TEXAS MUNICIPAL LEAGUE PUBLIC FUNDS INVESTMENT ACT WORKSHOP

Understanding Economic Indicators
March 14, 2024

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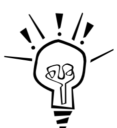


MAKING ECONOMICS EASY TO UNDERSTAND

???

- **Economics is the study of supply and demand**
- **Inflation vs. deflation is dependent on supply and demand**

2

KEY QUESTIONS

- **What investment returns can municipalities expect to earn?**
- **Why are interest rates rising?**
- **What is the outlook for inflation?**
- **What is the state of the economy?**

3

Demand and Supply

- **If demand exceeds supply, prices will rise, and inflation is a risk.**
- **If supply (or capacity to provide supply) exceeds demand, prices will fall, and deflation is a risk.**
- ***COVID-19. What happens when both supply and demand crash due to a world-wide pandemic?***

4

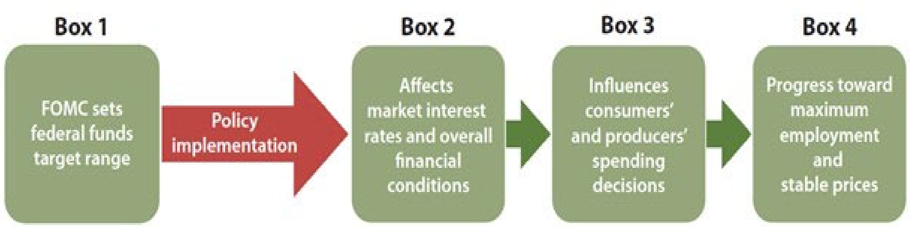
Monetary Policy

&

Fiscal Policy

5

Federal Reserve – Monetary Policy



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MONETARY POLICY

ECONOMIC EXPANSION

Fed Lowers Interest Rates
↓
Cost of Borrowing Money Fall
↓
Demand/Buying Increases
↓
Companies Increase Production & Employment
↓
Prices for Goods Rise
↓
Inflation Premium Rises
↓
Interest Rates Rise
↓
Bond Prices Fall

7

MONETARY POLICY

ECONOMIC CONTRACTION

Fed Raises Interest Rates
↓
Cost of Borrowing Money Rise
↓
Demand/Buying Decreases
↓
Companies Reduce Production & Employment
↓
Prices for Goods Fall
↓
Inflation Premium Falls
↓
Interest Rates Fall
↓
Bond Prices Rise

8

FISCAL POLICY

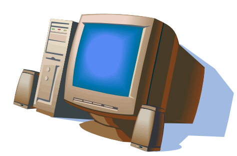
ECONOMIC EXPANSION

Government Lowers Taxes
↓
Increase Disposable Income
↓
Demand for Goods Rise
↓
Companies Increase Production
↓
Prices Rise
↓
Inflation Premium Rises
↓
Interest Rates Rise
↓
Bond Prices Fall

9

TECH BUBBLE

(1999 – 2000)



- **Tech Bubble**
  - **Internet**
  - **Y2K**
- **Over investment in the late Nineties**
- **Beginning in 2000, low demand and over capacity**
- **No pricing power and deflation**

10

HOW TO ADDRESS OVER CAPACITY?

- Higher demand to support the supply
  - Monetary Policy
  - Fiscal Policy
  - A Need for Goods
- Less capacity
  - Layoffs, plant closures, bankruptcies
  - Could lead to a downward economic spiral

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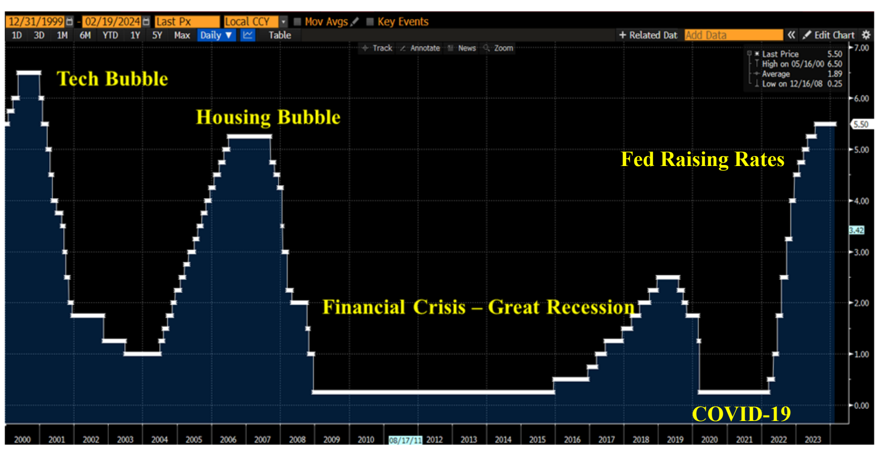
FED FUNDS RATE

A short-term interest rate used by the Federal Open Market Committee (FOMC) to control monetary policy .

12/31/99 – 02/19/24



SOURCE: Bloomberg L.P.

Interpretation:

The FOMC impacts economic growth by changing the Fed Funds Rate (short-term interest rates). Rates were near zero for over eight years after the Financial Crisis – Great Recession. The FED raised the Fed Funds Rate by over 5.0% since March 2022. Market is expecting rate cuts in 2024.

12

HOUSING BUBBLE

(2000 – 2005)

- Fed Lowers Interest Rates
  - To increase housing demand
  - To battle overcapacity
- Demand for housing soars
- Economic activity increases
- Loan demand rises and quality of mortgages fall

13

CREDIT CRISIS

(2008)

- Banks lose money on mortgages
  - Lehman, Bear Stearns go down
  - American International Group (AIG) lost $99.2 billion in 2008. The Federal Reserve stepped in with a $85 billion loan.
  - Government takes over Fannie & Freddie
- The world financial system cracks
- Worst recession since the Great Depression
- Government bails out banks, industries

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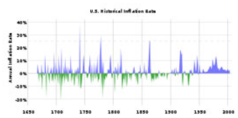
GREAT RECESSION



- Housing goes into depression
  - Oversupply of homes, foreclosures
  - Home prices fall, many below mortgage level
- Unemployment soars, millions lose jobs
- More Government intervention
- Housing and employment remain weak today

15

COVID-19 Pandemic

- Created a new chapter in the economic books.
  - World-wide demand and supply crash for most goods and services.
- The world has changed.
- Massive economic imbalances.
- Inflation is rising due to supply disruptions.

16

Russian Invasion of Ukraine

- The last thing the world economy needed after the imbalances created by the COVID-19 pandemic.
- The war and Russian sanctions are adding to inflationary pressures.
- Huge uncertainty and very risky.
- What is the end game?

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KEY ECONOMIC ISSUES

- Prior to the pandemic, there were deflationary pressures. Supply exceeded demand in many areas.
- What happens to the Demand-Supply relationship after the pandemic (short-term and long-term)?
- What happens now that the Fed is tightening monetary policy?
- What are the inflation expectations (supply chain constraints)?
- Is globalization a thing of the past?
- What's going to happen in Ukraine and Israel?
- What is the state of US-China relations?

18

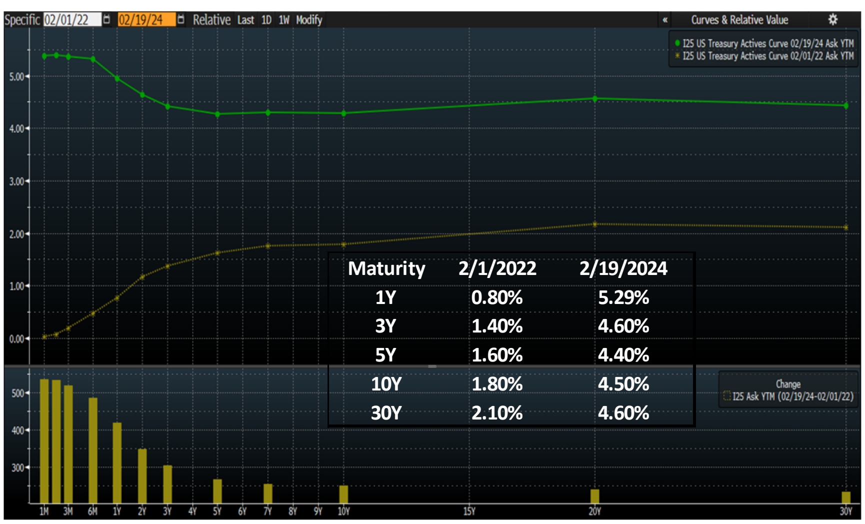
GLOBAL MONETARY STIMULUS HAD CREATED OVERCAPACITY AND EXTENDED ASSET PRICES!

- **Overcapacity leads to deflation (or low inflation), low interest rates and low investment income.**
- **Excess supply (capacity) leads to slower economic growth.**
- **Extended asset valuations (including stocks) is a risk.**

19

US Treasury Yield Curve

02/01/22 – 02/19/24



Maturity	2/1/2022	2/19/2024
1Y	0.80%	5.29%
3Y	1.40%	4.60%
5Y	1.60%	4.40%
10Y	1.80%	4.50%
30Y	2.10%	4.60%

SOURCE: Bloomberg L.P.

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WHERE'S THE YIELD?

	02/16/22	02/27/24
US Treasury - 1-Year Maturity	1.0%	5.0%
US Treasury - 2-Year Maturity	1.5%	4.7%
US Treasury - 5-Year Maturity	1.9%	4.3%
US Treasury - 10-Year Maturity	2.0%	4.3%
Germany - 10-Year Maturity	0.3%	2.5%
France - 10-Year Maturity	0.7%	2.9%
Japan - 10-Year Maturity	0.2%	0.7%

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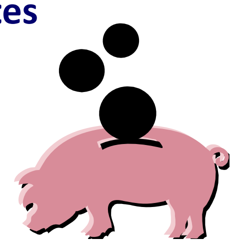
LOW INTEREST RATES

- High demand for safe investments means higher bond prices, lower interest rates
  - Slow economic growth
  - Volatile stock market
  - Geopolitical Risks
- Low inflation, even risk of deflation?
- Accommodative Monetary Policy
- Globalization (World demand for U. S. Treasuries)
- Low global interest rates



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LONGER-TERM INTEREST RATES – KEY ECONOMIC INDICATOR

THREE COMPONENTS OF LONG-TERM INTEREST RATES

Inflation Expectations

Risk Premium

Fed Funds Rate

Economic Indicators help assess Inflation Expectations.

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UNDERSTANDING ECONOMIC INDICATORS

(Bonds)

Investment Income

Credit Analysis

Interest Rates

Inflation Expectations

Economic Indicators

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UNDERSTANDING ECONOMIC INDICATORS
(Stocks)

Stock Price (Value)

Company Analysis

Sector Analysis

Industry Analysis

Economic Cycle

Economic Indicators

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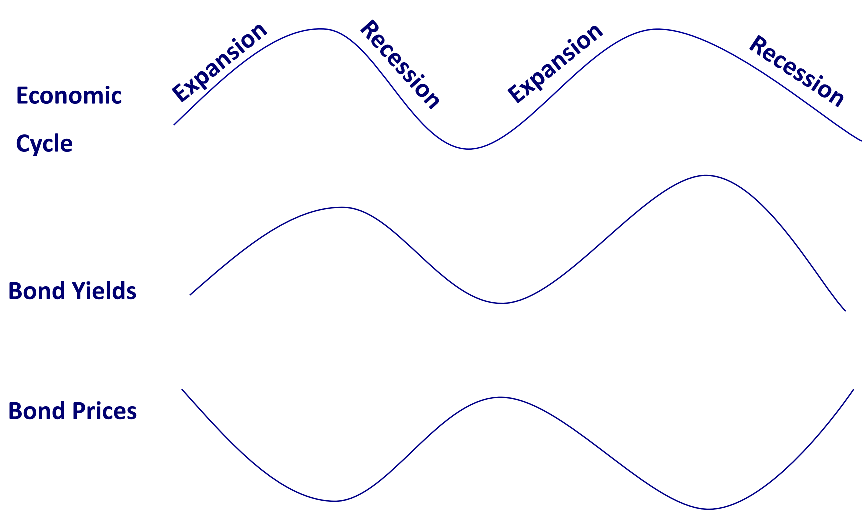
Economic Cycle/Bond Price - Yield



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THE FINANCIAL GAZETTE

VOL. 1 $5.25

Bond Prices Fall As CPI Ignites Inflation Fears

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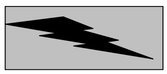

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Sale Off in the Bond Market as the Fed Raises Rates for a Seventh Time

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Bond Prices Plummet as Housing Starts Soaring to Record Heights

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Texas Municipal League

Public Funds Investments

Special Edition

Bond Prices Rise as Manufacturing Cools

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6-MONTH TREASURY BILL YIELD

12/31/99 – 02/19/24

SOURCE: Bloomberg L.P.

Interpretation:
The 6-month T-Bill rate is anchored to the Federal Funds Rate. This is a good indication of what Cities and other municipalities are earning on their investments. Yield has been rising along with the Fed Funds Rate.

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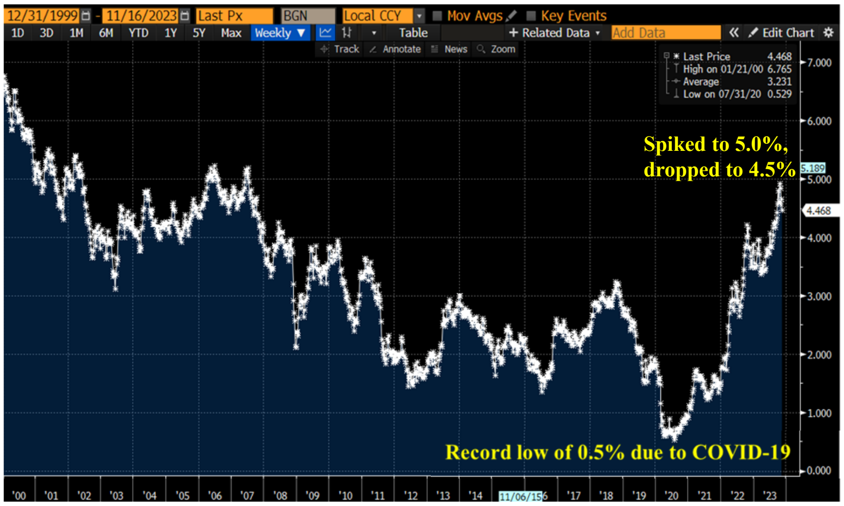
10-YEAR TREASURY YIELD

12/31/99 – 02/19/24



Interpretation:

SOURCE: Bloomberg L.P.

The 10-year yield rose from 0.8% to 5.0% since 2022 due to higher inflation expectations; but is down recently on better inflation numbers.

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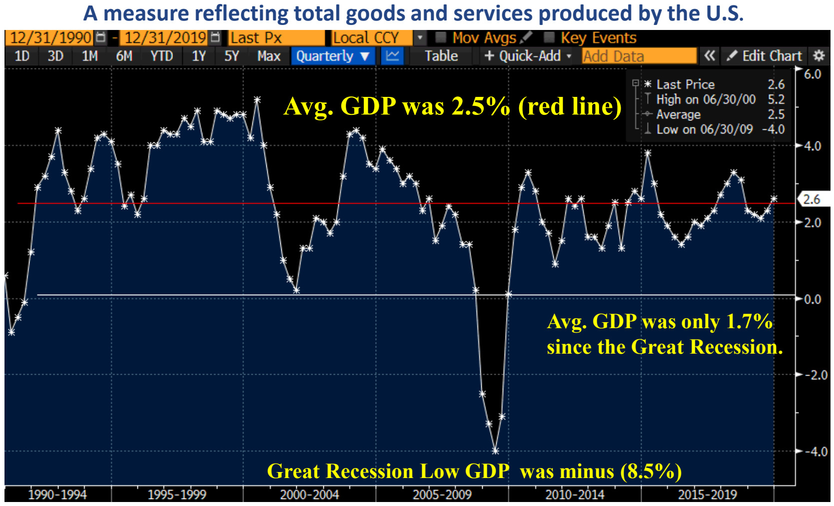
GROSS DOMESTIC PRODUCT (GDP)

Prior to Pandemic

12/31/90 – 12/31/2019

A measure reflecting total goods and services produced by the U.S.



Interpretation:

SOURCE: Bloomberg L.P.

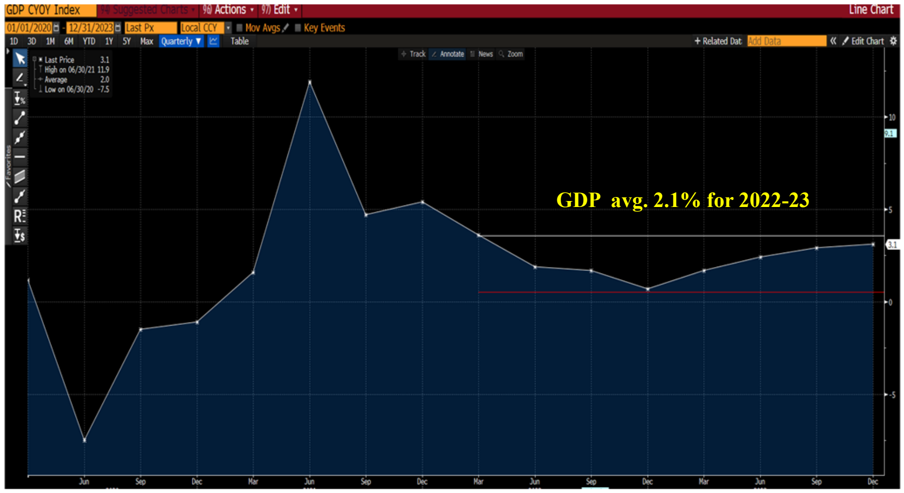
GDP went negative after the Tech Bubble and fell hard during the Great Recession (Recession started in Dec. 2007). The average GDP since the Great Recession was a tepid 1.7% going into the pandemic.

30

GDP After Pandemic

GDP - A measure reflecting total goods and services produced by the U.S.

01/01/2020 – 9/30/2023



SOURCE: Bloomberg L.P.

Interpretation:

Supply and demand crashed as the economy shut down due to COVID-19. The vaccines and the opening of the economy caused a historical jump in GDP. GDP growth is uneven and tepid in 2022-23.

31

U.S. UNEMPLOYMENT RATE

The percent of persons in the civilian labor force who are not employed.

12/31/90 – 01/31/24

SOURCE: Bloomberg L.P.

Interpretation:

Unemployment rose significantly after the Tech Bubble and during the Great Recession. Spiked to 15% during the pandemic. A strong rebound after the reopening led to a record low of 3.4% in January 2023. Unemployment was 3.7% in January 2024 as Fed tries to cool down a hot job market.

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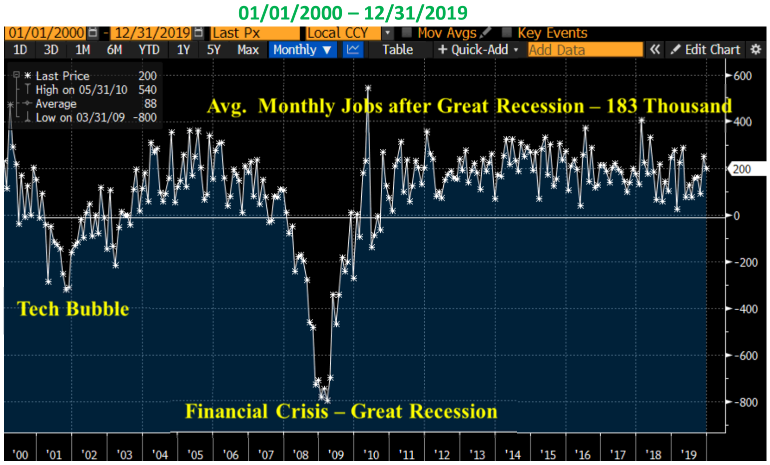
U. S. NON-FARM PAYROLLS

Prior to Pandemic

Number of new jobs created/lost in the U. S. economy.

01/01/2000 – 12/31/2019



Interpretation: SOURCE: Bloomberg L.P.

The U. S. economy lost 6.7 million jobs during the 2008 recession, the most in the post war period. The U.S. economy added between 2.1 million and 2.8 million jobs annually between 2011 and 2019 (prior to the pandemic).

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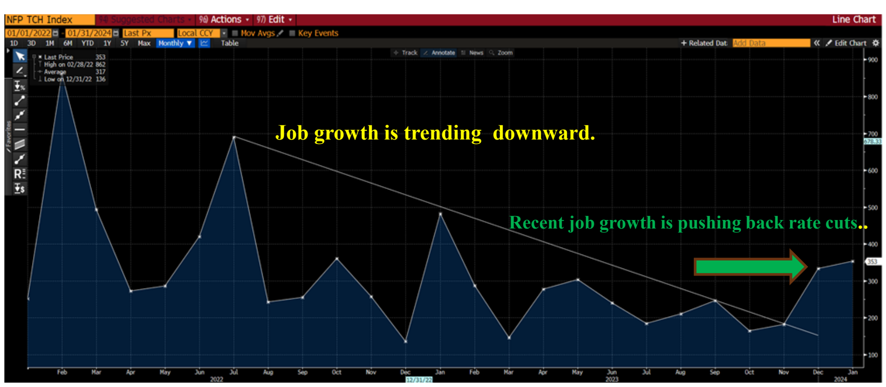
U.S. PAYROLLS AFTER PANDEMIC

Number of new jobs created/lost in the U. S. economy.

01/01/22 – 01/31/24



SOURCE: Bloomberg L.P.

Interpretation:

Payrolls are trending downward as the FOMC raised the Fed Funds Rate to slow demand.

34

INITIAL JOBLESS CLAIMS

Weekly initial jobless claims show the amount of people who have put in claims for unemployment.

01/01/22 – 02/16/24

Interpretation:

Initial jobless claims were trending higher due to higher interest rates and slowing economy. However, recent drop in claims is pushing back Fed rate cuts.

SOURCE: Bloomberg L. P.

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CONSUMER CONFIDENCE

- **Consumer attitudes about the state of the economy. An index level near 100 indicates a possible increase in consumer spending. Consumer spending accounts for two-thirds of economic activity.**

12/31/90 – 01/31/24

Interpretation

SOURCE: Bloomberg L.P.

Consumer confidence levels increased during the 90's to record levels. Confidence fell significantly after 1999 but hit a record low in February 2009 due to the financial crisis. Confidence was rising due to a stronger economy but took a hit due to COVID-19. After rebounding due to the reopening, uneven as better financial markets offset the mood about inflation/higher interest rates/wars.

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FREDDIE MAC 30-YEAR MORTGAGE RATE

01/01/99 – 12/28/23

SOURCE: Bloomberg L.P

Interpretation:
The 30-year mortgage rate fell to a record low of 1.75% in August 2020. Mortgage rates are rising due to FED rate hikes and higher inflation expectations. Rose to 7.8% in Oct. 2023. Rate at 6.9% in Feb 2024.

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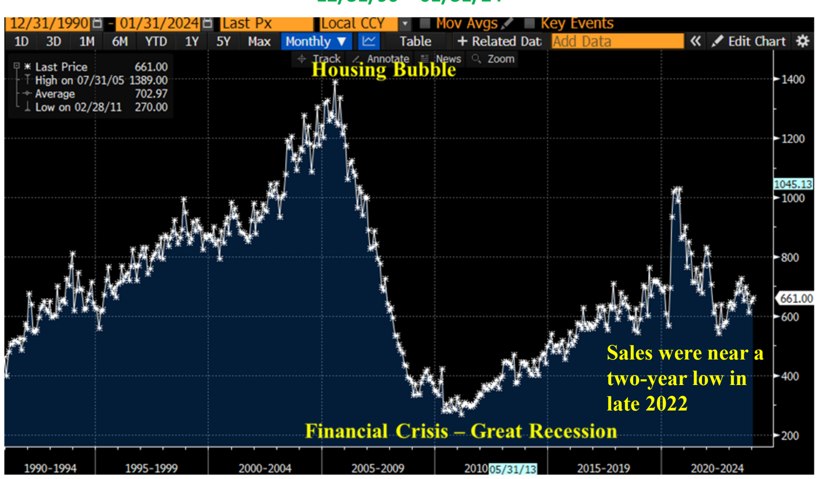
NEW HOME SALES

The number of new homes sold each month presented in an estimated annual rate issued by the U. S. Department of Commerce.

12/31/90 – 01/31/24



SOURCE: Bloomberg L.P.

Interpretation:
In February 2011 new home sales fell to record low. Fed stimulus and low mortgage rates helped housing. Sales rebounded after the reopening, but supply chain disruptions, inflation and higher mortgage rates are impacting the industry. Sales may rebound if mortgage rates continue to fall.

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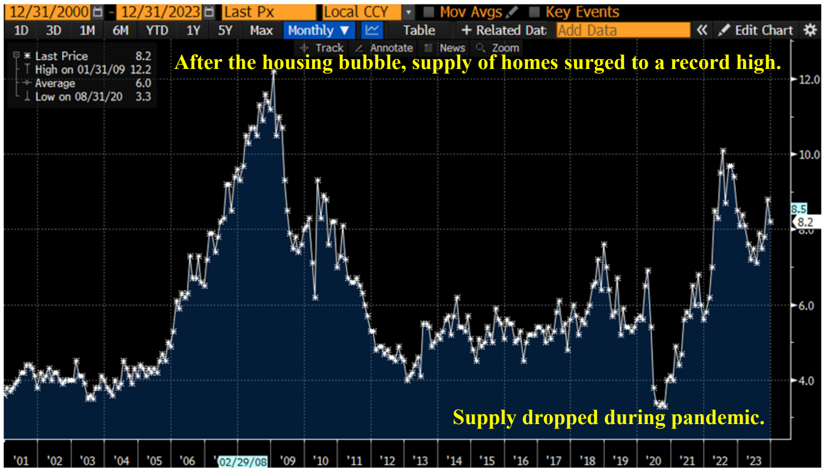
NEW HOME MONTHLY SUPPLY

Estimates the supply of unsold homes at the monthly sales pace.

12/31/2000 – 12/31/2023



SOURCE: Bloomberg L.P.

Interpretation:
In January 2009, the supply of unsold homes rose to a record high of 12.2 months. Supply of homes fell during the shutdown but picked up after the reopening. Supply spiked due to lower sales (higher mortgage rates and economic uncertainty).

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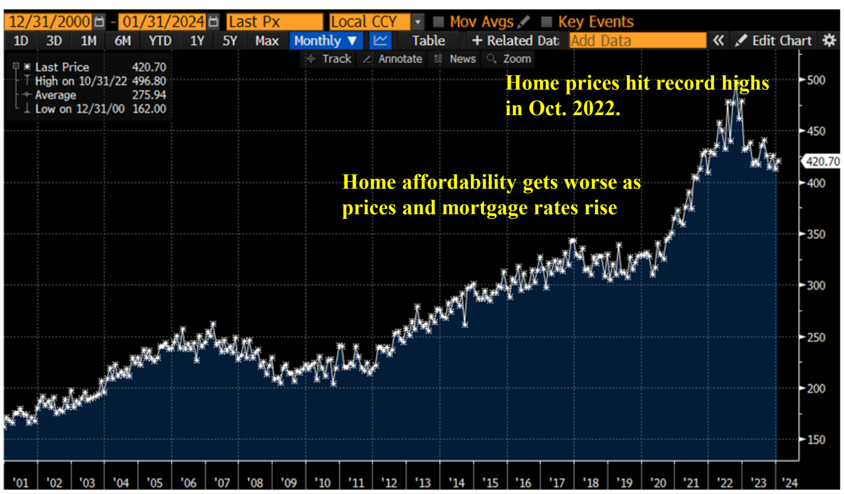
NEW HOME SALES PRICE

The median sales price for new single-family homes. 12/31/2000 – 01/31/2024



SOURCE: Bloomberg L.P.

Interpretation:
Home prices fell during the financial crisis but rebounded to record highs right in the middle of the pandemic. Demand for homes, low supply, strong economy and low interest rates support higher prices. Fed rate hikes have slowed the red-hot housing market, but prices remain high.

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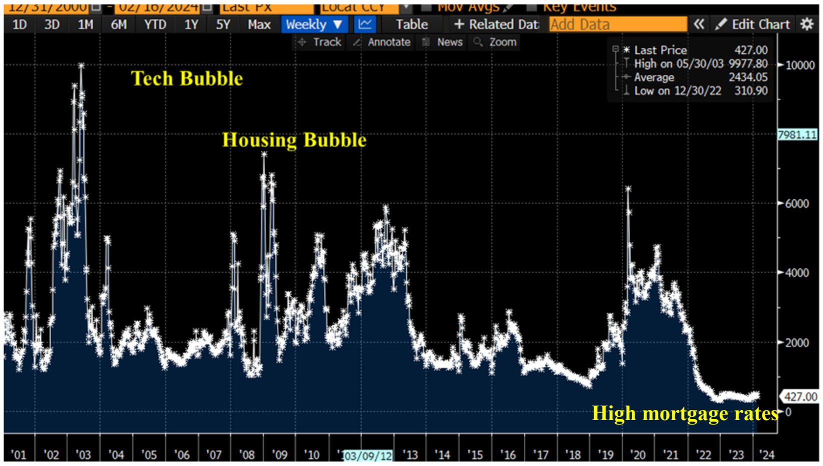
MORTGAGE BANKERS' ASSOCIATION REFINANCE INDEX

The refinance index covers all mortgage applications to refinance an existing mortgage.

12/31/00 – 02/18/2024



Interpretation: SOURCE: Bloomberg L.P.

As mortgage rates fall, refinance activity rises. Refinancing activity has dried up as mortgage rates rise.

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U. S. TOTAL AUTO SALES

(Annualized) (Units - Millions)

12/31/2000 – 01/31/2024

SOURCE: Bloomberg L.P.

Interpretation:

Sells plummeted to 8.6 million units in April 2020 (beginning of the pandemic). Sales rose in 2022-23 as supply chain interruptions subsided (auto prices came down).

42

CAPACITY UTILIZATION

A measure reflecting the level of output that a plant can maintain within the framework of a realistic work schedule, taking account normal downtime, and assuming sufficient availability of inputs to operate the machinery and equipment in place. A level above 85% indicates a factory operating at full capacity. Analysts view levels above 85% as inflationary. 12/31/90 – 01/31/24

SOURCE: Bloomberg L.P.

Interpretation:
Plant usage rates plummeted to an 11-year low after 1999. Over capacity was caused by over-investment during the late 90's. Capacity utilization crashed due to the economic recession. Capacity utilization plummeted to 63% at the beginning of the pandemic but rebounded due to reopening. Recent downturn due to higher rates.

43

INDUSTRIAL PRODUCTION

A measure of the output of the nation's factories, mines, and utilities. Changes in Industrial Production are widely followed as a major indicator of strength in the manufacturing sector. 12/31/90 – 01/31/24

Interpretation:
Industrial production fell hard during the pandemic. The reopening has caused rapid economic growth including industrial production. Higher rates are slowing demand and production.

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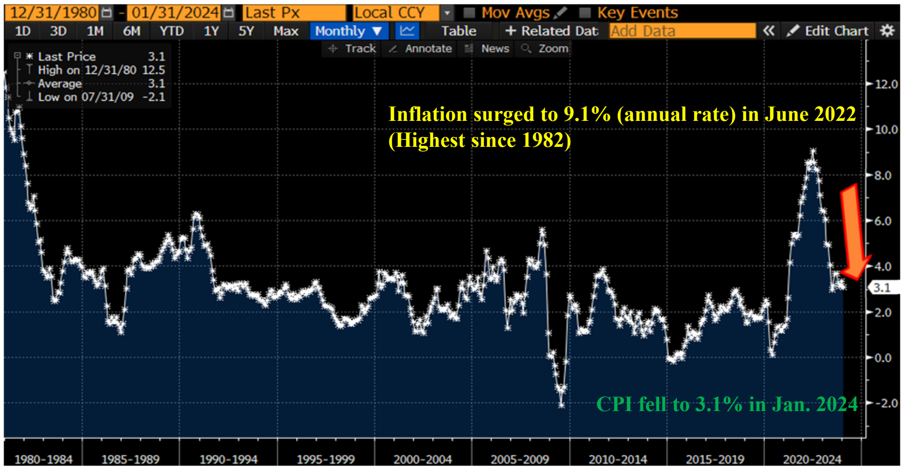
CONSUMER PRICE INDEX

A measure of the price level for a basket of goods and services purchased by consumers. Changes in the CPI are widely followed as an indicator of inflation. 12/31/80 – 01/31/24



SOURCE: Bloomberg L.P.

Interpretation:

During the late 1970's and early 1980's, CPI soared to double-digit levels. Since, inflation has declined due to productivity enhancements, competition, and globalization. Inflation has jumped since the reopening due to strong economic growth, shortages/supply chain disruptions and the war. Inflation is falling hard due to rate hikes and better supply movement.

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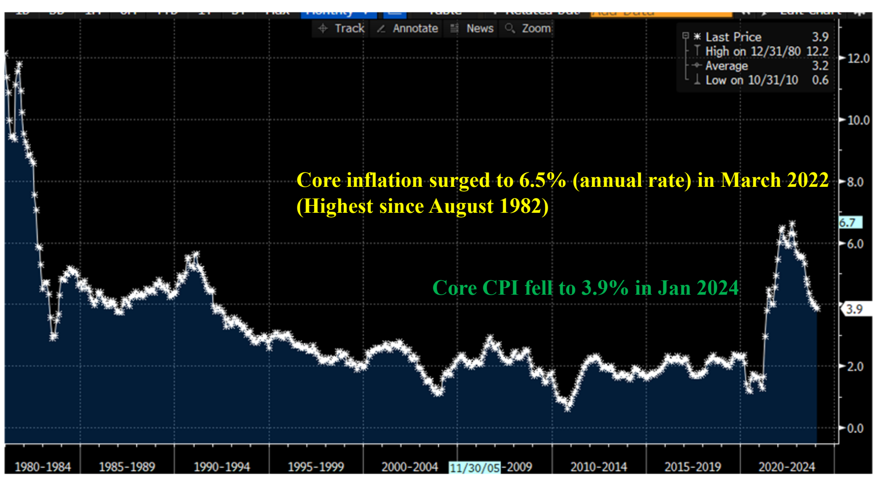
CONSUMER PRICE INDEX (CORE)

The CPI Core shows all items less food and energy.

12/31/80 – 01/31/24



SOURCE: Bloomberg L.P.

Interpretation:

The CPI Core rose at an annual rate of 6.4% in February 2022, the highest rate since August 1982. Rapid economic growth, supply disruptions from the reopening, and the Russian invasion of Ukraine are leading to higher inflation. Inflation may have peaked.

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CRB COMMODITY PRICE INDEX

A measure reflecting commodity prices.

01/01/2000 – 02/27/2024

SOURCE: Bloomberg L.P.

Interpretation:
The index rose to a record high earlier in 2008 as commodity prices surged due to growth in China and Housing Bubble. After tumbling during the great recession (in 2008), commodity prices rose. Prices remain low due to deflation and overcapacity before the pandemic. Rising due to the reopening, supply disruptions, and the war.

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CRUDE OIL

Definition: The Price of One Barrel of Oil – (West Texas Intermediate – WTI)

01/01/00 – 02/27/2024

SOURCE: Bloomberg L.P.

Interpretation:
The price of oil rose to $145 a barrel earlier in 2008 due to strong demand, capacity constraints, and fears of supply disruptions. After falling to $36 during the Great Recession. Oil tumbled to $16 a barrel due to COVID-19. Has surged during the reopening and supply disruptions due to the Russian invasion. Oil is down due higher supply and low demand.

48

U. S. RIG COUNT

Definition: The Baker Hughes Rotary Rig count includes only operating rigs.

01/01/90 – 02/23/24

Interpretation:

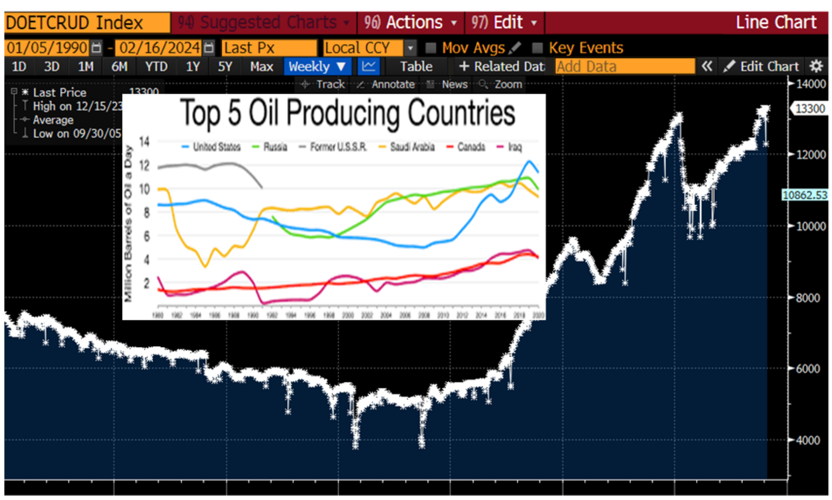
SOURCE: Bloomberg L.P.

The rig count peaked at 1,609 rigs on October 10, 2014, and was 503 on Feb. 23, 2024.

49

U. S. OIL PRODUCTION

Description: Department of Energy - US oil production - Barrels Per Day 01/05/90 – 02/26/2024



SOURCE: Bloomberg L.P.

Interpretation:

While rig count has decreased, U.S. oil production remains strong. After falling due to the pandemic, production has picked up during the reopening. In 2018, the US surpassed Russia to become the largest crude oil producer. Oil production hit a record of 13.3 million barrels per day in Dec. 2023.

50

AVERAGE PRICE OF GASOLINE

(All Grades)

01/01/07 – 02/23/24

SOURCE: Bloomberg L.P.

Interpretation:

After rising to over $4 per gallon in July 2008, gasoline fell to $1.60 in December 2008. The price of gasoline was falling again due to deflationary pressures (supply exceeding demand). The price surged due to the reopening and rising oil prices. Has eased recently.

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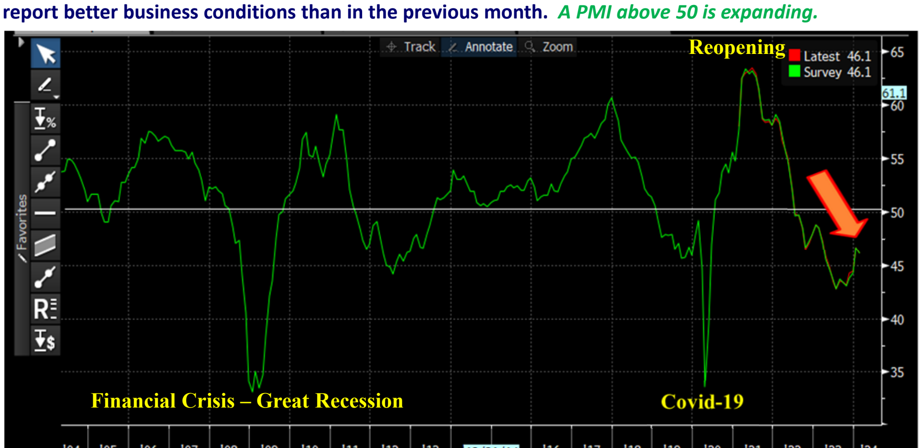
EUROZONE PURCHASING MANAGERS INDEX (PMI)

01/01/04 – 02/27/24

An indicator for European economic activity reflecting the percentage of purchasing managers that report better business conditions than in the previous month. ***A PMI above 50 is expanding.***



Interpretation:

After the economic shut-down due to pandemic, growth in Europe rebounded just like the US due to the reopening. A recession in the Eurozone is possible due to rising inflation and supply disruptions due to the Russian invasion.

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CHINA MANUFACTURING PURCHASING MANAGERS INDEX (PMI)

01/31/05 – 01/31/24

SOURCE: Bloomberg L.P.

Interpretation:

Economic growth in China is sluggish due to pandemic shutdowns. A Chinese prolonged economic slowdown would hurt the global economy. Recent regulation focused on "national security, technology and monopolies". Zero-COVID policy negatively impacted economic activity.

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DOW JONES INDUSTRIAL AVERAGE

A price-weighted average of 30 blue-chip stocks (leaders in their industry). 01/01/15 – 02/21/24

SOURCE: Bloomberg L.P.

Interpretation:

The stock market hit a record high on Feb. 12, 2024. Extended asset valuations is another result of easing monetary policy and "Where else is there to invest, globally?".

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http://www.federal reserve.gov

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FEDERAL RESERVE press release

Release Date: Jan. 31, 2024

(Excerpts from Full Release)

Recent indicators suggest that economic activity has been expanding at a solid pace. Job gains have moderated since early last year but remain strong, and the unemployment rate has remained low. Inflation has eased over the past year but remains elevated.

The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. The Committee judges that the risks to achieving its employment and inflation goals are moving into better balance. The economic outlook is uncertain, and the Committee remains highly attentive to inflation risks.

In support of its goals, the Committee decided to maintain the target range for the federal funds rate at 5-1/4 to 5-1/2 percent. In considering any adjustments to the target range for the federal funds rate, the Committee will carefully assess incoming data, the evolving outlook, and the balance of risks. The Committee does not expect it will be appropriate to reduce the target range until it has gained greater confidence that inflation is moving sustainably toward 2 percent.

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Conclusions

- Demand is easing due to higher interest rates and tighter credit conditions.
- Supply disruptions are easing leading to lower inflation.
- Interest rates are falling due to lower inflation.
- Asset bubbles (extended valuations).
- The Fed may be done raising rates. Rate cut possible in 2024.
- Globalization is not dead.

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QUESTIONS

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