an inventory correction; its Q2 revenues declined 17.2% y/y to $1.7 billion, and its adjusted earnings per share fell 27.8% y/y to $0.96.

Revenue from the company's auto segment dropped 15% y/y, and revenue from the industrial segment fell 23%. ON Semi believes it is shipping fewer semiconductors than the auto industry is using as it works down inventories. "[W]e are seeing some stabilization in demand in our core markets. Inventory digestion persists, with some pockets improving as customers maintain a cautious stance in 2024," said CEO Hassane El-Koury on the company's Q2 earnings *conference call*.

The company expects a recovery in its energy infrastructure business in H2-2024 as well as improvement in the Chinese automotive and industrial segments. ON Semiconductor also expects increasing demand for its chips from data centers and noted a recent win from Volkswagen Group.

ON's shares rallied 11.5% on July 29, the day of the earnings release, because results beat analysts' estimates. They've subsequently given back those gains and remain down 18.0% ytd through Tuesday's close.

Analysts believe that Q2 marked the low in the company's earnings and that full-year results should begin to climb in 2025. ON Semiconductor posted earnings per share of $4.89 last year and is expected to report a decline to $4.01 per share this year, followed by improvement to $5.02 in 2025.

(4) *Looking for the sunshine.* The current inventory correction may conclude within the next few quarters. In the meantime, analysts have already factored the correction into their estimates, so earnings expectations for non-Nvidia players are relatively low.

The S&P 500 Semiconductors industry grew revenues by only 0.1% last year, and earnings failed to grow at all. This year and next, the outlook is much brighter. Revenues are forecast to jump 28.4% this year and 24.2% in 2025 (*Fig. 4*). Earnings are expected to jump 47.9% this year and 41.2% in 2025 (*Fig. 5*). Excluding Nvidia, expected earnings growth is a substantially lower 5.4% this year and a similarly strong 42.2% in 2025, Joe calculates.

Nvidia accounts for over 90% of the industry's forecasted earnings gain in 2024 but just 44% of 2025's gain, with the drop reflecting the industry's inventory correction playing out. Nvidia's share of the industry's total expected earnings is expected to remain steady y/y at 45% in 2025, but that's still up sharply from its 24% share in 2023 and 10% in 2022.

The S&P 500 Semiconductors industry's forward P/E at 25.6 is high relative to historical levels, but don't blame that on Nvidia (*Fig. 6*). The AI darling's forward P/E is 32.2, and relatively modest relative to its own history (*Fig. 7*).

Some of the semiconductor companies suffering through the inventory correction, however, have reported sharp drops in earnings, and their P/Es have soared. This unfortunate subset includes Texas Instruments with a 31.8 forward P/E, Microchip Technology (29.0), and Analog Devices (27.0). As the inventory correction runs its course, the industry's earnings should improve and forward P/Es should fall.

Industrials: Rolling Down the Tracks. CSX's Q2 earnings reported earlier this week painted a picture of an economy that's sluggish but chugging along slowly. Going forward, the railroad anticipates traffic growing thanks to the various factories being built along its route. Let's take a look at what company executives had to say on their earnings *conference call*:

(1) *Baltimore dents results.* CSX's Q2 revenue was flat y/y at $3.7 billion, and its operating income fell 1% y/y to $1.45 billion, depressed by the shipping accident in the Port of Baltimore. Recall that a barge hit and toppled the Francis Scott Key Bridge, bringing shipments through the port to a halt for part of Q2. CSX ships coal through that port. Had the accident not occurred, CSX said operating income would have risen y/y.

(2) *Intermodal's a bright spot.* CSX's intermodal revenue grew 3% y/y on 5% y/y unit growth. The business was supported by higher East Coast imports, while the domestic intermodal business remains "muted." The company's comments corroborate the y/y increases in real exports and imports this year, after they declined for much of 2023 (*Fig. 8*).

CSX expects merchandise, intermodal, and coal exports to help it achieve volume and revenue growth in the low- to mid-single digits during H2-2024. It also anticipates "meaningful" operating margin expansion y/y. One area of growth involves shipping products for the new factories being built in CSX's territory, which primarily includes states east of the Mississippi. As those factories come online, they should boost CSX's business in H2 and the following two years.

(3) *Headwinds exist.* The railroad does see potential obstacles: "[T]he trucking market remains challenged and industrial markets are mixed as we move into the second half of the year. Accumulating effects of interest rates, including a sluggish housing market and fluctuating commodity prices, create headwinds for some of the markets we serve," said Chief Commercial Officer Kevin Boone. Interest rates may also impact consumer demand for automobiles.

The railroad industry's loadings of lumber and wood products have declined over the past two years but may have bottomed out early this year (*Fig. 9*). Loadings of motor vehicles have been on an uptrend since March 2022 (*Fig. 10*).

(4) *Rails gaining momentum.* The S&P 500 Rail Transportation industry's stock price index has risen 5.5% y/y, though it has been largely flat measured since 2022 (*Fig. 11*). The industry had a tough 2023, with revenues falling 2.9% and earnings tumbling 8.4%. Analysts are optimistic that it will return to growth this year and next. Revenues are forecast to climb 1.3% this year and 4.9% in 2025, while earnings are expected to increase 4.8% this year and 12.9% in 2025 (*Fig.12* and *Fig. 13*). The industry will need economic growth to keep its earnings on track.

Disruptive Technologies: Chinese Robots. We've written about Atlas and Digit and Optimus, humanoid robots developed by US manufacturers Boston Dynamics, Agility Robotics, and Tesla. But Chinese companies are developing humanoid robots as well, with more than a little help from the Chinese government. US legislators have started to sound the alarm bell, concerned that Chinese manufactured humanoid robots in US factories and homes could be a security threat that makes concerns about TikTok look trivial. We've watched far too many sci-fi movies to downplay the potential risk.

Here's a look at how China and its companies are diving into the market:

(1) *Set a goal.* Late last year, the Chinese government pronounced its goal of having Chinese companies mass produce humanoid robots by 2025 and develop a "reliable" supply chain by 2027.

The government has repeated its message frequently. On Tuesday, *China Daily*, widely regarded as the government's mouthpiece, *reported*: "Jin Zhuanglong, minister of industry and information technology, said accelerated efforts will be made to develop future-oriented industries, especially humanoid robots, brain-computer interfaces, the metaverse, the next generation of the internet, 6G, quantum technology, atomic-level manufacturing, and deep sea and aerospace."

(2) *Message received.* Local governments seem to have gotten the message. Beijing responded by establishing a 10 billion yuan fund dedicated to the development of the humanoid robotics industry. Shanghai plans to construct a "synergistic innovation platform that combines large-scale models with humanoid ones," reported an April 25 *article* in *China Daily*.

Beijing is also developing two robotics industrial parks. Together, they cover 56,000 square meters and are expected to be completed in H1-2026, according to an April 2 *article* in Xinhua, a publisher of official government news. And Guangdong Province has said it "plans to foster future industries such as 6G technology and humanoid robots," noted a February 2 Chinese government *press release*.

China's Ministry of Industry and Information Technology chose Humanoid Robots, a Shanghai-based research lab, to establish the National Local Joint Humanoid Robot Innovation Center. Humanoid Robotics has developed Qinglong, a 176-pound, open-source humanoid robot with capabilities showcased in a July 8 *article* in IOT World Today (check out the video). The Center plans to introduce a new humanoid robot model annually; and by 2027, it plans to train 1,000 humanoid robots simultaneously to perform real-world tasks.

(3) *Chinese companies catching up.* Increasing numbers of Chinese companies are also developing humanoid robots and have posted videos on YouTube boasting of their accomplishments. UBTECH's *video* shows its humanoid robot, Walker S, working on NIO's auto manufacturing line, testing a seatbelt, and installing a car hood emblem, among other tasks. Unitree Robotics' extremely dexterous G1 humanoid robot is shown picking up a walnut, cooking with a frying pan, and running (*video*). Stardust Intelligence's Astrobot S1 moves so fast that it can pull a tablecloth out from a stack of wine glasses and has mastered domestic chores like peeling veggies, decanting wine, ironing, and dusting (*video*).

(4) *US security concerns.* Alarms are sounding about the potential security threat posed by Chinese humanoid robots if they are purchased by US companies or by individuals: "As

they become more advanced, the Chinese Communist Party or state-sponsored bad actors could use the robots … to wreak havoc by spying, sabotaging critical infrastructure, or in the most nightmarish scenarios, even physically harming Americans," said Jacob Helberg, a member of the US-China Economic and Security Review Commission in an August 5 *New York Post* article.

US legislators fear the Chinese government is subsidizing the industry and plans to flood the global market with robots at below-market prices to eliminate foreign competition and make foreign countries reliant on Chinese robots. "Without policy action from Washington, China is poised to quickly put American competitors out of business and make Americans reliant on CCP-controlled humanoid robots. … We'd have to be delusional or suicidal to allow this to happen," said House Majority Leader Steve Scalise (R-LA) in the *NYP* article.

Calendars

US: Thurs: Jobless Claims 245k; Wholesale Inventories 0.2%; Atlanta GDPNow; Natural Gas Storage; Fed's Balance Sheet; Barkin. **Fri:** Baker-Hughes Rig Count. (FXStreet estimates)

Global: Thurs: China CPI & PPI 0.3%/-0.9%y/y; BoE Quarterly Bulletin. **Fri:** Germany CPI 0.3%m/m/2.3%y/y; Italy CPI 0.5%m/m/1.3%y/y; Canada Unemployment Rate 6.4%. (FXStreet estimates)

Strategy Indicators

Stock Market Sentiment Indicators (*link*): The *Bull-Bear Ratio* fell for the second week to 2.51 after climbing the prior two weeks from 3.50 to a 16-week high of 4.31. It was at 4.43 18 weeks ago—which was the highest reading since February 5, 2018. *Bullish sentiment* plunged to 46.9% this week, from 59.4% and 64.2% the previous two weeks, with the latter count the most bulls since late 2020, when the markets were recovering from their early 2020 Covid-related bear market plunge. Meanwhile, *bearish sentiment* rose the latest two weeks to 18.7%, after falling the prior two weeks from 17.9% to 14.9%, which again was the fewest bears since just 14.1% in late March 2024 (which also saw the last high for the bulls, which was just exceeded). The *correction count* rose this week to 34.4% from 25.0% last week—ending the seven consecutive readings near 20%. In the *AAII Sentiment Survey* (as of August 1), bearish sentiment among individual investors about the short-term outlook for stocks decreased during the latest week, while both optimism and neutral sentiment increased. *Bullish sentiment* increased 1.7ppts to 44.9%—remaining above its historical average of 37.5% for the 38th time in 39 weeks. Meanwhile, *bearish sentiment* sank 6.5ppts to 25.2%, falling below its historical average of 31.0% for the seventh time in eight weeks. Neutral sentiment rose 4.8ppts to 29.9%, below its historical average of 31.5% for the fourth straight week.

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): The S&P 500's forward profit margin remained steady w/w at a 25-month high of 13.3% during the August 1 week. That's up from a 24-month low of 12.3% during the March 30, 2023 week and just 0.1pt below its record high of 13.4% achieved intermittently in 2022 from March to June. It's now 3.0pts above its seven-year low of 10.3% during April 2020. Forward revenues jumped 0.5% w/w to a record high. Forward earnings hit yet another record high after soaring 1.2% w/w. It has hit that mark for nearly 11 months now. Revenues and earnings had been steadily making new highs from the beginning of March 2021 to June 2022; prior to that, they peaked just before Covid-19 in February 2020. The consensus expectations for forward revenues growth rose 0.1pt w/w to a 23-month high of 5.8%. It has gained 3.5pts 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 soared 0.4pts w/w to a 34-month high of 13.6%. It's now 10.3pts 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 at its highest since June 2010 and up substantially from its record low of -5.6% at the end of April 2020. Analysts expect revenues to rise 4.8% in 2024 (down 0.1pt w/w) and 5.9% in 2025 (unchanged w/w) compared to a revenues gain of 2.2% in 2023. They expect an earnings gain of 10.5% in 2024 (up 0.2pts w/w) and a 14.8% rise in 2025 (down 0.1pt w/w) compared to an earnings gain of 2.5% in 2023. Analysts expect the profit margin to rise 0.7ppt y/y to 12.6% in 2024 (unchanged w/w), compared to 11.9% in 2023, and to rise 1.0ppt y/y to 13.6% in 2025 (unchanged w/w). The S&P 500's weekly reading of its forward P/E edged up 0.1pt to 20.9 from a seven-week low of 20.8, but is down from a 31-month high of 21.6 during the July 11 week. That's up 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 rose 0.04pts w/w to 2.79 from a seven-week low of 2.75 and is down from a 31-month high of 2.86 during the July 11 week. That's up from a six-month low of 2.22 during the October 26, 2023 week and compares to a 31-month low of 1.98 in October 2022. That also compares to a record high of 2.88 at the end of 2021 and a 49-

month low of 1.65 in March 2020.

S&P 500 Sectors Earnings, Revenues, Valuation & Margins (*link*): During the August 1 week, forward revenues and earnings rose for all 11 of the S&P 500 sectors. This led to rising forward profit margins w/w for all but the Materials sector. These seven sectors had forward revenues at a record or post-pandemic high this week: Communication Services, Consumer Discretionary, Consumer Staples, Health Care, Industrials, Information Technology, and Real Estate. Financials' forward revenues would be at a record high too when adjusted for the incoming transfer of five former Tech sector firms in March 2023. Utilities' forward revenues is just 1.0% below its recent post-pandemic high, while Energy and Materials are lagging at more than 4.7% below. Seven sectors have record-high forward earnings this week: Communication Services, Consumer Discretionary, Consumer Staples, Financials, Industrials, Information Technology, and Utilities. Real Estate is 0.5% below its August 2022 record high. Health Care's forward earnings is 5.2% below its high and has stalled since late 2022. Forward earnings remains depressed for Energy and Materials; both are more than 21.0% below their post-pandemic highs. Looking at the forward profit margin, all of the sectors are showing signs of recovering from their early 2023 forward profit margin lows. Communications Services, Consumer Discretionary, and Information Technology are the only sectors with a forward profit margin at a record high this week. In recent weeks, Industrials was in that camp as well. Energy's forward margin is just 0.2ppts above its 23-month low of 10.4% in February, while those of Consumer Staples and Health Care are slightly above their post-pandemic lows in 2023. The annual profit margin is expected to fall y/y in 2024 for Energy, Materials, and Real Estate and to improve for the other eight sectors. 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 (27.4%, up 0.1pt w/w to a record high), Financials (19.3, up 0.1pt w/w and down from its 19.8 record high in August 2021), Communication Services (18.0, up 0.1pt w/w to a record high), Real Estate (17.6, up 0.1pt w/w to a 21-month high and down from its 19.2 record high in 2016), Utilities (14.1, up 0.1pt w/w and down from its 14.8 record high in April 2021), S&P 500 (13.3, a 25-month high and just 0.1pt below its record high of 13.4 achieved intermittently in 2022 from March to June), Materials (11.1, down from a recent 20-month high of 11.6 and from its 13.6 record high in June 2022), Energy (10.6, up 0.1pt w/w and down from a six-month high of 10.9 in June and its 12.8 record high in November 2022), Industrials (10.8, just a hair below its 10.8 record high in September 2013), Consumer Discretionary (9.1, a record high this week), Health Care (8.7, up 0.2pts from its 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).

Global Economic Indicators

Germany Industrial Production (*link*): German industrial production exceeded expectations in June, though the Bundesbank cautioned in its July report, "The spell of weak demand has not yet been fully overcome. . . . Industrial activity is likely to improve only slowly." Germany's *industrial production*, which includes construction, rebounded 1.4% in June (vs 1.0% expected), partially offsetting May's 3.1% slump (first reported down 2.5%). June's rebound was driven by a 7.5% advance in the auto output, following May's 9.9% plunge, with electrical equipment's 5.2% jump another major source of strength during the month. Meanwhile, output in the food industry fell 5.3%. Output is down 4.1% y/y, narrowing from May's 7.2% drop. *Excluding energy and construction*, production climbed 1.5% in June, with energy production logging a 2.9% increase, while *construction* output edged up only 0.3%. *By sector*, both capital (2.5%) and intermediate (2.1) production posted solid gains in June, while consumer (-2.4) good production contracted.

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