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1Q2023

Reports
ITR Economics

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Economic Overview

Recession in 2024

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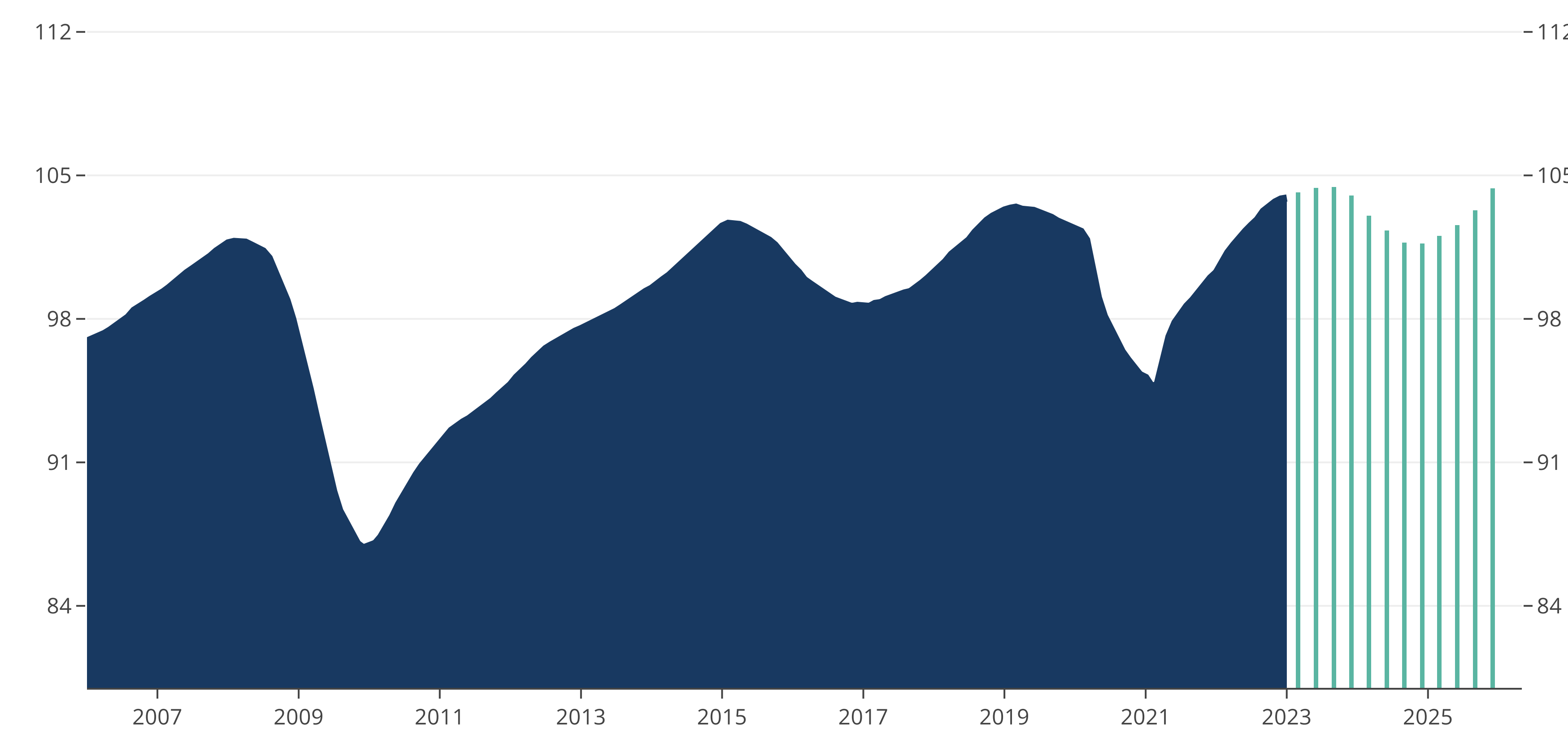
Current Events

Uncertainty and risks to the financial system have dominated the headlines of late. The recent bank failures have sparked fears of instability, exacerbated by painful memories of the Great Recession. The sharp increase in bond yields in the last year means that bonds bought during the pandemic now command a lower price in the secondary market. This is not a problem when such bonds are held to maturity or where hedging has been employed to address this risk. However, bank runs forced some banks to sell these securities early and cement a real loss. The bank failures to this point have come down to a combination of failing to hedge against this interest rate exposure and an abnormal level of exposure to specific sectors, such as tech. The FDIC has increased its coverage beyond the usual $250,000-per-depositer limit, and the Federal Reserve has created a new liquidity facility; this seems to have quelled fears. We continue to monitor the situation but are not immediately worried about a systemic failure.

The Federal Reserve has raised the federal funds rate twice so far in 2023. Our current forecasts would accommodate an additional 25–75 basis points of rise. Current Federal Reserve signals are toward the lower end of that range, though the body's actions often deviate from its own projections. Should the Fed raise rates by more than we are currently expecting or keep rates high for longer (we expect cuts by the end of this year), it would pose a downside risk to many of our outlooks and likely lead to a more severe or longer-lasting recession for the US economy than currently forecasted.

US Industrial Production Index

Annual Average (12MMA)



Clues on the decline ahead

We are forecasting worsening economic conditions as this year progresses and recession in 2024. Residential construction will likely reach a low sooner, in mid-2023, and nonresidential construction will have a later low in 2025. Cyclical downturns come with a lot of uncertainty and attendant anxiety. Knowing when the trough will occur can help assuage those worries. Our system of leading indicators, proven through decades of business cycles, provides directional guidance for the next two to four quarters. While we have seen some burgeoning upward movement in a handful of indicators, it has not been enough to confirm a shift in momentum. Sustained rise in leading indicators starting late this year would confirm our forecasted late-2024 macroeconomic low.

We expect the upcoming recession to be relatively mild. Multiple factors will contribute to this mildness. First, consumer balance sheets remain solid, with relatively low debt-to-income ratios, muted credit delinquency rates, and rising inflation-adjusted income. Second, the trend of onshoring and nearshoring manufacturing facilities to strengthen supply chains is likely to persist, providing new opportunities for domestic manufacturers. Third, many manufacturers built up robust backlogs during the period of supply chain disruption that characterized the pandemic. Provided we do not see large-scale cancelations, these backlogs will act to smooth out activity, contributing to a milder declining trend.

Takeaways for your business

As is the case with many recessions, it will be essential in the coming quarters to know your customers and your market. Given inflationary pressures, we expect this contractionary period will take a heavier toll on lower-income consumers. It will be essential to determine your customer base's willingness to stick with your products over lower-cost alternatives. Promote your business's competitive advantages; ensure your customers know why they do business with you over your competitors. Secondly, re-examine any planned capital expenditures – do they address persistent issues, or are you adding capacity that you will not need for another few years? Given the recent bank failures, as well as higher interest rates, credit conditions are likely to be tight. Be on good terms with your banker and make sure you have sufficient cash on hand. Finally, do not fall into the rabbit hole. In the long term, we expect the US to be well-positioned as a place for business.

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Terminology and Methodology

Data Trends: Moving Averages and Totals

Quarterly Average *(Three-Month Moving Average, or 3MMA)*
The average of the latest three months of data, updated every month. In the example, $57.79 is the quarterly average for the three months ending in March 2021 (i.e., the average for January, February, and March 2021).

Example: Monthly US Crude Oil Spot Prices averaged $57.79 in the first quarter of 2021, a 26.3% increase from the first quarter of 2020.

Quarterly Total *(Three-Month Moving Total, or 3MMT)*
The total of the latest three months of data, updated every month. In the example, $257.8 billion is the quarterly total for the three months ending in February 2021 (i.e., the total for December 2020, January 2021, and February 2021).

Example: Quarterly US Capital Goods New Orders totaled $257.8 billion in February 2021.

Annual Average *(12-Month Moving Average, or 12MMA)*
The average of the latest 12 months of data, updated every month. In the example, 119.0 million is the annual average for February 2021 (i.e., the average for the 12-month period from March 2020 through February 2021).

Example: US Private Sector Employment averaged 119.0 million workers during the 12 months through February 2021, down 7.5% from one year earlier.

Annual Total *(12-Month Moving Total, or 12MMT)*
The total of the latest 12 months of data, updated every month. In the example, $5.849 trillion is the annual total for February 2021 (i.e., the total for the 12-month period from March 2020 through February 2021).

Example: US Wholesale Trade totaled $5.849 trillion during the 12 months through February 2021.

Growth Rates

Monthly Growth Rate *(1/12 Rate-of-Change)*
The percentage change between a given month and the same month one year earlier. In the example, 79.3% is the monthly growth rate for March 2021.

Example: Monthly US Copper Futures Prices were at $4.00 per pound in March 2021, 79.3% above the March 2020 level of $2.29.

Quarterly Growth Rate *(3/12 Rate-of-Change)*
The percentage change between a three-month period and the same three-month period from one year earlier. In the example, 26.3% is the quarterly growth rate for March 2021.

Example: US Crude Oil Spot Prices averaged $57.79 in the first quarter of 2021, a 26.3% increase from the first quarter of 2020.

Annual Growth Rate *(12/12 Rate-of-Change)*
The percentage change between a 12-month period and the same 12-month period from one year earlier. In the example, -7.5% is the annual growth rate for February 2021; that is, US Private Sector Employment during March 2020 through February 2021 came in 7.5% below Employment from March 2019 through February 2020.

Example: US Private Sector Employment averaged 119.0 million workers during the 12 months through February 2021, down 7.5% from one year earlier.

Business Cycle Phases

Recovery (A)

The annual growth rate (12/12) is rising, but the rate of growth is still negative. We denote this phase with blue (for improving).

Accelerating Growth (B)

The annual growth rate (12/12) is rising, and the rate of growth is positive. We denote this phase with green (for go).

Slowing Growth (C)

The annual growth rate (12/12) is positive, but the rate of growth is declining. We denote this phase with yellow (for caution).

Recession (D)

The annual growth rate (12/12) is declining, and the rate of growth is negative. We denote this phase with red (for warning).

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IMEC Markets Dashboard

		Current		Annual Growth Rate Forecast (12/12), Year-End*		
Page Number	**Indicator**	**Growth Rate****	**Phase**	**2023****	**2024****	**2025****
4	US Industrial Production Index	2.9%	C	0.1%	-2.3%	2.7%
5	US Nondefense Capital Goods New Orders (excluding aircraft)	7.8%	C	1.8%	-4.6%	5.5%
6	US Machinery New Orders	7.9%	C	2.3%	-5.5%	6.9%
7	US Food Production Index	1.2%	C	0.6%	1.6%	1.4%
8	US Medical Equipment and Supplies Production Index	7.5%	C	1.2%	-0.9%	3.5%

**Coloring denotes the business cycle phase at year-end. For example, if a value in the 2021 column is colored blue, the corresponding indicator is forecasted to be in Phase A, Recovery, at year-end 2021. Green denotes Phase B, yellow Phase C, and red Phase D.*

***Annual growth rate (12/12) except where otherwise noted.*

Recovery (A) Accelerating Growth (B) Slowing Growth (C) Recession (D)

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US Industrial Production Index

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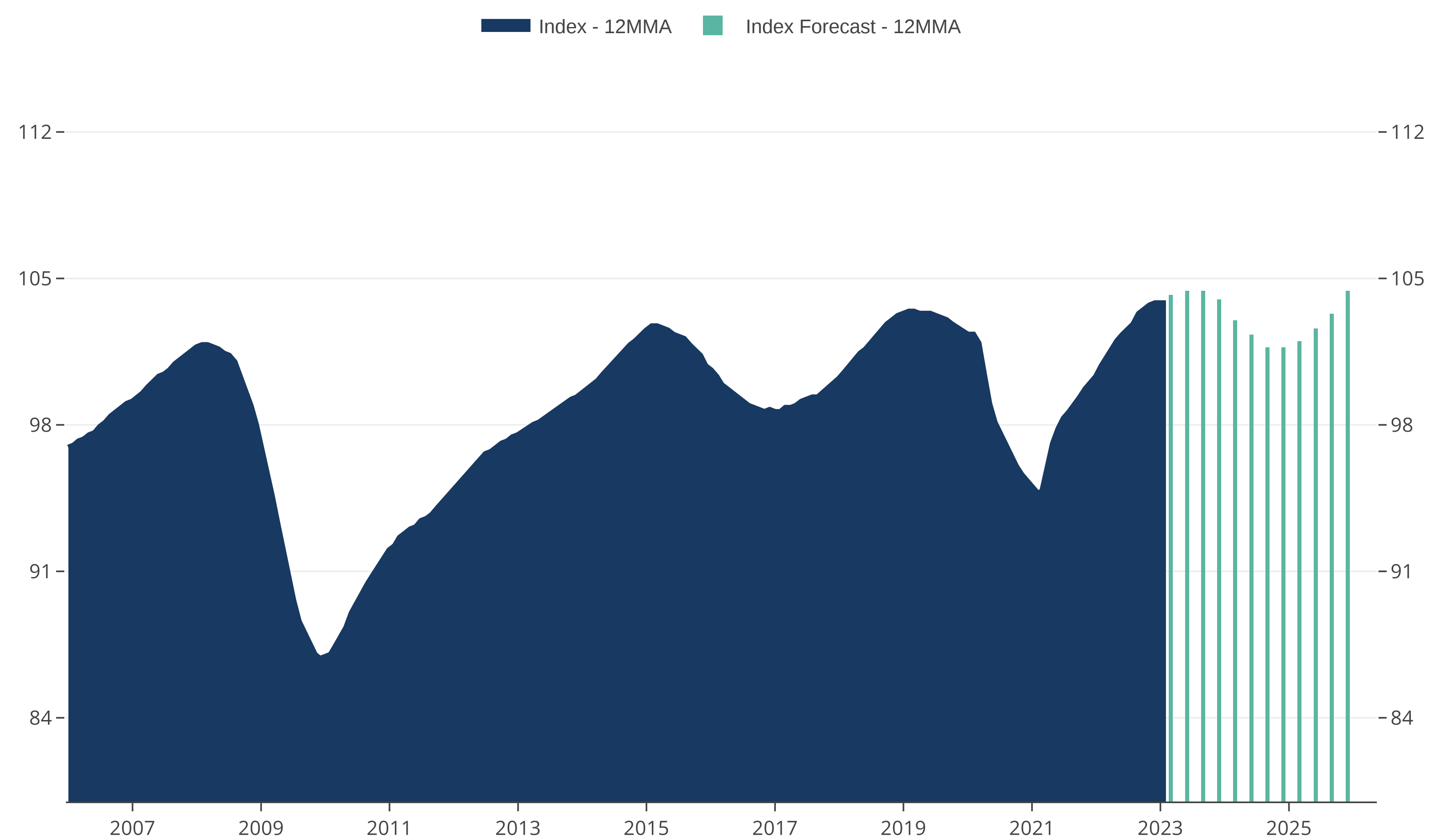
Manufacturing and Utilities Tick Down as Mining Rises; Decline in Total Expected by Late 2023

Annual Average (12MMA)



Annual Growth Rate (12/12)

Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- February 2023 Annual Growth Rate (12/12): 2.9%
- February 2023 Annual Average (12MMA), 2017=100: 103.8

Industry Outlook

Year	Annual Growth Rate
2023	0.1%
2024	-2.3%
2025	2.7%

Outlook & Supporting Evidence

- US Industrial Production's manufacturing and utilities components, which respectively account for about 78% and 12% of the whole, ticked down slightly on an annual basis in recent months. The mining component (around 10% of the whole) is rising.
- Annual Industrial Production is expected to peak late this year; growth will continue to slow in the meantime. 2023 is expected to come in at about the same level as 2022. Downside pressures will intensify in 2024, during which annual Production is expected to decline around 2%-3%. The 2023 and 2024 trends will help rebalance markets back toward their longer-term trajectory. Rise is expected to resume in 2025.
- Our expectation that the 2024 Industrial Production will be relatively mild is predicated on the inversion of the 10-year to 3-month Treasury yield curve not extending past this year. Federal Reserve policy decisions could be especially influential this cycle and are an unknown. Recent events have resulted in a rapid shift in the Federal Reserve's tone.

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US Nondefense Capital Goods New Orders (excluding aircraft)

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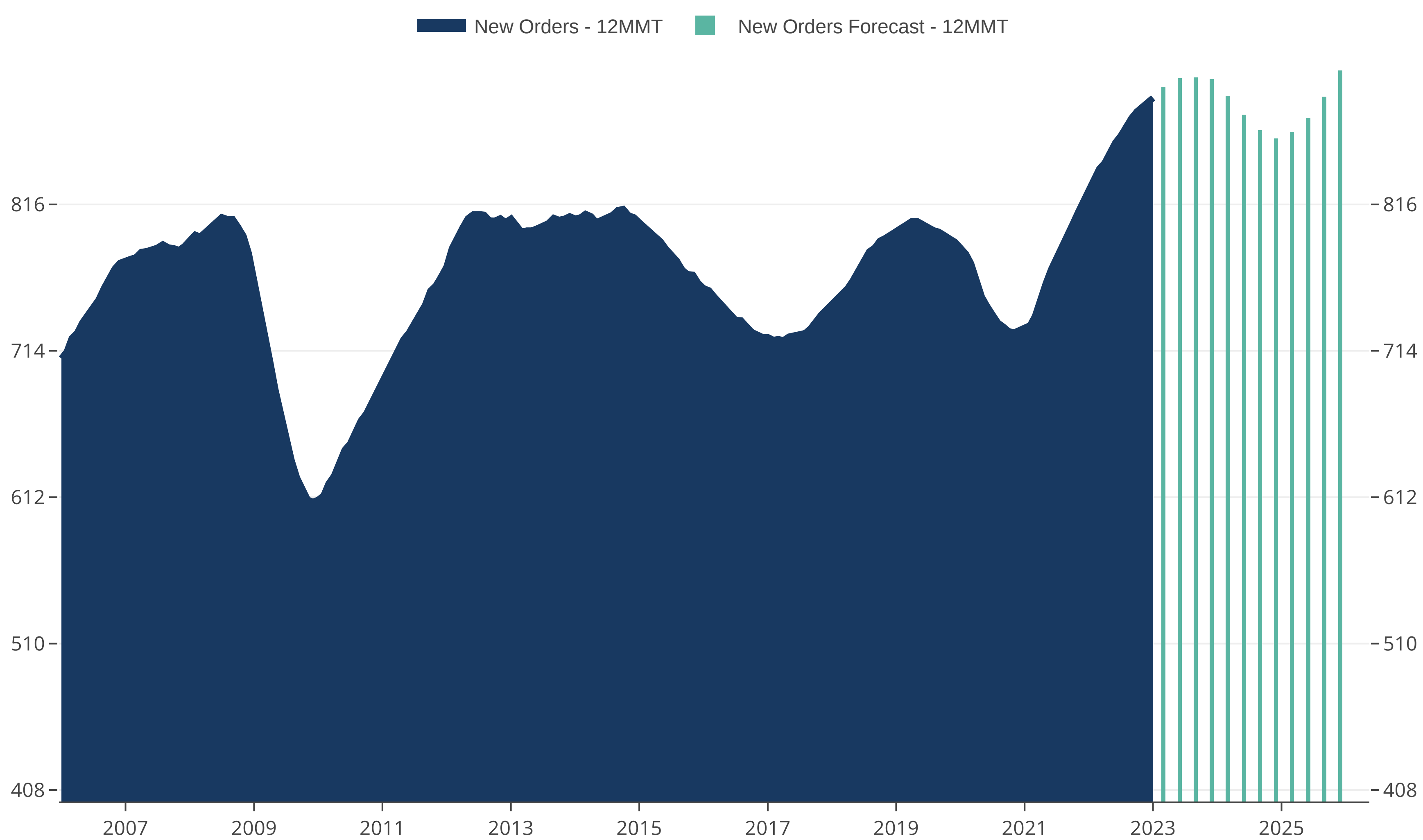
Elevated Interest Rates and Waning Confidence Signal Rate-of-Change Decline in Capex Ahead

Annual Total (12MMT)



Annual Growth Rate (12/12)

Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- January 2023 Annual Growth Rate (12/12): 7.8%
- January 2023 Annual Total (12MMT), Billions of USD: $890.2

Industry Outlook

Year	*Annual Growth Rate*
2023	1.8%
2024	-4.6%
2025	5.5%

Outlook & Supporting Evidence

- Trends in the US ISM PMI (Purchasing Managers Index) and the ITR Leading Indicator™ suggest that rate-of-change decline will persist through at least 2023 for US Nondefense Capital Goods New Orders (excluding aircraft).
- Interest rates remain elevated and are likely contributing to softening in New Orders as some firms decide borrowing costs are too high to justify investment in capital goods, especially amid weakening economic data and declining business confidence. We expect the current high interest rate environment to culminate in a recession for New Orders in 2024.
- Since experiencing the shortages in 2020-22, many firms operating in the US have sought to simplify their supply chains and source their inputs domestically. Our outlook is predicated on this trend remaining strong. Foreign Direct Investment in the US, an imperfect proxy for reshoring, remains elevated but is showing an emerging trend of decline. This is not yet a red flag, but it is worth monitoring as a potential downside risk.
- Annual New Orders will rise into the second half of 2023 and subsequently decline through 2024. New Orders will then rise through at least 2025.

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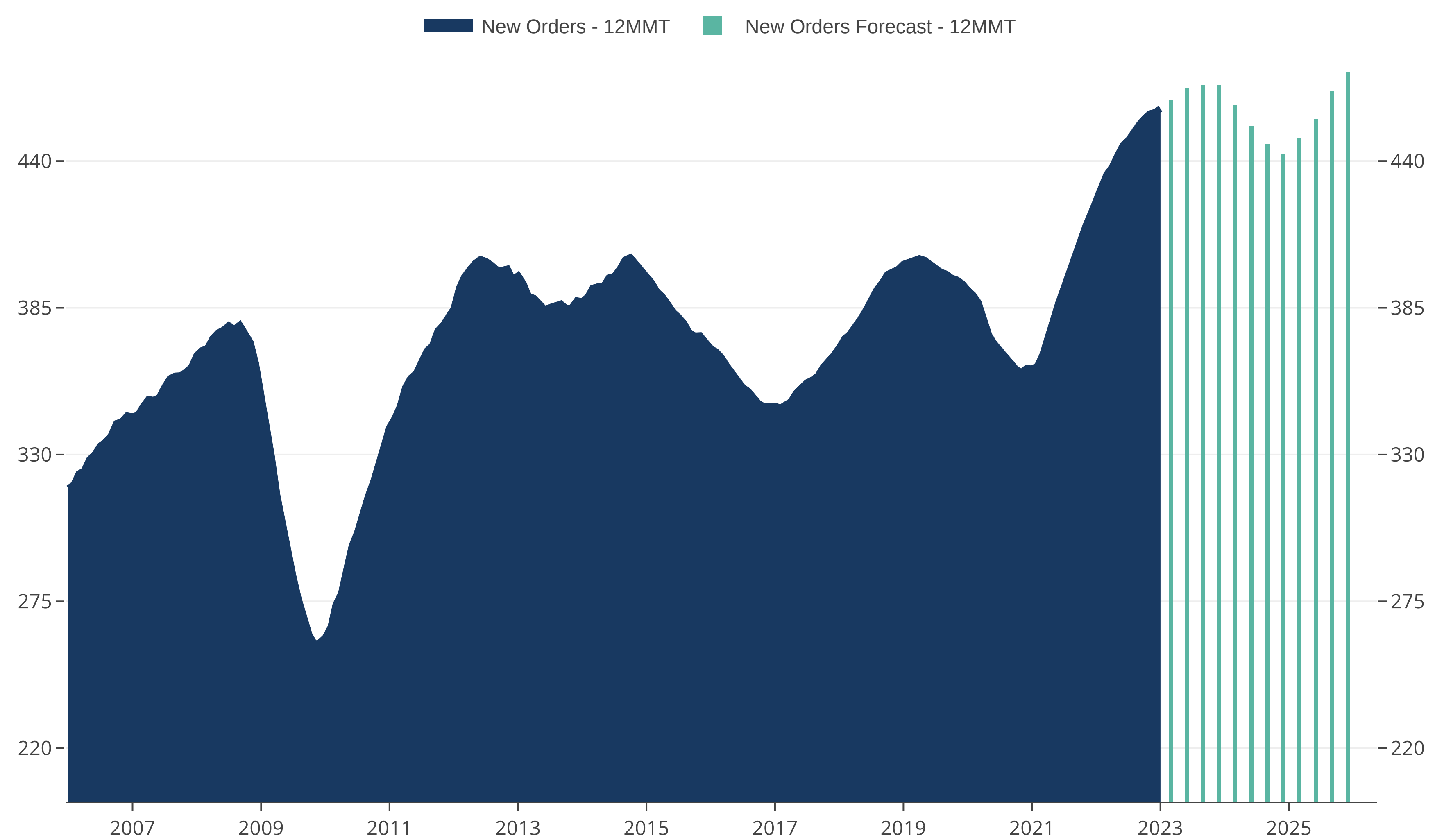
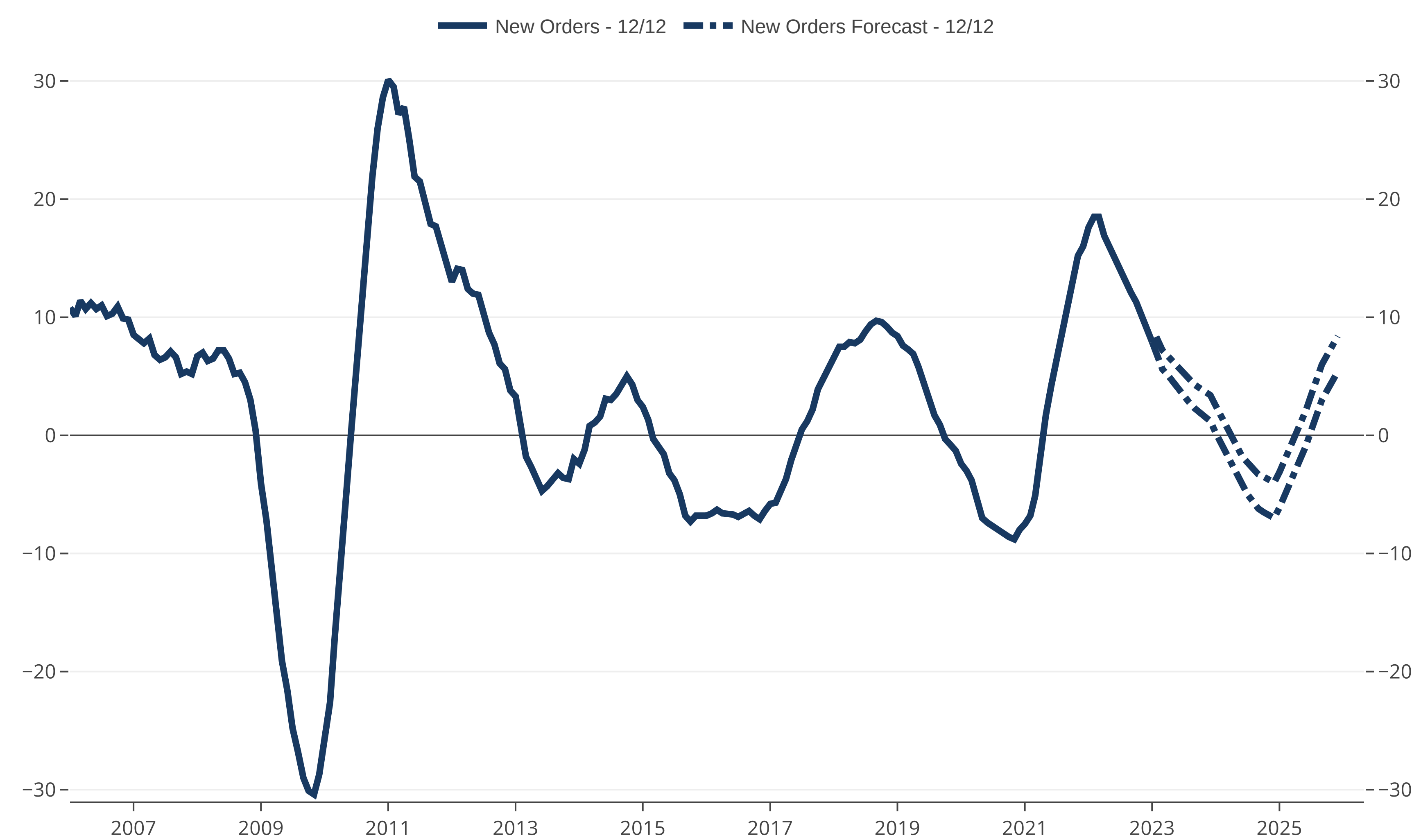
US Machinery New Orders

Labor Shortage, Backlogs Are Upside Pressures, but Macro Downturn Will Result in Decline Next Year

Annual Total (12MMT)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- January 2023 Annual Growth Rate (12/12): 7.9%
- January 2023 Annual Total (12MMT), Billions of USD: $459.6

Industry Outlook

Year	Annual Growth Rate
2023	2.3%
2024	-5.5%
2025	6.9%

Outlook & Supporting Evidence

- Annual US Machinery New Orders in January were 7.9% above the same period one year ago.
- Annual New Orders will rise in 2023 at a slowing pace and then decline in 2024. New Orders will rise in 2025.
- The US Manufacturing Capacity Utilization Rate stands at 77.7%. Utilization is moving lower from the April 2022 peak of 80.1% but is still above the 10-year average of 76.4%. Businesses may invest in additional machinery as they work through still-elevated backlogs and to mitigate the tight labor market. However, financing costs and waning economic data are likely to put increasing downward pressure on New Orders as the economy moves further along the back side of the business cycle this year and next.
- Annual US Manufacturing Job Openings have retreated slightly from record highs but are nearly double the pre-pandemic level. This illustrates a persistent labor shortage. We expect the labor availability may improve slightly as the US economy slows and then contracts, but it will not resolve altogether. This persistent difficulty in finding workers will incentivize some firms to buy more machines to alleviate their dependence on labor where possible. This will cushion the annual decline in New Orders in 2024.

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US Food Production Index

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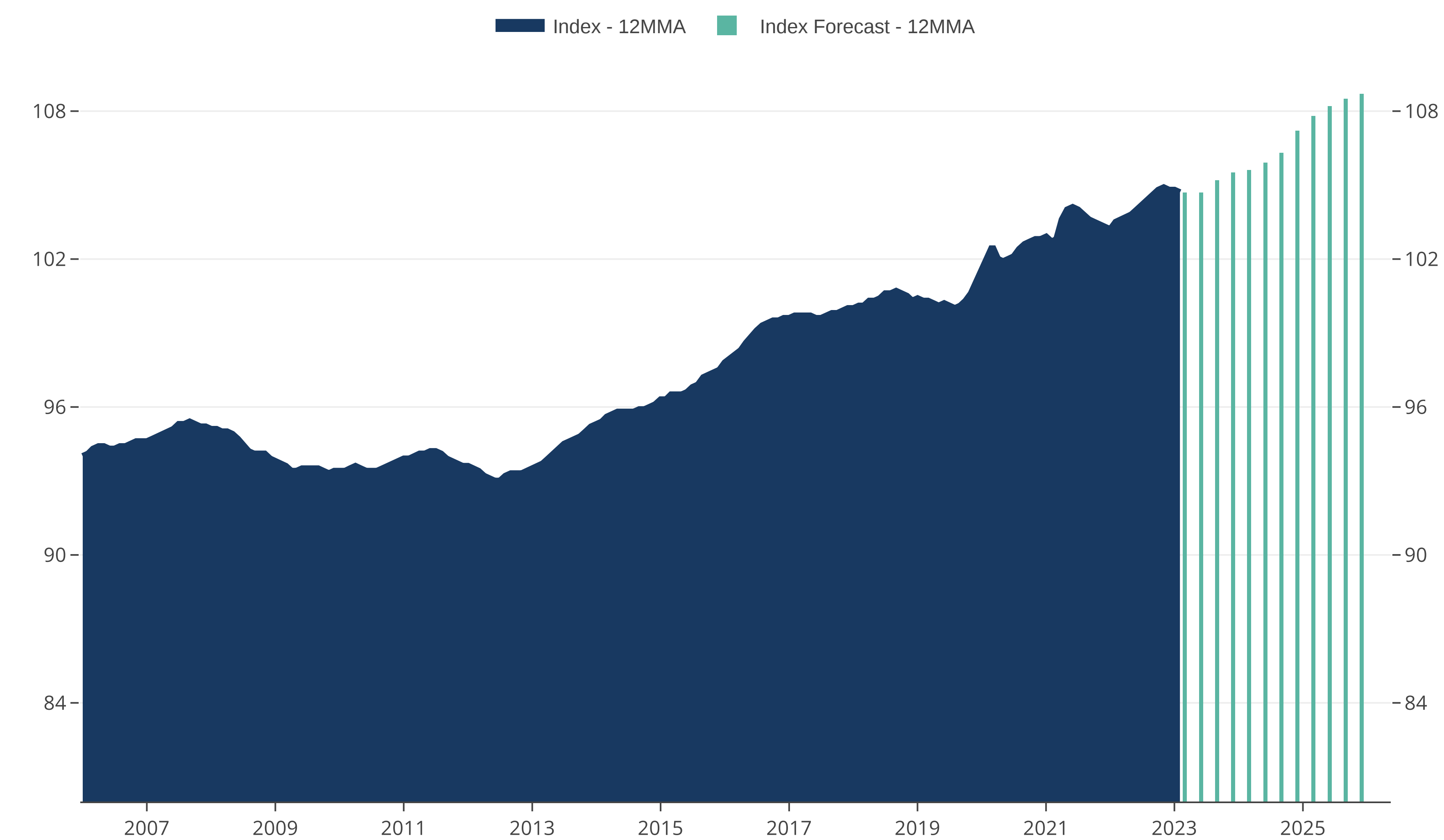
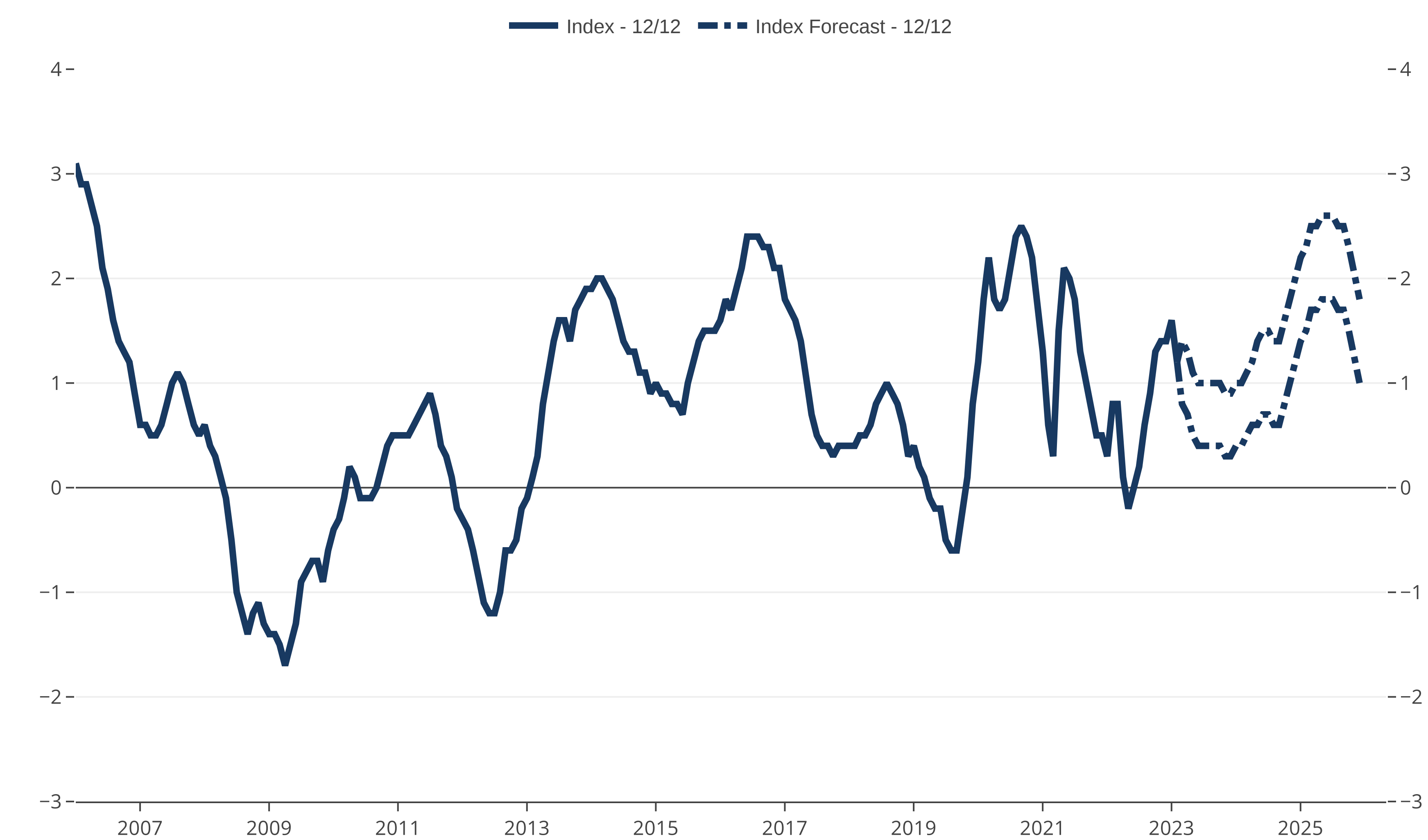
0.6% Growth Expected This Year, Followed by 1%-2% Rise Each for 2024 and 2025

Annual Average (12MMA)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- February 2023 Annual Growth Rate (12/12): 1.2%
- February 2023 Annual Average (12MMA), 2017=100: 104.7

Industry Outlook

Year	*Annual Growth Rate*
2023	0.6%
2024	1.6%
2025	1.4%

Outlook & Supporting Evidence

- US Food Production tentatively transitioned to a slowing growth trend in February, in line with our forecast. Trends in the Food Capacity Utilization Rate as well as stock prices for companies such as Tyson Foods and Kroger support our forecast for ongoing rate-of-change decline for Production in 2023.
- Trends in fertilizer imports and agricultural chemical production are tentatively signaling that global fertilizer shortages are easing. While still high, nitrogenous fertilizer prices are moving lower from an April 2022 high. The increasing affordability of fertilizer is a positive upstream sign for the food industry and may alleviate input costs for Production. On the other hand, Ukrainian officials have stated they expect grain production to be lower this year due to the war in their country. Ukraine is one of the largest producers of grains, an input for Production, and the war's impact on Production is still unclear and poses a risk to our outlook.
- Annual Production will rise through at least 2025. Growth will likely be less than 1% this year. Rise of about 1%-2% each is expected for 2024 and 2025.

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US Medical Equipment and Supplies Production Index

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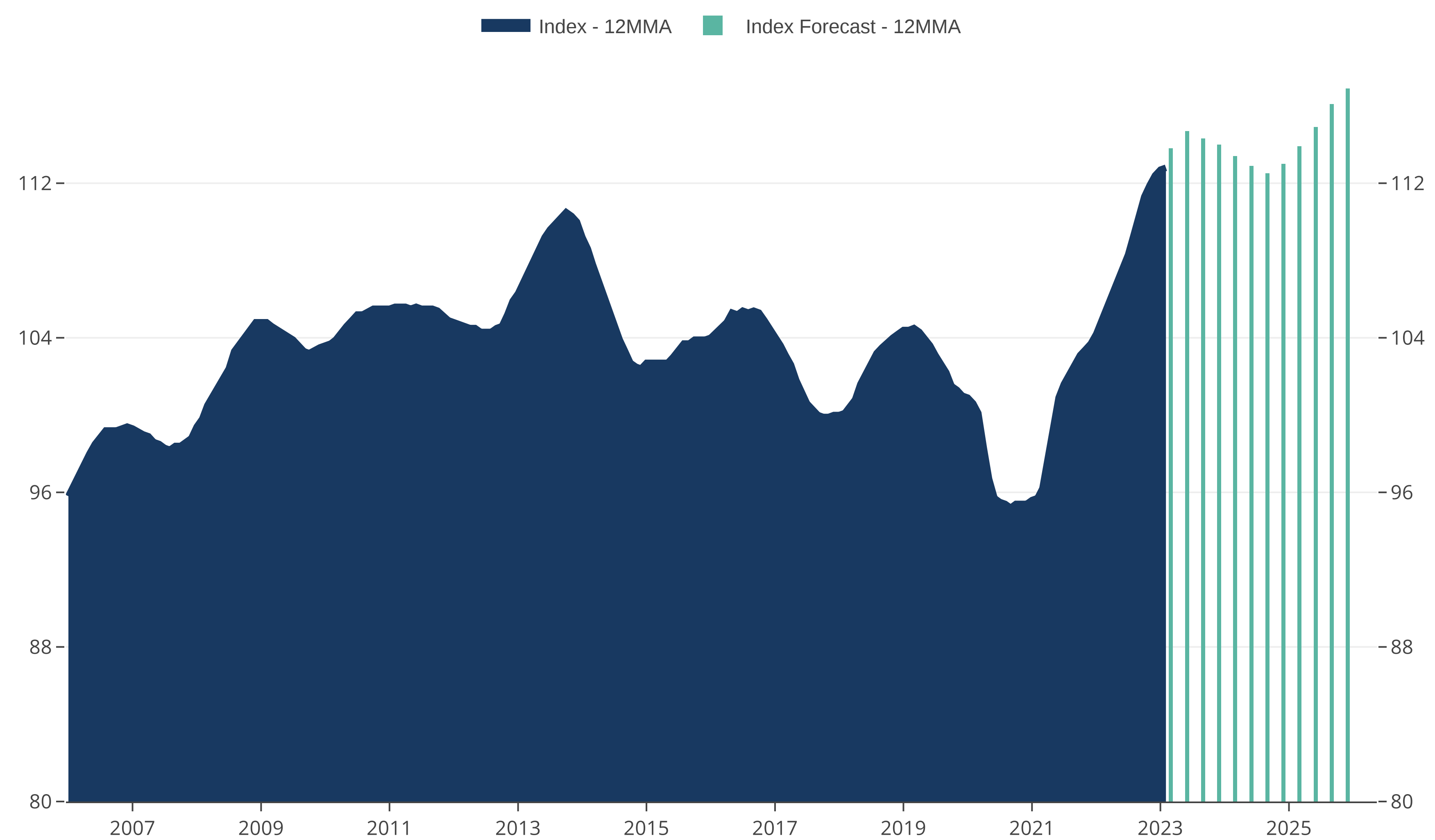
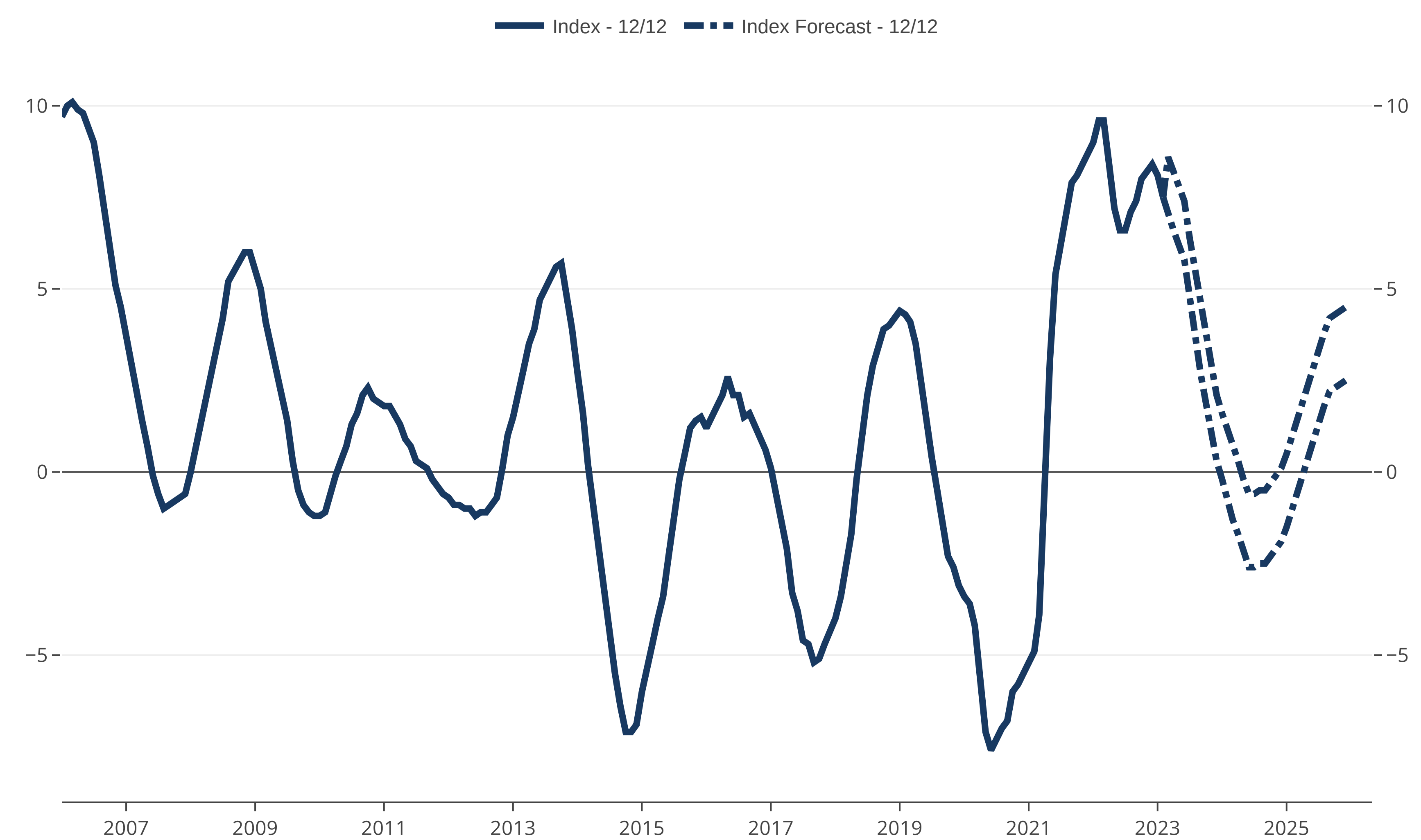
Trends in Medical Expenditures Data Suggest Rate-of-Change Decline in Production Will Continue

Annual Average (12MMA)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- February 2023 Annual Growth Rate (12/12): 7.5%
- February 2023 Annual Average (12MMA), 2017=100: 112.8

Industry Outlook

Year	Annual Growth Rate
2023	1.2%
2024	-0.9%
2025	3.5%

Outlook & Supporting Evidence

- Annual US Medical Equipment and Supplies Production in February was 7.5% above the same period one year ago.
- Medical Care Personal Consumption Expenditures and Hospitals Personal Consumption Expenditures were at record highs, suggesting generally elevated demand for Production. However, rise is decelerating for both, a signal that Production growth will likely continue to slow in at least the near term.
- Annual Production will rise at a slowing pace into the middle of this year and subsequently decline into the latter half of 2024. Annual Production will then rise through at least 2025.

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US Leading Indicators

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Indicator	Direction 2Q23	3Q23	4Q23
ITR LEADING INDICATOR™	Red	Red	Red
ITR RETAIL SALES LEADING INDICATOR™	Red	Red	Red
US OECD LEADING INDICATOR	Red	Red	N/A
US ISM PMI (PURCHASING MANAGERS INDEX)	Red	Red	Red
US TOTAL CAPACITY UTILIZATION RATE	Red	Red	N/A

Green denotes that the indicator signals cyclical rise for the economy in the given quarter. Red denotes the opposite.

What It Means for the US Economy

- The ITR Leading Indicator™ moved lower in February, signaling ongoing business cycle decline for the US industrial economy into at least late 2023.
- The US Total Industry Capacity Utilization Rate also signals that US Industrial Production will be on the back side of the business cycle into at least late 2023.
- The US OECD Leading Indicator monthly rate-of-change has tentatively moved higher but has not yet exhibited a statistically significant trend reversal. The indicator rate-of-change decline through November 2022 suggests that the US Industrial Production growth rate will decline into at least the second half of next year, in line with our outlook.
- Downward movement in the ITR Retail Sales Leading Indicator™ corroborates our expectation for further growth rate decline for US Total Retail Sales.

Leading indicators point to tougher economic conditions ahead in the coming quarters. Monitor your company's quarterly and annual rolling rates-of-change to assess how you are being impacted. Consider your end markets and client demographics to estimate your sensitivity to downward pressure. For many companies that trend with the industrial sector, we are expecting a relatively mild downturn, more akin to 2015-16 than the Great Recession.

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Market Definitions

US Industrial Production Index

Index of total industrial production in the United States; includes manufacturing, mining, and utilities. Source: Federal Reserve Board (FRB). 2017 = 100, not seasonally adjusted (NSA).

US Machinery New Orders

New orders for machinery in the United States. Industries in the machinery manufacturing subsector create end products that utilize mechanical force, for example, the application of gears and levers, to perform work. Some important processes for the manufacture of machinery are forging, stamping, bending, forming, and machining, which are used to shape individual pieces of metal. Processes such as welding and assembling are used to join separate parts together. Although these processes are similar to those used in metal fabricating establishments, machinery manufacturing is different because it typically employs multiple metal forming processes in manufacturing the various parts of the machine. Moreover, complex assembly operations are an inherent part of the production process. Measured in billions of dollars, not seasonally adjusted (NSA). Source: US Census Bureau

US Medical Equipment and Supplies Production Index

Medical equipment and supplies manufacturing index for the United States. Examples of products made by these establishments are surgical and medical instruments, surgical appliances and supplies, dental equipment and supplies, orthodontic goods, ophthalmic goods, dentures, and orthodontic appliances. Source: Federal Reserve Board. NAICS Code: 3391. Index, 2017 = 100, not seasonally adjusted (NSA).

US Nondefense Capital Goods New Orders (excluding aircraft)

New orders for nondefense capital goods, excluding aircraft, in the United States. Includes farm machinery and equipment, construction machinery, mining machinery, nondefense small arms and ordnance, industrial machinery, commercial and service industry equipment, other general purpose machinery, photographic equipment, metalworking machinery, turbine and generator manufacturing, power transmission equipment, pumps and compressors, material handling equipment, electronic computers, computer storage devices and peripheral equipment, communications equipment, nondefense search and navigation equipment, electrometrical equipment, electrical equipment, heavy duty truck manufacturing, railroad rolling stock, nondefense ship and boat building, office and institutional furniture, and medical equipment and supplies. Source: US Census Bureau. Measured in billions of dollars, not seasonally adjusted (NSA).

US Food Production Index

Industries in the US Food Manufacturing subsector transform livestock and agricultural products into products for intermediate or final consumption. The industry groups are distinguished by the raw materials (generally of animal or vegetable origin) processed into food products. The food products manufactured in these establishments are typically sold to wholesalers or retailers for distribution to consumers. Source: Federal Reserve Board. NAICS Code: 311. Index, 2017 = 100, not seasonally adjusted (NSA).

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Management Objectives™

Phase A

Recovery

- Scrupulously evaluate the supply chain
- Model positive leadership (culture turns to behavior)
- Start to phase out marginal opportunities (products, processes, people); repair margins
- Perform due diligence on customers and extend credit
- Be on good terms with a banker; you will need the cash more now than in any other phase
- Invest in customer market research; know what they value and market/price accordingly
- Hire key people and implement company-wide training programs ahead of Phase B
- Allocate additional resources to sales and marketing
- Invest in system/process efficiencies
- Make opportunistic capital and business acquisitions; use pessimism to your advantage

Phase B

Accelerating Growth

- Ensure quality control keeps pace with increasing volume
- Invest in workforce development: hiring, training, retention
- Ensure you have the right price escalator; space out price increases
- Maximize your profit margins through differentiation; stand out from the crowd and set yourself apart
- Use improved cash flow to strategically position the business to beat the business cycle
- Expand credit to customers
- Improve corporate governance (rent a CFO; establish a board of advisors or board of directors)
- Communicate competitive advantages; build the brand
- Query users for what they want and what is important to them
- Sell the business in a climate of maximum goodwill

Phase C

Slowing Growth

- Know if your markets are headed for a soft landing or a hard landing
- Cash is king; beware of unwarranted optimism
- Stay on top of aging receivables
- Revisit capital expenditure plans
- Lose the losers: if established business segments are not profitable during this phase, eliminate them
- Use competitive pricing to manage your backlog through the coming slowdown
- Avoid committing yourself to long-term expenses at the top of the price cycle, but lock in revenue
- Go entrepreneurial and/or counter-cyclical
- Evaluate your vendors for financial strength; if needed, look for additional vendors as a safety net
- If the cycle looks recessionary, cross-train key people to prepare for workforce attrition/reduction

Phase D

Recession

- Implement aggressive cost-cutting measures
- Offer alternative products with a lower cost basis
- Perform due diligence on acquisitions while valuations are falling
- Reduce advertising as consumers become more price conscious
- Enter or renegotiate long-term leases
- Negotiate labor contracts
- Consider capital equipment needs for the next cycle
- Tighten credit policies
- Develop programs for advertising, training, and marketing to implement in Phase A
- Lead with optimism, remembering that Phase D is temporary

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