Q2'23 ECONOMIC IMPACTS ON KANSAS MANUFACTURING WEBINAR

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- We will ask as many questions as we can at the end of the presentation.

- This webinar is being recorded. The link to the recording will be included in a follow-up email being distributed tomorrow.

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As an experienced consultant dedicated to the Kansas manufacturing industry, Kansas Manufacturing Solutions provides a suite of problem-solving services so manufacturers can compete and grow in the domestic and global marketplace

Problems We Solve

- **People**
- **Processes**
- **Operations**

Kansas Manufacturing Solutions

KMS's results are directly tied to our clients' results, validated and published by an independent third party

"

This has been a business saving experience for a 23-year-old company. I have the confidence to take this company to the next level and maximize the potential."

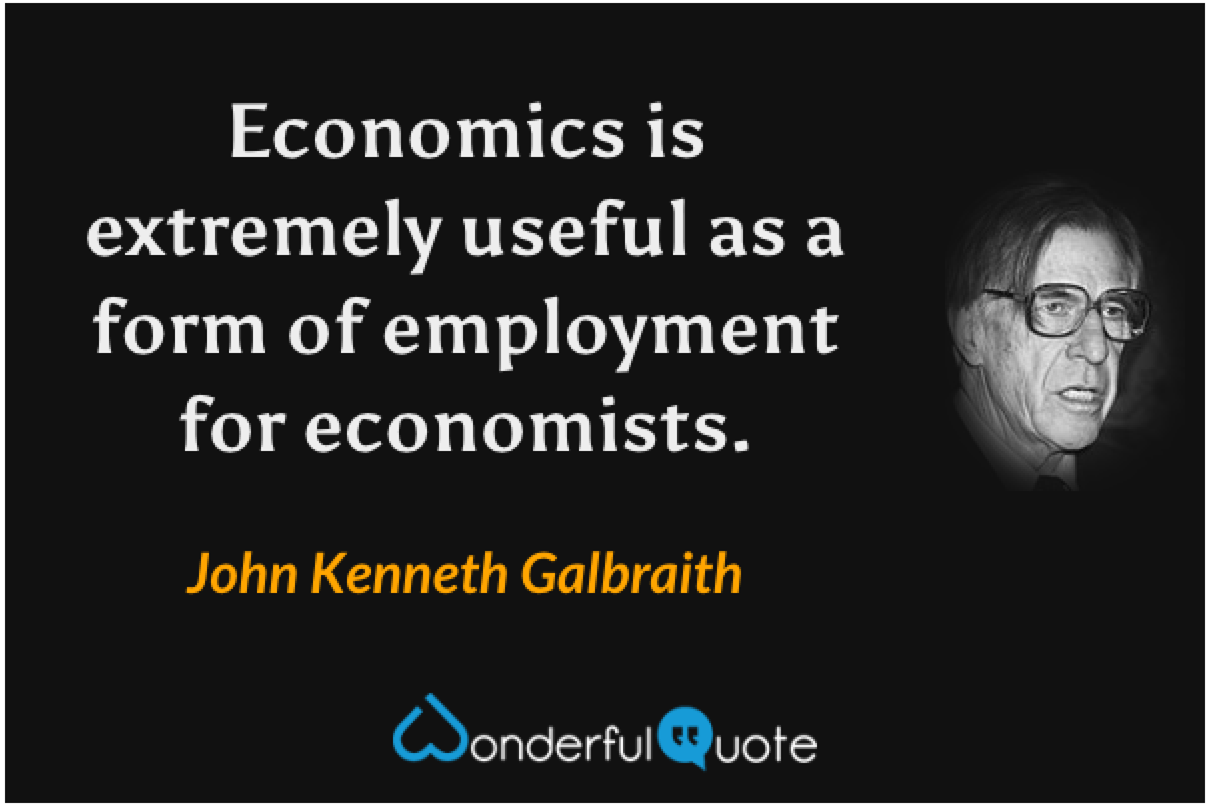
Kari Wagner, CEO, Mid Star Lab

Dr. Chris Kuehl

ARMADA

Managing Partner,
Armada Corporate Intelligence

Where Are We Now? Waiting for the Next Black Swan?



Chris Kuehl – Armada Corporate Intelligence

Mini Banking Crisis Sector Update

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- **100 of 4,700 regional banks under intensified "watch" with elevated risk**

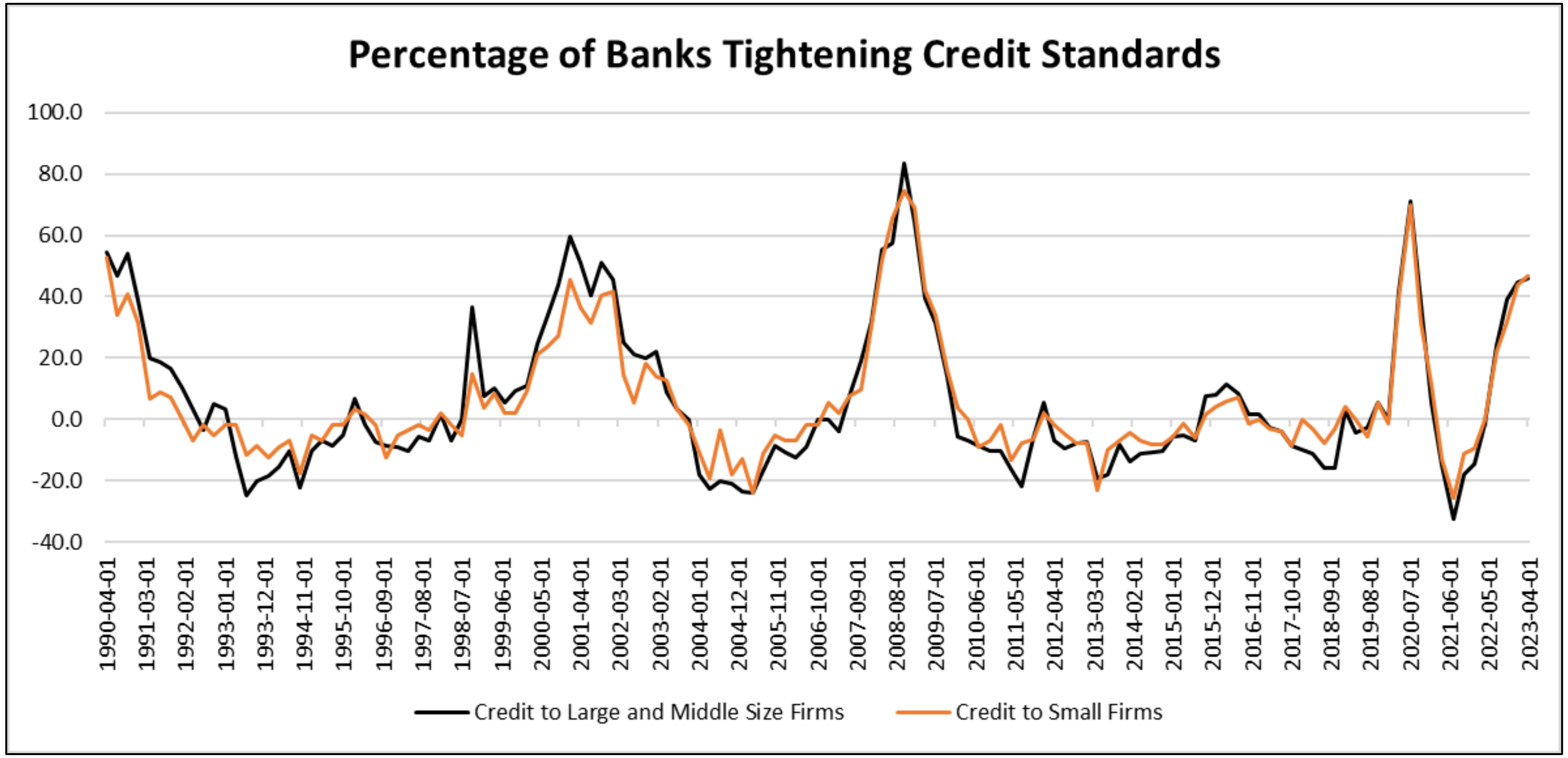
- **Fundamentally, most are passing regulatory checks…$1.1 T reportedly has flowed out of high-risk banks over the past year, some suggest outflows have stabilized**
  - FDIC has $125 billion in reserve ($23 billion in payouts YTD)
  - St. Louis Financial Stress Index has shown that conditions have improved since early March

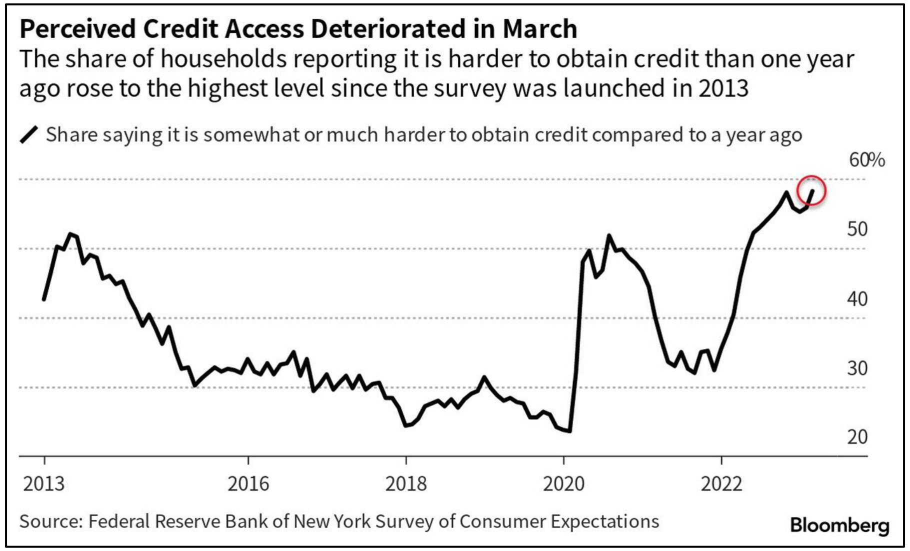
- **But the creative financing and financial instruments are complex – and too complex for modern banking systems to track risk. "Bank runs" are too easy today.**
  - Digital banking creates an easier environment for the proverbial "bank run" and can quickly destabilize specific bank entities
  - Tightening banking regulations could work much like a 25-50 basis point tightening by the Federal Reserve
  - Also tightens the operating environment and tightens conditions for shippers (can reduce inventory carrying activity)

- **More risks remain, but they look more traditional:**
  - Commercial real estate – risk could be as high as $3 trillion?
  - Gig properties (AirBnB and states shifting regulation) - $10B risk estimates
  - Automotive default risk; most banks have reserves set aside for this

Bank Credit Tightening Could be the Biggest Risk, Especially if it Changes Inventory Building and Carrying Strategies.

- Bank credit standards were already tightening before the early March mini banking crisis started.
- Data suggests that lending was slowing at the fastest sequential rate in history in the last three weeks of March ($45 billion decrease in small banks alone, $105 billion overall drop in lending activity outside of normal seasonality).
- The New York Fed shows that household surveys show that bank credit was tightening at the fastest rate since the measure was collected.





Macroeconomic Outlook

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3. Back to sub-2% growth through ‘25

	2023				2024				2019	2020	2021	2022	2023	2024	2025
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4							
Real GDP	1.1	-1.6	-1.8	-0.6	1.4	2.7	2.2	2.3	2.3	-2.8	5.9	2.1	0.7	1.0	1.8
Unemployment rate (%)	3.4	3.5	4.0	4.4	4.5	4.5	4.4	4.3	3.7	8.1	5.4	3.6	3.8	4.3	4.5
PCE Inflation (%Y/Y)	4.6	3.6	3.1	3.1	2.5	2.3	2.1	2.0	1.5	1.1	4.0	5.6	3.1	2.2	2.0
Core PCE Inflation (%Y/Y)	4.0	3.6	3.5	3.5	2.5	2.3	2.1	2.0	1.7	1.3	3.5	4.8	3.5	2.2	2.0
Fed Funds Rate	4.9	5.1	5.1	5.1	4.9	4.4	3.9	3.8	1.6	0.1	0.1	4.4	5.1	3.4	3.1
Canada Real GDP	-	-	-	-	-	-	-	-	1.8	-5.2	4.5	3.4	1.0	1.3	-
Unemployment rate (%)	-	-	-	-	-	-	-	-	5.8	9.5	7.4	5.4	5.7	6.0	-
Mexico Real GDP	-	-	-	-	-	-	-	-	-1.8	-8.2	5.0	2.7	1.6	2.1	-
Unemployment rate (%)	-	-	-	-	-	-	-	-	3.6	4.4	4.1	3.3	3.4	3.3	-

1. Greatest recession risk is being pushed further out, but it appears greatest between Q2 and Q3 of 2023 perhaps stretching as far as Q4.

2. Some estimates suggest that this could easily get pushed out, depending on how quickly the unemployment rate rises (which will have a disinflation effect and reduce inflation risk).

4. To hit 2% inflation target, estimates suggest the Fed will have to hit a peak Effective Funds Rate of 5.1% to 5.5% and unemployment will likely still approach 4.4%.

   Any further banking debacle can quickly change these outlooks.

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Source: Conference Board; Federal Reserve

Latest Leading Economic Indicator – April 2023 Shows Continuing Contraction

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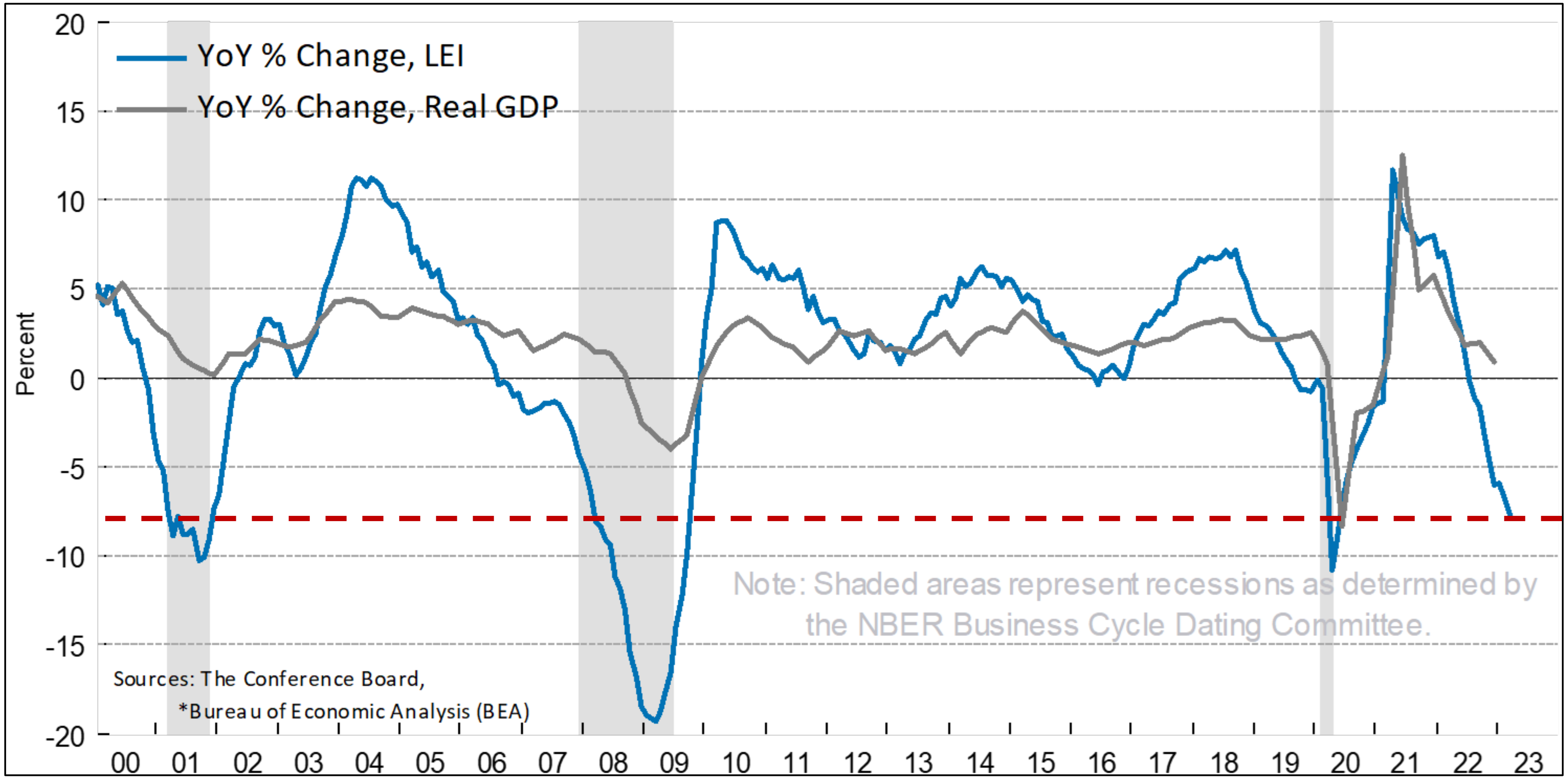
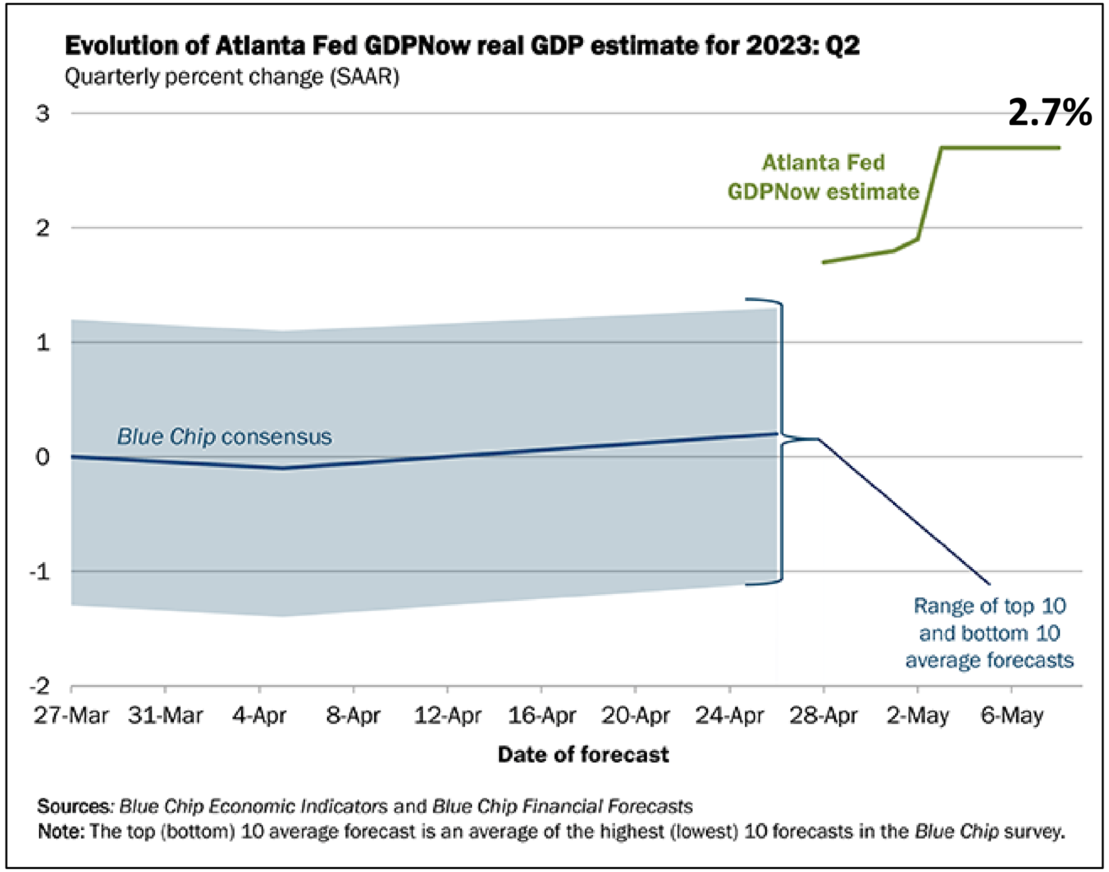
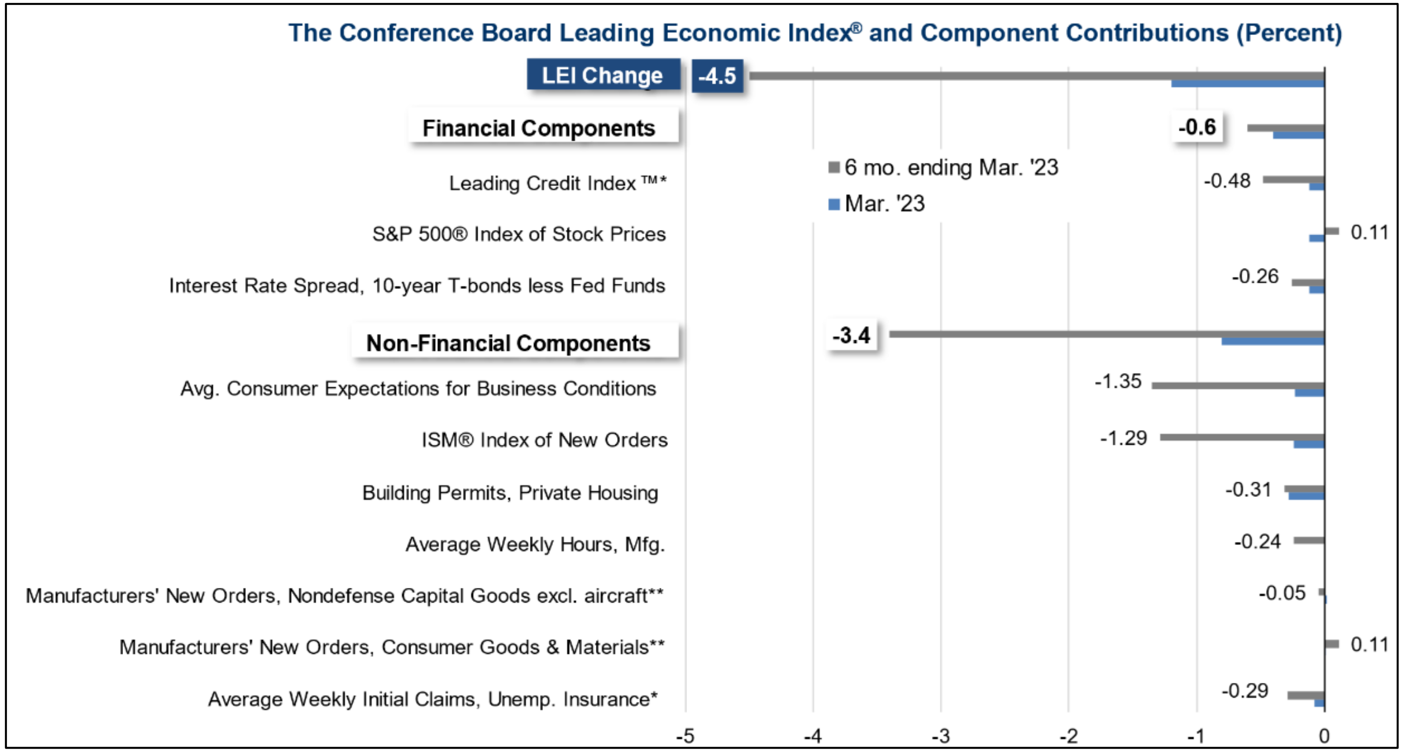
- The latest LEI from the Conference Board shows the fourth lowest levels in the past 23 years.
- Other periods with an LEI this low signaled that the country was in recession.
- The latest data also suggests that all indicators have now gone negative, including basic labor indicators.



Backdrop: But Real GDP Remains Hotter Than Expectations Largely Because Labor Conditions Remain Stable.

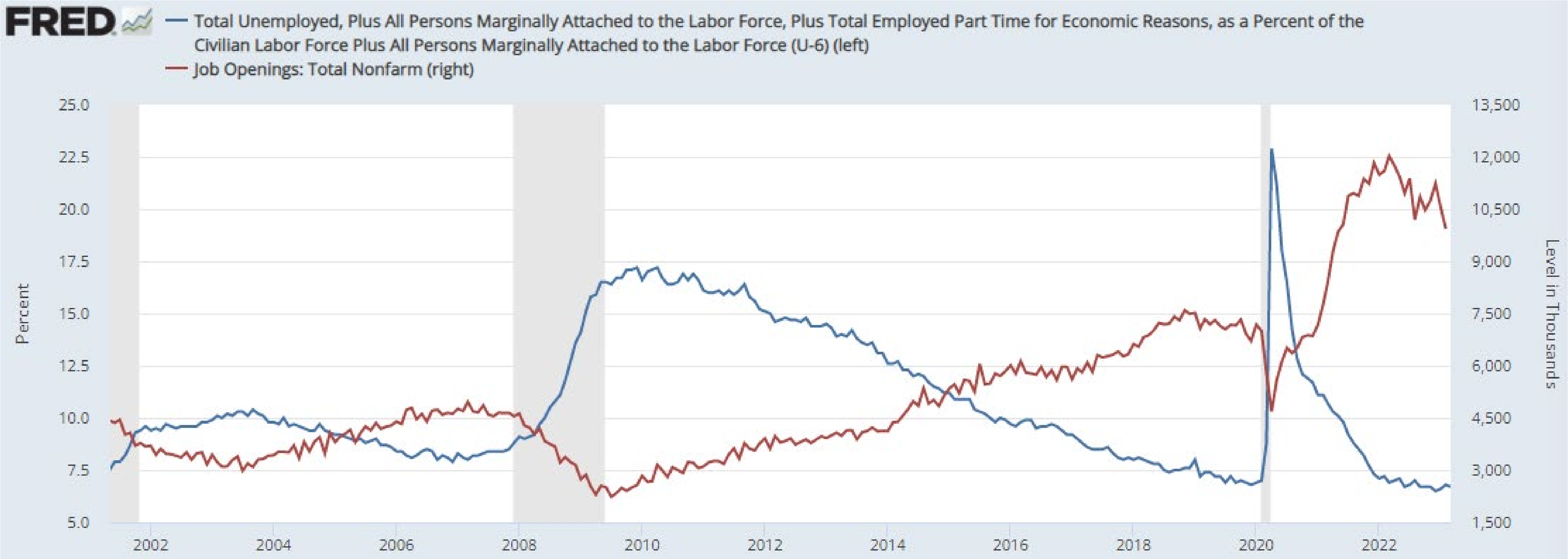
- Current GDP trackers are showing Q2 starting at 2.7% (Blue Chip Estimates have risen to 0.3%), being boosted by a strong labor environment.
- **However, the latest LEI measure likely signals that the economy has turned a weaker corner in the latest 30 days. Nearly every measure in the LEI was negative in March data. The LEI predicts economic strength over the next six months.**





Backdrop: Labor Market Remains Overheated and Unemployment Remains Low.

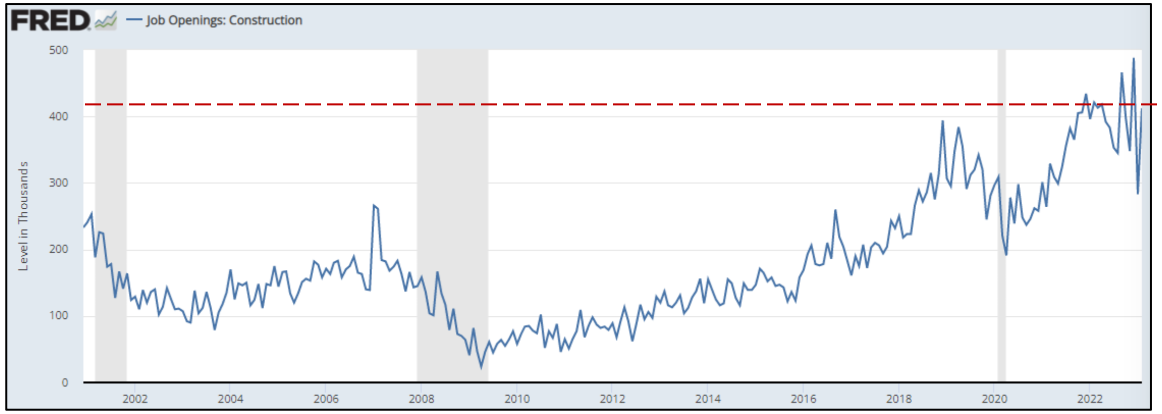
- Despite job openings falling to 9.9M in February (latest available), a normal balanced market is 6M. Openings are still too high, and wages remain elevated.
- The U-6 Unemployment rate ticked down in March to 6.7%, down from 6.8% in February but also remains near all-time lows.



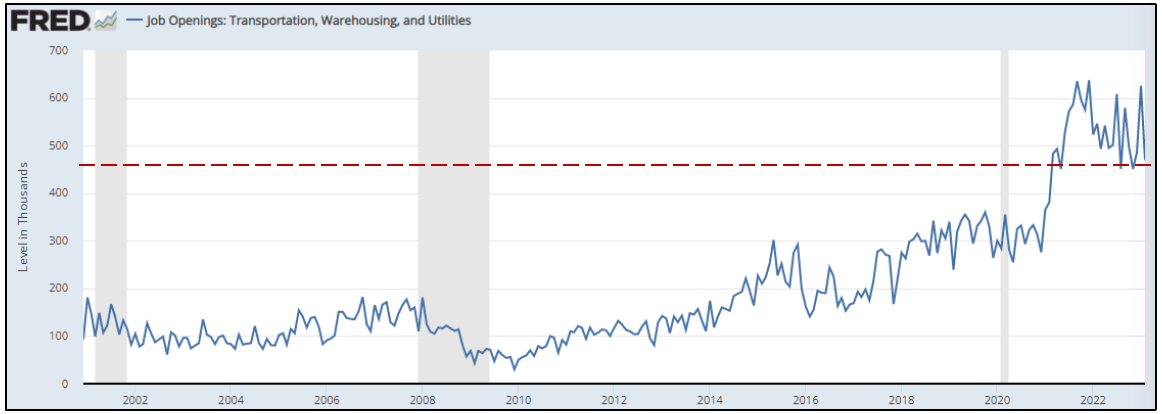
By Sector, Nearly All Sectors Cooling Year-over-Year

Category	Job openings				
	Feb. 2022	Jan. 2023	Feb. 2023	M/M	Y/Y
LEVELS BY INDUSTRY (in thousands)					
Total	11,601	10,563	9,931	-6.0%	-14.4%
Total private	10,516	9,536	8,937	-6.3%	-15.0%
Construction	421	283	412	45.6%	-2.1%
Manufacturing	826	732	694	-5.2%	-16.0%
Durable goods	511	462	475	2.8%	-7.0%
Nondurable goods	315	270	219	-18.9%	-30.5%
Trade, transportation, and utilities	1,903	1,837	1,627	-11.4%	-14.5%
Wholesale trade	338	304	310	2.0%	-8.3%
Retail trade	1,008	901	829	-8.0%	-17.8%
Transportation, warehousing, and utilities	557	633	488	-22.9%	-12.4%
Information	255	138	147	6.5%	-42.4%
Financial activities	501	451	476	5.5%	-5.0%
Finance and insurance	354	337	350	3.9%	-1.1%
Real estate and rental and leasing	147	114	127	11.4%	-13.6%
Professional and business services	2,255	2,101	1,823	-13.2%	-19.2%
Education and health services	2,171	2,012	1,862	-7.5%	-14.2%
Educational services	189	178	178	0.0%	-5.8%
Health care and social assistance	1,982	1,834	1,684	-8.2%	-15.0%
Leisure and hospitality	1,743	1,588	1,501	-5.5%	-13.9%
Arts, entertainment, and recreation	200	188	226	20.2%	13.0%
Accommodation and food services	1,543	1,400	1,275	-8.9%	-17.4%
Government	1,084	1,027	995	-3.1%	-8.2%
Federal	167	169	138	-18.3%	-17.4%
State and local	917	858	857	-0.1%	-6.5%

Key for truck driver capacity: construction openings snapped back in February, keeping driver capacity tighter than expected.

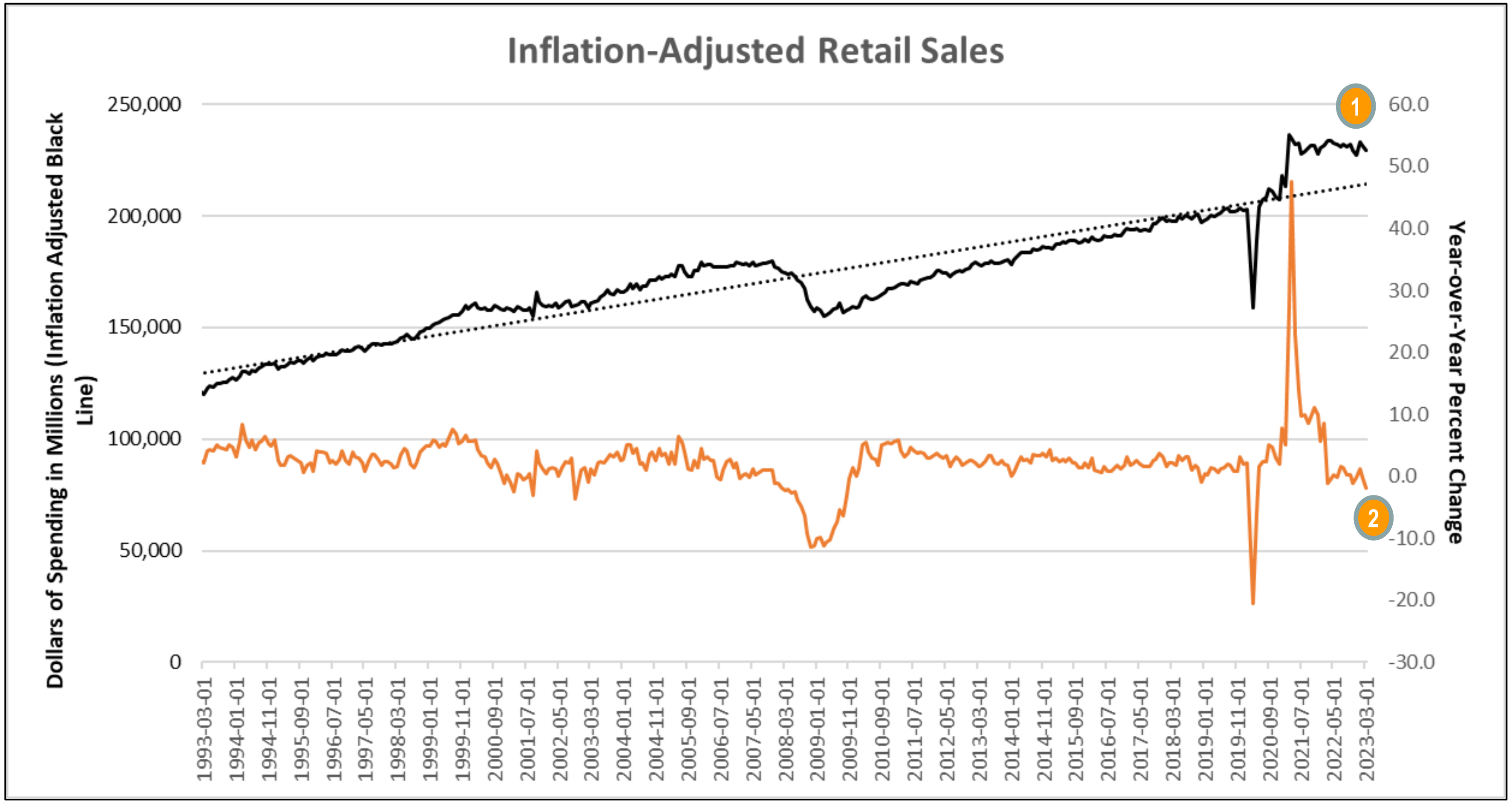


Transportation, Warehousing and Utilities still Historically Elevated.



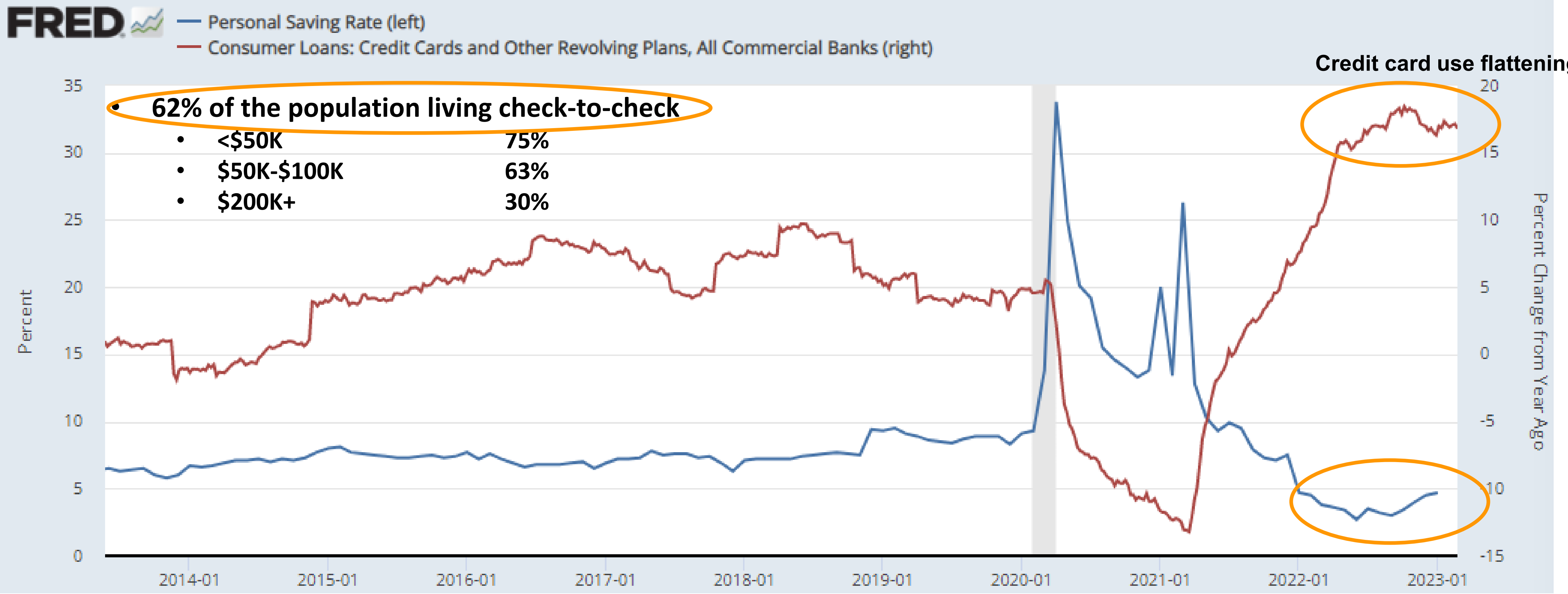
But Inflation-Adjusted Retail Spending Continued to Remain Stable and Near Historically High Rates Through March, despite Some Deceleration.

1. Inflation-adjusted retail sales continued to outpace the 30-year trend through March.
2. The growth rate has now fallen below the ten-year average, some fatigue in consumer spending was beginning to show up in March and inflation-adjusted sales fell 1.9% Y/Y.



Savings Rate Still Low, Now Consumers Working on Paying Down Debt

- Borrowing has improved, and consumers did work on paying down their debt – but spending remained stable
- **<u>Credit card interest rates have hit new all-time highs in February 2023 of 20.09%</u>.**
- Consumers were becoming a bit more optimistic about their ability to pay down their debt in 2023, but spending is weaker as a result. Half of US households with high credit card debt now supplementing income with gig work or part time jobs.



That's Why the Fed is Still Fighting…it Can't Allow 78M Households to Fail.

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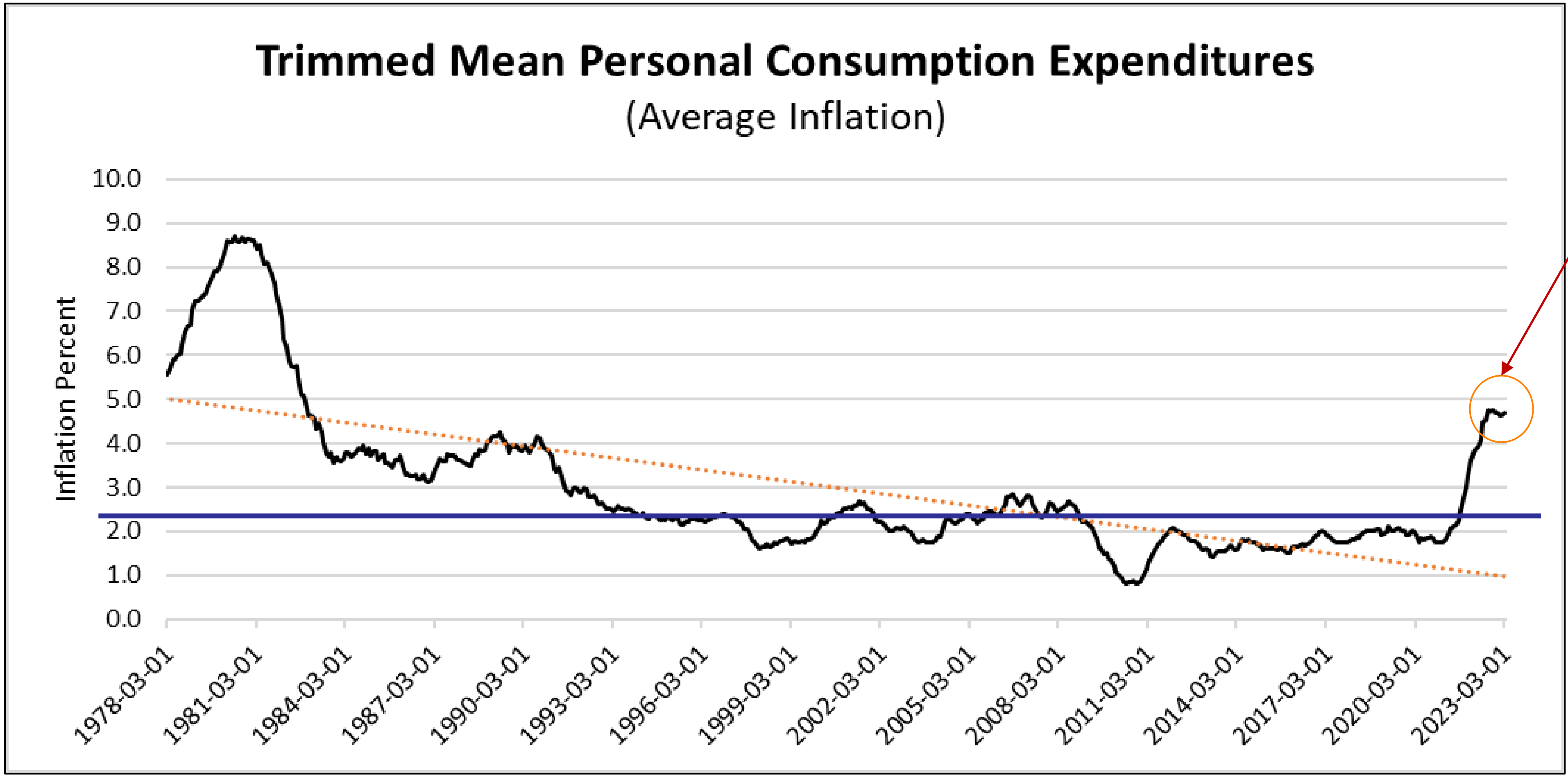

- **4.68% Mar**
- 4.67% Feb
- 4.63% Jan
- 4.68% Dec
- 4.70% Nov
- 4.75% Oct
- 4.73% Sep
- 4.75% Aug
- 3.91% Jul

2% Target Rate
(20-year average 2.07%)

Note: The Trimmed Mean Personal Consumption Expenditures (TMPCE) averages more than 3,000 inflationary measures, stripping off the extreme highs and lows to give us a more accurate view of street level inflation.

Source: Federal Reserve

The New York Fed Uses the Yield Curve for Recession Probability Predictions, Current Curves Still Show Third Highest Probability in History.

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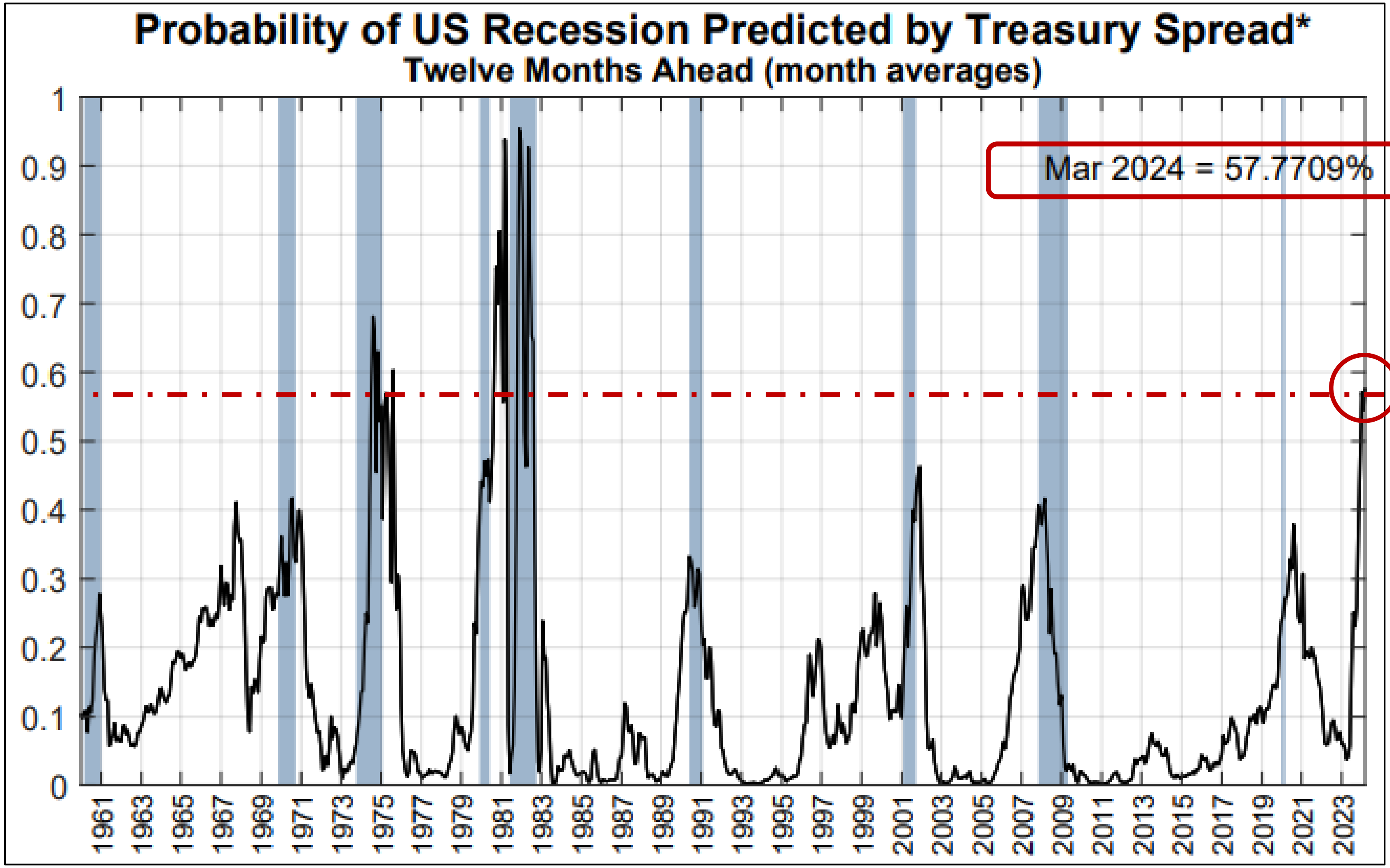

One of the Largest Factors Likely to Shape the Economy in 2H 2023. Inventory Ratios Remained High in February.

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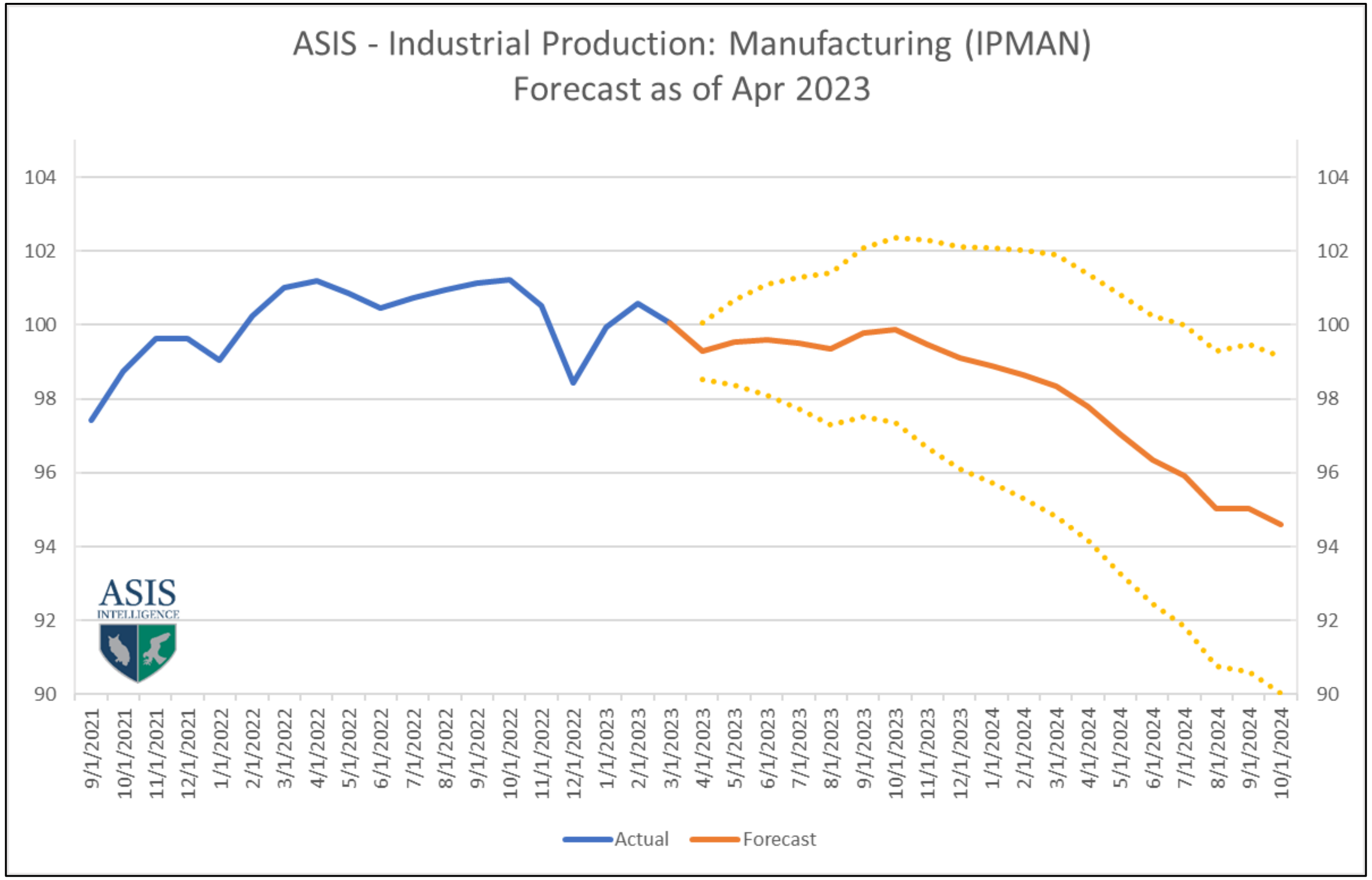
- February is the latest data available.
- **62.8% of the marketplace remains overstocked** through the end of February relative to 10-year average between Dec 2009 and Dec 2019.
- **19.4% were reporting understocked conditions that were understocked on a historical basis.**
- **17.7% are effectively "balanced".**
- Said another way, approximately 37% of the market is likely in a continuous reorder cycle, but the majority of the market is likely still conservatively ordering for the rest of 2023. Especially with the cost of capital rising for carrying additional inventory.
- Some supply chain pressures in China could reverse this thinking for sourcing managers.

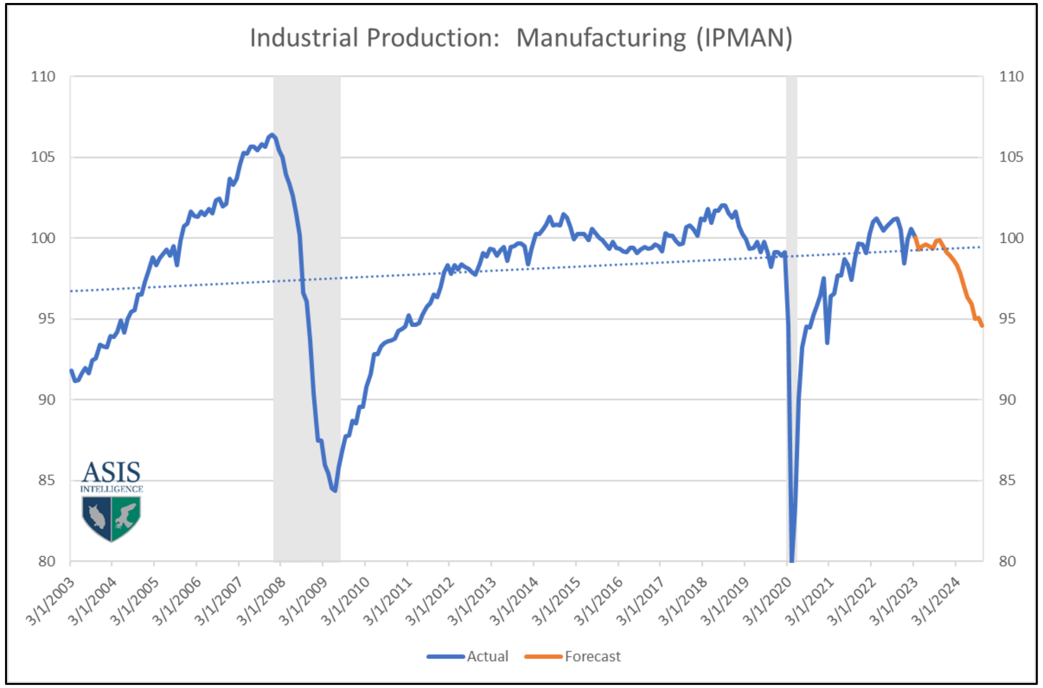
Inventory to Sales Ratio (ISR) Analysis

	Sector	February Sales (Millions)	9/12/09 - 09/12/19 10-YR Average	Feb-23	ISR Percent Above/Below Pre-pandemic
	Total Business		**1.34**	**1.36**	**1.5%**
1	Automotive		2.49	0.61	-75.5%
2	Retail		1.43	1.23	-14.0%
3	Merchant Wholesalers		1.29	1.37	6.2%
4	Manufacturing		1.35	1.49	10.4%
1	Apparel Stores	26,346	2.39	2.18	-8.8%
2	Department Stores (ie. Nordstrom's)	11,589	2.11	1.93	-8.5%
3	Drugs Wholesalers	82,040	1.09	1.05	-3.7%
4	General Merchandise (ie. Walmart)	73,592	1.43	1.38	-3.5%
5	Machinery Wholesalers (ie. John Deere, Vermeer)	53,645	2.60	2.57	-1.2%
6	Food and Beverage Stores	81,345	0.78	0.78	0.0%
7	Furniture, Appliance Stores (i.e NFM)	19,023	1.63	1.64	0.6%
8	Chemical Wholesalers	13,913	1.17	1.19	1.7%
9	Paper Wholesalers (ie. National Paper)	8,585	1.09	1.11	1.8%
10	Building Material Stores (ie. Home Depot)	36,787	1.85	1.94	4.9%
11	Computer Wholesale Distributors	24,584	0.79	0.85	7.6%
12	Furniture Wholesalers	10,400	1.71	1.84	7.6%
13	Lumber and Construction Material Wholesalers	19,287	1.49	1.65	10.7%
14	Grocery Wholesalers	74,089	0.68	0.76	11.8%
15	Durable Goods Wholesalers	313,128	1.59	1.79	12.6%
16	Commerical Equipment Wholesalers	49,574	1.09	1.27	16.5%
17	Hardware, Plumbing, Heating Wholesalers	19,821	2.05	2.47	20.5%
18	Alcohol Wholesale Distributors	13,548	1.31	1.58	20.6%
19	Household Appliances/Electronics Wholesalers	64,648	1.10	1.37	24.5%

Armada Forecast For Industrial Production in Manufacturing This Carries Out the Durable Manufacturing New Order Estimates 18 Months in Advance.

1. These models use 18-22 economic metrics to forecast output from each of the following sectors of durable manufacturing.
2. This model for industrial production in manufacturing shows slowing continuing through the end of the year at this stage. Pay attention to the curve over the next six months, the tail end of the curve (6 months +) will change and should show improvement for early 2024 at some point.



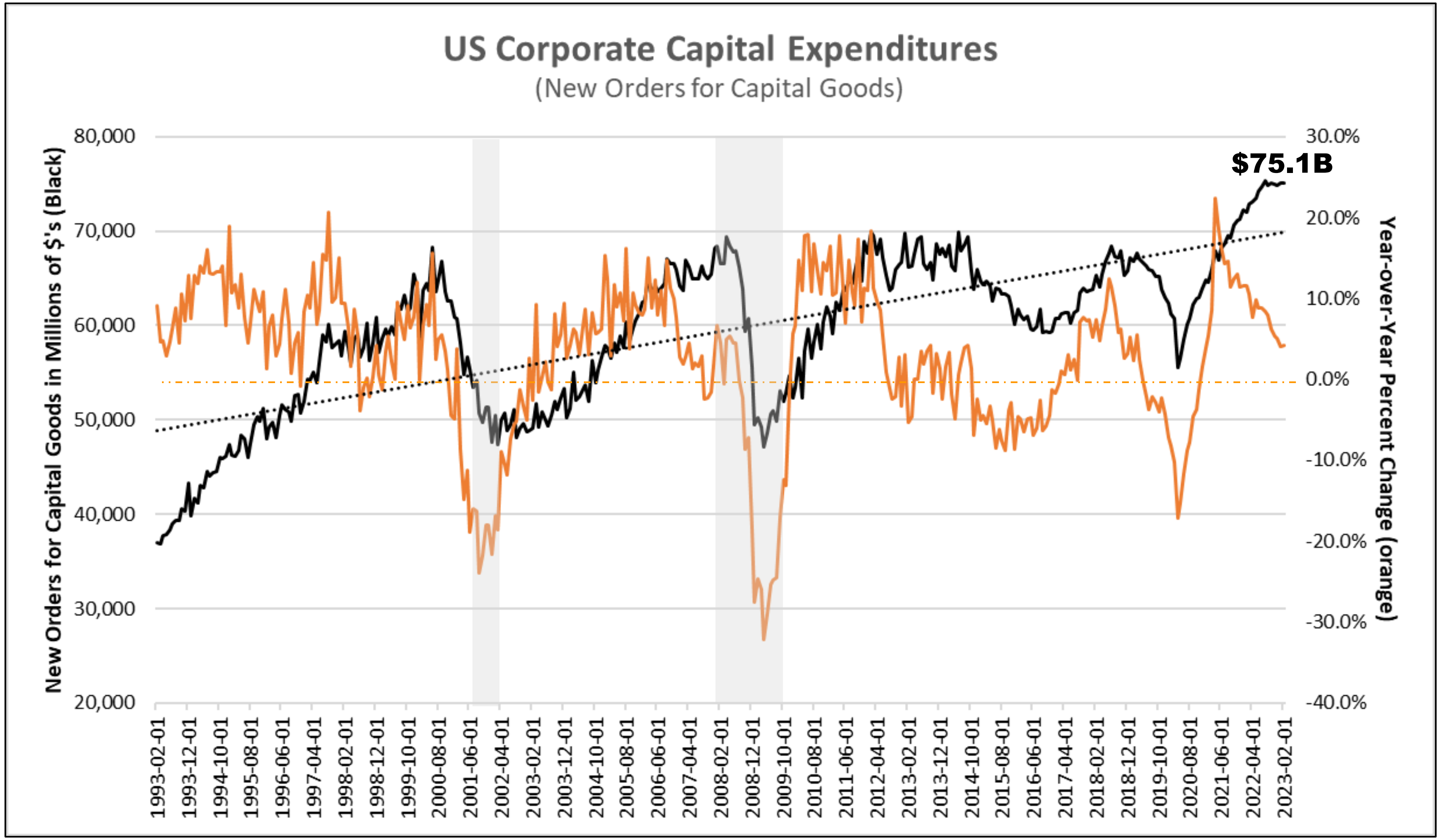


Accuracy:

- **3 months: 99.65%**
- **6 months: 93.88%**

Corporate Investment Remains Steady

- Small business surveys show investment has started to decline, but still not showing in this view of the national data yet



+4.2% Y/Y

Source: Federal Reserve

Construction Spending Improved in February and Continues to Help Keep Certain Commodity Classes Growing For Now. Construction Materials and Equipment Will Continue to Experience Stable Demand.

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- Nonresidential construction spending still growing 18.8% Y/Y vs. residential which was down 9.8%
  - **Single family -23.3%**
  - **Multi-family +23.6%**
- Manufacturing construction activity up 62.3% Y/Y on $147B in annualized spending. This is continued evidence of the re-shoring trend taking place.
- Infrastructure spending beginning to build momentum.
- Lodging up 38.1%
- Also waiting on health care expansion to start
- Power is a primary focus for Federal investment, but shortages of certain materials holding back the industry.

Table 1. **Value of Construction Put in Place in the United States, Seasonally Adjusted Annual Rate**
(Millions of dollars. Details may not add to totals due to rounding.)

Type of Construction	Mar 2023[p]	Feb 2023[r]	Jan 2023[r]	Dec 2022	Nov 2022	Mar 2022	Percent change Mar 2023 from - Feb 2023	Mar 2022
Total Construction	**1,834,692**	**1,829,580**	**1,835,483**	**1,838,507**	**1,840,294**	**1,768,168**	**0.3**	**3.8**
Residential	837,547	838,897	851,235	868,435	869,322	929,023	-0.2	**-9.8**
Nonresidential	997,145	990,683	984,247	970,071	970,972	839,145	0.7	**18.8**
Manufacturing	147,416	140,955	138,836	129,965	137,916	90,823	4.6	**62.3**
Lodging	22,370	22,281	22,481	22,043	21,774	16,203	0.4	**38.1**
Water supply	24,628	24,226	23,983	24,184	24,109	19,502	1.7	**26.3**
Sewage and waste disposal	37,621	37,298	35,234	35,141	34,099	29,915	0.9	**25.8**
Conservation	11,715	10,435	10,410	9,467	11,127	9,346	12.3	**25.3**
Highway and street	122,548	122,658	121,642	120,095	117,272	100,971	-0.1	**21.4**
Commercial	125,407	126,411	127,946	131,767	129,822	104,265	-0.8	**20.3**
Office	97,242	97,166	96,792	95,946	95,292	84,343	0.1	**15.3**
Amusement and recreation	29,258	29,206	29,103	29,224	28,991	25,993	0.2	**12.6**
Transportation	61,287	62,181	62,163	60,718	59,925	54,515	-1.4	**12.4**
Health care	56,592	56,606	56,665	56,002	55,869	51,026	0.0	**10.9**
Educational	108,244	107,357	107,527	105,286	105,978	97,783	0.8	**10.7**
Communication	24,822	24,993	24,998	24,996	24,818	23,633	-0.7	**5.0**
Public safety	11,393	11,765	11,092	11,219	11,701	10,973	-3.2	**3.8**
Religious	2,947	3,072	3,087	2,897	2,837	2,879	-4.1	**2.4**
Power	113,655	114,074	112,288	111,122	109,443	116,976	-0.4	**-2.8**

Data Source: US Census Bureau

Global Manufacturing Highlights

- 19 countries had manufacturing sectors in contraction in April, up from 18 in March.
- Across the broader global PMI's, there is a hint of improving consumption in the services sector but was still sluggish on the manufacturing front.
- China experienced a slight uptick in new domestic and international orders and appears to be continuing to stockpile petroleum and raw materials, especially metals.
- But as the services sector data shows, the services side of the global economy (which includes retail spending) was largely improving across the board and consumption was stable.
  - Competition for raw materials will still be stable through this period as companies continue to fulfill moderate orders for new products.

Country	Current Month	Latest Month Manuf. PMI	Prior Month Manuf. PMI	M/M Change	Current Month	Latest Month Services PMI	Prior Month Services PMI	M/M Change
Global PMI	Apr	49.6	49.6	0.0	Apr	55.4	54.4	1.0
Eurozone PMI	Apr	45.8	47.3	-1.5	Apr	56.2	55.0	1.2
US	Apr	50.2	49.2	1.0	Apr	53.6	52.6	1.0
China	Apr	49.5	50.0	-0.5	Apr	56.4	57.8	-1.4
Canada	Apr	50.2	48.6	1.6				
Mexico	Apr	51.1	51.0	0.1				
Japan	Apr	49.5	49.2	0.3	Apr	54.9	55.0	-0.1
Germany	Apr	44.5	44.7	-0.2	Apr	56.0	53.7	2.3
South Korea	Apr	48.1	47.6	0.5				
UK	Apr	47.8	47.9	-0.1	Apr	55.9	52.9	3.0
France	Apr	45.6	47.3	-1.7	Apr	54.6	53.9	0.7
India	Apr	57.2	56.4	0.8	Apr	62.0	57.8	4.2
Italy	Apr	46.8	51.1	-4.3	Apr	57.6	55.7	1.9
Taiwan	Apr	47.1	48.6	-1.5				
Brazil	Apr	44.3	47.0	-2.7	Apr	54.5	51.8	2.7
Spain	Apr	49.0	51.3	-2.3	Apr	57.9	59.4	-1.5
Russia	Apr	52.6	53.2	-0.6	Apr	55.9	58.1	-2.2
Netherlands	Apr	44.9	46.4	-1.5				
Ireland	Apr	48.6	49.7	-1.1	Apr	58.4	55.7	2.7
Greece	Apr	52.4	52.8	-0.4				
Poland	Apr	46.6	48.3	-1.7				
ASEAN	Apr	52.7	51.0	1.7				
Vietnam	Apr	47.7	46.7	1.0				
Philippines	Apr	51.4	52.5	-1.1				
Australia	Apr	48.0	49.1	-1.1	Apr	53.7	48.6	5.1
Switzerland	Apr	45.3	47.0	-1.7				
Hong Kong	Apr	52.4	53.5	-1.1				
Singapore	Apr	49.7	49.9	-0.2				

Sources: S&P Global, Caixin, JP Morgan, Jibun Bank, Nevi, BME, CIPS

Armada Transportation Demand Index Showing a Similar Pattern…Although This Index Suggests the Market "Normalizing" Relative to Pre-Pandemic Levels of Activity.

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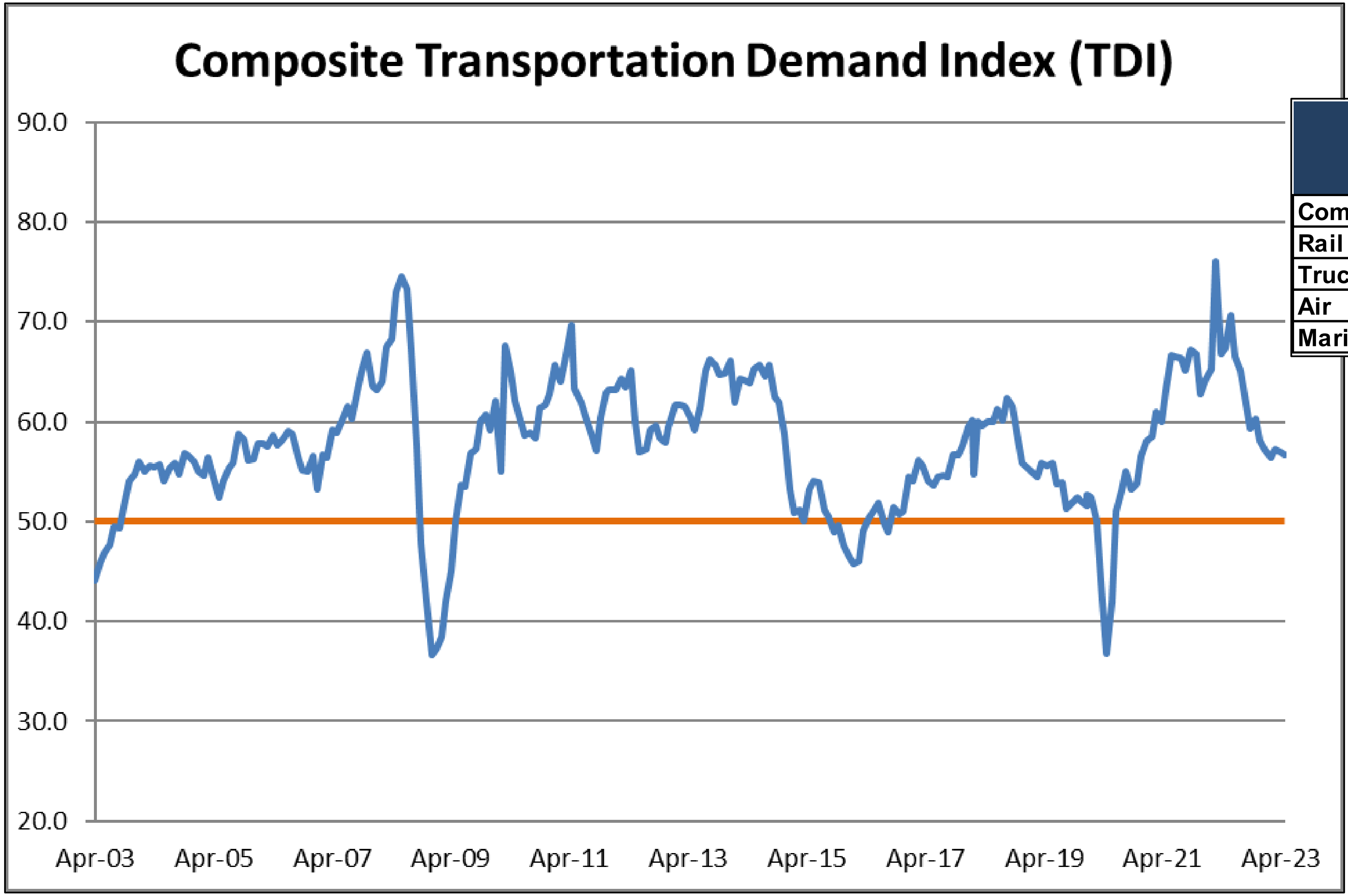

	23-Apr	23-Mar	22-Apr	Y/Y Change %	M/M Change %
Composite	56.7	57.0	67.4	-15.9%	-0.5%
Rail	55.1	55.0	65.2	-15.4%	0.3%
Trucking	56.8	57.2	67.9	-16.4%	-0.8%
Air	61.8	61.2	66.2	-6.7%	0.9%
Maritime	60.0	59.1	64.6	-7.1%	1.6%

- All measures still over 50, but the "normalization" is obvious.
- March ushered in a bit of a flattening of the demand curve, and it remains stable relative to historical values.

EIA still predicting a net build in inventories based on a global recession.

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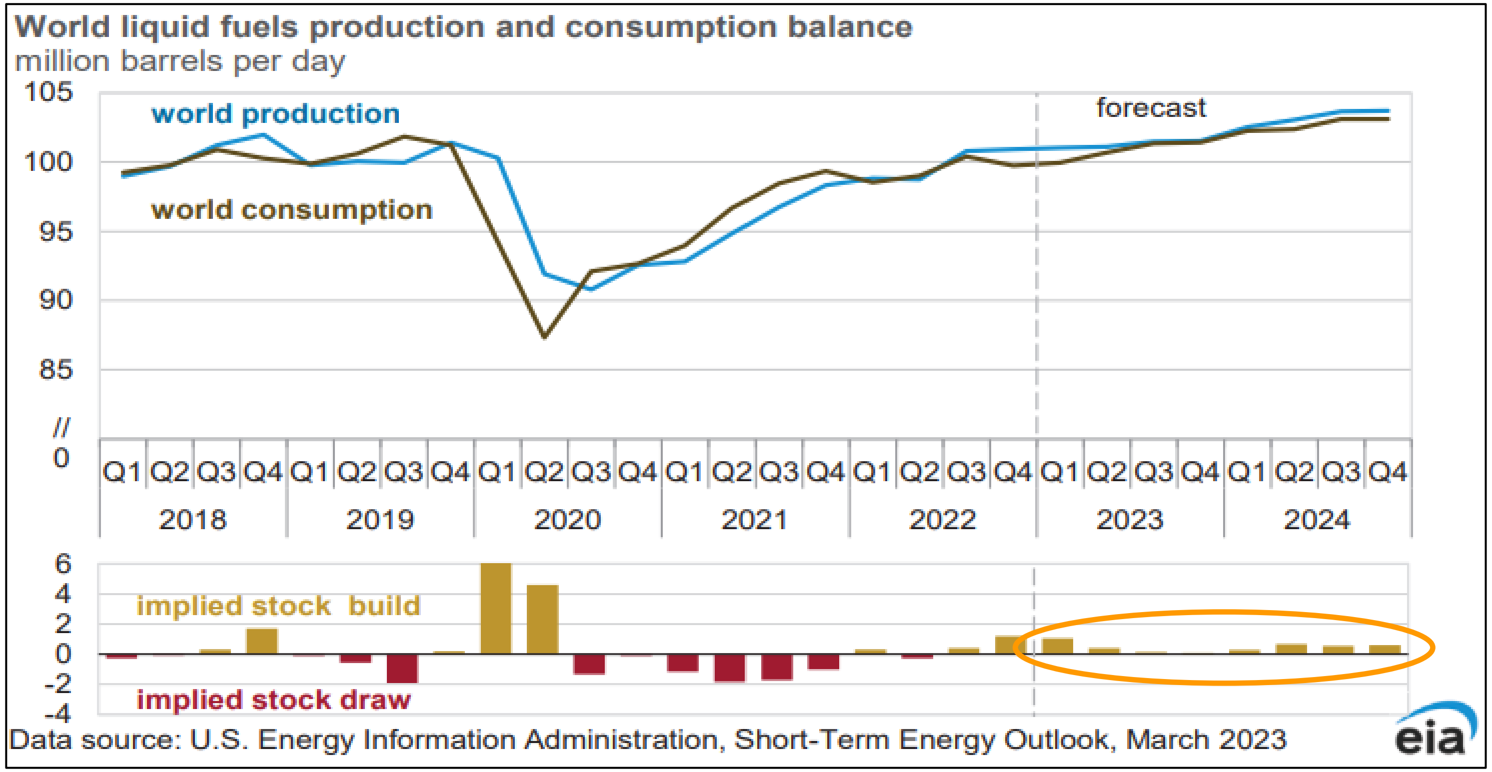
- Now an implied a slight net build through most of 2023 according to EIA
    - Consumption is still 20M Bpd currently with US production at 12.5M Bpd; 7M Bpd gap must still be imported
    - The US will start rebuilding the SPR in 2023 and 2024?
    - OPEC cut of 1.13M Bpd will hit in May, and could drive more demand for US crude oil when that trend hits

    - Concerns that global <u>excess capacity is still just 1.2% higher currently</u>, when China and Europe are largely consuming less.
        - <u>**China has now lifted quotas on refiners and have told them to import as much as possible.**</u>



Crude forecast:
- 2021 $68.21
- 2022 $94.91
- 2023 $77.10
- 2024 $71.57

Diesel forecast:
- 2021 $3.29
- 2022 $4.97
- 2023 $4.17
- 2024 $3.73

Gasoline forecast:
- 2021 $3.02
- 2022 $3.97
- 2023 $3.49
- 2024 $3.25

Source: EIA; Baker Hughes; Conoco-Philips

Population Changes 2021 – 2022

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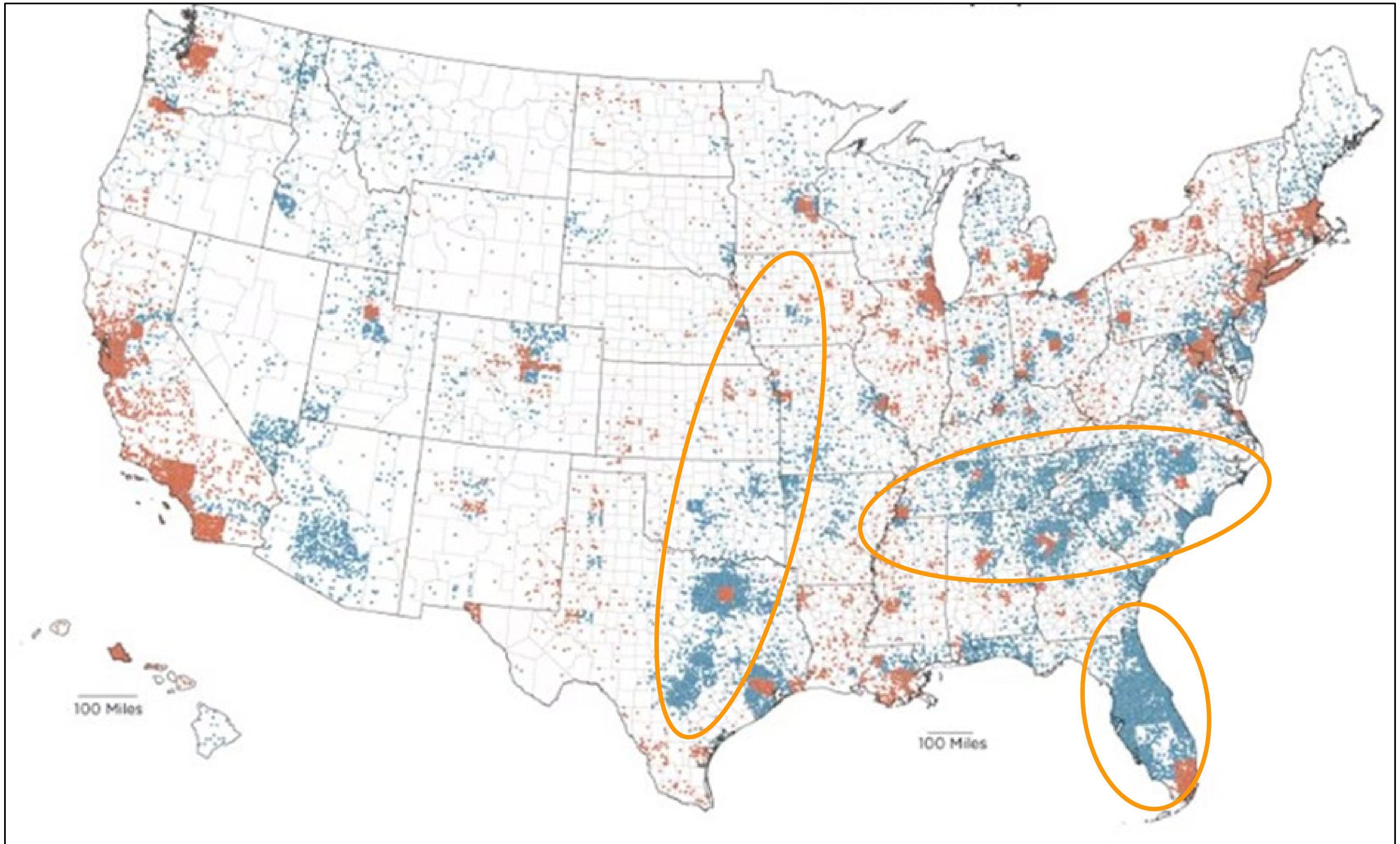
- **Note the flight even out of popular (but dense) population centers like downtown Dallas and Miami, but flight to suburbs in those regions are among the fastest growth rates in the country.**
- **Corridors seem to be continuing to get population influxes…**
  - I35 corridor
  - Tennessee Valley Region +Atlanta
  - And Florida



Source: U.S. Census Bureau, Vintage 2022 Population Estimates.

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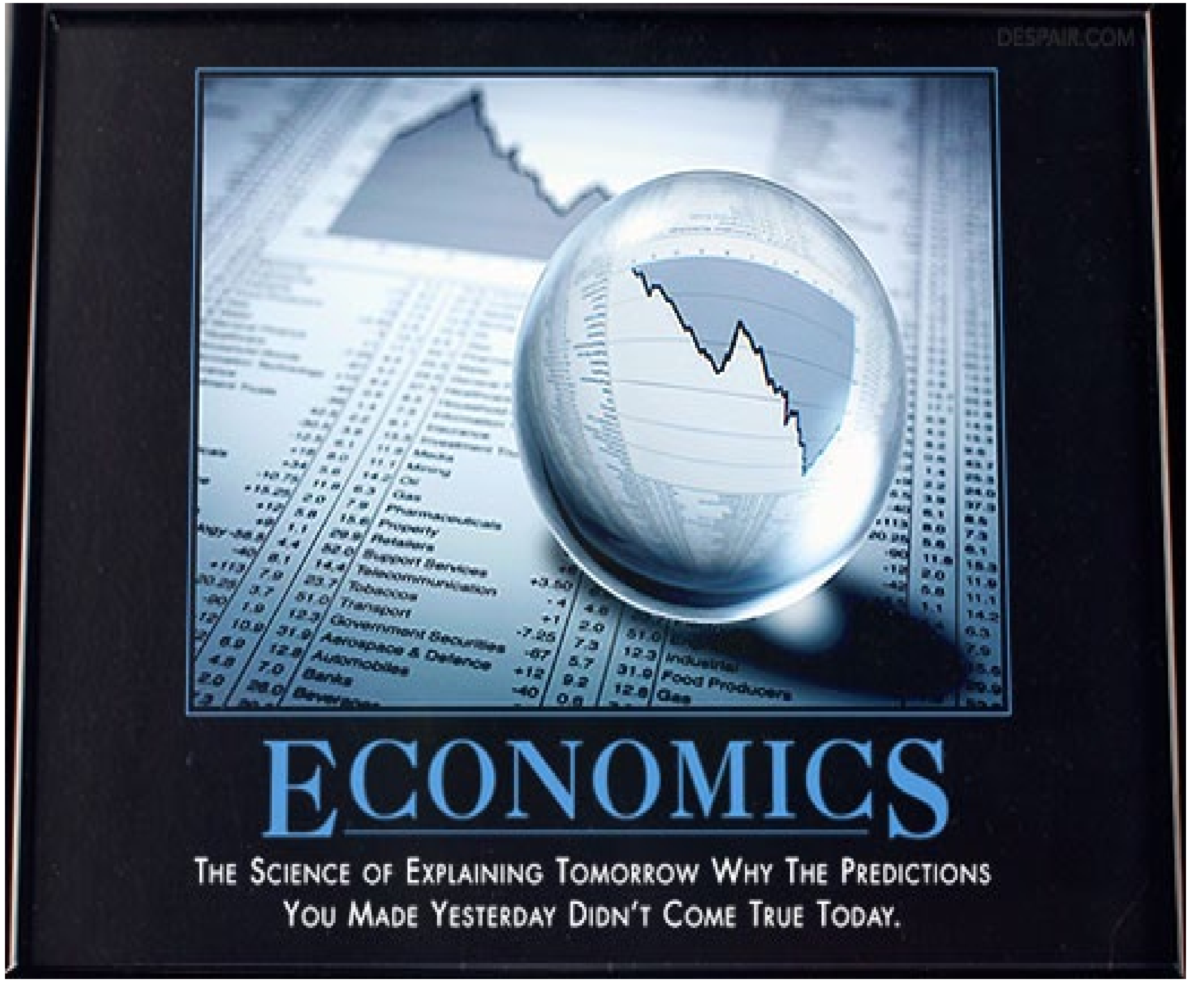

Wrap Up

- This webinar has been recorded. A link to the webinar replay and the presentation deck will be included in a follow-up email to you tomorrow.

- In 6 months, you may be asked to provide feedback about the value of today's event.