



Global Economic Activity

4Q 2024 Update
As of October 1, 2024

www.arrowrootfamilyoffice.com

Table of Content

4Q 2024

U.S. Economics	
U.S. Economic Indicators	4
History of U.S. Recessions	5
Unemployment & Job Openings	6
Consumer Confidence	7
Retail Sales & Personal Finances	8
Housing Market Update	9
Business Activity & Sentiment	10
CPI vs PPI	11
Global Economics	
Global GDP Growth	13
Global Industrial Production	14
Oil Update	15
Larger Chart Versions	18

Robert Santos
CEO, rob@arrowrootfamilyoffice.com

4Q 2024

U.S. Economics

Consumers, Business Sentiment, Housing, & Inflation

U.S. Economic Indicators

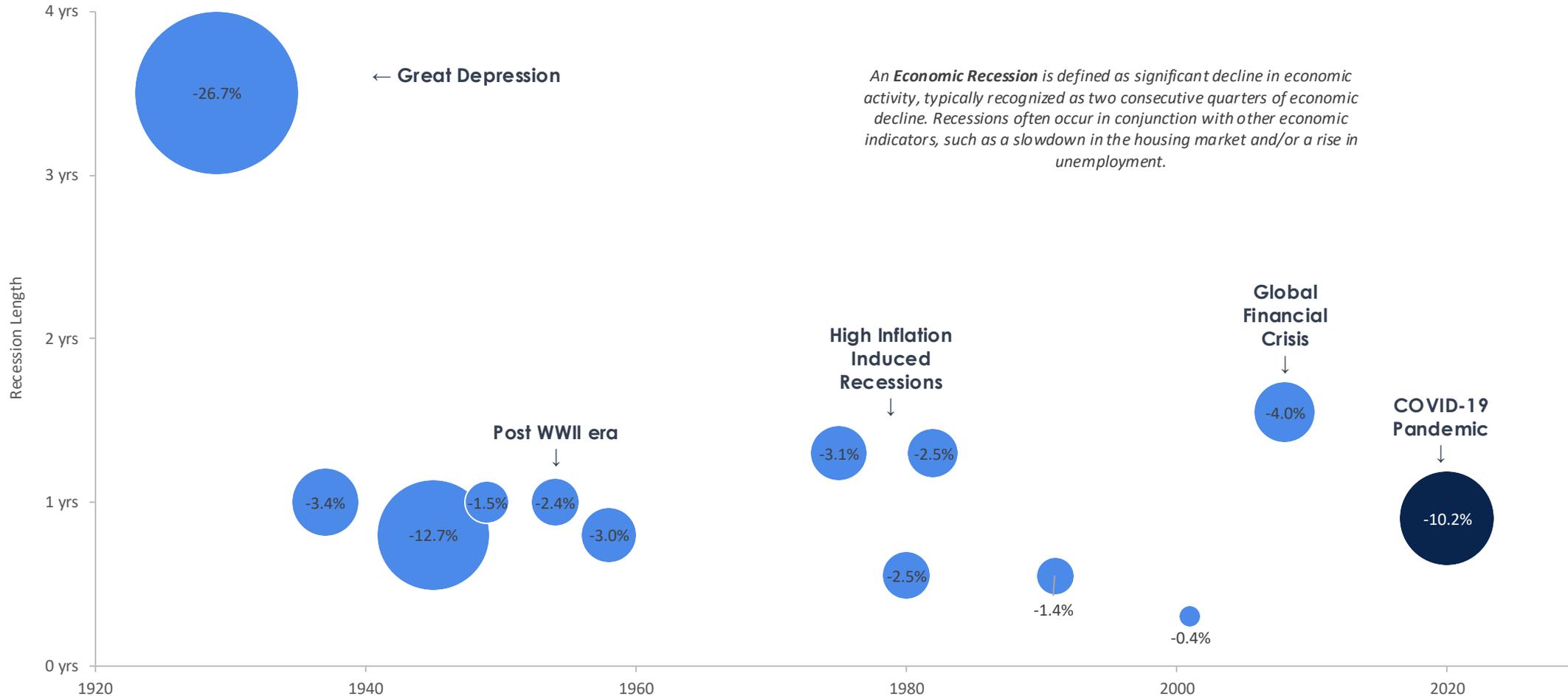
4Q 2024

Category	Economic Indicator	2022			2023												2024								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Labor	Nonfarm Payrolls (000s)	361	258	136	482	287	146	278	303	240	184	210	246	165	182	290	256	236	310	108	216	118	89	142	
	Unemployment Rate (%)	3.7	3.6	3.5	3.4	3.6	3.5	3.4	3.7	3.6	3.5	3.8	3.8	3.8	3.7	3.7	3.7	3.9	3.8	3.9	4.0	4.1	4.3	4.2	
	Average Workweek (Hours)	38.7	38.5	38.5	38.6	38.7	38.5	38.6	38.6	38.5	38.5	38.5	38.5	38.4	38.4	38.4	38.2	38.4	38.2	38.3	38.2	38.3	38.2	38.3	
	Average Hourly Earnings (y/y %)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
	Jobless Claims – Initial (000s)	203	210	208	203	214	225	217	227	252	234	245	219	211	218	208	210	209	214	210	224	239	238	231	
	Jobless Claims - Continuing (Millions)	1.42	1.46	1.57	1.61	1.65	1.69	1.72	1.72	1.76	1.78	1.81	1.80	1.81	1.81	1.80	1.78	1.80	1.80	1.78	1.79	1.84	1.86	1.85	
	Jobless Openings (Millions)	10.5	10.7	11.0	10.4	9.8	9.6	9.9	9.3	9.1	8.8	9.4	9.3	8.7	8.9	8.9	8.7	8.8	8.4	7.9	8.2	7.9	7.7		
Consumer	Personal Income (y/y%)	5%	5%	4%	6%	6%	6%	6%	6%	5%	5%	5%	5%	4%	4%	4%	5%	4%	4%	4%	4%	4%	4%		
	Retail Sales (y/y%)	9%	8%	8%	5%	5%	3%	1%	1%	1%	0%	2%	4%	5%	4%	4%	5%	3%	4%	5%	6%	6%	5%	5%	
	Domestic Auto Sales (y/y%)	15%	6%	-4%	3%	3%	8%	15%	22%	13%	20%	12%	14%	0%	1%	16%	-6%	-3%	9%	-12%	-7%	-16%	-13%	-16%	
	Consumer Confidence Index	102	10.1	109	106	103	104	104	103	110	114	109	104	99	101	108	111	105	103	98	101	98	102	106	99
	Michigan Confidence Index	60	57	60	65	67	62	64	59	64	72	69	68	64	61	70	79	77	79	77	69	68	66	68	69
Housing	New Home Sales (y/y%)	-16%	-24%	-24%	-20%	-20%	-10%	8%	14%	23%	35%	1%	25%	17%	3%	3%	4%	3%	6%	7%	-9%	2%	7%	10%	
	Housing Starts (y/y%)	-9%	-17%	-24%	-21%	-19%	-20%	-25%	3%	-8%	6%	-14%	-7%	-5%	6%	17%	1%	10%	-3%	1%	-17%	-6%	-16%	4%	
	Building Permits (y/y%)	-9%	-21%	-27%	-25%	-13%	-21%	-20%	-11%	-14%	-13%	2%	-6%	-2%	8%	9%	5%	-4%	-1%	-2%	-9%	-3%	-6%	-7%	
	Homebuilder Sentiment Index	38	33	31	35	42	44	45	50	55	56	50	44	40	34	37	44	48	51	51	45	43	41	39	41
	Monthly Supply (# of months)	3.3	3.3	2.8	2.9	2.5	2.6	2.9	3.0	3.1	3.2	3.2	3.3	3.5	3.4	3.0	3.0	2.8	3.0	3.3	3.6	4.0	4.0	4.1	
	National Home Price Index (\$000s)	299	297	294	293	293	297	301	305	309	310	312	313	313	312	311	311	313	317	321	324	325	326		
Business	Leading Economic Index (y/y%)	-4%	-5%	-6%	-6%	-7%	-8%	-8%	-8%	-8%	-8%	-8%	-8%	-8%	-8%	-7%	-7%	-6%	-6%	-5%	-5%	-5%	-5%	-5%	
	NFIB Small Business Index	91	92	90	90	91	90	89	89	91	92	91	91	91	91	92	90	89	89	90	91	92	94	91	
	Manufacturing PMI	50	49	48	47	48	47	47	47	46	47	48	49	47	47	47	49	48	50	49	49	49	47	47	
	Services PMI	55	55	49	55	55	51	52	51	54	53	54	53	52	53	51	53	53	51	49	54	49	51	52	
	Industrial Production (y/y%)	3%	2%	1%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	1%	-1%	0%	0%	-1%	0%	1%	-1%	0%
	Capacity Utilization (%)	81	80	79	80	80	79	80	79	79	79	79	79	78	78	78	77	78	78	78	78	78	77	78	
Inflation	Headline CPI (y/y%)	7.7	7.1	6.5	6.4	6.0	5.0	4.9	4.0	3.0	3.2	3.7	3.7	3.2	3.1	3.4	3.1	3.2	3.5	3.4	3.3	3.0	2.9	2.5	
	Core CPI (y/y%)	6.3	6.0	5.7	5.6	5.5	5.6	5.5	5.3	4.8	4.7	4.3	4.1	4.0	4.0	3.9	3.9	3.8	3.8	3.6	3.4	3.3	3.2	3.2	
	Headline PCE (y/y%)	6.3	5.9	5.4	5.5	5.2	4.4	4.4	4.0	3.2	3.3	3.3	3.4	2.9	2.7	2.6	2.5	2.5	2.7	2.7	2.6	2.5	2.5	2.3	
	Core PCE (y/y%)	5.3	5.1	4.9	4.9	4.8	4.8	4.8	4.7	4.3	4.2	3.7	3.6	3.4	3.2	2.9	2.9	2.8	2.8	2.8	2.6	2.6	2.6	2.7	
	Producer Price Inflation (y/y%)	8.2	7.4	6.4	5.7	4.7	2.7	2.3	1.1	0.3	1.1	1.9	1.8	1.1	0.8	1.1	1.0	1.6	2.0	2.3	2.5	2.7	2.1	1.7	

Disclosures: Data sourced from Federal Reserve, NBER, Institute for Supply Management, University of Michigan, DOL, U.S. Census

History of U.S. Recessions

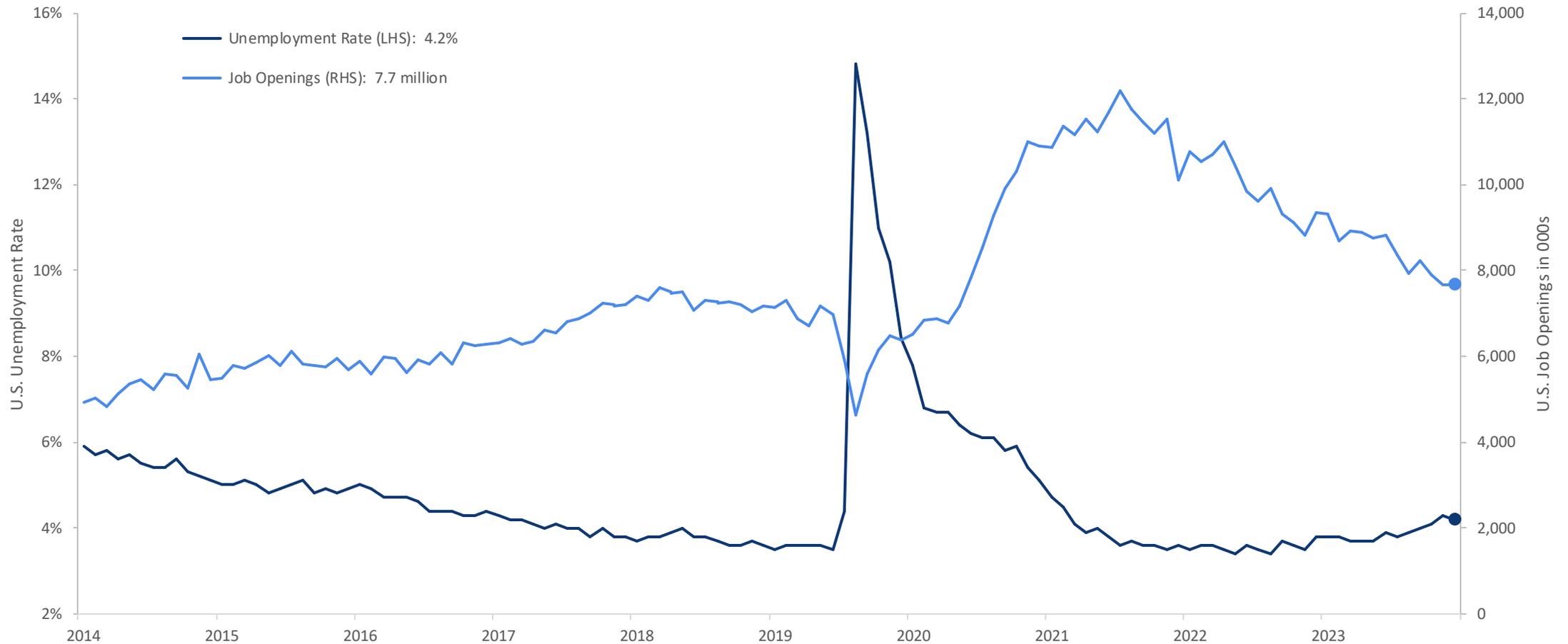
4Q 2024



Disclosures: Data sourced from the Federal Reserve. This analysis is based on nominal GDP growth and contractions. The severity of each recession is calculated as the change in GDP from the peak quarter (before the recession) to the trough quarter (end of the recession). The Great Depression is the only recession that is calculated from 1929 to 1933.

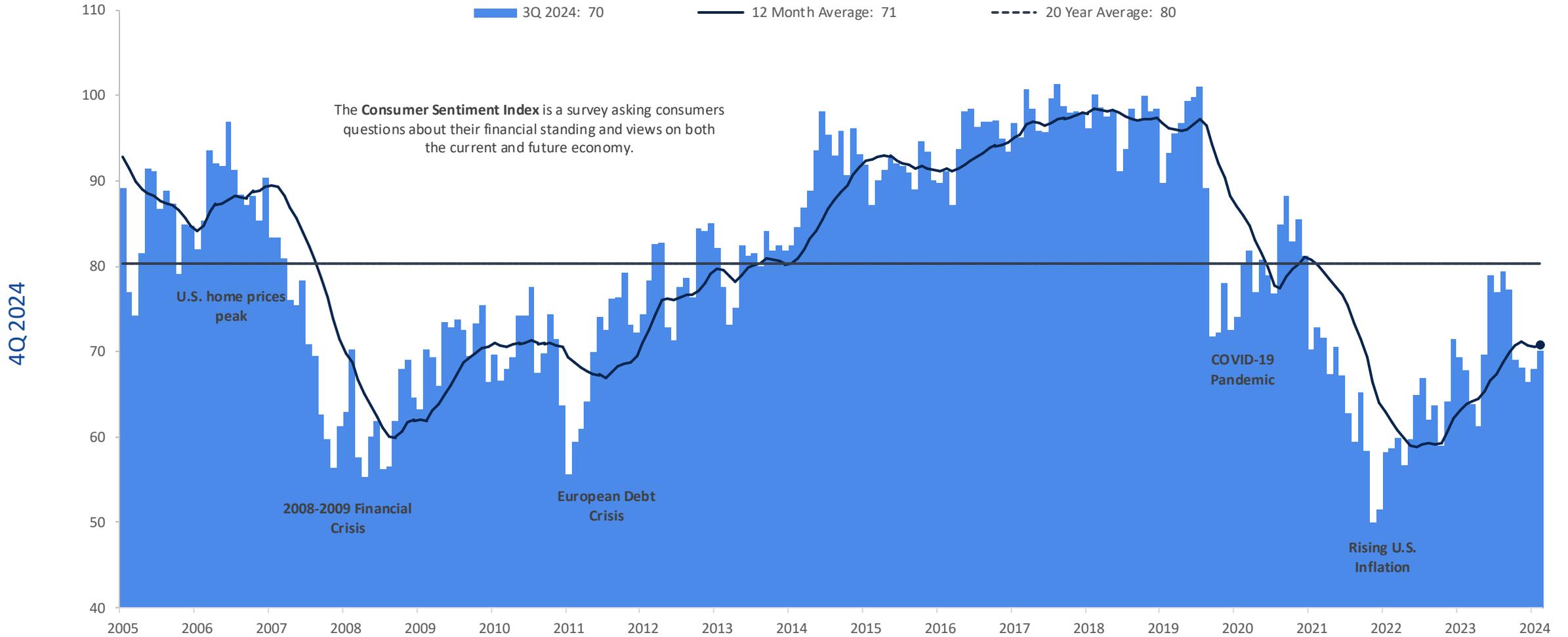
Unemployment Rate & Job Openings

4Q 2024



Disclosures: The Unemployment Rate represents the number of unemployed as a percentage of the labor force. Labor force data is restricted to people 16 years of age and older, who currently reside in 1 of the 50 states or the District of Columbia, who do not reside in institutions (e.g., penal and mental facilities, homes for the aged), and who are not on active duty in the Armed Forces. Job Openings (Total Nonfarm) is provided by the U.S. Bureau of Economic Analysis (St. Louis Federal Reserve identifier: JTSJOL). Data sourced from Federal Reserve and U.S. Bureau of Economic Analysis. RHS = right hand side. LHS = left hand side.

Consumer Confidence

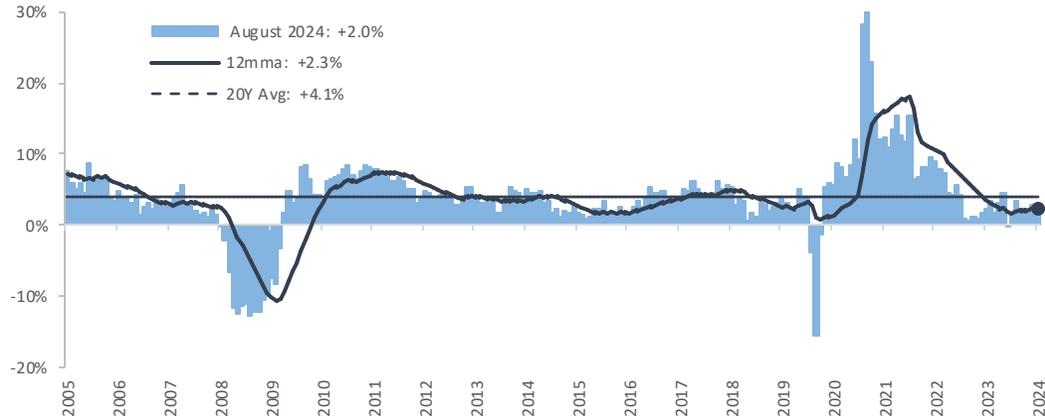


Disclosures: The University of Michigan Consumer Sentiment Index is a monthly survey that asks consumers questions about their financial standing and views on both the current and future economy.

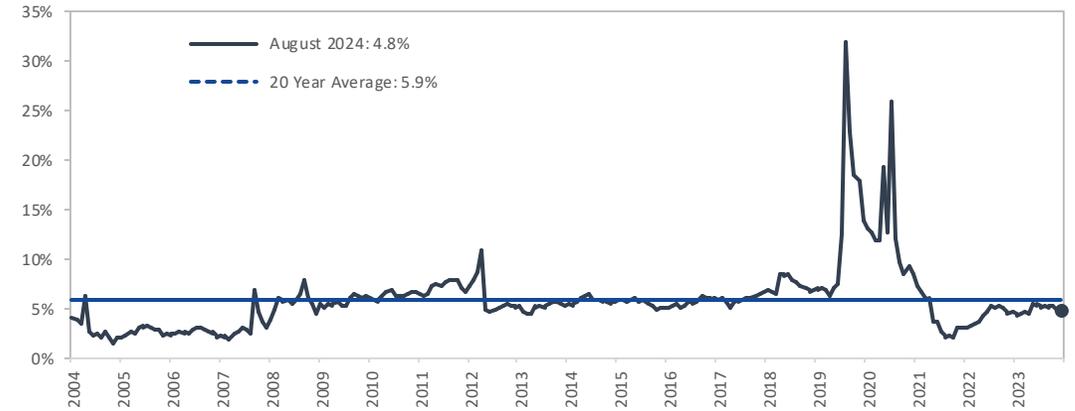
Retail Sales & Personal Finances

4Q 2024

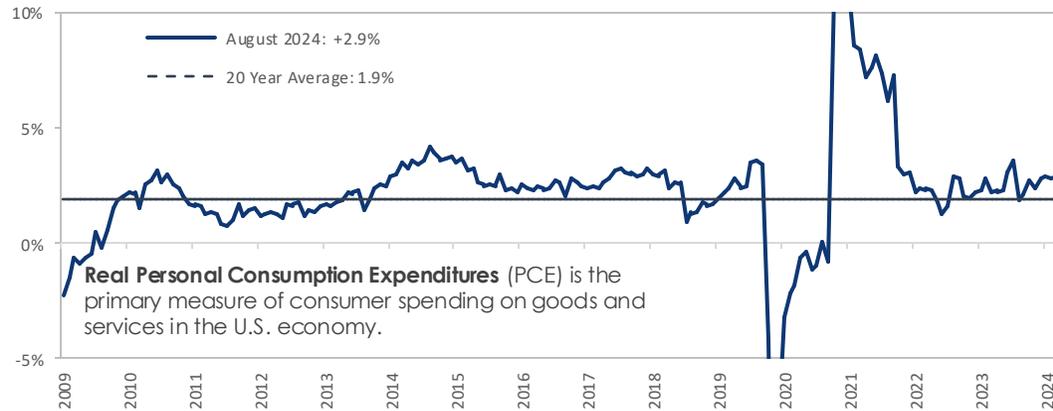
Year over Year Growth in Retail Sales
20 years of data (retail sales excluding food); 12mma = 12 month moving average



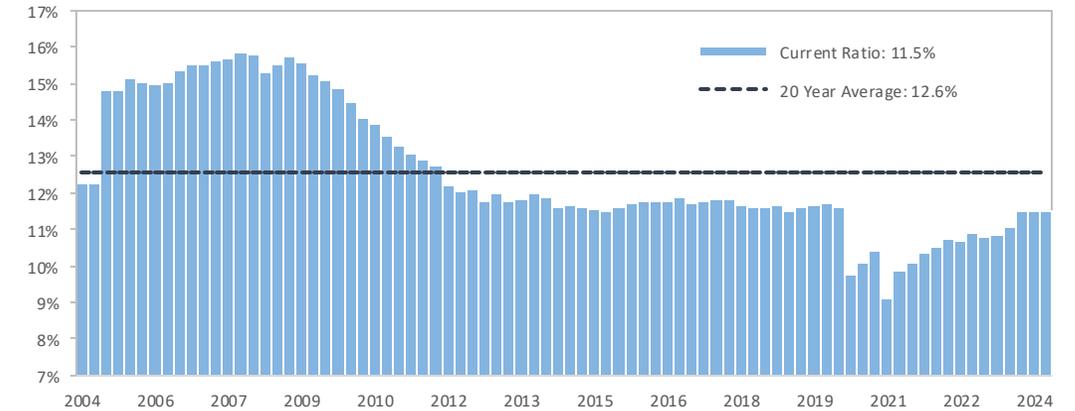
Personal Savings Rate
20 years of data; % of disposable income



Real Personal Consumption Expenditures
20 years of data adjusted for inflation



Household Debt Service Ratio
Percent of disposable personal income



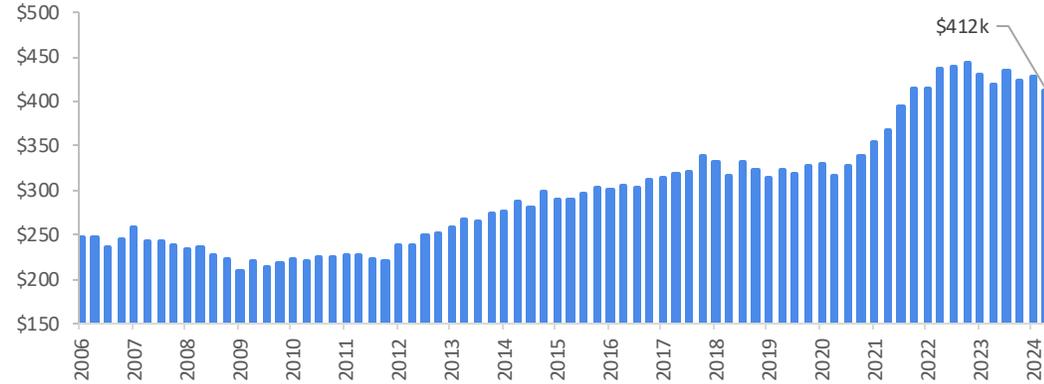
Disclosures: Data sourced from U.S. Bureau of Economic Analysis, U.S. Census Bureau, and the Federal Reserve.

Housing Market Update

4Q 2024

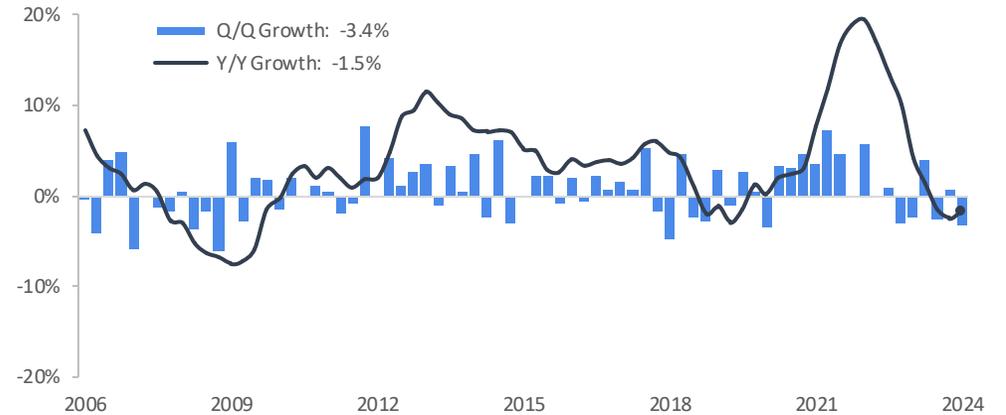
Median Sales Price for Homes Sold in the U.S.

USD in thousands, seasonally adjusted



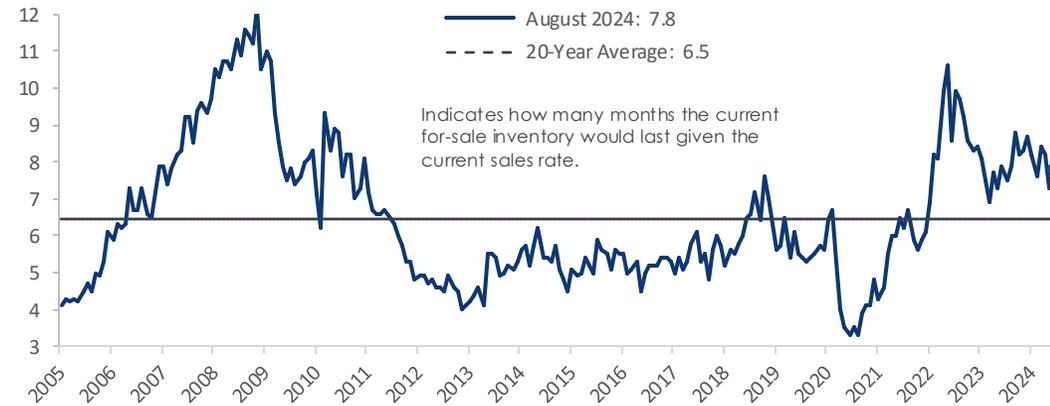
Rolling Changes in U.S. Home Prices

Year over year growth rate is an average of the past 4 quarters



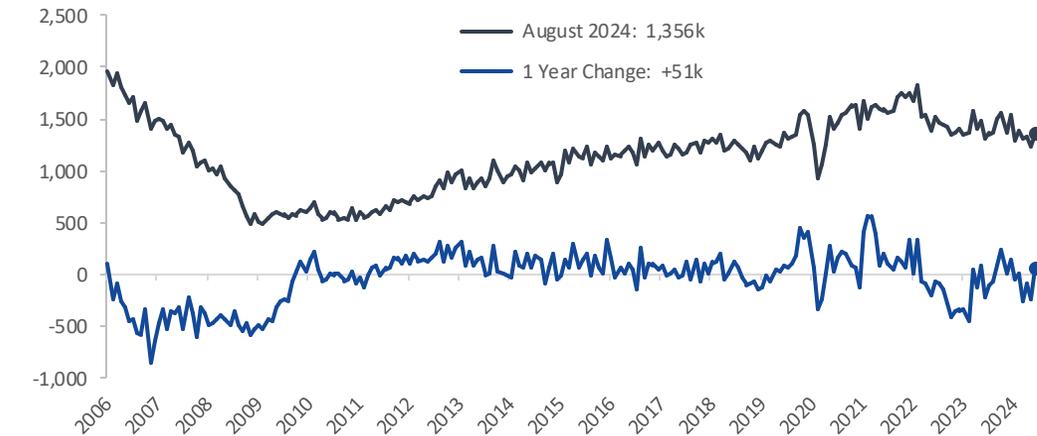
U.S. Home Inventory (in months)

Ratio of Houses for Sale to Houses Sold



Housing Starts in 000s

Current level and year over year growth in housing starts

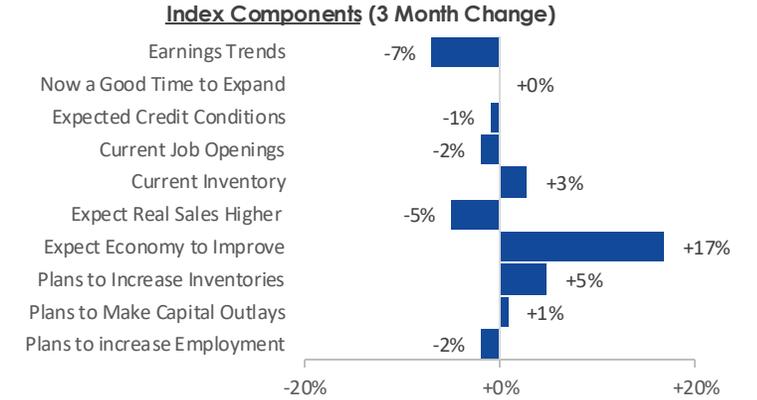
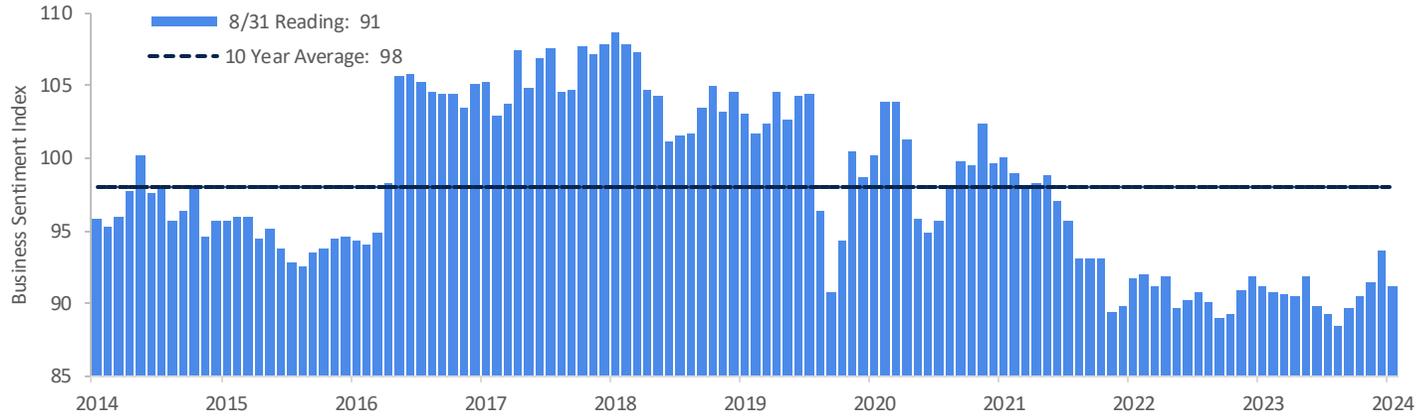


Disclosures: Data sourced from National Association of Realtors and Federal Reserve.

Business Activity & Sentiment

National Federation of Independent Business (NFIB) Small Business Optimism Index & Components

Small businesses make up ~50% of the U.S. workforce. This index provides a pulse on small business owners' outlook



4Q 2024

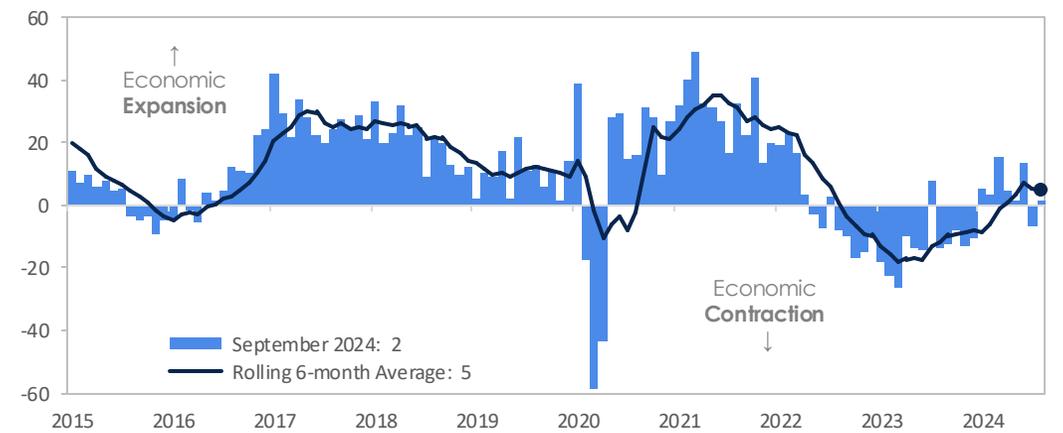
Leading Economic Index vs S&P 500 Return

Last 10 years of monthly data from Federal Reserve



Philadelphia Federal Reserve Business Index

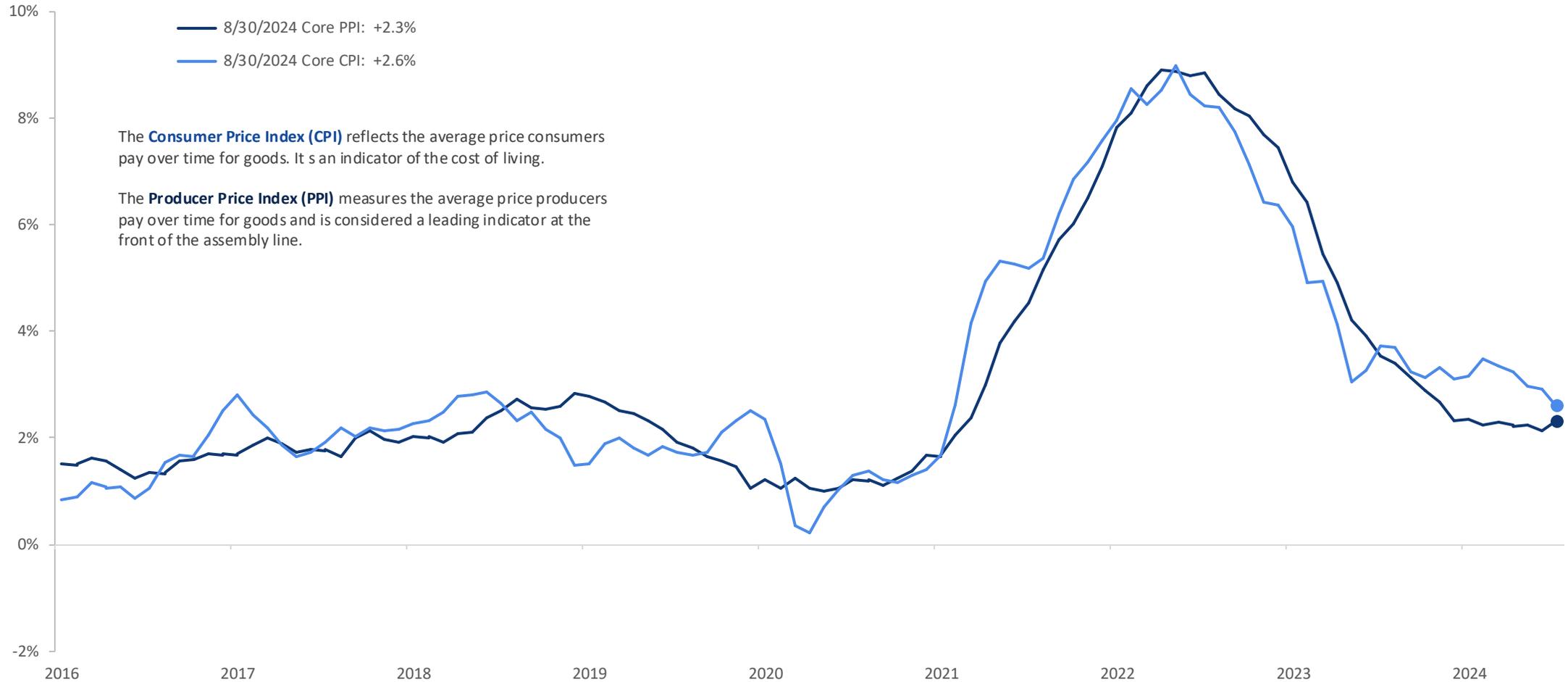
Readings of more (less) than zero signal expansion (contraction)



Disclosures: Data sourced from Federal Reserve. S&P 500 performance is based on price returns of the State Street SPDR S&P 500 ETF (SPY).

CPI vs PPI

4Q 2024



Disclosures: Data sourced from the Federal Reserve, U.S. Bureau of Labor Statistics. The Consumer Price Index (CPI) measures the changes in the price level of a basket of consumer goods and services purchased by households. The Producer Price Index (PPI) measures the average changes in prices received by domestic producers for their output (based on Final Demand: Finished Goods Less Foods and Energy).

4Q 2024

Global Economics

GDP, Manufacturing, & Oil Industry



PROCESSING....
PROGRAM RUNNING...



PROGRAM RUNNING...
PROGRAM RUNNING...
PROGRAM RUNNING...

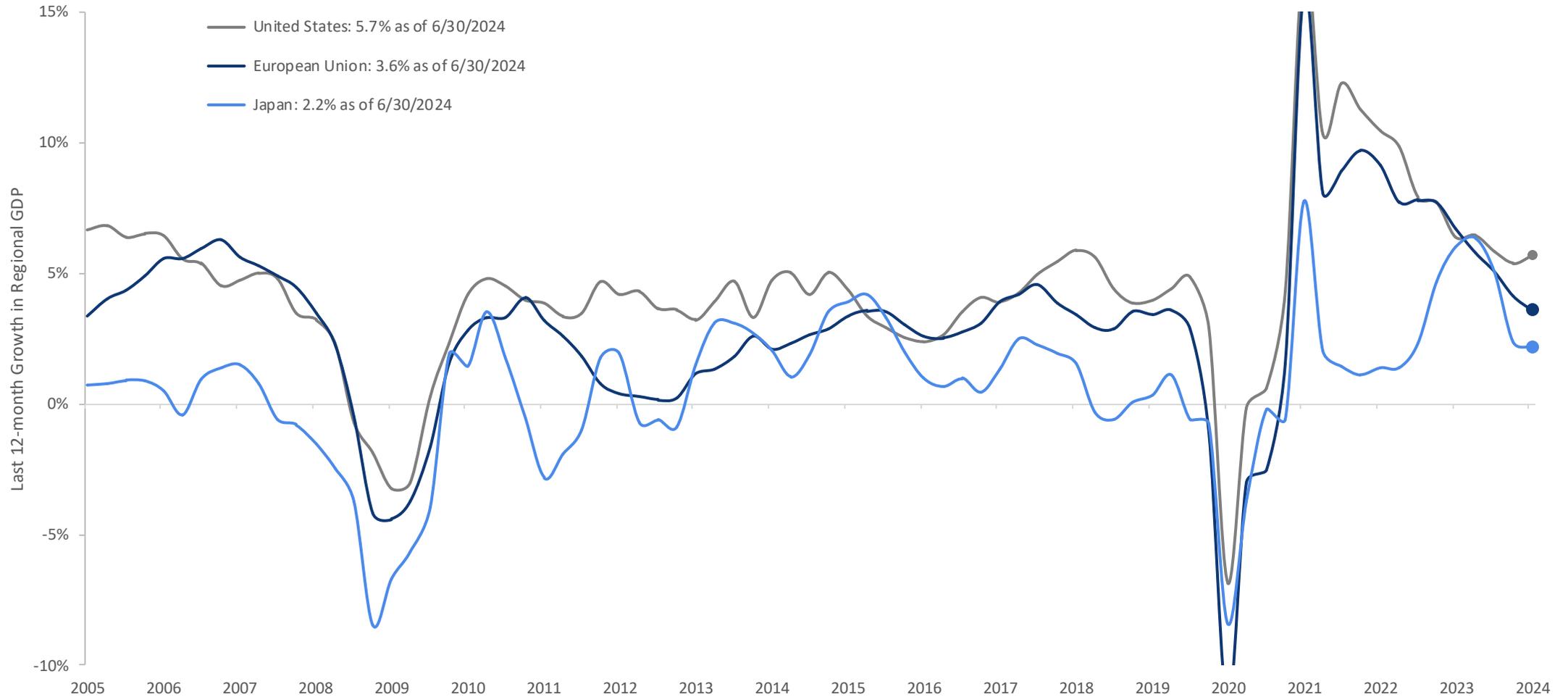


PROGRAM RUNNING...
PROGRAM RUNNING...



Global GDP Growth

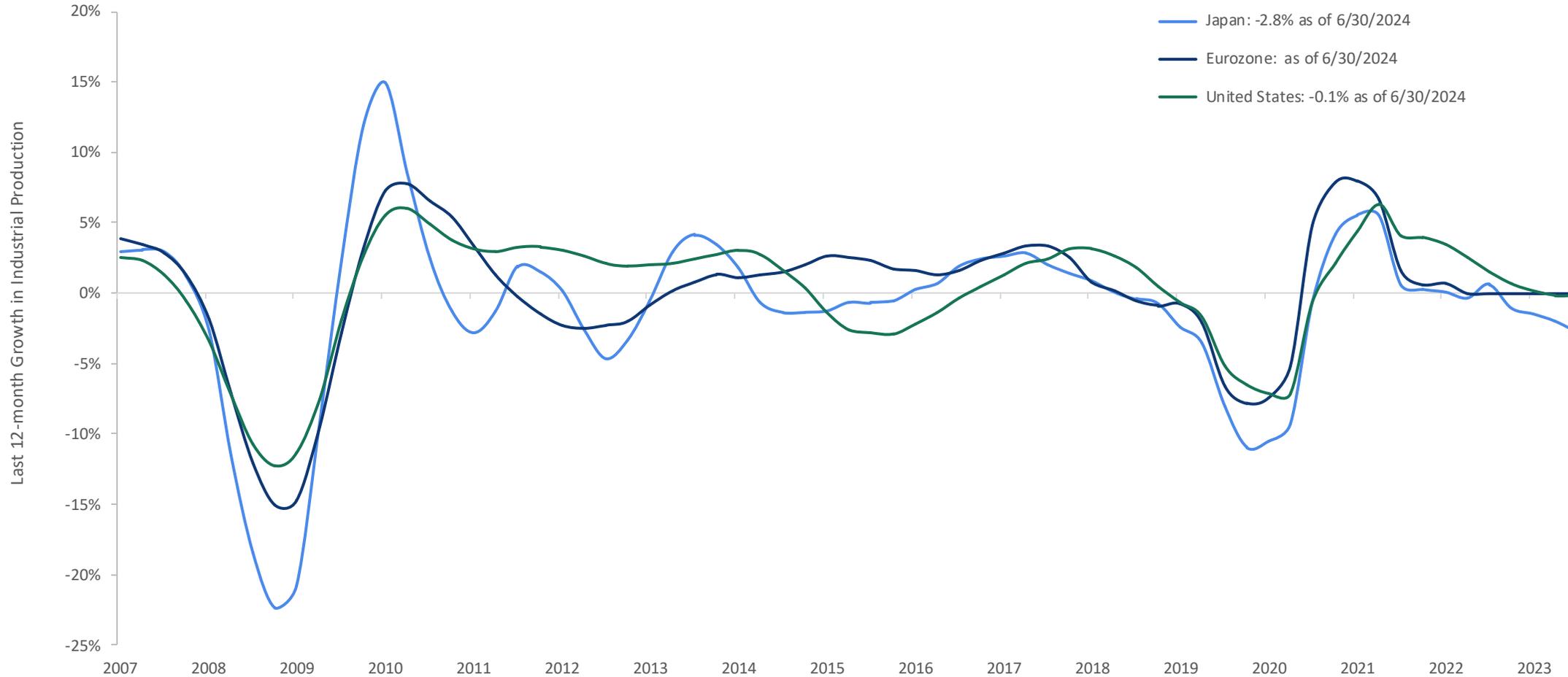
4Q 2024



Disclosures: Data from the Federal Reserve, European Central Bank, and Bank of Japan. Growth is calculated as the rolling last 12-month growth in Gross Domestic Product (GDP).

Global Industrial Production

4Q 2024



Disclosures: Data from the Federal Reserve, European Central Bank, and Bank of Japan. Growth is calculated as the rolling last 12-month growth in industrial production.

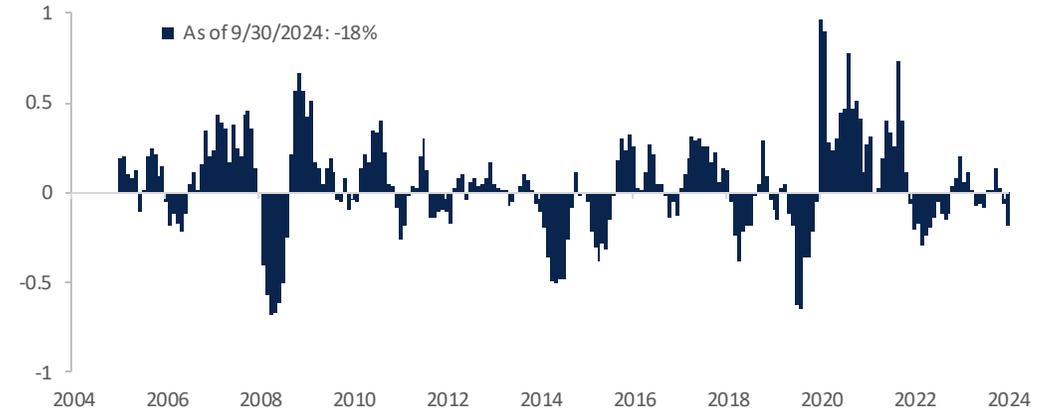
Oil Update

4Q 2024

Price of WTI Crude Oil
20 years of monthly datapoints



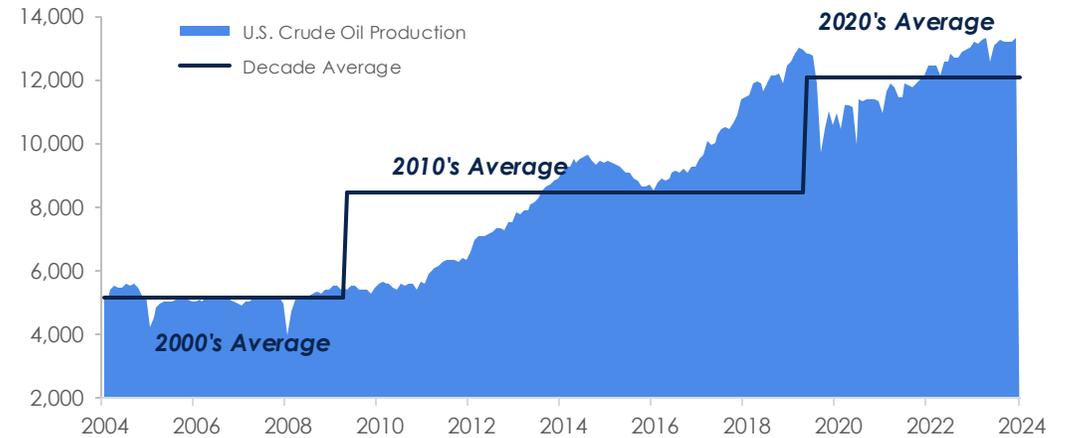
Rolling 6 Month Change in Oil Prices
20 years of monthly datapoints



Total U.S. Rig Count
Oil & Gas Rig Count from Energy Information Administration (EIA)



U.S. Crude Oil Production
Barrels per day in 000s



Disclosures: Data sourced from the Federal Reserve and the Energy Information Administration (EIA).

Definitions

Consumer Price Index (CPI)	Measures the changes in the price level of a basket of consumer goods and services purchased by households. .
Economic Contraction	A phase of the economic business cycle, typically after the peak, in which the economy as a whole declines.
Economic Expansion	A phase of the economic business cycle, typically after the trough, in which the economy as a whole grows.
Home Price Index	A broad measure of the movement of single-family house prices in each city across the United States.
Home Sales (Existing)	An economic indicator that reflects the number of homes that have previously been constructed and are now being resold.
Home Sales (Pending)	An economic indicator that reflects the number of homes that are being sold but have not been finalized.
Household Debt Service Ratio	The ratio of total required household debt payments to total disposable income
Inflation	A general rise in price level relative to available goods and services
Inventory to Sales Ratio	A measure of the amount of inventory companies are holding versus the number of sales
Leading Economic Index	An economic leading indicator intended to forecast future economic activity calculated by The Conference Board, a non-governmental organization. The value of the index is derived from the values of ten key variables.
NFIB Small Business Optimism Index	A measure of small business health in the United States.
Personal Savings Rate	A percentage of disposable personal income for the broad population
Philadelphia Fed Business Index:	A regional federal reserve bank index measuring changes in business growth. A value above (below) zero indicates growth (contraction).
Producer Price Index (PPI)	Measures the average changes in prices received by domestic producers for their output.
Real Yield:	Calculated as the Nominal Yield minus CPI rate
Retail Sales	A measure of consumer demand for goods based on purchases of durable and non-durable goods over a defined period of time
Unemployment Rate	A lagging economic indicator which is calculated as the percent of the labor force that is jobless
University of Michigan Consumer Sentiment Index	A monthly survey that asks consumers questions about their financial standing and views on both the current

4Q 2024

Disclosures and Legal Notice

Investing involves risk, including the possible loss of principal. Stock markets can be volatile. Investments in securities of small and medium capitalization companies may involve greater risk of loss and more abrupt fluctuations in market price than investments in larger companies. Investments in fixed-income instruments are subject to the possibility that interest rates could rise, causing their values to decline. High yield and unrated debt securities are at a greater risk of default than investment grade bonds and may be less liquid, which may increase volatility. Investors in asset-backed securities, including mortgage-backed securities and collateralized loan obligations (“CLOs”), generally receive payments that are part interest and part return of principal. These payments may vary based on the rate loans are repaid. Some asset-backed securities may have structures that make their reaction to interest rates and other factors difficult to predict, making their prices volatile and they are subject to liquidity and valuation risk. CLOs bear similar risks to investing in loans directly, such as credit, interest rate, counterparty, prepayment, liquidity, and valuation risks. Loans are often below investment grade, may be unrated, and typically offer a fixed or floating interest rate.

This material is distributed or presented for informational or educational purposes only and should not be considered a recommendation of any particular security, strategy or investment product, or as investing advice of any kind. This material is not provided in a fiduciary capacity, may not be relied upon for or in connection with the making of investment decisions, and does not constitute a solicitation of an offer to buy or sell securities. The content contained herein is not intended to be and should not be construed as legal or tax advice and/or a legal opinion. Always consult a financial, tax and/or legal professional regarding your specific situation.

This material contains opinions of the author, but not necessarily those of Arrowroot Family Office LLC or its subsidiaries. The opinions contained herein are subject to change without notice. Forward looking statements, estimates, and certain information contained herein are based upon proprietary and non-proprietary research and other sources. Information contained herein has been obtained from sources believed to be reliable, but are not assured as to accuracy. No part of this material may be reproduced or referred to in any form, without express written permission of Arrowroot Family Office, LLC. There is neither representation nor warranty as to the current accuracy of, nor liability for, decisions based on such information. Past performance is not indicative of future results..

4Q 2024

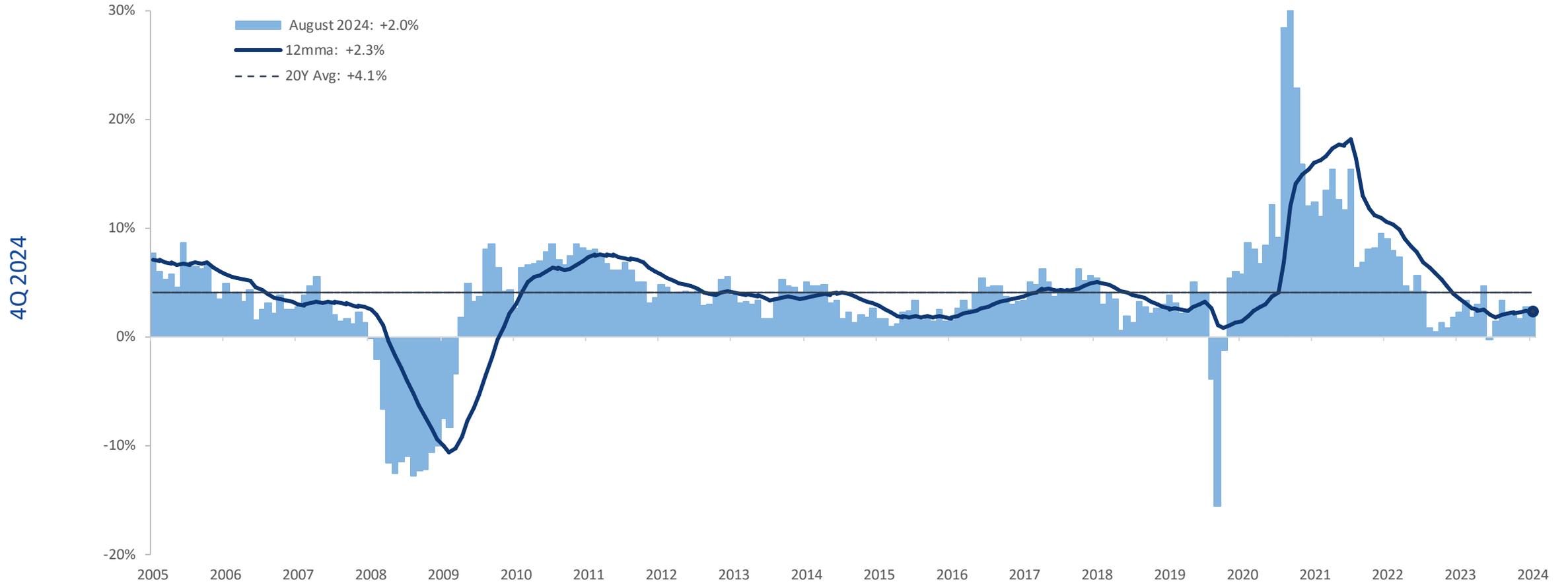
Larger Chart Versions



Year over Year Growth in Retail Sales

Year over Year Growth in Retail Sales

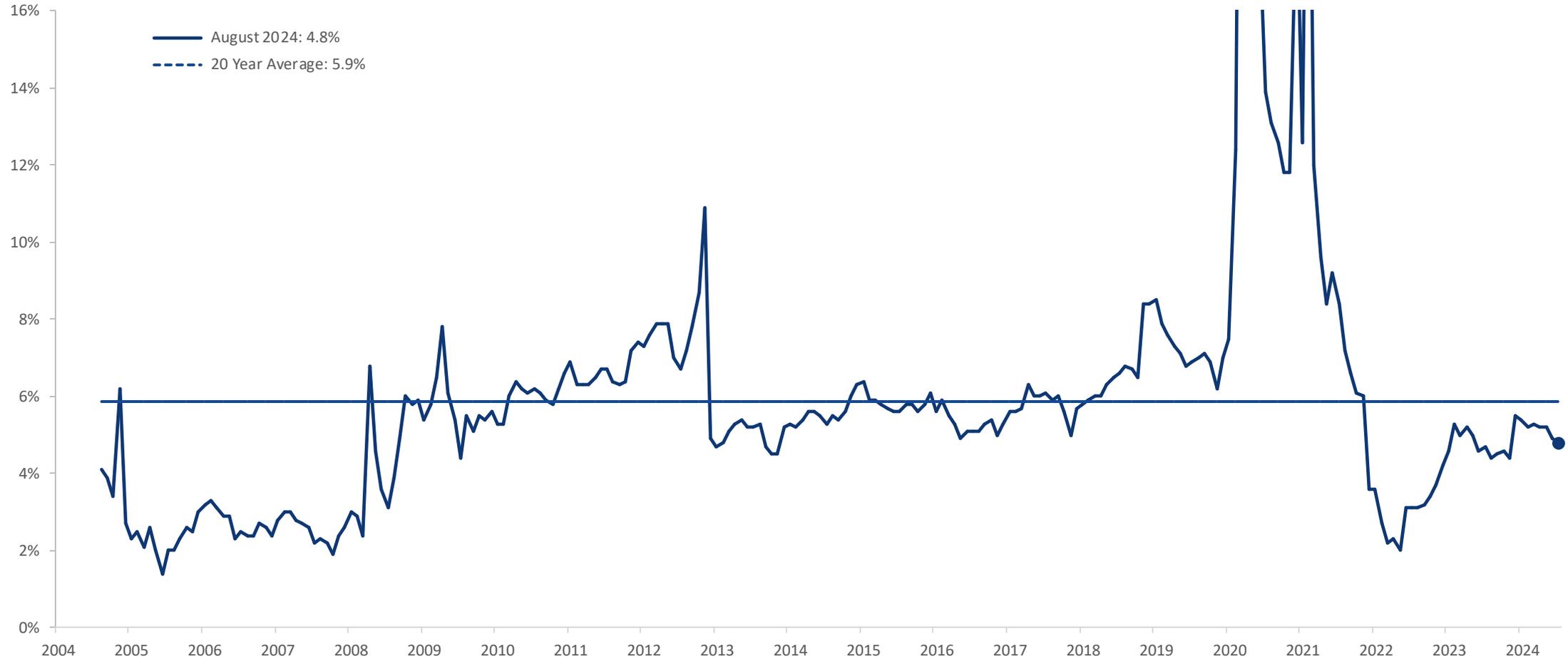
20 years of data (retail sales excluding food); 12mma = 12 month moving average



Disclosures: Data sourced from U.S. Bureau of Economic Analysis, U.S. Census Bureau, and the Federal Reserve.

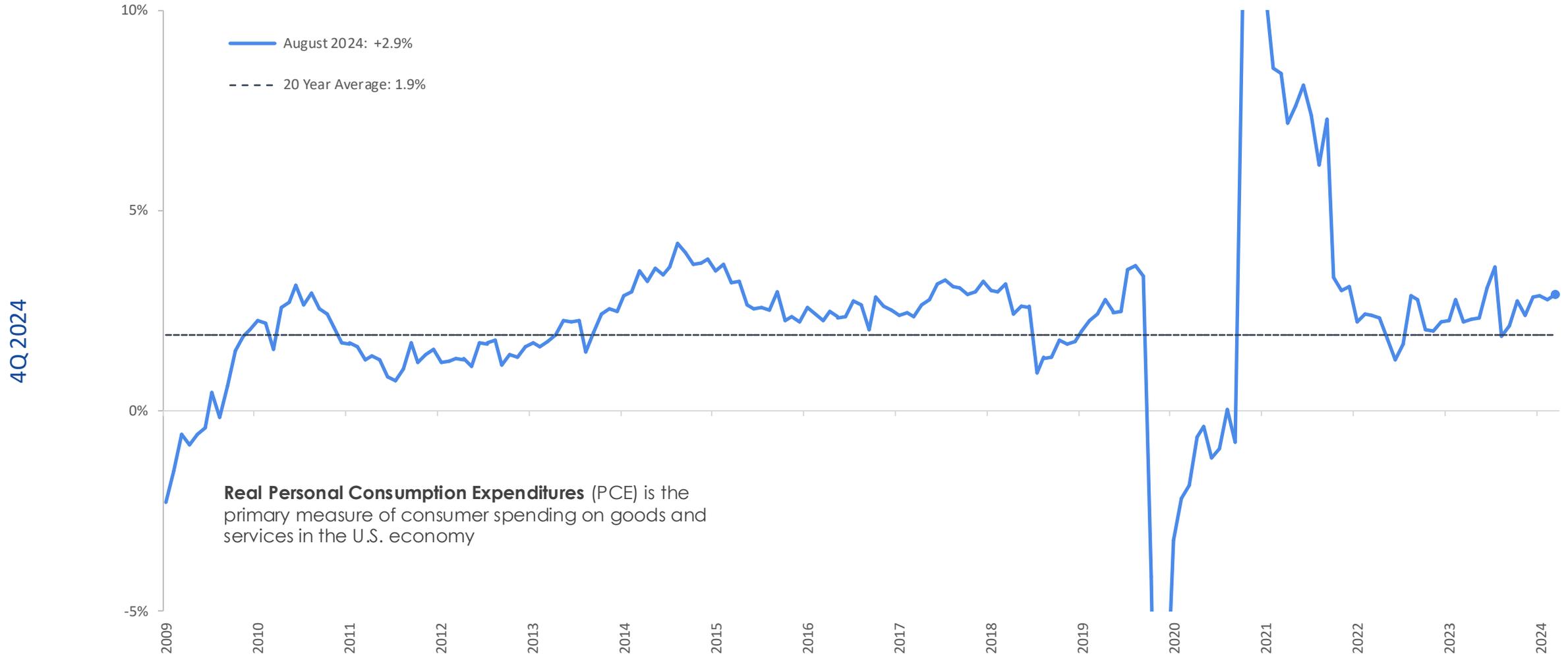
Personal Savings Rate (% of disposable income)

4Q 2024



Disclosures: Data sourced from U.S. Bureau of Economic Analysis, U.S. Census Bureau, and the Federal Reserve.

Real Personal Consumption Expenditures

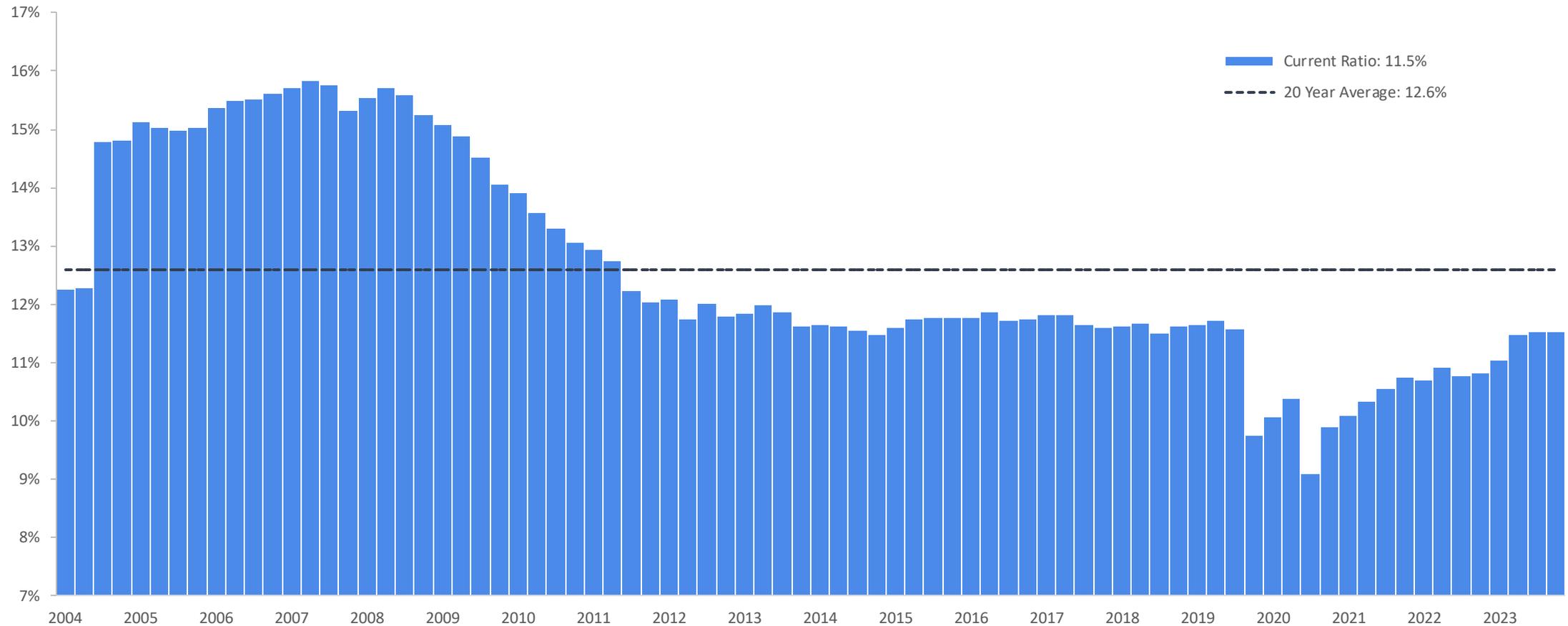


Disclosures: Data sourced from U.S. Bureau of Economic Analysis, U.S. Census Bureau, and the Federal Reserve.

Household Debt Service Ratio (% of Disposable Personal Income)

Household Debt Service Ratio
Percent of disposable personal income

4Q 2024



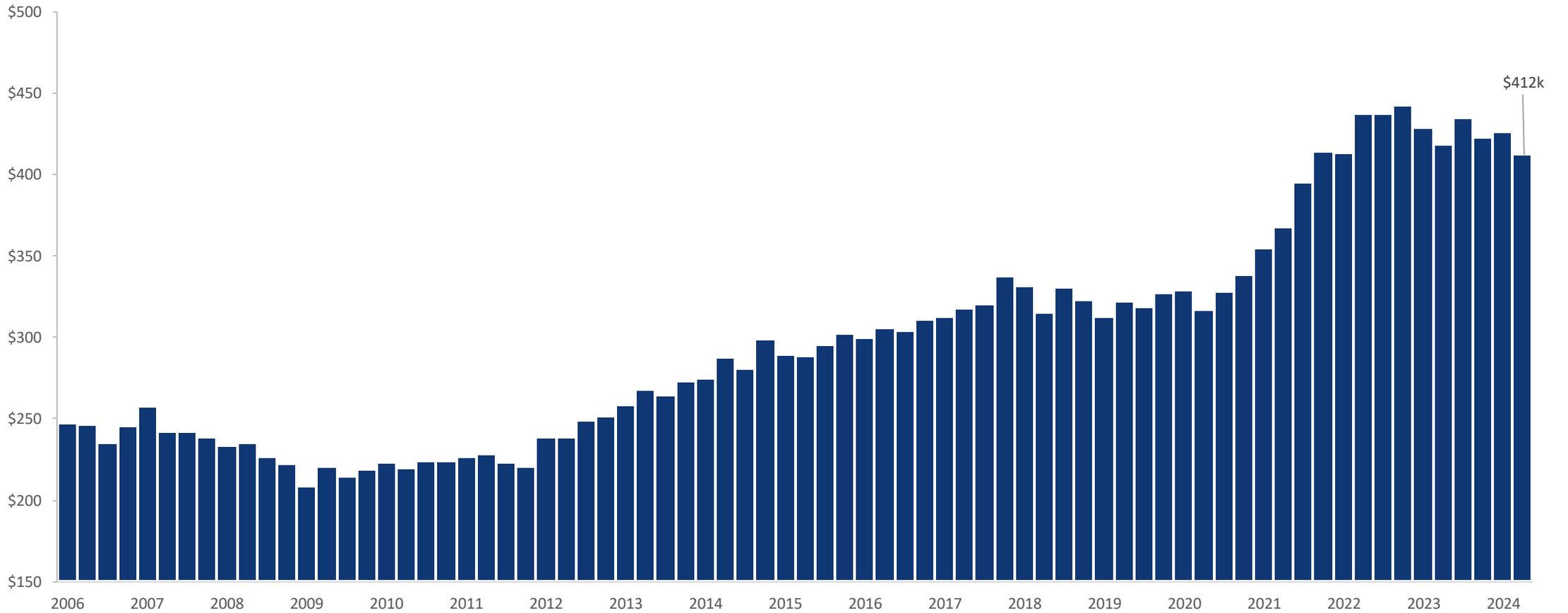
Disclosures: Data sourced from U.S. Bureau of Economic Analysis, U.S. Census Bureau, and the Federal Reserve.

Median Sales Price for Homes Sold in the U.S.

Median Sales Price for Homes Sold in the U.S.

USD in thousands, seasonally adjusted

4Q 2024

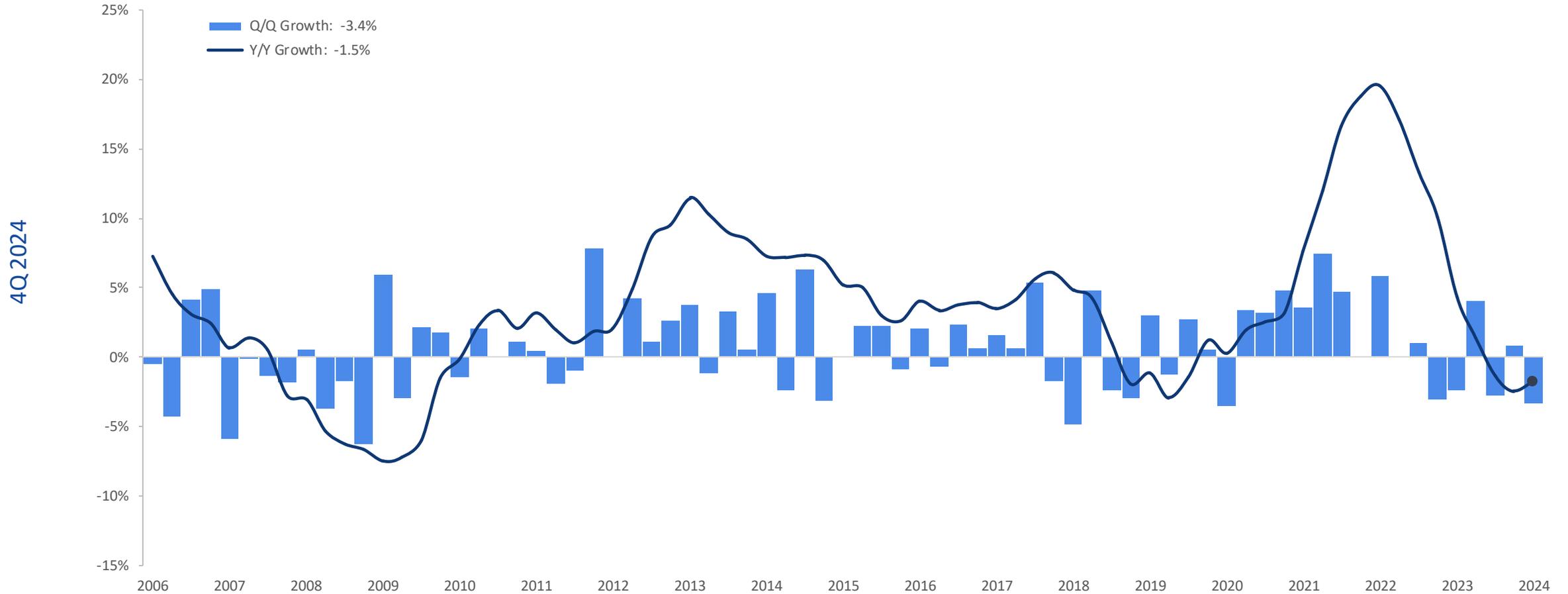


Disclosures: Data sourced from National Association of Realtors and Federal Reserve.

U.S. Home Prices

Rolling Changes in U.S. Home Prices

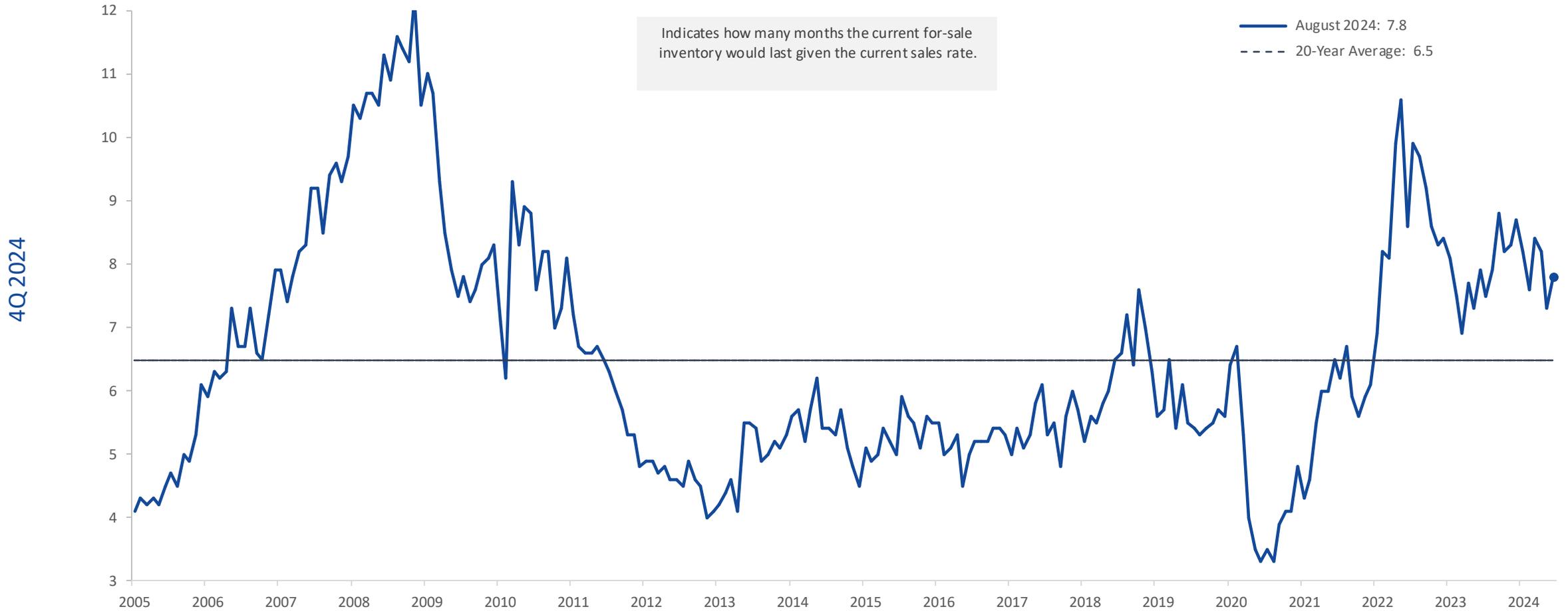
Year over year growth rate is an average of the past 4 quarters



Disclosures: Data sourced from National Association of Realtors and Federal Reserve.

U.S. Home Inventory

U.S. Home Inventory (in months)

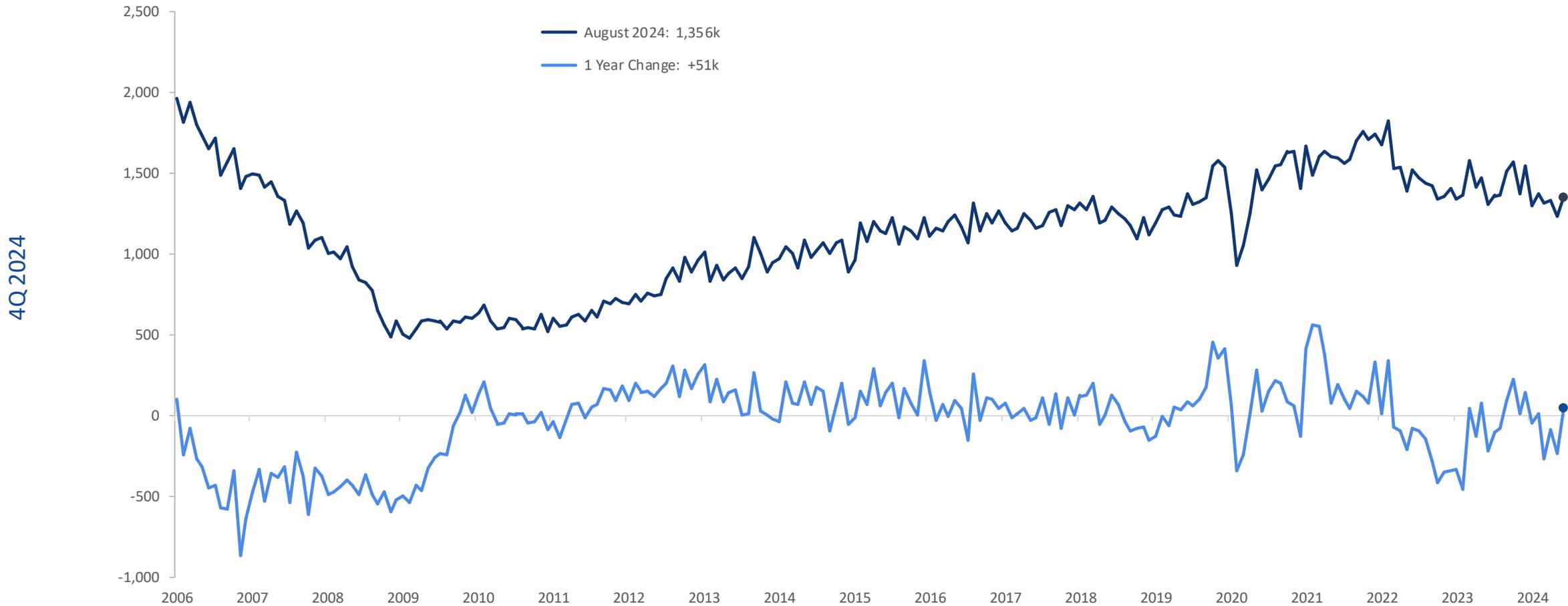


Disclosures: Data sourced from National Association of Realtors and Federal Reserve.

Housing Starts in 000s

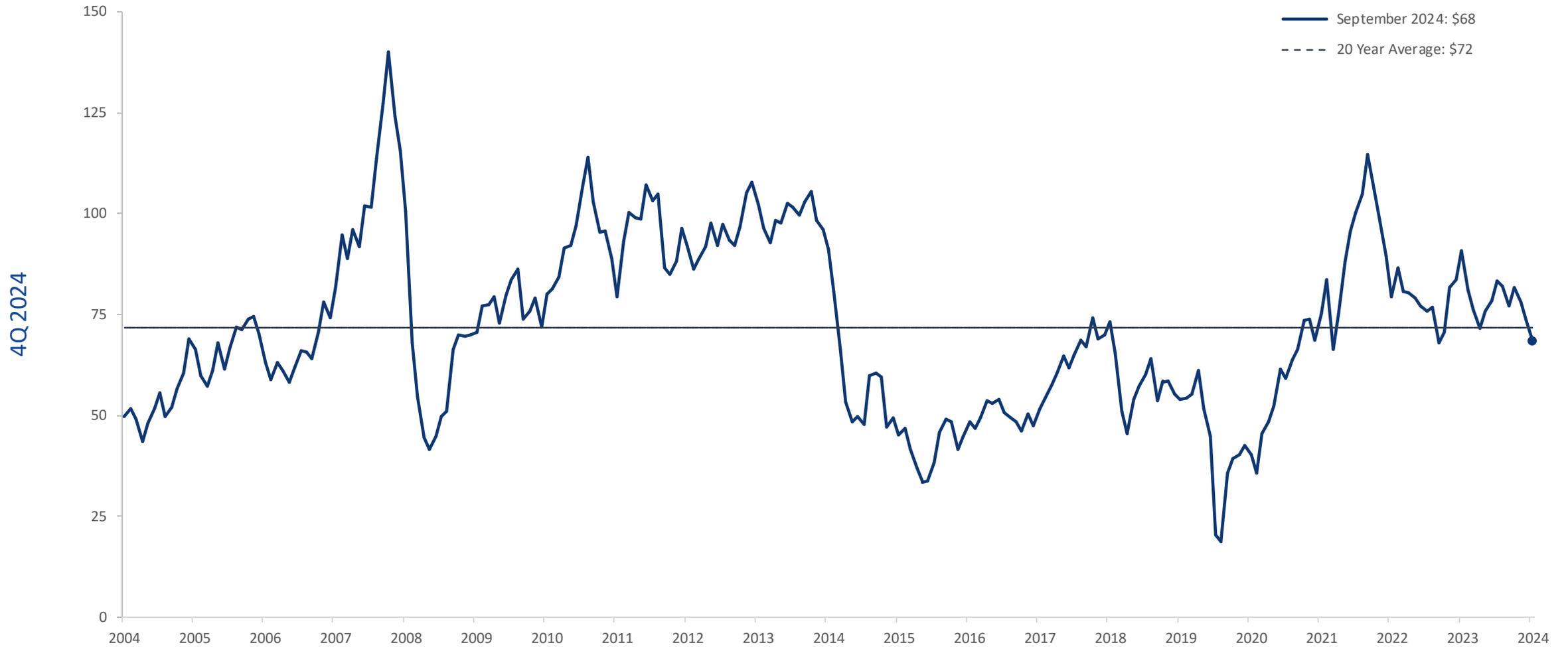
Housing Starts in 000s

Current level and year over year growth in housing starts



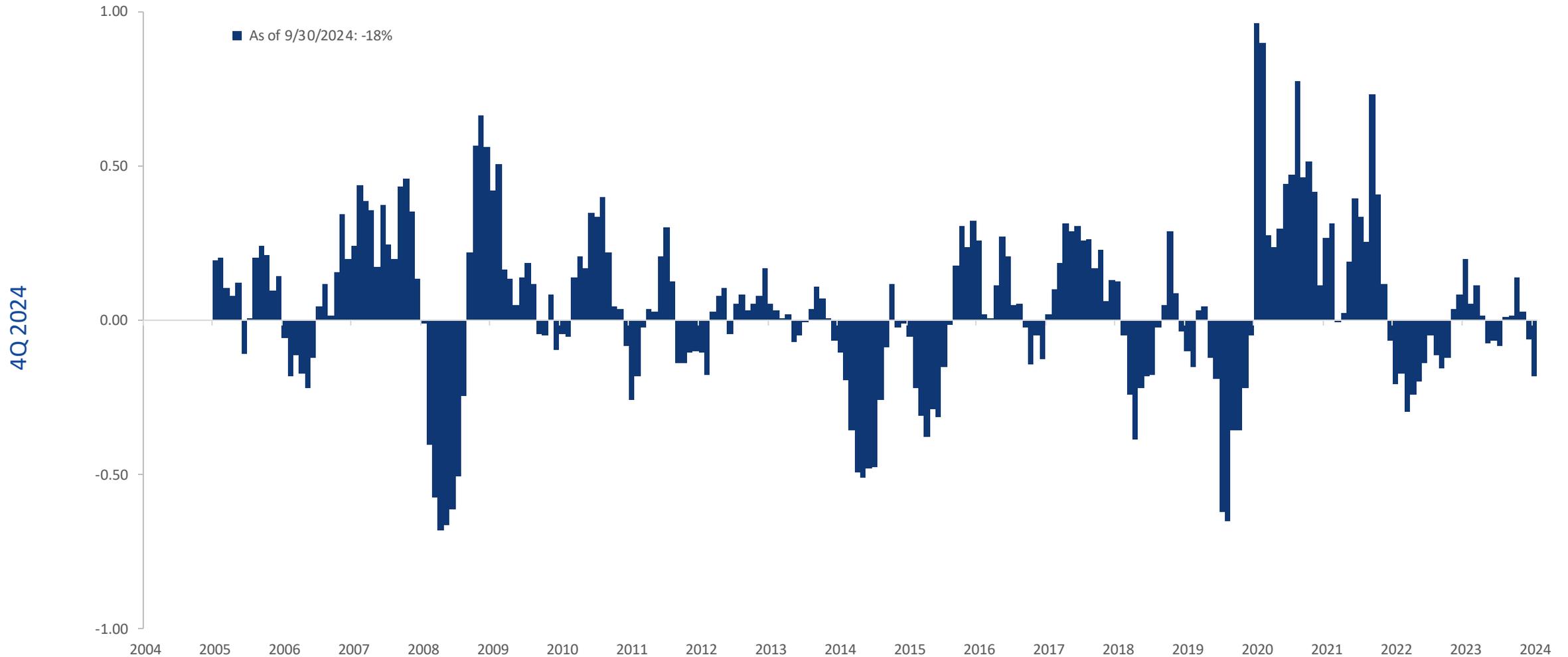
Disclosures: Data sourced from National Association of Realtors and Federal Reserve.

Price of WTI Crude Oil



Disclosures: Data sourced from the Energy Information Administration (EIA).

Rolling 6 Month Change in Oil Prices



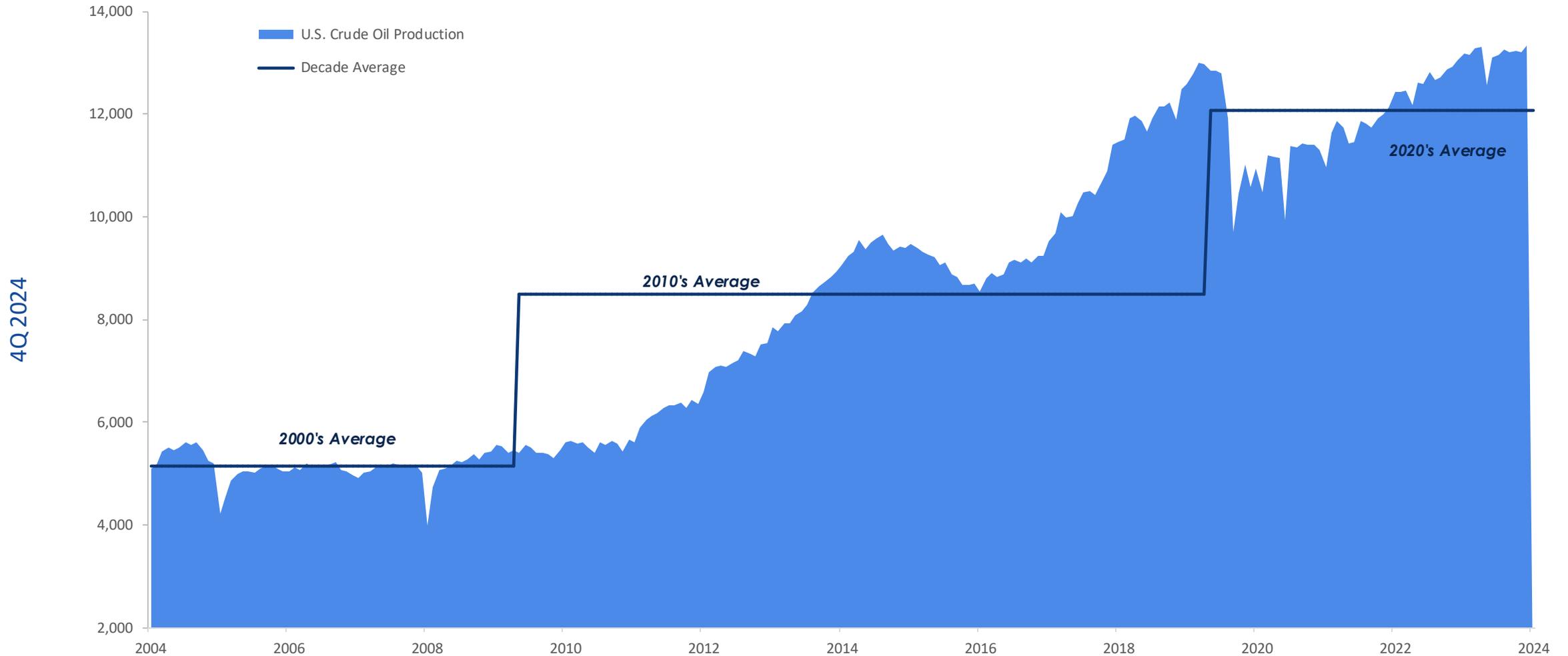
Disclosures: Data sourced from the Energy Information Administration (EIA).

Total U.S. Rig Count



Disclosures: Data sourced from the Energy Information Administration (EIA).

U.S. Crude Oil Production (Barrels per day in 000s)



Disclosures: Data sourced from the Energy Information Administration (EIA).

Thank You

