Yardeni Research

September 19, 2024

Morning Briefing

China, Lithium & OpenAI o1

Check out the accompanying chart collection.

Executive Summary: With China's economy moribund, particularly the consumer sector, Chinese manufacturers are flooding global markets with their inexpensive wares. Besides exporting goods, they're essentially exporting deflation. Foreign governments aren't pleased. Jackie reports on this state of affairs and what US and European governments may do in response. … Also: The price of lithium has been depressed by multiple forces for the past two years but may be poised to recover. … And in our Disruptive Technologies segment, OpenAI's new and improved language program, OpenAI o1, features more sophisticated thinking and more accurate answers than its predecessor, ChatGPT-4o.

China: Becoming the World's Problem. China's latest round of economic data continued to show its bifurcated economy. Chinese consumer spending continues to limp along, as consumers' pocketbooks and confidence have been hurt by declining property and stock prices. China's industrial production, on the other hand, has slowed to a much lesser extent thanks to government support.

However, a new problem has arisen: Chinese companies need buyers for their products. With demand low at home, they're looking abroad for buyers and cutting prices to boot. Foreign governments, worried about the health of their domestic industries, aren't happy about this development. The US and Europe are threatening to institute new tariffs to prevent low-priced Chinese goods from flooding into their markets.

Let's take a deeper look:

(1) *Dismal data.* Recent data about August economic activity continued to show China's consumer activity slowing much more sharply than its industrial activity. Retail sales decelerated to 2.1% y/y in August, down from 2.7% in July. August real retail sales growth sagged to only 1.4% y/y (*Fig. 1*).

Consumers have struggled under the weight of falling home prices and falling stock prices. A 70-city average of new home prices fell 5.3% y/y in August, continuing the declines of the past two years (*Fig. 2*). Consumers' alternative major investment option, Chinese equities, also continue to deflate. The CSI 300 is down 14.9% over the past year and 45.4% from its February 10, 2021 peak (*Fig. 3*). A softening job market hasn't helped, with the nationwide urban jobless rate inching up to 5.3% in August from 5.2% and unemployment for those aged 15-24 jumping to 17.1% in July, when the country stopped reporting the data (*Fig. 4*).

China's industrial base has also decelerated, but to a much lesser extent thanks to economic incentives from the government. Industrial production increased 4.5% y/y in August, down from 5.1% y/y growth in July (*Fig. 5*). China's auto production jumped to 26.8 million in August, up from 24.7 million in July but down 2.2% compared to year-ago production (*Fig. 6*). Despite the healthy output growth, industrial profits are relatively slim, growing 3.6% y/y (*Fig. 7*).

In response to recent economic data, Goldman Sachs and Citigroup lowered their forecasts for China's 2024 economic growth to 4.7%, below the government's target of "around 5%." Bond investors appear even more gloomy; the yield on China's 10-year bond fell to 2.08% as of Friday's close (*Fig. 8*).

(2) *Exporting deflation.* China has to sell the boatloads of the goods it's producing somewhere, and that's where export markets come in. The country's imports were flat y/y in August, but its exports rose 8.4% (*Fig. 9*). While the country's exports have exceeded its imports for more than a decade, exports have grown much more quickly since 2020 than imports. Back in 2014, exports were 1.1 times larger than imports. By August, exports were 1.4 times larger than imports (*Fig. 10*).

China is exporting more than goods; it's also exporting deflation. The country's producer price index (PPI) fell 1.8% y/y in August; as goes China's PPI, so goes the US's CPI for goods excluding food and energy, which was down 1.7% in August. The US import price index from China also fell in August, by 1.4%. There's a tight correlation between the three data points going back at least 10 years (*Fig. 11*). The same correlation exists between China's PPI and the European Union's PPI, which fell 1.9% y/y in July (*Fig. 12*).

(3) *Diplomatic dancing.* US and European politicians are not happy about low-priced Chinese goods undercutting prices of domestically produced goods. US officials, led by the Treasury Department's Undersecretary for International Affairs Jay Shambaugh, are traveling to Beijing for discussions with their counterparts on Thursday and Friday.

“During our trip we will further our discussions on China’s macroeconomic imbalances and industrial policies that risk causing significant harm to workers and firms in the U.S. and around the world,” said Shambaugh in a September 17 *WSJ* *article*.

Meanwhile, China’s Commerce Minister Wang Wentao is in Europe to discuss the EU’s anti-subsidy case against China-made electric vehicles (EVs) ahead of a vote on more tariffs, a September 17 Reuters *article* reported. While in Italy, he said that the EU investigation into Chinese EVs was hurting Chinese companies’ confidence in investing in Italy. It was a thinly veiled threat; Italy has been encouraging Chinese carmakers to open factories and raise vehicle output in Italy.

Materials: Will Lithium’s Bust End? It’s been a tough two years for the lithium market. The toxic combination of excessive production, destocking, slower-than-expected EV growth, and economic uncertainty sent the price of lithium down 87% from its November 17, 2022 peak of CNY 542,000 per ton to a recent CNY 70,150 per ton (*Fig. 13*).

But in recent days, a large Chinese miner shut down production following news earlier this year that the planned construction of some new mines has been delayed. The commodity market is doing what the commodity market does: correct by reducing supply when prices fall. Now prices may have found their footing.

Let’s take a closer look at the forces that drove lithium prices down and why they may recover from here:

(1) *Production surged in recent years.* Excitement about surging demand for batteries in EVs and elsewhere combined with skyrocketing lithium prices encouraged miners to boost production. From 2011 through 2016, mine production of lithium worldwide bounced between 31,500 and 38,000 metric tons. Then production surged to 95,000 metric tons in 2018, 146,000 in 2022, and 180,000 in 2023, according to Statista’s *data*.

(2) *EV sales disappointed.* Global EV sales, including battery electric and plug-in hybrid EVs, have continued to grow, just less rapidly than was expected. EV sales from January through August of this year totaled 9.8 million; that’s up 20% over the same period last year but down from the same period in 2023, according to a September 12 Rho Motion *press release*. That 2023 period saw sales increase 39% y/y, an October 3, 2023 *press release* stated.

Sales in China have remained robust, with six million EVs sold ytd through August, up 33%

y/y. More than one million EVs were sold during August alone, marking a new monthly record. Sales in the region benefitted from subsidies given to drivers trading in vehicles that produced more pollution. Sales were up 35% during the same period ytd in 2023.

In the US and Canada, sales increased 9% y/y to 1.1 million from the start of the year through August, a sharp slowdown from the same period in 2023 when sales jumped 57%. Going forward, sales could be affected by the US presidential election. While Vice President Harris would likely extend President Biden's Green New Deal if she became president, the policies would likely be unwound if former President Trump is reelected.

Ytd sales in Europe fell 4% to 1.9 million, due primarily to a 23% drop in Germany after subsidies were cut last year. That's a major reversal from the same period in 2023 when sales rose by 30%. The German government agreement on September 4 to reduce corporate taxes is expected to help boost sales going forward.

(3) *Production slowing.* Miners have responded to falling lithium prices by cutting production or postponing the development of new mines. Most recently, China's battery giant CATL suspended production of lithium carbonate in Yichun, a September 11 Reuters *article* reported. The decision is expected to reduce China's lithium carbonate monthly production by about 8%, or 5,000-6,000 tons, and the stocks of lithium mining companies responded by rallying from very depressed levels.

CATL isn't alone. Albemarle announced in July that it will halt the expansion of its Kemerton manufacturing plant in Australia and idle a lithium processing line at the plant. The plant's production will fall by half to 25,000 tons, and employees will be cut, a July 31 CNBC *article* reported. The expansion was going to increase capacity by 100,000 tons.

The news followed Albemarle's announcement in May that it pushed back plans to reopen the Kings Mountain mine in North Carolina, originally slated for late 2026. The company is working on getting permits but has no new production start date, a May 3 CNBC *article* reported. The year began with Australia's Core Lithium suspending mining at its Grants open pit, opting instead to process the ore it had already stockpiled. Mining has yet to restart.

The share price of US lithium producer Albemarle rose 14.2% in the days following the Reuters' CATL news but is still down almost 70% from its 2022 peak. At the very least, recent news of lithium mining cutbacks may mean a floor is finally in place.

Disruptive Technologies: OpenAI's New LLM. OpenAI has introduced a new large language model (LLM) that it claims "thinks" before answering. (Skeptics say thinking is merely computer processing.) The program, OpenAI o1, breaks apart complex problems into more manageable pieces before answering, and, through reinforcement, it learns to recognize and correct mistakes and try a different approach when the current approach isn't working. OpenAI *reports* that the new program, which can take longer to generate an answer, is far more accurate than its predecessor large language model, GPT-4o. Here are some additional details:

(1) *A better test taker.* OpenAI gave ChatGPT-4o and OpenAI o1 the same tests, and in most cases the new program came out on top.

Here's how o1 scored compared to ChatGPT-4o on various tests: AIME 2024 math competition (o1 scored 83.3, GPT-4o scored 13.4), Codeforces coding competition (89.0, 11.0), AP Physics (81.0, 63.0), AP Chemistry (98.0, 76.0), and AP Calculus (83.3, 71.3).

Interestingly, it fared well on the reading and writing portions of the SAT, i.e., the SAT EBRW, (94.4, 92.8) and on the LSAT (95.6, 69.5). But both programs flunked the AP English Language exam equally (58.0, 58.0), which tests complex critical thinking, reading, and writing skills like understanding an author's purpose and intended audience, according to the *Princeton Review*.

(2) *Additional guardrails.* OpenAI "taught" the new model human values and principles. "By teaching the model our safety rules and how to reason about them in context … o1-preview achieved substantially improved performance on key jailbreak evaluations and our hardest internal benchmarks for evaluating our model's safety refusal boundaries."

The model lays out what it is "thinking" and the various steps it's taking to solve a problem. But in one scary sentence, OpenAI suggests an ability to manipulate versus merely inform, writing: In "the future we may wish to monitor the chain of thought for signs of manipulating the user."

(3) *Coders beware.* OpenAI o1 could be "the final nail in coding's coffin," the folks at Windows Central *wrote* earlier this week. The program passed OpenAI's research engineering hiring interview for coding at a 90%-100% rate. Earlier this year, Nvidia's CEO Jensen Huang predicted that coding may be taken over by AI and suggested that the next generation of students should pick other areas of study. (Farming anyone?)

(4) *What o1 lacks.* The new OpenAI program doesn't have web browsing, image generation, or file uploading. OpenAI plans to add these capabilities in the future, a September 12 ARS Technica *article* reports. It's also roughly four times more expensive than GPT-4o.

That said, TechCrunch *asked* o1 various questions that were more open ended than your typical Google search. For example, one query asked o1 what he should ask when interviewing a data scientist with only 30 minutes for the task. Another asked o1 to help plan Thanksgiving, including determining whether the meal could be cooked in two ovens or whether a third oven was needed. The response said two ovens would be sufficient and broke down how to prioritize oven space. Now if o1 would only do the actual cooking!

Calendars

US: Thurs: Leading Indicators -0.3%; Jobless Claims 232k; Philadelphia Fed Manufacturing Index -0.6; Existing Home Sales 3.89mu; Fed's Balance Sheet. **Fri:** Baker-Hughes Rig Count; Harker. (FXStreet estimates)

Global: Thurs: BoE Interest Rate Decision 5.00%; UK Gfk Consumer Confidence -13; BoJ Interest Rate Decision 0.25%; Japan CPI 2.8%y/y; Schnabel; Nagel; Balz. **Fri:** Eurozone Consumer Confidence -13.5; Germany PPI 0.0%m/m/-0.9%y/y; France Business Survey 99; UK Retail Sales 0.4%; Canada Headline & Core Retail Sales 0.3%/-0.5%; BoJ Pres Conference; Lagarde; Mann; Macklem. (FXStreet estimates)

Strategy Indicators

Stock Market Sentiment Indicators (*link*): The *Bull-Bear Ratio* climbed to 2.15 this week, after sinking from 2.42 to 1.92 last week—which was the lowest since November 2023. *Bullish sentiment* climbed to 49.2% this week, after falling the prior two weeks from 53.2% to 43.5%—its lowest percentage since last August. Meanwhile, *bearish sentiment* edged up for the second week, from 21.6% to 22.9% over the period, hovering just above 20.0% the past few weeks, though up roughly 50% from the mid-July count of just 14.9%. The *correction count* fell to 27.9% after increasing the prior two weeks, from 24.2% to 33.9%. In the *AAII Sentiment Survey* (as of September 12), bearish sentiment among individual investors about the short-term outlook for stocks increased during the latest week, while optimism and neutral sentiment decreased. *Bearish sentiment* jumped 6.0ppts to 31.0%—reaching its historical average of 31.0% for the first time in five weeks. Meanwhile, *bullish sentiment* fell 5.5ppts to 39.8%, remaining above its historical average of 37.5% for the 44th time in 45 weeks, while *neutral sentiment* was little changed, edging down 0.5ppts to 29.3% and holding below its historical average of 31.5% for the 10th straight week.

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): The S&P 500's forward profit margin remained steady at a record high of 13.4% during the September 13 week. That's its first record since the June 9, 2022 week, and it is now 3.1ppts above its seven-year low of 10.3% during April 2020. It was a relatively quiet week for revisions as forward revenues and forward earnings both ticked down less than 0.1% w/w from their record highs a week earlier. Revenues and earnings have been steadily making new record highs for 12 months now. That compares to its prior 16-month string of record highs from March 2021 to June 2022; prior to that, they peaked just before Covid-19 in February 2020. The consensus expectations for forward revenues growth was steady w/w at 5.7% and is down from a 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 a 35-month high of 14.1%. It's now 10.8ppts 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 4.7% 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 10.0% in 2024 (unchanged w/w) and a 15.2% 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 0.6ppt y/y to 12.5% in 2024 (unchanged w/w), compared to 11.9% in 2023, and to rise 1.1ppts y/y to 13.6% in 2025 (unchanged w/w). The S&P 500's weekly reading of its forward P/E rose 0.1pt w/w to 20.8 from a four-week low of 20.7, but is up 1.1pts from a 14-week low of 19.7 during the August 8 week. It's now 0.8pt below its 31-month high of 21.6 during the July 11 week and is up 5.5pts 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 edged up 0.01pt to 2.79 from a three-week low of 2.79, but is up 0.16pt from a 14-week low of 2.63 during the August 8 week. It's now 0.07pt 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 September 13 week, forward revenues rose for three of the 11 S&P 500 sectors and forward earnings rose for four sectors. This led to rising forward profit margins w/w for four sectors as well. Information Technology was the only sector to post record high forward revenues this week. These five sectors had record high forward revenues a week earlier: Communication Services, Consumer Staples, Health Care, Industrials, 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. These two sectors are less than 0.2% from their post-pandemic or record highs: Consumer Discretionary and Utilities. Energy and Materials are the biggest laggards at 5.3% and 11.5% below, respectively. Three sectors have record-high forward earnings this week: Industrials, Information Technology, and Utilities. These five sectors are less than 1.6% below their recent records: Communication Services, Consumer Discretionary, Consumer Staples, Financials, and Real Estate. Health Care's forward earnings is 3.7% below its high and improving now after stalling since late 2022. Forward earnings remains depressed for Energy and Materials; both are more than 21.4% 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. These four sectors have their forward profit margin at a post-pandemic or record high this week: Consumer Discretionary, Financials, Industrials, and Information Technology. Among the laggards, Energy's forward margin has fallen 0.4ppts from its six-month high of 10.9% in mid-June to a hair above its 23-month low of 10.4% in February; Consumer Staples' is 0.2ppt above its seven-year low of 6.7% in March 2023; and Health Care is 0.3ppt above its 8.5% record low in April. 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 (27.6%, a record high this week), Financials (19.4, down from its 19.8 record high in August 2021), Communication Services (18.0, down from its 18.1 record high during the August 8 week), Real Estate (17.3, down 0.1ppt w/w and down from its 19.2 record high in 2016), Utilities (14.1, down from its 14.8 record high in April 2021), S&P 500 (13.4, a record high this week), Materials (11.2, down 0.1ppt w/w and down from a 20-month high of 11.6 in July and from its 13.6 record high in June 2022), Energy (10.5, down from a six-month high of 10.9 in June and its 12.8 record high in November 2022), Industrials (10.9, up 0.1ppt w/w to a new record high again for the first time since September 2013), Consumer Discretionary (9.2, a record high this week), Health Care (8.8, up 0.3ppt 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).

US Economic Indicators

Housing Starts & Building Permits (*link*): Housing starts recovered in August, posting its biggest gain since April, after Hurricane Beryl caused a steep drop in single-family units in July. *Housing starts* rebounded 9.6% in August to 1.356mu (saar) after slumping 6.9% in July to 1.237mu—the lowest level since May 2020—led by single-family units. *Single-family* starts in August rebounded 15.8% to 992,000 units (saar), after tumbling the prior five months, by 12.8% in July to 857,000 units—the lowest since March 2023—and 24.4% over the five months ending July. Multi-family starts, buildings with five units or more, slumped 6.7% in August to 333,000 units (saar) after rising three of the prior four months by 42.2%. Total starts were up 3.9% y/y, with single-family units up 5.2% and multi-family units 6.2% lower. Meanwhile, *building permits*, a proxy for future construction, climbed 4.9% in August to 1.475mu (saar), with single-family permits up 2.8% to 967,000 units (saar) and buildings with five units more up 8.4% to 451,000 units. On a year-over-year basis, they fell 6.5%, 0.5%, and 10.9%, respectively. *Builder confidence* climbed in September for the first time in five months as mortgage rates fell, though builders continue to face challenges. Carl Harris, NAHB Chairman, warned that the cost of construction remains elevated relative to household budgets, while builders also face competition from rising existing home inventory.

Global Economic Indicators

Eurozone CPI (*link*): The *Eurozone CPI* inflation rate slowed to a three-year low of 2.2% y/y in August, matching its flash estimate and down from July's 2.6%. Meanwhile, the *core CPI* slowed to 2.8% from 2.9% in each of the prior three months, posting its sixth successive reading below 3.0%. It was at 2.7% in April, which was the lowest since February 2022. Both are down sharply from their recent peaks of 10.6% in October 2022 and 5.7% in March 2023. Looking at the components, the *services* rate moved up from 4.0% in July to 4.1% in August, the highest annual rate among the components last month, up from its recent low of 3.7% in April—which was the lowest rate since summer 2022. It peaked at 5.6% in July 2023. The rate for *energy* prices fell back into negative territory in August, dropping to -3.0% y/y after climbing from a recent low of -11.5% last November to 1.2% this July. Meanwhile, the rate for *food, alcohol & tobacco* was unchanged at 2.3% in

August, the second highest annual rate among the components, though is down from a recent peak of 2.8% in April. The rate for non-energy industrial goods fell closer to zero in August, rising only 0.4% y/y from 0.7% in each of the prior three months and 1.1% in March. Among the four *largest Eurozone countries*, all eased in August: Germany (2.0% y/y from 2.6% y/y), France (2.2. from 2.7), Italy (1.2 from 1.6), and Spain (2.4 from 2.9).

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