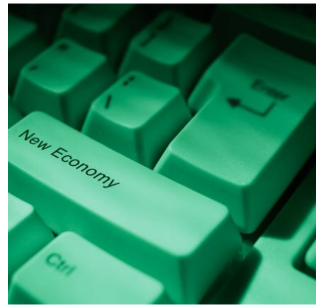

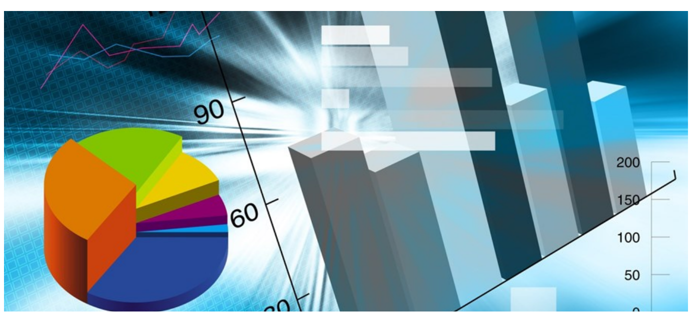

npta
National Paper Trade Association

August 2021

Economic Report

ITR ECONOMICS

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overview

The road back to economic “normal” is already well-traveled. US Real Gross Domestic Product (GDP) for the second quarter of 2021 came in 0.8% above the pre-pandemic record level. Some sectors – such as retail, residential construction, and capital goods – are already in record territory. Others, such as the labor market and the industrial sector, will require more time to get there due to challenges related to finding workers and materials. Job openings and new orders data signal that demand, however, is not in question. Make no mistake: the leading indicators provide compelling evidence that robust rise across a wide swath of sectors will characterize the next two to three quarters.

Alongside robust growth rates come a bevy of so-called “positive problems”: capacity constraints, labor shortages, the margin squeeze inherent to aggressive rise in input costs, and the like. These concerns are referenced across our client base and are frequently highlighted in the media. They are real, and we know they are painful. We also know that such problems will not persist indefinitely. Indeed, the economy is – as always – in the process of rebalancing supply and demand.

Looking further ahead, we now have a number of key leading indicators that have ticked over into nascent rate-of-change declining trends, including (but not limited to) the following:

• JP Morgan Global Purchasing Managers Index (PMI)

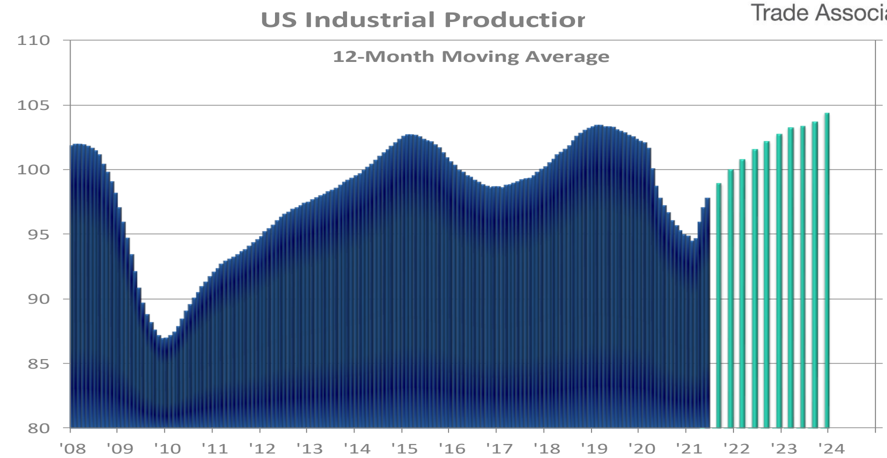
• OECD US Leading Indicator

• US Total Industry Capacity Utilization Rate

• US ISM PMI (Purchasing Managers Index)

Our analysis suggests the list of indicators that are moving lower is likely to grow in the coming months, putting us on track for slowing industrial sector growth beginning in early 2022, in line with our outlook. Meanwhile, on the supply side, producers are working hard to catch up with demand. The US Total Industry Capacity Utilization Rate has risen 12 percentage points from the April 2020 low and now sits just below the five-year average.

What does this all mean for today's hot-button issues – commodity prices and inflation? It means that the upside pressures we have experienced in recent months



will not persist as linear, breakneck rise, but will begin to ease. Take steel scrap, for instance. The price of steel scrap is up 90.7% during the last 12 months as demand has comfortably outstripped supply, pushing up on prices. However, China Crude Steel Production is in an accelerating growth trend while US Raw Steel Production is on the cusp of transitioning to an accelerating growth trend. These supply-side signals, when combined with declining rates-of-change in the leading indicators, suggest greater equilibrium between supply and demand, and thus more price stability, in the steel scrap market moving forward.

While each operates within its own particular circumstances, we generally expect markets for many other commodities and products will undergo a similar rebalancing, yielding disinflation during 2022 and into 2023. (We would be remiss not to mention that, despite the disinflation, we expect consumer and producer prices for the next three years will rise at rates significantly above those of the recent past, due in large part to the effects of fiscal and monetary stimulus.) Rebalancing forces will also keep long-term interest rates from surging unabated. We encourage our clients to take a deep breath and avoid overreacting in the sentiment of the moment. Consider leveraging still-low interest rates to increase automation or efficiencies in preparation for economic growth through at least 2023, while also thinking of “what’s next” to help counterbalance the effects of slowing growth through much of 2022 and 2023.

Terminology & Methodology

Data Trends:

Monthly Moving Total (MMT) vs Monthly Moving Average (MMA):

Totals are used when it makes sense to add the data together, as with units sold or total dollars spent. Averages are used when the data cannot be compounded, such as with an index, percent, price level, or interest rates.

3MMT/A and 12MMT/A:

A 3-month or 12-month moving total/average is the total/average of the monthly data for the most recent 3 and 12 months, respectively. The 3MMT/A illustrates the seasonal changes inherent to the data series. The 12MMT/A removes seasonal variation in order to derive the underlying cyclical trend. It is also referred to as the annual total or annual average.

Rates-of-Change:

A rate-of-change figure is the ratio comparing a data series during a specified time period to the same period one year ago. **Rates-of-change** are expressed in terms of the **annual percent change in a 12MMT/A, 3MMT/A, and actual monthly data.**

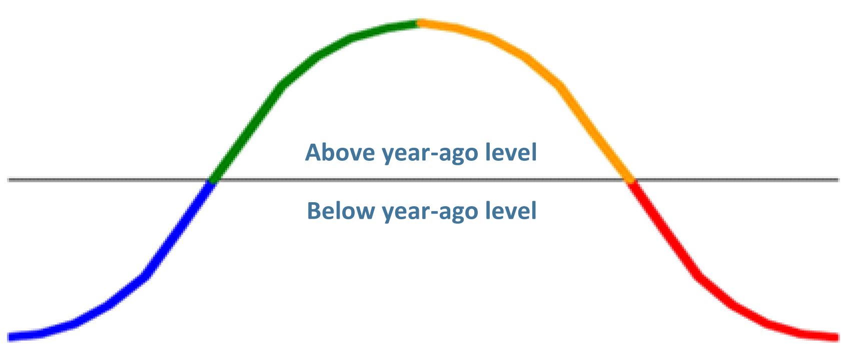
Rates-of-change reveal whether activity levels are rising or falling compared to last year. A rate-of-change trend illustrates and measures cyclical change and trends in the data.

ITR Economics' three commonly used rates-of-change are the **1/12**, **3/12**, and **12/12**, which represent the year-over-year percent change of a single month, 3MMT/A, and 12MMT/A (respectively).

A rate-of-change above 0 indicates the data is higher than one year prior, while a rate-of-change below 0 indicates the data is below one year earlier.

Business Cycle:

The data trends and rates-of-change identify positions in the business cycle. Those positions are:



Accelerating Growth (B): 12/12 is rising and is above zero; the data trend is accelerating in its ascent and is above the year-ago level. This is the second positive phase of the business cycle.

Recovery (A): 12/12 is rising but is below zero; the data trend is below the year-ago level and is either heading toward a low or is in the early stages of rise. This is the first positive phase of the business cycle.

Slowing Growth (C): 12/12 is declining but remains above zero; the data trend ascent is slowing or has stopped its rise, but it is still above the year-ago level. This is the first negative phase of the business cycle.

Recession (D): 12/12 is declining and is below zero; the data trend is below the year-ago level and the rate of decline is increasing. This is the second and final negative phase of the business cycle.

Business Cycle

Page Number	Industry	Current	Phase	2021	2022	2023
4	US Pulp, Paper, and Board Mills Production Index	-5.0%	A	-0.7%	-1.1%	-0.3%
5	US Commercial Printing Production Index	-3.6%	A	5.5%	0.2%	-2.1%
6	US Media Spending on Print Advertising	-31.7%	A	-11.2%	-6.0%	-8.5%

A RECOVERY

B ACCELERATING GROWTH

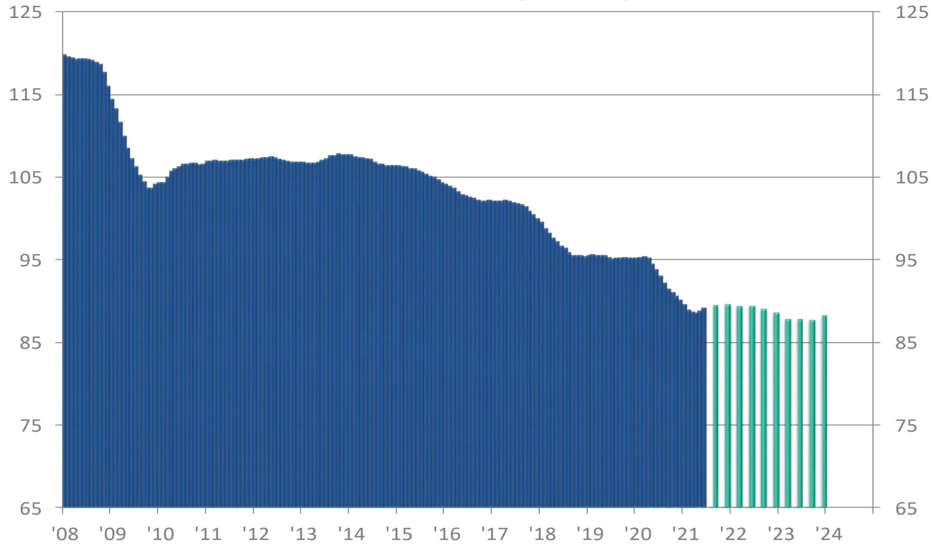
C SLOWING GROWTH

D RECESSION

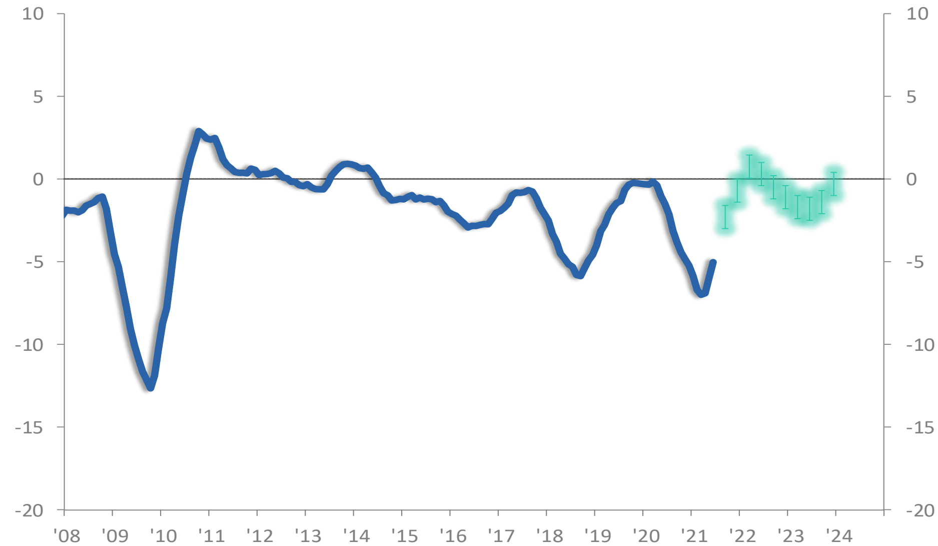
US Pulp, Paper, and Board Mills Production Index

Production Struggling to Keep Up With Demand; Upward Pressure Will Cool Next Year

12-Month Moving Average



Year-over-Year Growth Rate



Industry Outlook

2021: -0.7%

2022: -1.1%

2023: -0.3%

Outlook & Supporting Evidence

- We adjusted the annual average outlook for Production due to a data revision and rebase by the Federal Reserve Board. Our growth rate forecast is unchanged; expect a business cycle peak in the first half of 2022 and a subsequent low around mid-2023.
- US Real Gross Domestic Product is at a record high, driving demand for paper products across a broad swath of industries. However, mills are struggling to meet strong demand, creating a backlog. Capacity and supply chain constraints, along with competition from imports, could hinder recovery in domestic Production in at least the near term.
- Growth in annual E-commerce Retail Sales, although still at double-digits, is beginning to slow. This could temper demand for paperboard in the coming quarters.

Phase & Amplitudes

Phase A

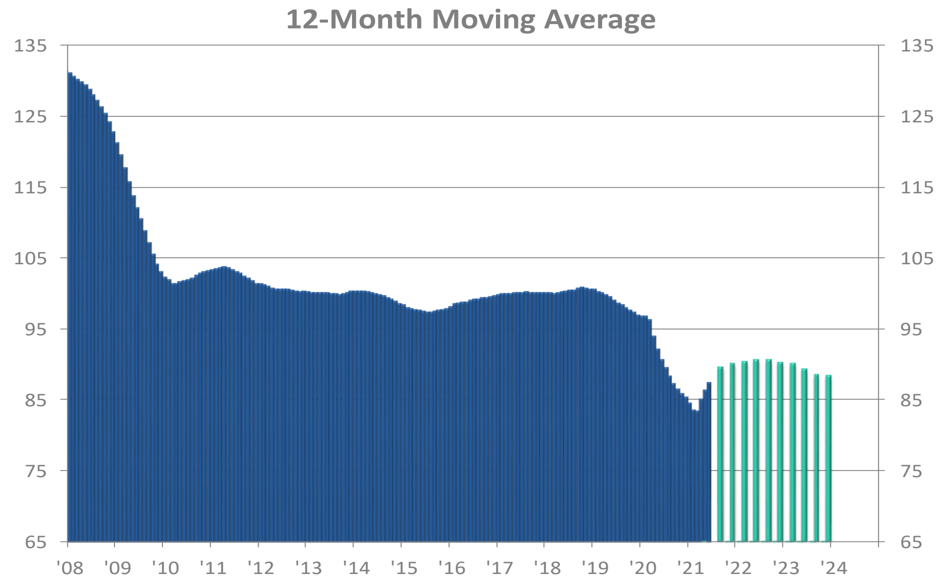
Recovery

June 2021 Annual Growth Rate (12/12): -5.0%

June 2021 Annual Average (12MMA): 89.1

US Commercial Printing Production Index

Forecast Revised; Annual Production to Rise Into Mid-2022 and Then Decline Into Late 2023



Industry Outlook

2021: 5.5%

2022: 0.2%

2023: -2.1%

Outlook & Supporting Evidence

- The Federal Reserve Board revised and rebased the historical Production data. We revised the forecast to account for the revision as well as upgrades to a number of our benchmark forecasts. The timing of the business cycle high and low points is unchanged. Annual Production will rise into mid-2022 and then decline into late 2023.
- Expansion in the US industrial and consumer sectors is driving demand for Production. Rise in the US Printing and Related Support Activities Utilization Rate suggests that Production business cycle rise will persist through 2021.
- Trends in the US ISM PMI (Purchasing Managers Index) and the US OECD Leading Indicator suggest that annual Production will transition to Phase C, Slowing Growth, in the first half of 2022.

Phase & Amplitudes

Phase A

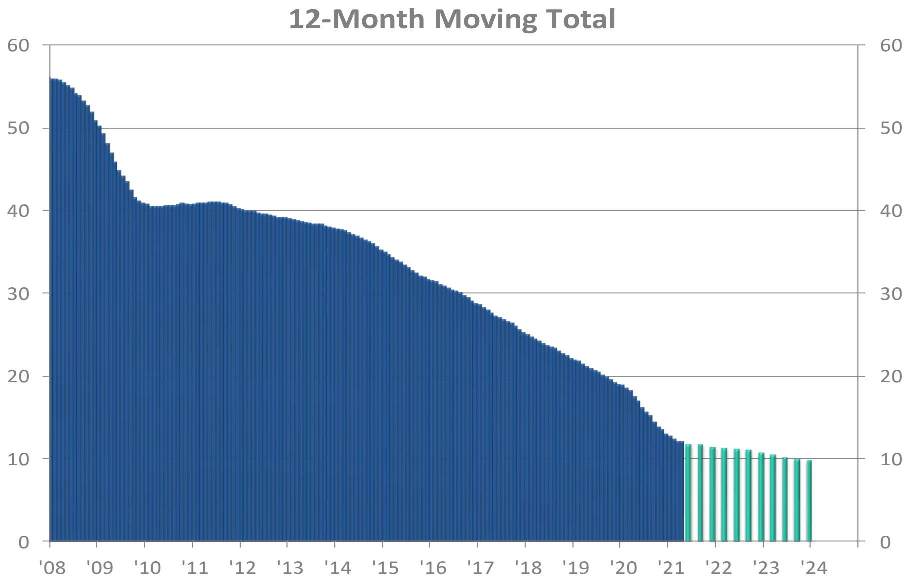
Recovery

June 2021 Annual Growth Rate (12/12): -3.6%

June 2021 Annual Average (12MMA): 87.4

US Media Spending on Print Advertising

Rate-of-Decline Easing, but No Rise Is Expected Through at Least 2023



Industry Outlook

2021: -11.2%

2022: -6.0%

2023: -8.5%

Outlook & Supporting Evidence

- US Media Spending on Print Advertising during the 12 months through April totaled $12.0 billion, down 31.7% from one year ago. This marked a transition to Phase A, Recovery, in line with our unchanged outlook.
- Despite the transition to Phase A, Recovery, we expect annual Spending to continue to decline through at least year-end 2023, as media spending transitions away from print and toward digital.
- Macroeconomic rise will likely enable businesses to boost their advertising budgets. However, given the trends of the last decade, the rise in spending is unlikely to significantly bolster the printing sector.

Phase & Amplitudes

Phase A

Recovery

April 2021 Annual Growth Rate (12/12): -31.7%

April 2021 Annual Total (12MMT): $12.0 billion

US Leading Indicators

Indicator	Direction		
	3Q21	4Q21	1Q22
ITR Leading Indicator™	●	●	●
ITR Retail Sales Leading Indicator™	●	●	●
US OECD Leading Indicator	●	●	●
US ISM PMI (Purchasing Managers Index)	●	●	●
US Total Capacity Utilization Rate	●	●	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

- A myriad of leading indicators – including, but not limited to, four of the five indicators in this table – have ticked down, tentatively suggesting a business cycle peak for US Industrial Production early next year, in line with our forecast.

- Recent stumbles in the US stock market and in the daily data for prices of commodities such as copper and oil reinforce our expectation that US Industrial Production will be characterized primarily by slowing growth next year.

- The ITR Retail Sales Leading Indicator™ is still rising, signaling US Total Retail Sales strength will extend through at least early next year.

Multiple leading indicators have begun to decline, signaling that the US industrial sector will transition to Phase C, Slowing Growth, in the first half of 2022. Now is the time to start brainstorming new products or potential markets that could buck the slowing growth trend we are expecting to characterize much of 2022-23.

Appendix — 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).

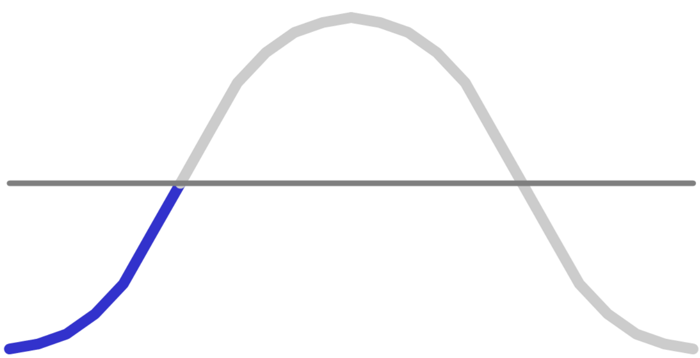
US Pulp, Paper, and Board Mill Production Index — NAICS 3221. This industry group comprises establishments primarily engaged in manufacturing pulp, paper, or paperboard. Source: FRB. Index, 2017 = 100, NSA.

US Commercial Printing Production Index — NAICS 32311. This industry comprises establishments primarily engaged in printing on apparel and textile products, paper, metal, glass, plastics, and other materials, except fabric (grey goods). The printing processes employed include, but are not limited to, lithographic, gravure, screen, flexographic, digital, and letterpress. Establishments in this industry do not manufacture the stock that they print, but may perform post printing activities, such as folding, cutting, or laminating the materials they print, and mailing. Source: FRB. Index, 2017 = 100, NSA.

US Media Spending on Print Advertising — Media spending in the US on print advertising. Includes magazine and newspaper advertising. Source: Kantar Media. Measured in billions of dollars, NSA.

Management Objectives™

Phase



A

1 Scrupulously evaluate the supply chain

2 Model positive leadership (culture turns to behavior)

3 Start to phase out marginal opportunities (products, processes, people); repair margins

4 Perform due diligence on customers and extend credit

5 Be on good terms with a banker; you will need the cash more now than in any other phase

6 Invest in customer market research; know what they value and market/price accordingly

7 Hire key people and implement company-wide training programs ahead of Phase B

8 Allocate additional resources to sales and marketing

9 Invest in system/process efficiencies

10 Make opportunistic capital and business acquisitions; use pessimism to your advantage

Management Objectives™

1 Ensure quality control keeps pace with increasing volume

2 Invest in workforce development: hiring, training, retention

3 Ensure you have the right price escalator; space out price increases

4 Maximize your profit margins through differentiation; stand out from the crowd and set yourself apart

5 Use improved cash flow to strategically position the business to beat the business cycle

6 Expand credit to customers

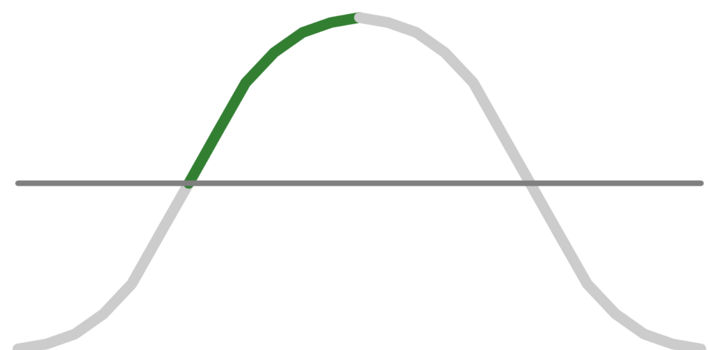
7 Improve corporate governance (rent a CFO; establish a board of advisors or board of directors)

8 Communicate competitive advantages; build the brand

9 Query users for what they want and what is important to them

10 Sell the business in a climate of maximum goodwill

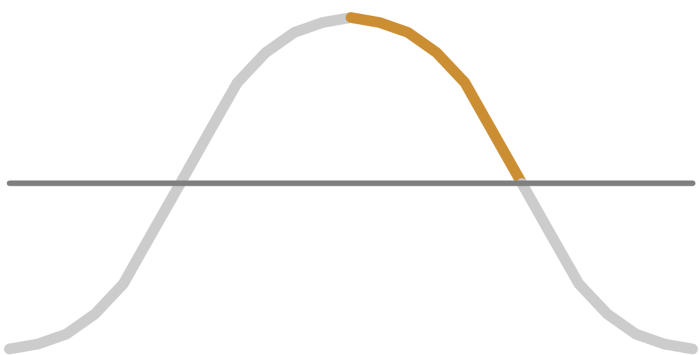
Phase



B

Management Objectives™

Phase



C

1 Know if your markets are headed for a soft landing or a hard landing

2 Cash is king; beware of unwarranted optimism

3 Stay on top of aging receivables

4 Revisit capital expenditure plans

5 Lose the losers: if established business segments are not profitable during this phase, eliminate them

6 Use competitive pricing to manage your backlog through the coming slowdown

7 Avoid committing yourself to long-term expenses at the top of the price cycle, but lock in revenue

8 Go entrepreneurial and/or counter-cyclical

9 Evaluate your vendors for financial strength; if needed, look for additional vendors as a safety net

10 If the cycle looks recessionary, cross-train key people to prepare for workforce attrition/reduction

Management Objectives™

1 Implement aggressive cost-cutting measures

2 Offer alternative products with a lower cost basis

3 Perform due diligence on acquisitions while valuations are falling

4 Reduce advertising as consumers become more price conscious

5 Enter or renegotiate long-term leases

6 Negotiate labor contracts

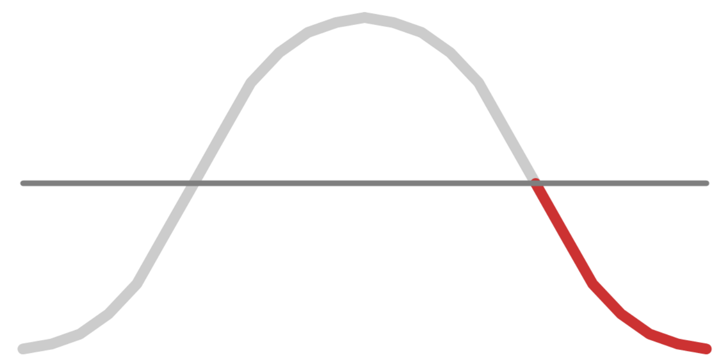
7 Consider capital equipment needs for the next cycle

8 Tighten credit policies

9 Develop programs for advertising, training, and marketing to implement in Phase A

10 Lead with optimism, remembering that Phase D is temporary

Phase



D