



March 14, 2024

## Morning Briefing

---

### Cisco Vs Nvidia & AI Goes To School

---

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

**Executive Summary:** A quarter century ago, people saw Cisco as a way to invest in the enormous potential of the Internet. Investors bid up its shares, and purchasing managers over-ordered its products, expecting rationing since supplies were tight. What happened next wasn't pretty. Today, people see in Nvidia—its shares and its products—the enormous promise of AI. Jackie examines whether Cisco circa 2000 represents a cautionary tale for Nvidia investors today. ... Also: In our Disruptive Technologies segment, a look at the many ways AI can improve classroom learning materials, engage students, and make teachers' lives easier.

---

**Information Technology: Nvidia vs Cisco.** It's easy to compare Nvidia in 2024 and Cisco in 2000. They both sell the equipment needed by companies keen on breaking into a hot, new technology. In 2000, that new technology was the Internet. Today, it's artificial intelligence (AI). In 2000, Cisco sold routers and networking equipment and still does so today. Nvidia sells specialized semiconductor chips.

It's more difficult to decide whether Cisco's past will be Nvidia's prologue. Cisco's past included a dramatic share price runup just before the turn of the century and a dizzying 90% plummet just after. Nvidia's shares likewise have been driven up by investors excited about a new technological frontier. Are they now vulnerable to a nosedive like Cisco's?

To determine that, context is important. Is the stock market environment of today more akin to 1998, when the bull-market party was just getting started, or more like March 2000, when the market hit its frenzied peak and was about to crash? If pressed, we'd say the current environment is more like 1998. Today's market lacks the record IPO issuance and the money-losing dot-com companies that were hallmarks of 2000. Today, money markets are flush with cash, margin debt is moderate, and equity mutual funds and ETFs are just starting to see inflows pick up ([Fig. 1](#), [Fig. 2](#), and [Fig. 3](#)). This was not the case in 2000.

Just as importantly, by May 2000 the Federal Reserve was still tightening. It had raised interest rates six times by a total of 175bps to 6.5%. It would raise interest rates three more times before finishing. Today's Fed, conversely, is believed to be on the cusp of easing after having raised the Fed funds rate by 525bps to the current 5.25%-5.50% range ([Fig. 4](#)).

There is, however, a caveat. While Nvidia may not be as expensive as Cisco was at its peak, during the largest bubble in recent history, that does not mean that Nvidia isn't expensive when compared to more typical overvalued market benchmarks. With that in mind, let's take a look at some additional similarities and differences between Cisco at the turn of the century and Nvidia today:

(1) *Split decision on price.* Both Cisco and Nvidia shares have enjoyed exceptional price runups. But which has run up more depends on when the clock starts ([Fig. 5](#)).

Cisco rose much more than Nvidia in the two and a half years prior to each stock's peak. Cisco's shares gained 761.8% from the start of 1998 through its peak on March 27, 2000. That far exceeds Nvidia's 215.1% gain from the start of 2022 through Nvidia's peak on March 7, 2024.

Conversely, Nvidia's share price far outpaced Cisco's if the clock starts a year and a half prior to each company's stock peak. That perspective might be more relevant given Nvidia's tough 2022. Its shares fell that year because gaming sales declined and AI sales hadn't yet hit their current frantic pace. Nvidia shares gained 534.1% from the start of 2023 through March 7, 2024. In the year and a half prior to Cisco's peak—from December 31, 1998 through March 27, 2000—Cisco shares only rose 245.1%.

By Cisco's peak in 2000, it boasted the stock market's largest market capitalization, having pushed past Microsoft, which was facing government antitrust charges. Cisco also eclipsed third-placed General Electric, which was tarred and feathered as an "old-economy" stock.

Twenty-four years later, Cisco ironically is the 60th largest company in the stock market and Microsoft has regained the top spot thanks to investors' enthusiasm about the company's AI involvement. Nvidia has climbed through the ranks quickly and is currently the third largest company behind only Microsoft and Apple, according to [companiesmarketcap.com](https://companiesmarketcap.com).

(2) *Cisco's valuation was higher.* Cisco shares were far more expensive in 2000 than Nvidia shares are today measured by their P/E ratios. In April 2000, Cisco's shares traded at 135 times its earnings for the fiscal year ended July 2000 and they traded at about 189 times

trailing-12-month earnings, according to an April 12, 2000 *WSJ* [article](#).

At \$919.13, Nvidia shares trade at 36.9 times the earnings expected in its fiscal year ending January 31, 2025. They trade at 77.0 times earnings reported last fiscal year. Analysts are expecting earnings to soar 108.9% this fiscal year before slowing to 18.2% growth in fiscal 2026.

Cisco's peak price-to-sales ratio—using sales over the trailing 12 months—was 38 at its peak in 2000, far loftier than Nvidia's 24.7 multiple today.

(3) *A little history*. Cisco was much younger during the dot-com boom than Nvidia is today. At its peak in 2000, Cisco was only 14 years old. The company was started by Stanford University staff, which needed to create a router to connect university computers. It had only been public for 10 years.

Nvidia has been around much longer, having started in 1993 when its founders set out to design graphics accelerator chips for PCs to improve the performance of video games. Later its chips were used in the oil and gas industry to process data from geological surveys. Another surge of demand for its chips came from crypto miners in 2021 and more recently companies have bought them to train AI models.

(4) *Acquisitions & investments*. Both companies actively made acquisitions or investments in companies to acquire new technology or gain insight into customers and technology.

“In the 18 months from mid-1999 to late 2000, Cisco doubled its payroll to 44,000 workers. The company employed 500 recruiters just to sift through job applications and, on average, acquired a company every other week,” a May 7, 2003 *WSJ* [article](#) reported. Cisco acquired 17 companies in 2000 and 16 in 1999, according to a company [report](#). That's more than the 11 companies it purchased in 2023 and two acquired in 2022.

Nvidia invested in 35 companies last year, up about six times from the number of deals done in 2022, a December 11 *FT* [article](#) said. Many of the companies were AI-focused and use Nvidia products. Nvidia owns stakes in Inflection AI, Cohere, and Mistral, each ChatGPT rivals.

Nvidia's largest bid for a company didn't result in a purchase. Nvidia offered to buy British chip designer Arm for \$40 billion but pulled the plug in February 2022 due to objections from regulators. Arm licenses its technology to many chip companies, and regulators—including

the Federal Trade Commission—presumably feared that a Nvidia acquisition would end competitors' ability to license the chips. Nvidia still owns almost two million shares in the British company, according to a regulatory [filing](#).

(5) *How does it end?* Those looking for a reason to sell Nvidia shares should watch the demand for the company's chips. Right now, demand is off the charts, with CEOs like Meta Platform's Mark Zuckerberg saying his company will have purchased 350,000 H100 graphics cards from Nvidia by the end of 2024, a January 18 CNBC [article](#) reported. He didn't say how many cards the company currently owns or how many Meta will buy in 2025, but continued demand from large customers will be key.

Cisco knows that demand can change on a dime. The company had \$3.8 billion in unfilled orders as of September 25, 2000. But customers presumably started ordering more than they needed, as purchasing managers often do when demand exceeds supply and they believe they will only receive a percentage of their order. When supply caught up to demand, customers were given what they ordered and found themselves holding too much equipment.

At the same time, the .com bust meant the demise of money-losing startups, many of which were customers of Cisco. By the end of 2000, savvy buyers could purchase barely used Cisco equipment in the "gray market" for 15 cents on the dollar, an August 1, 2001 CIO [article](#) reported.

Nvidia has lived through booms and busts over its 30 years and hopefully it's watching its inventory levels—and those of its customers—closely. The company reported that 19% of its sales last fiscal year came from one end customer, which is presumably a cloud computing company like Google, Amazon, or Microsoft, a February 22 *WSJ* [article](#) reported. One of the risks Nvidia mentions in its fiscal 2023 [annual report](#) is a failure to anticipate customer demand properly, which could lead to mismatches between supply and demand.

The percentage of capital spending on high-tech equipment, including software and R&D, pulled back to 49.5% in Q4, down from a peak of 53.0% in Q4-2021. But both amounts are higher than 43.1% in March 2000, after which capital spending on high-tech equipment proceeded to fall for much of the next seven years ([Fig. 6](#)).

When the bubble bursts, things can go south fast. By March 2001, Cisco was announcing widespread layoffs, its first in the company's history, along with massive cost-cutting plans. Cisco's share price fell 90% from a peak of \$80.06 in March 2000 to a low of only \$8.06 in

October 2002. At a recent \$50, the shares have yet to revisit their 2000 peak, but at least the company survived and continues to operate today.

**Disruptive Technologies: Teachers Learning AI.** Students have been quick to adopt AI, using it for both good and evil. We've heard of students using it to research or to quickly summarize articles to provide a study guide. Then again, we've also heard of students using it to write their papers for them. Less discussed is how teachers are using AI. A teacher friend of ours says he can ask AI to write word problems for a math test, and in short order his wish is granted.

One third of K-12 teachers surveyed in early December said they've used AI tools in their classroom, a February 28 [article](#) in EducationWeek reported. Here are some of the ways teachers are using AI to make their jobs more efficient:

(1) *Lesson plans.* If teachers plug in the subject they'd like to present to a class and the amount of time they have for the lesson, MagicSchool AI will provide a set of lesson plans, saving the teacher time and effort, a March 8 [article](#) on The Markup noted.

Here are just some of the many ways MagicSchool can make teachers' lives easier, according to its [website](#): propose AI-resistant assignments; suggest accommodations for students who need support; generate suggestions for a behavior intervention plan; write letters to families or student recommendations to colleges; write clear explanations for key concepts being taught; and generate quizzes, vocabulary lists, SAT practice exercises, science lab projects, and even a whole year's syllabus.

(2) *Grade papers.* Another app, Writable, uses ChatGPT to help grade students' writing assignments, according to a March 6 Axios [article](#). Students must submit their essays electronically, and the teacher runs the essays through Writable, which sends them through ChatGPT. ChatGPT offers up comments and observations, which the teacher reviews before sharing with the student.

The use of essay grading apps has received pushback from folks who believe comments on essays should be personalized. Proponents look at it as a starting point, noting that teachers can add additional comments. Writable was purchased by education company Houghton Mifflin Harcourt and faces competition from Crowdmark, EssayGrader, and Gradescope, the article notes.

(3) *Create a story.* Storybook AI generates stories based on a prompt. A teacher in Ghana

told The Markup that students who generated stories using Storybook AI were more interested in what they were reading. The teacher said it was a great way to create additional reading materials that keep students engaged while they practice reading.

(4) *Narrowing the gap.* School districts often buy lesson plans and teaching tools for their teachers, giving wealthier school districts an edge over lower-income districts when it comes to accessing quality materials. AI may be one way to level the playing field.

---

## Calendars

**US: Thurs:** Retail Sales Total & Core Retail Sales 0.8%/0.5%; Business Inventories 0.2%; Headline & Core PPI 0.3%/m/m/1.2%/y/y & 0.2%/m/m/2.0%/y/y; Initial Claims 218k; IEA Monthly Report. **Fri:** Import & Export Prices 0.3%/0.3%; Headline & Manufacturing Industrial Production 0.1%/0.3%; Empire State Manufacturing Index -7.6; University of Michigan Consumer Sentiment Index 77.3; Baker-Hughes Rig Count. (FXStreet estimates)

**Global: Thurs:** Spain CPI 0.4%/m/m/2.9%/y/y; De Guindos; Elderson; Schnabel; Mauderer. **Fri:** France CPI 0.9%/m/m/3.1%/y/y; Italy CPI 0.1%/m/m/0.9%/y/y; Italy Retail Sales 0.2%; Lane. (FXStreet estimates)

---

## Strategy Indicators

**Stock Market Sentiment Indicators** ([link](#)): The *Bull-Bear Ratio* climbed for the second week from 3.45 to 4.20 this week—the highest since February 5, 2018. *Bullish* sentiment increased for the third week to 60.9%—the most bulls since summer 2021 for the second week. The bulls last exceeded 60% in April and July 2021, at 63.7% and 61.2% respectively. Meanwhile, *bearish* sentiment fell for the second week to 14.5%—the lowest count since March 2018—from 16.7% two weeks ago. The *correction count* was unchanged at 24.6%. Turning to the *AAll Sentiment Survey* (as of March 7), both optimism and pessimism rose, the latter only slightly, while neutral sentiment declined. The *percentage expecting stock prices to rise over the next six months* jumped 5.2ppts to 51.7%, and is unusually high, remaining above its historical average of 37.5% for the 18th straight week. The *percentage expecting stock prices will stay essentially unchanged over the next six months* dropped 5.7ppts to 26.5%, falling below its historical average of 31.5% for the fifth time in six weeks. Meanwhile, the *percentage expecting stocks to fall over the next six*

months was little changed, edging up 0.4ppt to 21.8%, below its historical average of 31.0% for the 18th straight week.

**S&P 500 Earnings, Revenues, Valuation & Margins ([link](#)):** The S&P 500's forward profit margin rose 0.1pt w/w to a 16-month high of 12.9% during the March 7 week. That's up from a 24-month low of 12.3% during the March 30, 2023 week, but is down 0.5pt from its record high of 13.4% achieved intermittently in 2022 from March to June. It's now 2.6pts above its seven-year low of 10.3% during April 2020. Forward revenues rose 0.5% w/w to a record high. Forward earnings jumped 1.1% higher w/w to a new record high as well. It had hit that mark during the September 21 week for the first time since the June 16, 2022 week. 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 17-month high of 5.1%. It has gained 2.8pts 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 rose 0.3pt w/w to a seven-week high of 11.2%. That's down from a 26-month high of 11.5% in early January and is now 7.9pts 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 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 4.7% in 2024 (unchanged w/w) and 5.8% in 2025 (unchanged w/w) compared to a revenues gain of 2.2% in 2023. They expect an earnings gain of 9.8% in 2024 (unchanged w/w) and a 13.5% rise in 2025 (down 0.1pt w/w) compared to an earnings gain of 2.2% in 2023. Analysts expect the profit margin to rise 0.6ppt y/y to 12.6% in 2024 (unchanged w/w), compared to 12.0% in 2023, and to rise 0.9ppt y/y to 13.5% in 2025 (unchanged w/w). The S&P 500's weekly reading of its forward P/E ticked down 0.1pt w/w to 20.5 from a 25-month high of 20.6. That 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 remained steady w/w at a 25-month high of 2.64. That's up from a six-month low of 2.22 during the October 26 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](#)):** Looking at the 11 S&P 500 sectors during the March 7 week, seven had their forward revenues rise w/w, and nine had forward earnings move higher. The forward profit margin moved higher w/w for all

11 sectors. Six sectors have forward revenues at post-pandemic or record highs this week: Communication Services, Consumer Discretionary, Consumer Staples, Health Care, Industrials, and Information Technology. Among the remaining five sectors, only three have forward revenues more than 5.0% below their post-pandemic highs: Energy, Financials, and Materials. Four sectors had record-high forward earnings this week: Communication Services, Consumer Discretionary, Consumer Staples, and Information Technology. Real Estate was in that camp in very recent weeks, and Industrials isn't too far off. Among the remaining five sectors, only Energy and Materials have forward earnings down more than 10.0% from their post-pandemic highs, while Health Care remains close. Among the 11 sectors, only Industrials has weathered a broad margin retreat from post-pandemic or record highs. Now nearly all of the sectors are showing signs of recovering from their early 2023 lows. Communication Services, Consumer Discretionary, and Information Technology are the only sectors with their forward profit margin at a record high this week. The forward profit margin for Industrials remains close to its record high. Energy's is at a 23-month low, while those of Consumer Staples and Health Care remain at or close to their record lows. The annual profit margin is expected to fall y/y in 2024 for Energy, Materials, and Real Estate and 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 (26.6%, a new record high this week), Financials (18.6, down from its 19.8 record high in August 2021), Real Estate (16.5, down from its 19.2 record high in 2016), Communication Services (17.0, a new record high this week), Utilities (13.7, down from its 14.8 record high in April 2021), S&P 500 (12.9, down from its record high of 13.4 achieved intermittently in 2022 from March to June), Energy (10.4, down from its 12.8 record high in November 2022), Materials (10.7, down from its 13.6 record high in June 2022), Industrials (10.7, down from its record high 10.8 in September 2023), Health Care (8.8, a record low this week and down from its 11.5 record high in February 2022), Consumer Discretionary (8.8, a record high this week), and Consumer Staples (6.9, down from its 7.7 record high in June 2020).

---

## Global Economic Indicators

**Eurozone Industrial Production** ([link](#)): Eurozone industrial production began 2024 on a down note, dragged lower by Ireland, which had boosted output in December. Headline production, which excludes construction, slumped 3.2% in January, after climbing 2.0% over the two months through December. Ireland production plunged 29.0% in January after soaring 19.0% in December. Looking at the largest Eurozone economies, output in January rose in Spain (0.9) and Germany (0.6%), while it fell in France (-1.0); data for Italy were not



available. Compared to a year ago, Germany (-5.4% y/y) posted a steep decline in production, while France rose 1.0% and Spain was unchanged. Among the main industrial groups, capital goods output tumbled 14.5% in January, following December's 11.3% surge, while consumer goods production was also in the red—led by a 1.2% drop in durable goods production, with nondurable goods output posting a 0.3% downtick. Meanwhile, intermediate goods production rebounded 2.6% from December's 1.4% shortfall, while energy output increased for the fourth month, by 0.5% m/m and 4.6% over the period. Compared to a year ago, production in all main industrial groups were in the red except for energy (0.3% y/y), with output contracting for capital (-12.1), consumer durable (-8.4), consumer nondurable (-3.1) and intermediate (-2.5) goods.

---

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, Director of Research Projects & Operations, 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

