MORNING BRIEFING
December 8, 2022

On Industrials P/Es & Chinese Protestors

Check out the accompanying chart collection.

Executive Summary: . The Industrials sector is outperforming the S&P 500 despite market expectations for a recession. The sector's exposure to airlines, the defense industry, Boeing, and General Electric may continue to support its performance into 2023. … Also: The bear market has taken a bite out of most industries' forward P/Es, especially those involved with Information Technology or Consumer Discretionary sectors. Meanwhile, forward P/Es have expanded for select industries in the defensive Consumer Staples and Health Care sectors. … And Jackie examines how technology both helped and hurt Chinese protesters.

Industrials: Surprising Strength. Given all the talk of recession, the S&P 500 Industrials stock price index has held up surprisingly well. It has fallen 6.3% ytd through Tuesday's close, far outpacing the S&P 500's 17.3% drop over the same period. The sector is benefitting from trends that should be tailwinds even if the economy suffers from a shallow recession. The airline industry continues to rebound from years of depressed travel because of Covid. Defense spending is elevated and may continue to be for many years due to the war in Ukraine and the need to modernize. And finally, restructurings at Boeing and General Electric, two of the largest companies in the sector, may finally be bearing fruit.

Here's how the Industrials sector's stock price index has faired compared to the 10 other sectors in the S&P 500 ytd through Tuesday's close: Energy (53.6%), Utilities (-1.3), Consumer Staples (-2.0), Health Care (-2.8), Industrials (-6.3), Materials (-10.4), Financials (-11.4), S&P 500 (-17.3), Information Technology (-25.6), Real Estate (-26.7), Consumer Discretionary (-33.0), and Communication Services (-37.7) (*Fig. 1*).

The Industrials sector's stock price index's ytd performance has been bolstered by the following industries: Construction & Engineering (30.5%), Agricultural & Farm Machinery (27.8), Aerospace & Defense (13.4), Construction Machinery & Heavy Trucks (11.8), and Environmental & Facilities Services (0.1).

The stock price indexes of all other industries in the sector are in negative territory ytd including: Human Resources & Employment Services (-33.8%), Air Freight & Logistics (-21.4), Building Products (-21.4), Trucking (-17.6), Railroads (-17.0), Electrical Components

& Equipment (-15.3), Industrial Machinery (-15.3), Research & Consulting Services (-11.9), Industrial Conglomerates (-9.3), Airlines (-7.6), Diversified Support Services (-5.8), and Trading Companies & Distributors (-5.2) (*Fig.2* and *Fig.3*).

Looking into 2023, the Industrials sector is expected to report the second strongest earnings growth (14.4%) of the 11 S&P 500 sectors. The sector's growth is bolstered by the Airlines industry, which is expected to report the strongest earnings growth in the Industrials sector, 94.6%, as it continues to rebound from a loss in 2021. Otherwise, the Aerospace & Defense (45.6%), Agricultural & Farm Machinery (19.5), and Industrial Conglomerates (17.1) industries are expected to post the strongest earnings growth next year.

Here's the 2023 earnings growth forecast for the other Industrials industries: Construction & Engineering (10.9%), Construction Machinery & Heavy Trucks (8.8), Building Products (8.2), Trading Companies & Distributors (7.7), Diversified Support Services (7.3), Environmental & Facilities Services (6.6), Research & Consulting Services (6.6), Industrial Machinery (4.2), Railroads (2.1), Air Freight & Logistics (-2.4), Trucking (-2.5), Electrical Components & Equipment (-3.0), and Human Resources & Employment Services (-11.3).

Let's take a deeper look at what's driving the strong earnings growth in the Aerospace & Defense industry and the Industrial Conglomerates industry next year.

(1) War: Bad for humans, good for defense contractors. The Ukraine war has depleted US and NATO ammunitions and reinforced the importance of a strong, technologically advanced military. But replacing those munitions and modernizing the military will take time and should benefit contractors' bottom lines for many years.

Contractors complain the Defense Department has been slow to issue new contracts, but new contracts have started to dribble out. The Pentagon recently awarded $3.9 billion of new contracts to equip Ukraine, replenish US stocks of weapons, and backfill those supplied by allies. Many of those purchases will occur over the next several years, rather than in the short term, an October 29 *WSJ* article reported.

And earlier this week the Army awarded a contract for its next-generation helicopter to Textron's Bell division, sending the company's shares up 5.3% on Tuesday while the S&P 500 dropped 1.4%. The aircraft will replace Sikorsky's Black Hawk helicopter, which is currently in use. The initial award was for $232 million, but it's expected to be worth around $70 billion as the newest helicopter is produced over many decades, a December 5 Reuters article reported. Textron beat out Lockheed Martin's Sikorsky division and Boeing.

Contractors have had difficulties finding workers and supplies, but this too could elongate the industry's upward earnings cycle. For example, Lockheed Martin and Raytheon Technologies jointly produce the Javelin antitank missiles being used in Ukraine. They expect it will take two years to double output from the current rate of 400 a month, a December 6 *WSJ* article reported. Analysts expect Lockheed's earnings to increase from $22.52 a share in 2022 to $27.21 in 2023 and $28.38 in 2024. At Raytheon earnings are expected to grow from $4.76 a share in 2022 to $5.13 next year and $6.13 in 2024.

(2) *Boeing: Course correcting.* Boeing's travails with the 737 Max and its defense business cut its stock in half from 2018 levels. But the company believes it has fixed the problems plaguing the Max just as travelers are packing airports and global airline profitability is expected to return next year, according to International Air Transport Association data quoted in a December 6 Reuters article.

Airlines have picked up the pace of plane orders. United Airlines is reportedly close to buying dozens of Boeing 787 Dreamliners, a December 2 *WSJ* article reported. And Boeing anticipates delivering 450 737s next year up from 375 this year, a November 2 *WSJ* article reported. Boeing executives recently said they expect $100 billion of annual sales by 2025 or 2026 and expect to restart the company's dividend as soon as 2026, a November 2 *WSJ* article reported. Southwest Airlines announced on Wednesday it also plans to reinstate its dividend, making it the first major carrier to do so. Boeing shares, which hit a low of $115.86 in June, took off over the last two months, closing at $178.43 Tuesday.

The S&P Aerospace & Defense industry is expected to grow revenue by 2.7% this year and 8.7% in 2023 (*Fig.4*). The industry's earnings are expected to improve even more with earnings growing 8.2% this year and 45.6% in 2023 (*Fig.5*). Boeing's turnaround certainly helps the industry. The company is forecast to lose $7.84 a share this year but earn $3.61 a share in 2023. The industry does sport a lofty valuation. At 22.1, the Aerospace and Defense industry's forward P/E is at historically high levels (*Fig.6*).

(3) *Splitsville.* A member of the S&P 500 Conglomerates industry, General Electric shares have fallen by more than half since 2016. The storied manufacturer was plagued by its exposure to the aviation industry—it sells engines and parts—during the Covid shutdown. More recently its renewable energy business, which makes turbines for power plants and wind turbines, has come under pressure because of inflation, lower demand, and higher warranty pressure.

But GE is on the cusp of splitting into three companies, individually focused on aviation, power generation or health care. Shares rose 0.7% on Tuesday, while the S&P 500 declined 1.4% after an Oppenheimer analyst upgraded the stock's rating to Buy with a price target of $104 because he believes the sum of GE's three units will be worth more individually after the spinoffs, than they are worth together today.

General Electric has the second largest market capitalization of the companies in the S&P 500 Industrial Conglomerates industry. The industry, which also includes Honeywell International, 3M, and Roper Technologies, is expected to have little revenue growth this year, 0.8%, with modestly better results in 2023, 4.3% (*Fig.7*). Meanwhile, earnings are expected to grow 7.3% this year and surge 17.1% in 2023 (*Fig.8*). The forward P/E for the Industrial Conglomerates industry, at 18.6, is closer to its historical lows (*Fig.9*).

Strategy: P/Es Change With The Times. With the S&P 500 down 17.3% ytd through Tuesday's close, it makes sense that the index's forward P/E would contract to 17.9 from 20.5 one year ago. The forward P/Es for most of the S&P 500 sectors shrank, with the exception of the Consumer Staples, Health Care, Materials, and Utilities sectors, which saw their forward P/Es expand as investors flocked to "safe" havens during market selloffs.

Here are the S&P 500 sectors and their forward P/Es as of December 1 and a year prior: Real Estate (36.1, 48.0), Consumer Discretionary (23.3, 30.8), Information Technology (21.8, 26.9), Consumer Staples (21.5, 19.9), Utilities (19.0, 18.9), Industrials (18.7, 19.4), S&P 500 (17.9, 20.5), Health Care (17.7, 16.2), Materials (16.9, 15.9), Communications Services (15.3, 19.8), Financials (12.9, 14.1), and Energy (9.7, 10.5) (*Table 1*).

Let's take a look at how forward P/Es have changed for the S&P 500's industries, excluding REITS. First, we teased out industries with forward P/Es that dropped by roughly five points over the past year. Here's what we discovered:

(1) Shrinking tech multiples. A number of technology-related industries that went into the market's correction with lofty P/Es have much lower multiples today. The list includes Internet & Direct Marketing Retail, home of Amazon, which now has a forward P/E of 50.8, down 10.0 points from last year. Others include: Application Software (28.0, 47.7), Systems Software (24.2, 32.8), Internet Services & Infrastructure (21.6, 26.1), Electronic Equipment & Instruments (20.3, 27.4), Semiconductors (19.5, 24.2), Interactive Media & Services (18.3, 24.3), and Technology Distributors (18.1, 21.7).

(2) *Growing earnings.* Some industries' forward P/Es shrank because their earnings are expected to grow sharply as they continue to recover from the impact of Covid. This applies to Movies & Entertainment (27.2, 38.8), Hotels (18.3, 27.2), and Airlines (9.1, 16.5).

(3) *Consumer related names too.* A number of industries catering to consumers saw their forward P/Es decline over the past year: Personal Products (38.0, 40.7), Footwear (31.9, 39.2), Automobile Manufacturers (20.7, 43.3), Home Improvement Retail (17.7, 22.8), Consumer Electronics (17.3, 21.4), Auto Parts & Equipment (15.7, 22.4), and Leisure Products (12.0, 18.0).

(4) *A few P/Es increased.* A surprising number of industries saw their forward P/Es increase over the past year. But P/E increases were much smaller than the decreases experienced by the industries with shrinking P/Es. A number of industries in the defensive Consumer Staples sector boast higher P/Es today than they did a year ago: Soft Drinks (25.5, 22.9), Household Products (24.6, 23.4), Packaged Foods (19.1, 16.4), Agricultural Products (14.6, 13.0), Brewers (13.4, 10.6), and Tobacco (13.4, 11.3).

Another defensive sector, Health Care, also contains many industries with forward P/Es that grew over the course of the year including: Managed Health Care (19.7, 18.2), Biotechnology (15.8, 10.5), Pharmaceuticals (14.9, 13.0), Health Care Distributors (14.6, 9.9), Health Care Facilities (13.0, 11.7), and Health Care Services (12.5, 10.9).

Some industries forward P/Es jumped because their earnings declined. Industries falling into this unfortunate category include Publishing (25.3, 22.4), Copper (23.3, 10.6), Steel (11.8, 6.4), and Commodity Chemicals (10.4, 6.9).

A lucky few had earnings that improved and their forward P/Es increased as well. The fortunate group includes Aerospace & Defense (22.1, 17.3), Property & Casualty Insurance (14.6, 13.4), Life & Health Insurance (10.1, 8.4), Apparel Retail (23.1, 19.4), and Interactive Home Entertainment (18.2, 16.8).

Disruptive Technologies: Chinese Tech Tussle. Chinese protests against a range of government policies and actions in recent weeks highlight how modern technology is a double edged sword for activists. In some situations, technology is helping protesters by making communication harder for the state to control. In others, it's helping the government to identify and halt protestors' efforts. Let's take a look at this serious game of cat and mouse:

(1) *The all-powerful cell phone.* As much as the Chinese government would like to project only positive images of the country, videos taken and sent by cell phones have given the world a glimpse into what's actually happening there. Censors struggled to remove the surge of posts about the protests that went viral on China's social media sites WeChat, Weibo, TikTok, and Kuaishou, a November 28 article in Australia's ABC News reported. In other cases, tech-savvy activists have used private networks to send videos to platforms outside of China, according to a November 29 Reuters article.

(2) *Telegraphed by Telegram.* One messaging service Chinese protestors use is Dubai-based Telegram, founded in 2013. While not popular in the US, the service is growing quickly internationally and has more than 700 million monthly users who can communicate directly to each other or within groups of up to 200,000 people.

The company's stated goal isn't to make profits but to offer private conversations free from snooping third parties. It promises not to share users' personal data with advertisers or anyone else, and person-to-person communication is encrypted. The platform makes no judgement on who is communicating for good or for ill purposes. As a result, Telegram reportedly has carried messages from Chinese protestors and terrorists alike. It has become a hub for distributing pirated movies and music.

That said, the company's guarantees of user privacy aren't bulletproof. Telegram recently was forced by the Delhi High Court in India to disclose the name, phone number, and IP address of one of its channel's administrators accused of copyright infringement, a November 30 TechCrunch article reported.

Here's how Telegram works: It stores chat data in multiple data centers around the globe that are controlled by different legal entities across different jurisdictions. Its decryption keys are "split into parts and are never kept in the same place as the data they protect. As a result, several court orders from different jurisdictions are required to force us to give up any data," the company's website explains. The service also offers self-destructing messages that can't be forwarded and can be opened only by the intended party (though recipients are able to take and forward screenshots of messages).

Wired's February 8, 2022 article about Telegram's beginnings and its tight band of employees is worth a read.

(3) *Tech helps the police.* There are reports that police in Beijing are randomly taking people's cell phones and looking through them to see if the owners were involved in the protests. Police look for virtual private networks or the Telegram app on the phones. After this news broke, Chinese citizens reportedly scrambled to delete any texts, videos, and other evidence of participation in protests.

Authorities reportedly use cell phone location data to track down protestors. One Beijing university student was informed by his school that the police had used mobile phone data to track his movements to a protest site and was requesting a written explanation of why he was there, a November 29 *WSJ* article reported.

Technology also is used by the government to control the public narrative. Chinese government-controlled broadcasters avoided showing the crowds attending the World Cup soccer tournament because many attendees weren't wearing masks. And nationalist bloggers have been posting claims that recent anti-Covid lockdown protests were fomented by "foreign forces," a November 29 Reuters article reported.

(4) *Harry's invisible cloak?* Chinese graduate students invented the InvisDefense coat, which prevents security cameras from determining whether the person wearing it is a human or an inanimate object. The coat is covered in patterns that blind security cameras during the day, and it sends out unusual heat signals at night. The coat reduces the accuracy of pedestrian detection by 57%, and its accuracy could improve in the future, a December 5 *South China Morning Post* article stated.

The coat and its technology could be used to help improve cameras, artificial intelligence programs, and facial recognition programs, said the Wuhan University professor who oversaw the project. "InvisDefense might also be used in anti-drone combat or human-machine confrontation on the battlefield." Bet that never occurred to J.K. Rowling!

Calendars

US: **Thurs:** Initial & Continuous Jobless Claims 230k/1.60m; Natural Gas Storage. **Fri:** Headline & Core PPI 0.2%m/m/7.2%y/y & 0.2%m/m/5.9%y/y; University of Michigan Consumer Sentiment Index Headline, Current Conditions, and Expectations 56.9/58.0/56.0; Wholesale Trade & Inventories; Baker-Hughes Rig Count. (Bloomberg estimates)

Global: **Thurs:** France Nonfarm Payrolls; China CPI & PPI 1.6% & -1.5% y/y; Lagarde; Wuermeling; Kozicki. **Fri:** Spain Industrial Production 2.8% y/y; UK Inflation Expectations; Enria; McCaul. (Bloomberg estimates)

Strategy Indicators

Stock Market Sentiment Indicators (*link*): The Bull-Bear Ratio rose to 1.34 this week after falling from 1.37 (which was the highest since the August 23 week) to 1.22 last week. It was at 0.57 in early October, which was the lowest since March 2009. Bullish sentiment jumped to 43.3% (highest since the 45.1% during the August 23 week) after falling from 41.7% to 38.4% last week. Meanwhile, bearish sentiment rose for the second week to 32.4% after falling the prior six weeks by 13.6ppts (to 30.5% from 44.1%). The correction count retreated to 24.3% after increasing the prior five weeks from 24.6% to 30.1%. Turning to the AAII Sentiment Survey (as of December 1), the short-term direction of the stock market dropped to a six-week low, while pessimism held around the same level; neutral sentiment jumped for the second successive week. The *percentage expecting stocks to rise* over the next six months fell for the second week to 24.5% after climbing the prior week from 25.1% to 33.5%. Optimism held below its historical average of 37.5% for the 48th consecutive week. The *percentage expecting stocks to fall* over the next six months ticked up to 40.4% from 40.2% in each of the prior two week; it had jumped 14.1ppts three weeks ago from 32.9% to 47.0%. Pessimism is above its historical average of 31.0% 51 of the past 54 weeks. The *percentage expecting stock prices will stay essentially unchanged* over the next six months increased 4.2ppts to 35.1%, putting neutral sentiment above its historical average of 31.5% for just the second time since the end of July.

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): The S&P 500's forward profit margin remained steady last week at an 18-month low of 12.7%. That's down 0.7ppts from its record high of 13.4% achieved intermittently from March to June. Since the end of April 2020, it has exceeded its prior record high of 12.4% in September 2018. It's now up 2.4pts from 10.3% during April 2020, which was the lowest level since August 2013. Forward revenues rose 0.3% w/w and is now 0.7% below its record high in mid-October. Forward earnings remains near a nine-month low, but improved 0.5% w/w to 4.0% below its record high in mid-June. Both had been steadily making new highs from the beginning of March 2021 to mid-June; prior to that, they peaked just before Covid-19 in February 2020. The consensus expectations for forward revenues growth fell 0.5ppt w/w to a 29-month low of 2.8%. 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. Forward earnings growth rose 0.1ppt w/w to 4.5% from a 31-month low of 4.4%. 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. So far this year, analysts' revisions to their forecasts for 2022 revenues have outpaced their revisions for 2022 earnings, so the imputed 2022 profit margin estimate that we calculate from those forecasts has fallen 0.7ppt to 12.5% (unchanged w/w). They expect revenues to rise 11.6% (down 0.1ppt w/w) in 2022 and 2.6% in 2023 (unchanged w/w) compared to the 16.5% gain reported in 2021. They expect earnings gains of 8.0% in 2022 (up 0.1ppt w/w) and 3.8% in 2023 (unchanged w/w) compared to an earnings gain of 50.5% in 2021. Analysts expect the profit margin to drop 0.4ppt y/y to 12.5% in 2022 (unchanged w/w) compared to 12.9% in 2021 and to improve 0.2ppt y/y to 12.7% in 2023 (unchanged w/w). The S&P 500's weekly reading of its forward P/E rose 0.2pt w/w to a 15-week high of 17.9, up from a 30-month low of 15.3 in mid-October. That's down from a four-month high of 18.2 in mid-August and also compares to 23.1 in early September 2020, which was the highest level since July 2000 and up from a 77-month low of 14.0 in March 2020. The S&P 500 weekly price-to-sales ratio rose 0.02pt w/w to a 14-week high of 2.27, up from a 31-month low of 1.98 in mid-October. That's down from a four-month high of 2.38 in mid-August and 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, last week saw consensus forward revenues rise for all but Energy and Materials. Forward earnings and the forward profit margin rose for all but Energy, Health Care, and Materials. Nearly all of the sectors are below recent record highs in their forward revenues, earnings, and profit margins. Consumer Staples, Financials, and Health are the only sectors with forward revenues at a record high this week. Financials is the only sector with forward earnings at a record high, but Consumer Staples, Energy, Industrials, and Utilities remain close to their recent record highs. Since mid-August, all sectors have forward profit margins retreat from their record highs. Energy's was down 0.1ppt from its record high a week earlier and those of Industrials and Tech remain close to their post-pandemic highs. Only three sectors posted a higher profit margin y/y during 2020: Consumer Staples, Tech, and Utilities; during 2021, all of the sectors but Utilities posted a y/y improvement. Just three sectors are expected to see margins improve y/y for full-year 2022, followed by five sectors in 2023. Here are 2022's gainers: Energy, Industrials, and Utilities. Here's how they rank based on their current forward profit margin forecasts along with their record highs: Information Technology (24.2%, up 0.1ppt w/w from an 18-month low and down from its 25.4% record high in early June), Financials (18.1, up 0.1ppt w/w and down from its 19.8 record high in August 2021), Real Estate (17.4, up 0.5ppt w/w from a seven-month low and down from its 19.2 record high in 2016), Communication Services (14.2, up 0.1ppt w/w from a 22-month low and down from its 17.0 record high in October 2021), Utilities (13.7, unchanged w/w and down from its 14.8 record high in April 2021), Energy (12.7, down 0.1ppt w/w from its 12.8 record high a week earlier), S&P 500 (12.7, unchanged w/w at a 19-month low and down from its record high of 13.4 achieved intermittently from March to June), Materials (11.5, unchanged w/w at a 20-month low and down from its 13.6 record high in June), Health Care (10.1, down 0.1ppt w/w to a 29-month low and down from its 11.5 record high in March), Industrials (10.1, up 0.1ppt w/w from a 14-month low and down from its 10.5 record high in December 2019), Consumer Discretionary (7.4, up 0.1ppt w/w from a 19-month low and down from its 8.3 record high in 2018), and Consumer Staples (7.1, unchanged w/w at a 54-month low and down from its 7.7 record high in June 2020).

S&P 500 Sectors & Industries Forward Profit Margin Since Peak (*link*): Since the S&P 500's forward profit margin peaked at a record high 13.4% during the June 9 week, it has fallen 5.4% to 12.7% through the December 1 week. The drop has been paced by three of the 11 sectors, though all but the Energy sector is down since the peak. Here's the sector performance since the June 9 peak: Energy (up 6.9% to 12.7%), Utilities (down 0.9% to 13.7%), Industrials (down 2.6% to 10.1%), Consumer Staples (down 2.9% to 7.1%), Real Estate (down 2.9% to 17.4%), Consumer Discretionary (down 4.6% to 7.4%), Financials (down 4.9% to 18.1%), Information Technology (down 5.0% to 24.2%), S&P 500 (down 5.4% to 12.7%), Health Care (down 7.5% to 10.1%), Communication Services (down 12.1% to 14.2%), and Materials (down 15.5% to 11.5%). These are the best performing industries since the June 9 peak: Wireless Telecommunication Services (up 49.1% to 10.1%), Oil & Gas Refining & Marketing (up 47.5% to 5.0%), Hotels, Resorts & Cruise Lines (up 18.7% to

11.7%), Casinos & Gaming (up 18.7% to 2.7%), and Oil & Gas Equipment & Services (up 15.6% to 10.6%). The worst performing industries since the June 9 peak: Copper (down 42.2% to 11.1%), Alternative Carriers (down 38.4% to 5.4%), Commodity Chemicals (down 38.3% to 6.3%), Home Furnishings (down 34.0% to 5.9%), and Gold (down 31.7% to 13.1%).

US Economic Indicators

Productivity & Unit Labor Costs (*link*): Productivity growth during Q3 was revised up to 0.8% (saar), from the initially reported 0.3% gain, which followed declines of 4.1% and 5.9% the prior two quarters. *Real output* (to 3.3% from 2.8%, saar) was revised higher, following declines of 1.2% and 2.5% the prior two quarters, while hours worked (2.5 from 2.4) was little changed from the initial estimate, slowing from 2.9% and 3.6% the prior two quarters. *Unit labor costs* increased 2.4% (saar), slower than the 3.5% initial gain, and considerably slower than the increases of 6.7% and 8.5% the previous two quarters, as productivity growth swung from negative to positive. *Hourly compensation* (3.2% from 3.8%) was slower than the initial Q3 estimate, but faster than the 2.3% and 2.1% gains the prior two quarters. On a year-over-year basis, productivity fell 1.3%, narrowing from Q2's 2.1% drop, while the rate for unit labor costs narrowed eased to 5.3% from 7.0% during Q2, which was the highest since Q3-1982. Despite the recent weakness in productivity, we still think a major productivity growth cycle began during the final quarter of 2015. We track the annualized 20-quarter percent change in productivity which bottomed at 0.4% during Q4-2015. It recently peaked at 2.5% during Q2-2021, dropping to 1.7% last quarter. We anticipate that businesses will react to the current labor shortage by using productivity-enhancing technologies, sending the productivity cycle peak to around 4.0% during the second half of this decade.

Global Economic Indicators

Germany Industrial Production (*link*): Production fell less than expected in October, despite a sharp 3.6% decline in the energy-intensive sectors. Germany's *headline production*, which includes construction, slipped 0.1%, smaller than the expected 0.7% decline, following an upwardly revised 1.1% in September—which was nearly double the 0.6% preliminary gain. Construction output posted a 4.2% gain in October, its strongest performance since the start of the year. Production excluding construction (which the overall Eurozone uses) fell 0.9% after a 1.2% gain in September and a 0.7% loss in August. Industrial production including construction fell 1.0% ytd, while the measure excluding construction dropped 2.0%. *Manufacturing production* contracted 0.5% following an upwardly revised 1.5% (from 0.8%) in September; it's down 1.1% ytd. Looking at the main industrial groupings, *capital goods* output climbed in October for the sixth time in seven months, by 1.4% m/m and 12.9% over the period, more than recovering from the 9.5% slump during the two months through March—with output up 2.5 ytd. *Consumer durable goods* production sank 4.6% during the two months through October, after climbing to its highest level since March 2019 in August. Meanwhile, *consumer nondurable goods* production dipped 1.7% after a two-month gain of 4.8%; it's down 4.5% from its recent peak during February. Output of *intermediate goods* sank to its lowest level since September 2020, contracting 5.2% ytd.

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