IMEC

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What A Yield Curve Inversion Means For You

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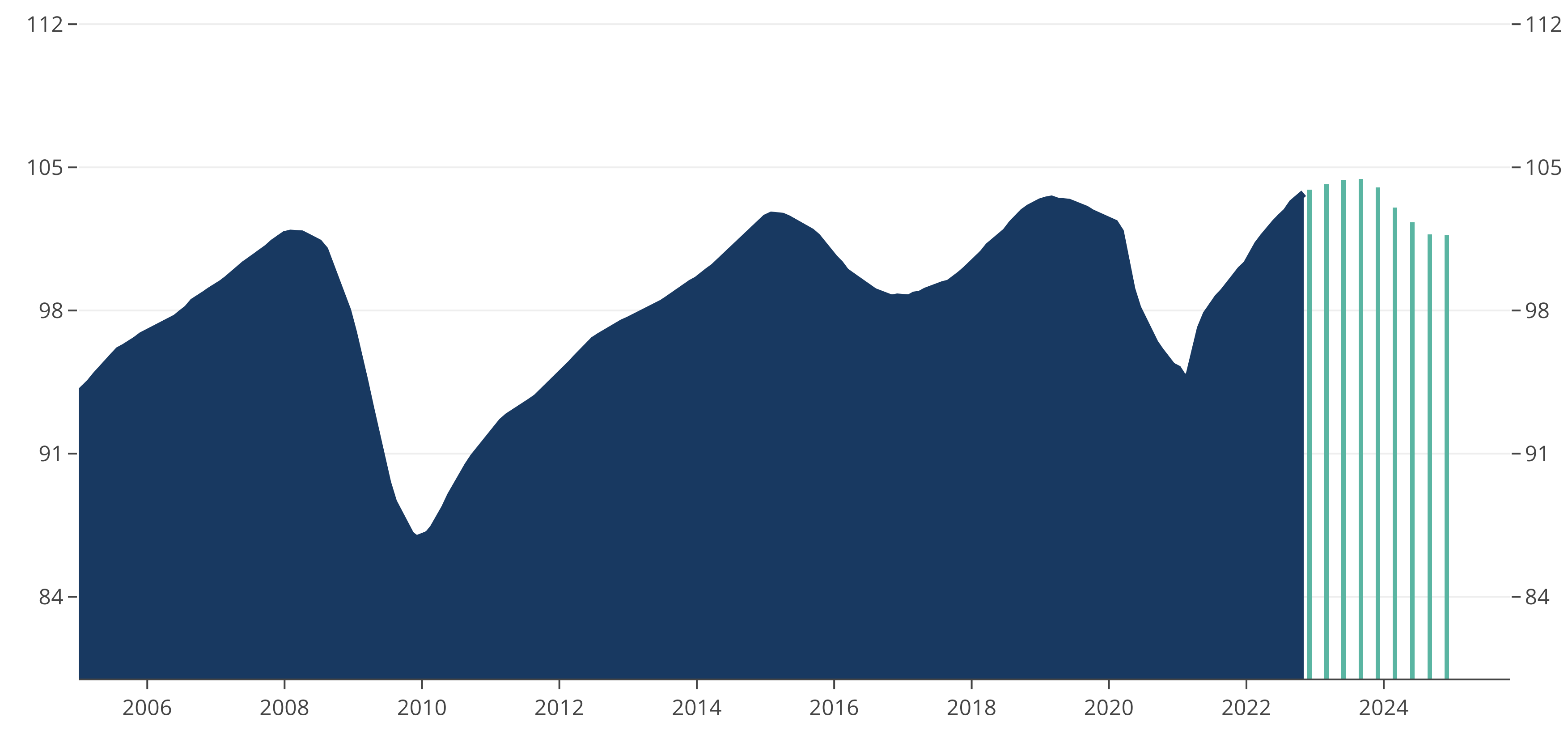
US Industrial Production Index

Annual Average (12MMA)



Rain or shine, we constantly monitor our system of leading indicators for signs of improvement or deterioration. In the last quarter, we've seen broad-based weakness, coupled with a new signal: short term interest rates – as measured by 3-month treasuries – are now higher than long-term interest rates, as measured by 10-year treasuries. This so-called "inverted yield curve" is a signal that there is an 88% probability of a US Industrial Production recession coming, as the Federal Reserve has raised short-term interest rates too far, too fast.

We lowered our annual average US Industrial Production forecast downward by a slim 0.4% for 2023. Instead of the mild growth (+1.6%) previously forecast, we now expect activity to be virtually flat for 2023 (+0.1%) relative to 2022, with decline developing late in the year. 2024 is impacted more significantly. Prior to the extremely sharp and fast rate hikes by the Fed, we were expecting growth for 2024. Now we expect decline to extend throughout 2024, with 2024 coming in 2.3% below the 2023 average, as it typically takes just over a year for yield-curve inversions to translate into a recession.

At the bottom of the cycle in 3Q24, we are calling for 2.6% year-over-year contraction. We've experienced a similar severity of decline in US Industrial Production three times in the last 30 or so years: the early 1990s macroeconomic recession, the early 2000s macroeconomic recession, and the 2015-16 recession. The 2015-16 recession only impacted the industrial sector and was particularly unrelenting for companies tied to oil prices. Expect this cycle to be more like the early 1990s or early 2000s.

Three main tailwinds – reshoring, backlogs, and a solid consumer balance sheet – will keep the recession relatively mild. Companies continue to be interested in positioning their supply chain closer to the North American consumer base, and backlogs will continue to be worked through as the supply chain loosens. Meanwhile, our examination of consumer balance sheets revealed that the aggregate consumer debt-to-income ratio, particularly the credit card debt-to-income ratio, is in a healthy place. Simply put, consumers are not overleveraged, which is the opposite situation that the US economy found itself in going into the Great Recession.

It will be especially important to understand the degree to which your business will (or will not) be impacted by a macroeconomic recession. Use the forecasts in this report to help. In general, industries that benefitted greatly from stimulus in 2020-21 (outdoor equipment, single-family housing in expensive areas, etc.) are most at risk of a pullback in 2023-24. In addition, discretionary markets like tech are likely to underperform essentials in the food industry, healthcare, and utilities, as consumers will prioritize deploying tighter dollars to where they are most needed. Meanwhile, there will be some loosening in the labor market – though not marked, given demographics – particularly in 2024. Take this as an opportunity to upgrade your talent pool in preparation for recovery and rise starting in 2025.

There are an elevated number of risks to our forecast both to the upside and to the downside because of domestic and international political events at play in this cycle. The degree of monetary and fiscal stimulus that was deployed in 2020-21, and is now being withdrawn, is unprecedented. The war in Ukraine and general nationalist/protectionist sentiment around the world, coupled with a pandemic, only adds to the uncertainty. In spite of this, the labor market and consumer balance sheets look very strong, offering upside risk.

What can you do amid the uncertainty? First and foremost, make a plan and work the plan. Determine what impacts the recession will have on your business (reach out to us if you need help). After making those determinations, put baseline budgets and strategies in place to maximize your competitive advantages in the recessionary landscape. Get your employees excited and focused on implementing those strategies, but don't stop there. We will regularly be in contact with our clients and providing updates if the upside or downside risk factors lead us to change our baseline forecasts. You should have plans at the ready to adjust as things develop. Monitor your cash flow more carefully than before. Lastly, lead with confidence and be opportunistic. Your competitors may go into panic mode. Don't follow them there.

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).

IMEC Markets Dashboard

		Current		Annual Growth Rate Forecast (12/12), Year-End*	
Page Number	**Indicator**	**Growth Rate****	**Phase**	**2023****	**2024****
4	US Industrial Production Index	4.0%	C	0.1%	-2.3%
5	US Nondefense Capital Goods New Orders (excluding aircraft)	9.8%	C	1.8%	-4.6%
6	US Machinery New Orders	11.3%	C	2.3%	-5.5%
7	US Food Production Index	1.5%	B	0.6%	1.6%
8	US Medical Equipment and Supplies Production Index	8.2%	C	1.2%	-0.9%

**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.*

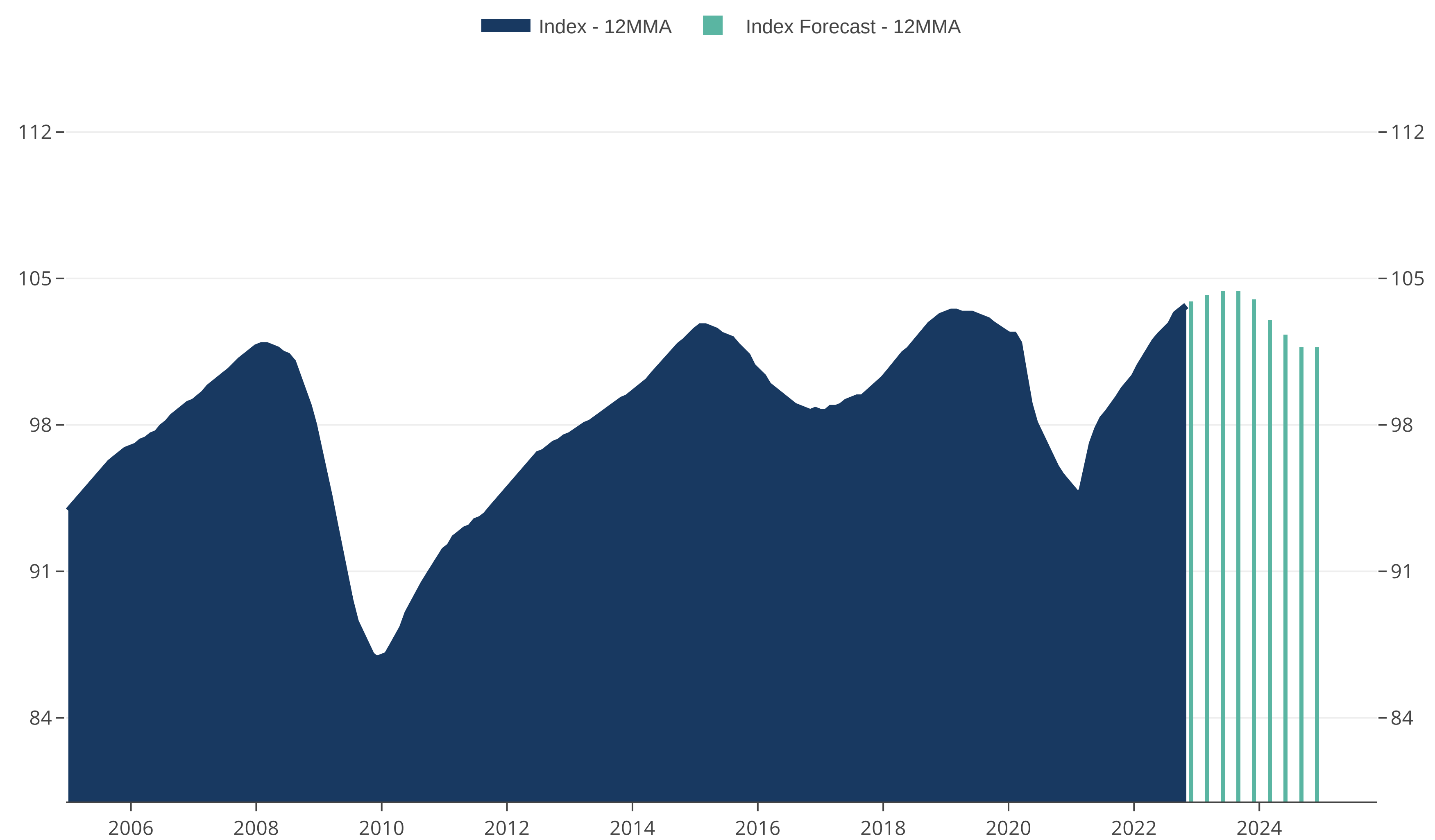
***Annual growth rate (12/12) except where otherwise noted.*

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

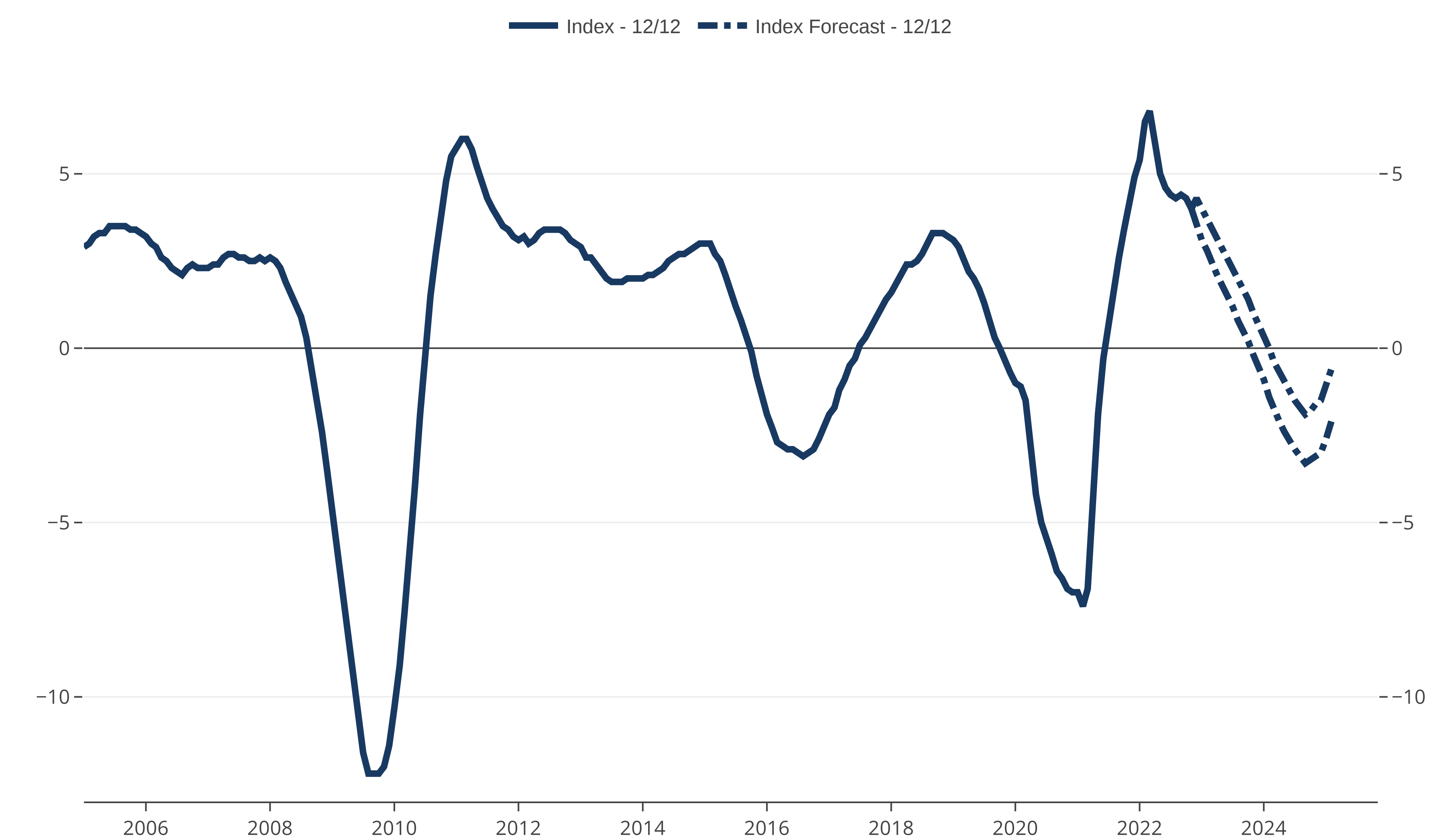
US Industrial Production Index

Forecast Revised; Yield Curve Inversion Signals Hard Landing in 2024

Annual Average (12MMA)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- November 2022 Annual Growth Rate (12/12): 4.0%
- November 2022 Annual Average (12MMA), 2017=100: 103.7

Industry Outlook

Year	Annual Growth Rate
2022	3.9%
2023	0.1%
2024	-2.3%

Outlook & Supporting Evidence

- Leading indicators continue to descend, confirming that 2023 will be a year of growth-rate decline. We expect Production in 2023 will come in relatively flat with 2022; this is a minor downgrade from our prior outlook for 1.6% growth.
- Aggressive rate hikes by the Federal Reserve and the resulting inverted yield curve suggest a hard landing on the horizon, not for 2023 but more likely for 2024, based on historical precedent. As a result, we pulled in a recessionary cycle that we had previously projected for 2025-26 into 2024. We were previously calling for 3.1% rise in 2024, but are now forecasting 2.3% decline that year.
- The recession in 2024 will be mild relative to other recessions. Backlogs and foreign investment into the US are expected to mitigate some of the downside pressures on Production. We also expect the labor market to be relatively tight compared to previous recessions, given demographic trends. This will keep wages relatively high and consumption from contracting significantly, and suggests that the recession for Production will be mild.
- The annual growth rate will reach a trough in late 2024, ending the year in Phase A, Recovery.

US Nondefense Capital Goods New Orders (excluding aircraft)

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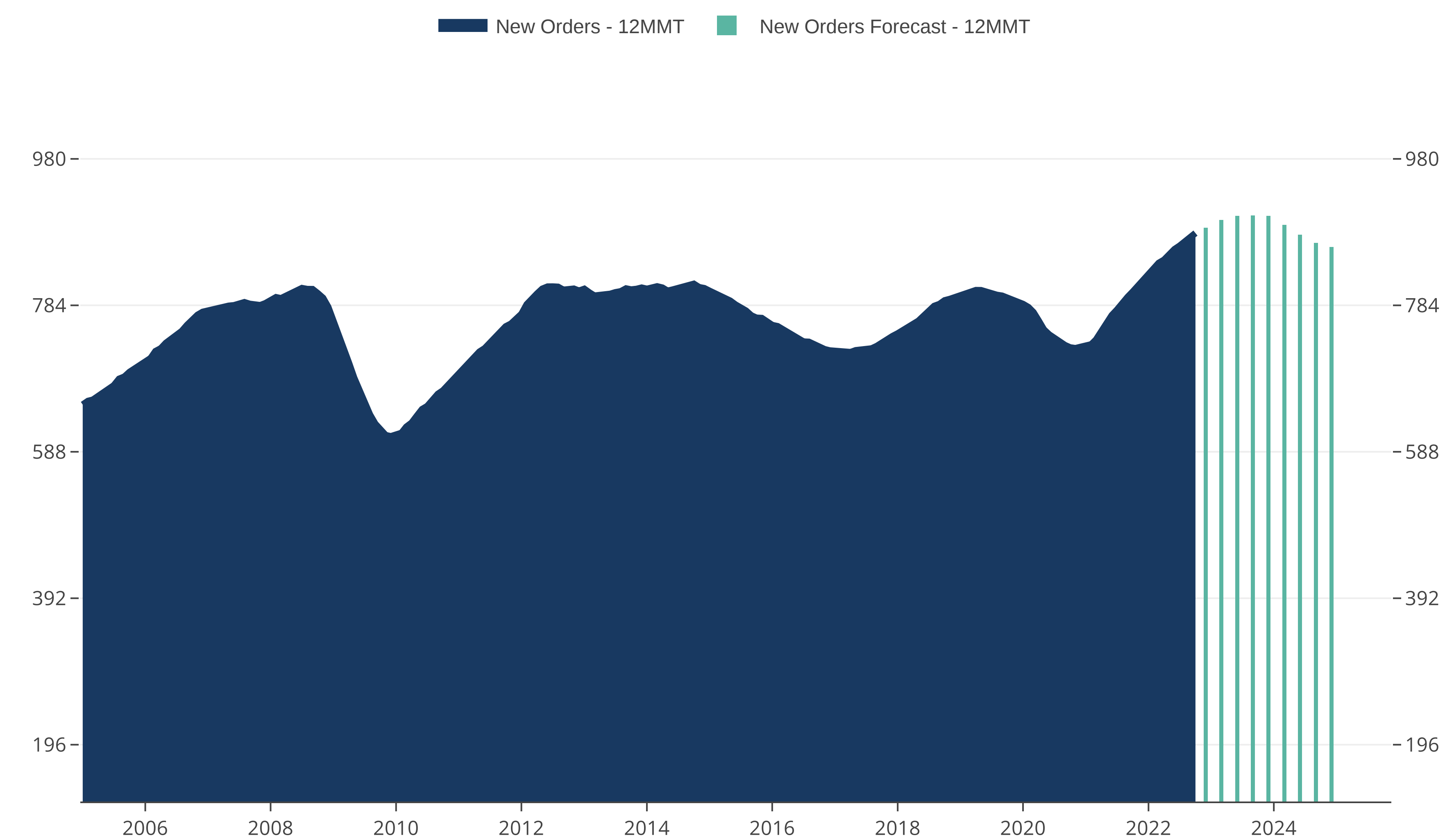
Forecast Revised; New Orders to Decline from Late 2023 to 2024; Risks Present to Upside and Downside

Annual Total (12MMT)



Annual Growth Rate (12/12)

Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- October 2022 Annual Growth Rate (12/12): 9.8%
- October 2022 Annual Total (12MMT), Billions of USD: $880.7

Industry Outlook

Year	*Annual Growth Rate*
2022	8.4%
2023	1.8%
2024	-4.6%

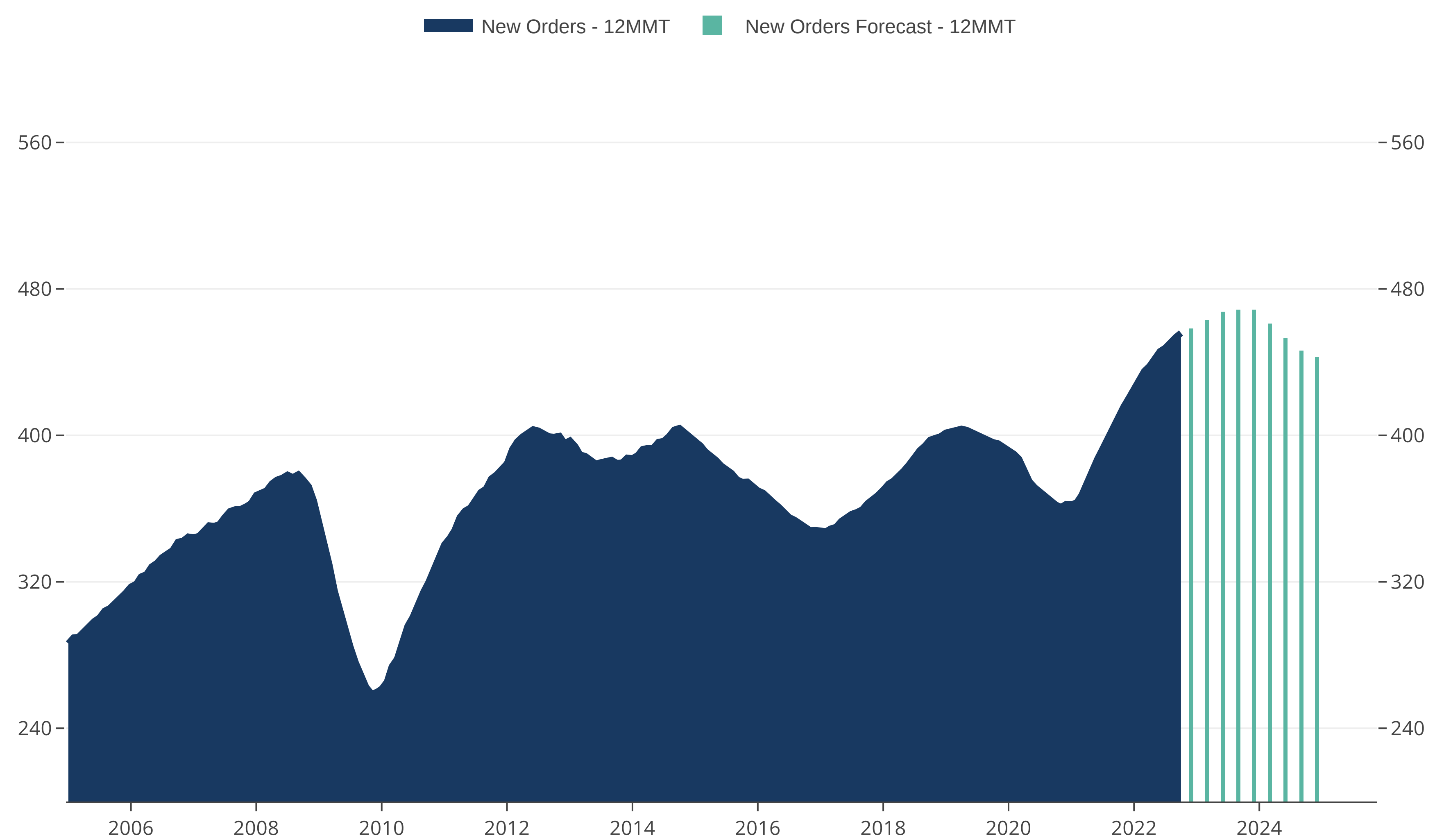
Outlook & Supporting Evidence

- Ongoing leading indicator decent, elevated interest rates, and a sustained inversion in the yield curve resulted in a change to our underlying macroeconomic outlook for the coming years, as detailed in the preceding pages. US Nondefense Capital Goods New Orders (excluding aircraft), a benchmark for business-to-business spending, will be impacted by those same factors. We revised our New Orders forecast.
- Our outlook for the New Orders annual growth rate was changed by less than one percentage point for 2022 and 2023. The primary change was to 2024 due to an elongated macroeconomic downturn. We previously expected 2024 to come in 8.4% higher than 2023; the updated forecast now calls for 4.6% decline.
- Annual New Orders will rise into the latter half of 2023, then decline in 2024. During this recession, we expect New Orders to decline roughly 5%, relatively mild compared to previous recessions.
- Turmoil in China and concerns about supply chains have driven more movement to onshoring in recent years. If onshoring increases further in popularity during the next few years, it would pose an upside risk to the forecast. If the yield curve inversion lasts beyond 2023, it would be a downside risk to the forecast.

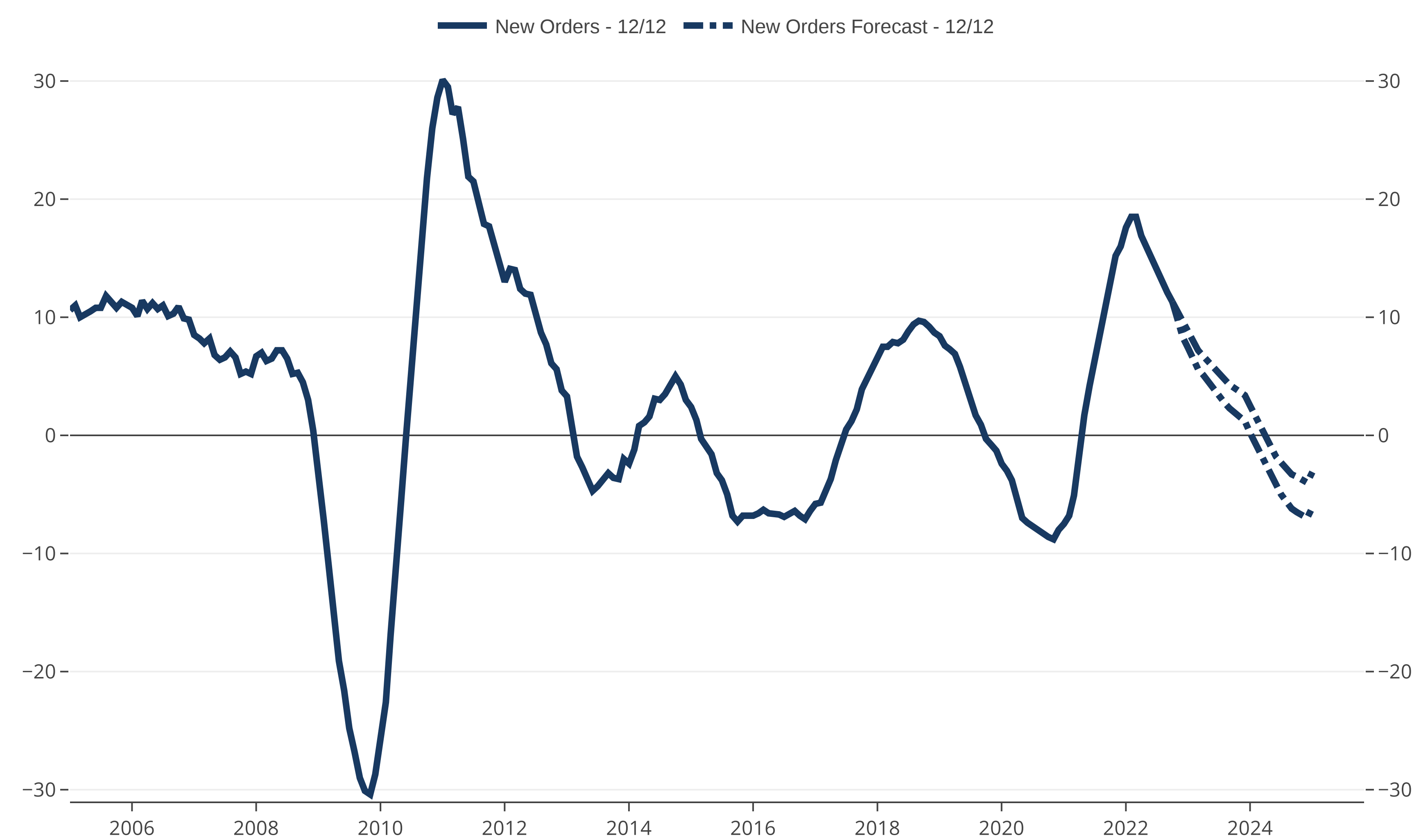
US Machinery New Orders

Forecast Revised; Elevated Interest Rates and Waning Economic Data Could Deter Machinery Investment

Annual Total (12MMT)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- October 2022 Annual Growth Rate (12/12): 11.3%
- October 2022 Annual Total (12MMT), Billions of USD: $455.9

Industry Outlook

Year	Annual Growth Rate
2022	9.0%
2023	2.3%
2024	-5.5%

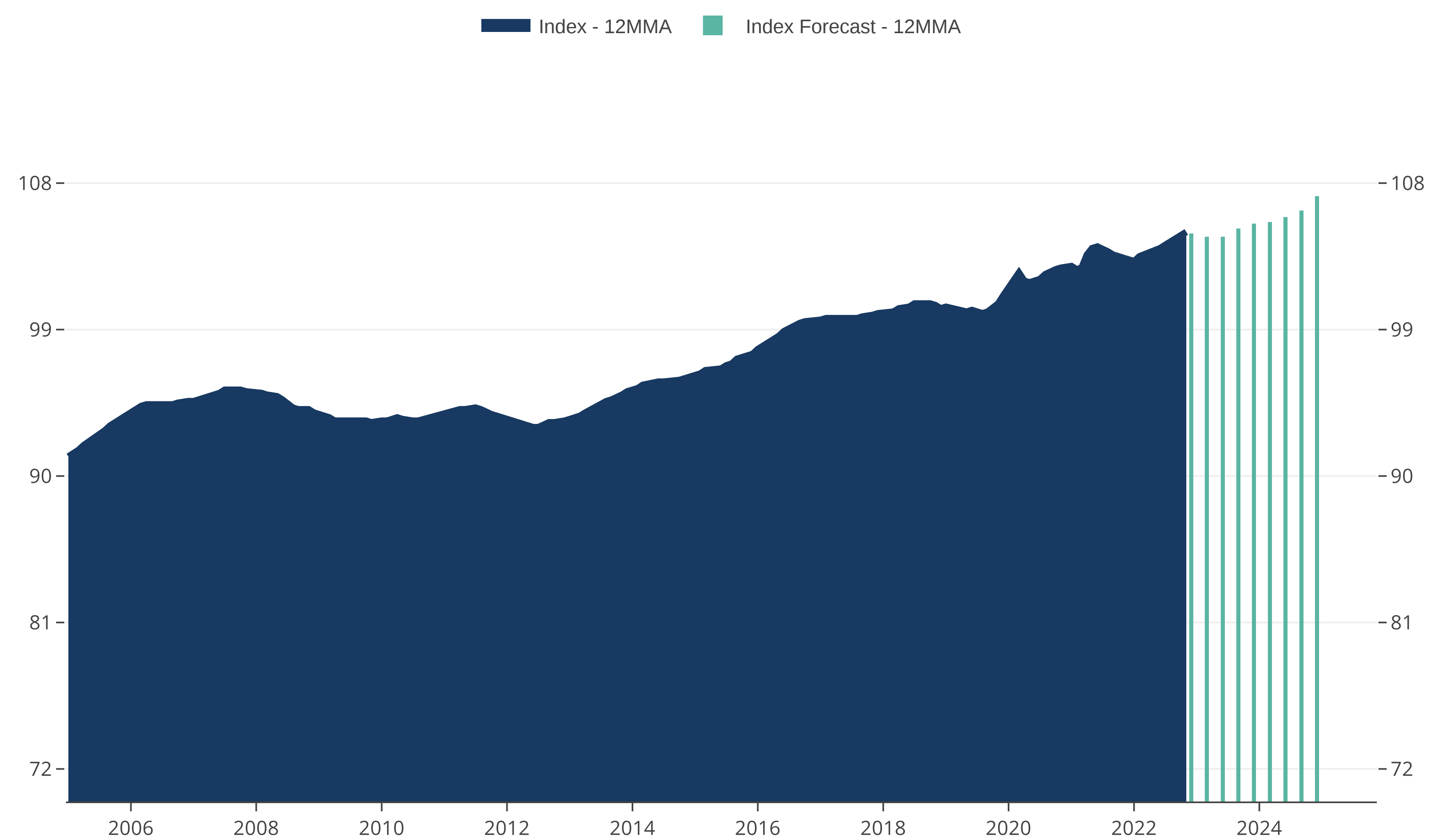
Outlook & Supporting Evidence

- We revised the US Machinery New Orders outlook in line with the change to our macroeconomic expectations. The 2023 outlook was little changed, while our outlook for 2024 New Orders was lowered by 14.5%.
- Expect annual New Orders to rise into the end of 2023, then decline in 2024, dipping about 3% below the current value.
- We expect the 2024 recession in New Orders to be relatively mild by recent historical standards, as elevated backlogs and onshoring trends will provide some buffer to machinery demand.
- New Orders are denominated in current dollars. Our outlook for US Producer Prices was only minimally changed due to our new macroeconomic outlook. Consequently, the New Orders forecast revision primarily reflects changes in expected activity, not prices.
- US Domestic Corporate Profits (with capital consumption adjustments) declined 1.1% in the third quarter from a record-high second quarter. Businesses' still-elevated profits could be allocated to new machinery, but rising interest rates and waning economic data could deter such purchases, especially where financing is involved.
- Certain sectors of the economy that utilize machinery will be relatively insulated from the anticipated recession in 2024. These could include the automotive, aerospace, and food manufacturing sectors, which could pose upside risk to the forecast.

US Food Production Index

Forecast Revised; Rise Expected Through at Least 2024 Given Essential Nature of Food Industry

Annual Average (12MMA)



Annual Growth Rate (12/12)

Current Phase

Phase B
Accelerating
Growth

Current Indicator Amplitude

- November 2022 Annual Growth Rate (12/12): 1.5%
- November 2022 Annual Average (12MMA), 2017=100: 105.0

Industry Outlook

Year	Annual Growth Rate
2022	1.5%
2023	0.6%
2024	1.6%

Outlook & Supporting Evidence

- Our analysis of market conditions suggested that Production was likely to trend about 2% lower than we previously forecast; we updated our outlook accordingly.
- The food sector is largely nondiscretionary, and, given the inelasticity of demand, we anticipate annual Production will avoid the decline forecasted for many other manufacturing sectors in 2024.
- Production will generally grow through at least 2024, with the annual growth rate oscillating between 0% and 2%. This industry may be a haven relative to more cyclical markets, but growth rates will be relatively low.

US Medical Equipment and Supplies Production Index

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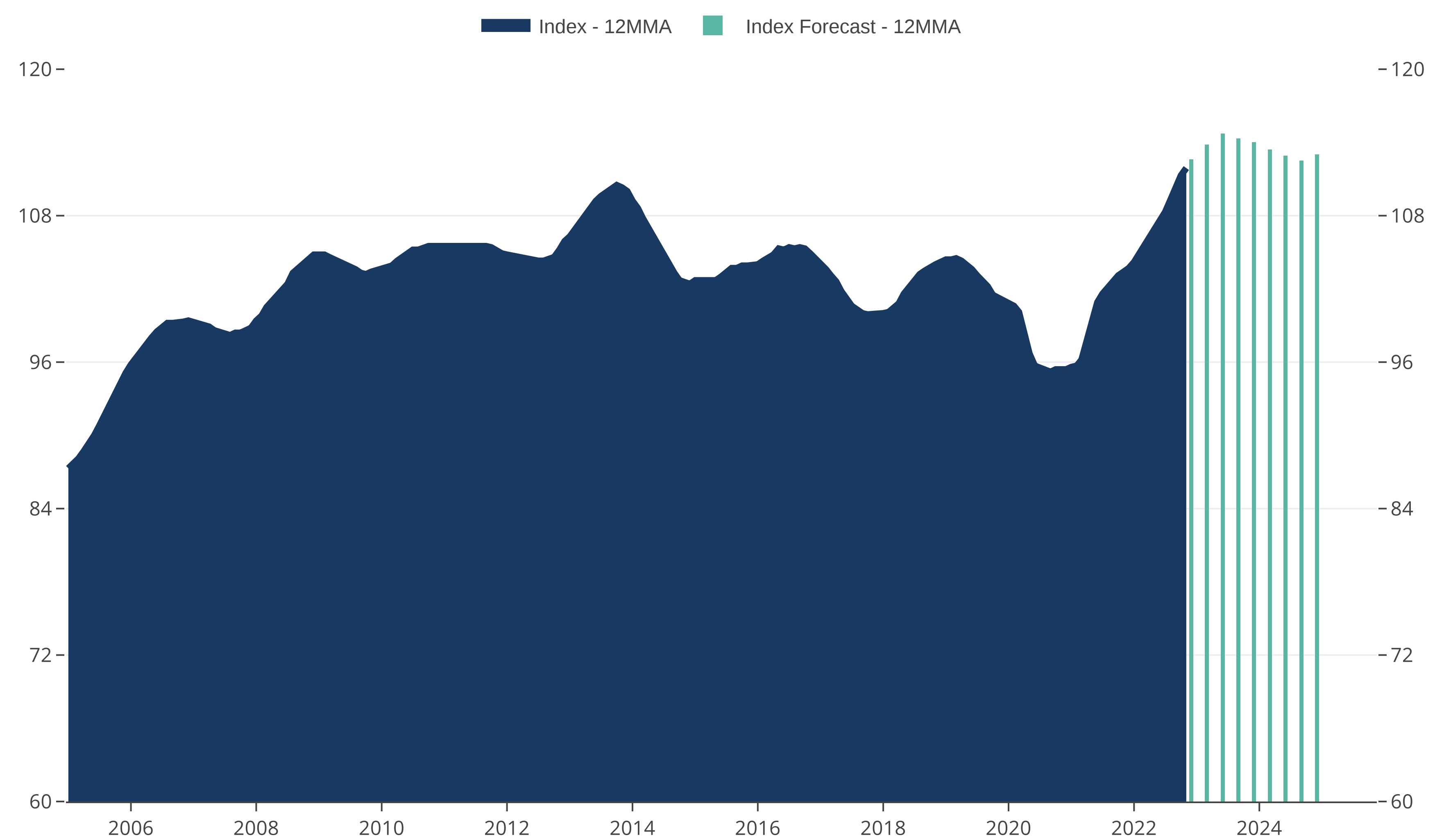
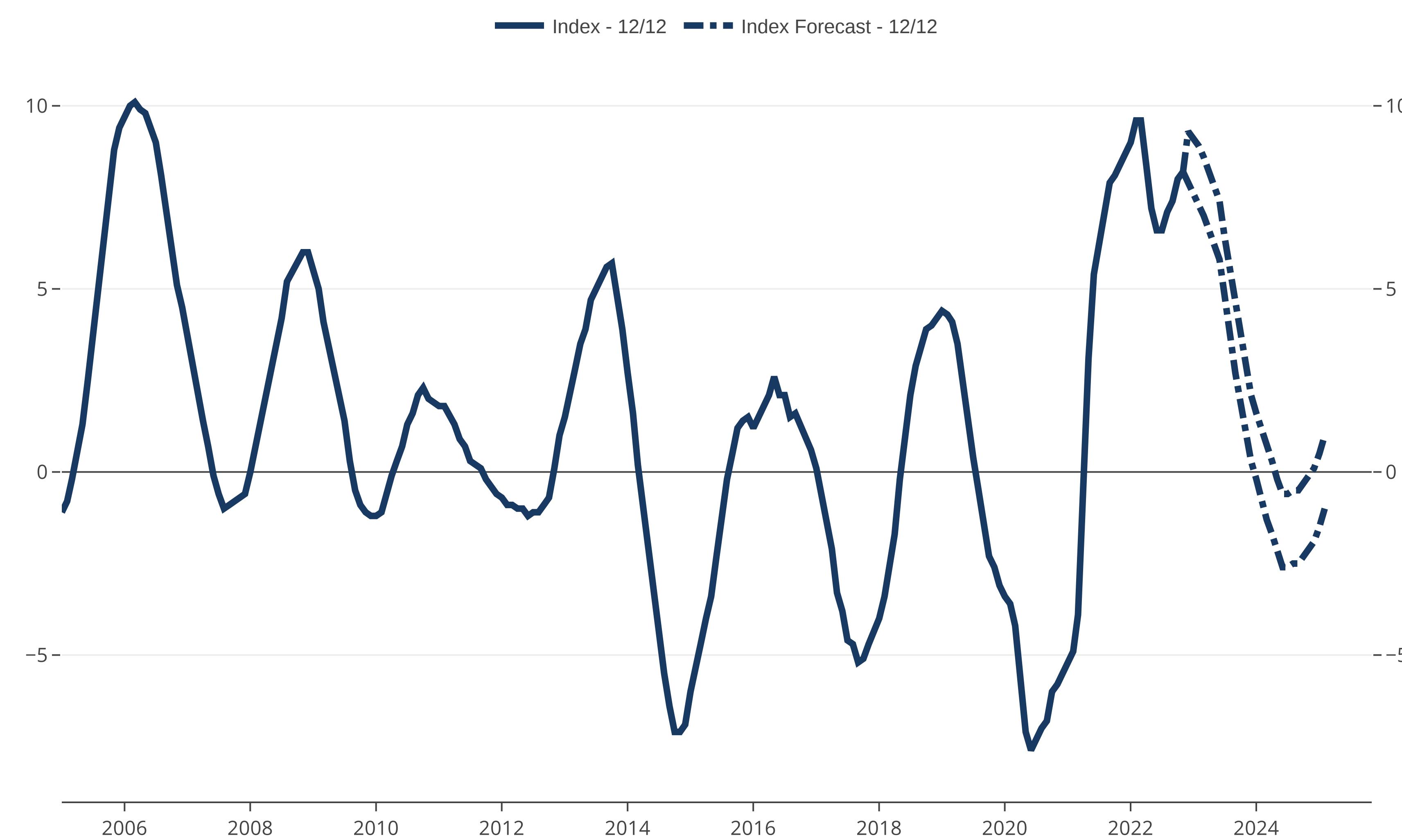
Forecast Revised on Longer Downturn and Interest Rate Sensitivity

Annual Average (12MMA)



Annual Growth Rate (12/12)



Current Phase

Phase C
Slowing Growth

Current Indicator Amplitude

- November 2022 Annual Growth Rate (12/12): 8.2%
- November 2022 Annual Average (12MMA), 2017=100: 111.9

Industry Outlook

Year	*Annual Growth Rate*
2022	8.6%
2023	1.2%
2024	-0.9%

Outlook & Supporting Evidence

- US Medical Equipment and Supplies Production historically does not trend in sync with the macroeconomy, however the market does have some sensitivity to interest rates, and economic conditions suggest a longer cyclical downturn than we had previously forecasted. Consequently, we revised the forecast; the primary change is that we now expect a mild recession in 2024. 2024's annual rate-of-change was lowered from +3.7% to -0.9%.
- Beware of linear budgeting in this sector. The medical supplies industry has been benefiting from increased interest in domestic sourcing, demand for medical services that were put off earlier in the pandemic, and needs in inventory restocking. However, the relatively strong US dollar may hinder demand for domestically produced supplies, and growth is slowing for medical care expenditures. Cyclical decline in production will become more pronounced in 2023.
- Annual Production will rise into mid-2023 then mildly decline into the latter half of 2024.

US Leading Indicators

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Indicator	Direction 1Q23	2Q23	3Q23
ITR LEADING INDICATOR™	Red	Red	N/A
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 general consensus among leading indicators is that the US industrial sector will remain on the back side of the business cycle through at least the first half of 2023.
- We have yet to see sustainable upward movement in the leading indicators in this dashboard; this contributed to our decision to revise our US Industrial Production outlook.
- Further decline in the ITR Retail Sales Leading Indicator™ signals that business cycle momentum will continue to wane for US Total Retail Sales in the coming quarters.

Ongoing decline in the leading indicators signal tougher economic conditions in the quarters ahead. Make sure your sales goals are realistic given waning economic conditions and a shift in pricing to disinflation. Consider building up a larger cash cushion for the likely recession in 2024. Make sure you don't overleverage. At the same time, don't be afraid to make investments that will pay off in the long run, such as efficiency improvements and those that boost your competitive advantage. Remember to lead with confidence; recessions are temporary and the long-term trajectory of the US economy is rise.

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).

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

