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# How Will We Know We Are in a Recession?

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## Overview

As we emerged from the pandemic, demand for goods and services was high, consumers had money in their pockets from fiscal stimulus, and supply chains were slow to reopen. This all led to a rapid rise in prices and, consequently, interest rates as the Federal Reserve pursued the most aggressive policy tightening since the late 1970s and early 1980s. Although increasing policy rates is intended to slow inflation, it typically does so by slowing economic activity. Hence, central banks can find themselves trying to navigate a delicate balance of reigning in prices but not tipping the economy into a recession.

The Fed started raising interest rates more than a year ago. The pace and level of increases has led many observers to predict that the Fed's actions may lead the US into a recession. Given the delayed impact of rate hikes on the economy, their full impact on economic growth may not be known for some time. In this piece we will discuss what a recession is, what signs are useful in indicating whether a recession could be approaching, what these indicators are telling us, and how this compares to history.

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## What is a recession?

One way of defining a recession is when a country experiences a decline in GDP over two consecutive quarters. Here in the US, the official declaration of recession is made by a group called the National Bureau of Economic Research (NBER).[1] They define a recession as "a significant decline in economic activity that is spread across the economy and that lasts more than a few months."[2] Typically the NBER retroactively declares the start of a recession. This means we may be in a recession well before it's officially declared. Defining a recession retroactively may be a relatively straightforward exercise in assessing economic variables after the fact, but predicting a recession is more challenging.

1 The NBER is a private, non-partisan, research organization.

2 Source: NBER. The NBER looks to several economic indicators that include personal income minus transfers (PILT), non-farm payroll employment, real personal consumption expenditures, wholesale – retail sales, the household survey for employment, and industrial production.

## How do we know a recession may be approaching?

It is challenging to forecast with certainty whether a recession is on the horizon and, if so, how deep it will be. Yet there are indicators that investors can monitor to develop a sense of what might lie ahead for the economy. These include both market-based and economic indicators. Market indicators include the US Treasury yield curve shape, the stock market, and credit spreads. Economic indicators can include building permits, new orders for durable goods, initial jobless claims, and business sentiment surveys.

In addition, composite indicators like the OECD Composite Leading Indicator (CLI)[3] and the Conference Board's Leading Economic Indicator combine multiple economic, financial, and market indicators into a single index that is designed to provide insight into the likelihood of a recession. The inclusion of credit market and consumer and business sentiment surveys could offer a more complete indication of the onset of economic contraction.[4] That said, no one indicator has proven to be infallible for recession prediction, or on its timing. However, these methods have been useful in the past in providing some perspective on how the economy may track.[5]

## Market indicators of a recession

### The shape of the yield curve

The yield curve typically exhibits an upward slope, where bond investors earn a higher yield for owning a bond with a longer maturity date. That is, its "normal" state is upward sloping, meaning yields increase with maturity. However, sometimes the yield curve can be flat or even inverted. An inverted (i.e., downward sloping) curve reflects market expectations of rates dropping in the future consistent with an economic slowdown. Economists have historically used inverted yield curves as a predictor of recessions in the US.[6]

When the Fed raises the Fed Funds rate (an overnight borrowing rate for banks), the front end of the yield curve often rises. At the same time the back end of the yield curve usually declines, or does not increase as much, as growth and inflation expectations fall. This can lead to the US yield curve inverting where short-term bond yields are higher than long-term yields. This dynamic is considered a harbinger of a forthcoming recession.[7]

3 Source: Organization for Economic-Cooperation and Development (OECD). The composite leading indicator (CLI) is designed to provide early signals of turning points in business cycles showing fluctuation of the economic activity around its long-term potential level. CLIs show short-term economic movements in qualitative rather than quantitative terms.

4 Source: Chicago Federal Reserve, D. Kelley, "Which Leading Indicators Have Done A Better Job at Signaling Past Recessions?" Chicago Fed Letter No. 425, 2019. Kelley argues that the Conference Board's LEI has the best record for signaling a recession. Since recessions only occurred in 12% of the months between 1970 and 2019 – Kelley argues – that a prediction that states that recessions never occur would be 88% accurate. The ability to accurately predict economic contraction is not easily quantified.

5 Source: Ibid.

6 While there are several yield curve inversions that may signal a recession, the two-year Treasury yield minus the 10-year Treasury yield, or the 2-10 spread, has the longest track-record. Although the Federal Open Markets Committee (FOMC) does not have an official recession indicator in terms of a yield curve inversion, Chair Powell has recently indicated that the Committee is also looking at the spread between the three-month Treasury and the eighteen-month forward Treasury.

7 Source: The Cleveland Federal Reserve, Yielding Clues About Recessions: The Yield Curve as a Forecasting Tool, May 18, 2023.


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When the slope of the yield curve inverts and short-term bond yields rise higher than long-term yields, the probability of a recession rises.[8] But predictions may not always materialize. There have been two false positive signals from the yield curve inversions - 1966 and late 1998 - where no recession followed.[9] The 2019 inversion may have been another false signal. Although yield curve inversions have historically reasonably predicted recessions, they do not provide a perspective on the timing of the recession. On average recessions have followed yield curve inversions anywhere from 6 months to 24 months after the inversion occurs.

[8] Source: The Cleveland Federal Reserve and Dueker, Michael J. "Strengthening the Case for the Yield Curve as a Predictor of US Recessions," Review, Federal Reserve Bank of St. Louis (March/April 1997), pp. 41-51. On average, when the yield curve inverts and the 10-year Treasury yield minus the 3-month Treasury yield is equal to -0.8%, the probability of a recession rises to 50%. If that same metric rises still further to greater than -2.4%, the probability of a recession is 90%.

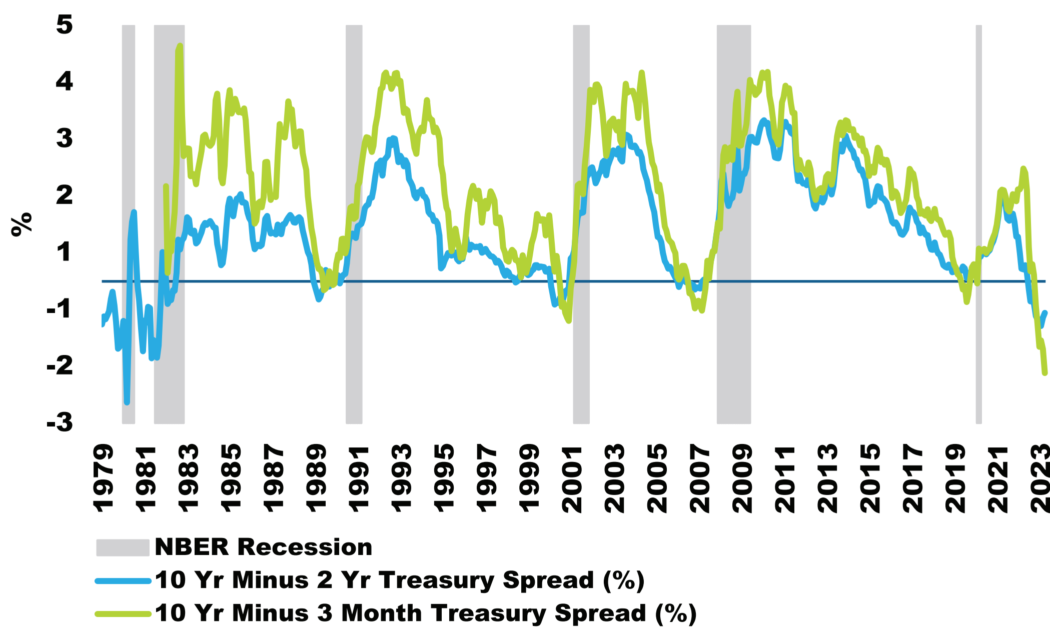


**FIGURE 1**

**Yield Curve Inversions & Recessions (%)**

Source: FRED as of June 2, 2023 and Bloomberg data through April 1, 2023.

**Equity markets**

The US equity markets have historically been viewed as a leading indicator of recessions (i.e., markets tend to move down before recessions rather than during or after). While the effects of the Fed rate hikes may take some time to materialize into the broader economy (generally believed to be around 12 months), the effects felt on the financial markets tend to be more immediate. In the first half of 2022, the S&P 500 index fell by 21 percent – the worst 6-month start to a year since 1970. Concerns over increased borrowing costs and its impact on both businesses and consumers caused heightened volatility throughout most of the year.

In November 2021, the Fed indicated a willingness to hike interest rates as inflation hit a multidecade high of 6.2%. Equity and bond market gains slowed and started to reverse in the following months.[10] By the end of the first quarter of 2022, major equity and bond indices were in substantially negative territory.[11] For 2022, the Russell 3000 declined 19.2%, its worst year since the 2008 financial crisis.[12]

**Credit markets**

Credit markets tend to react quickly to recession risks. Credit default swaps (CDS), which offer insurance against bond issuers defaulting, typically get more expensive as bondholders start to reassess issuer ability to service or pay their debts. Similarly, corporate and high yield bonds can experience a decline in prices and a widening of credit spreads in times of – or in anticipation of - economic distress.

[9] Source: The Cleveland Federal Reserve, Yield Curve and Predicted GDP Growth, as of April 27, 2023. According to the Cleveland Fed, the probability of recession rose from 72.7% in February 2023 to 75.5% in April 2023 with the predicted GDP for the US falling from -2% GDP to -3% GDP in the same short period.

[10] Source: Federal Reserve. Federal Reserve minutes released November 23, 2022 and November CPI released December 13th, 2022 confirming broad based inflation. The Federal Reserve increased the Fed Funds Rate by 25 bps in March 2023.

[11] Source: Bloomberg data as of March 31, 2022. The US Bloomberg Intermediate Aggregate index was down -5.9% and the Russell 3000 index was down -5.3% in the first quarter of 2022.

[12] Source: Bloomberg data as of December 2022. The Bloomberg US Intermediate Aggregate index returned -13% for 2022.



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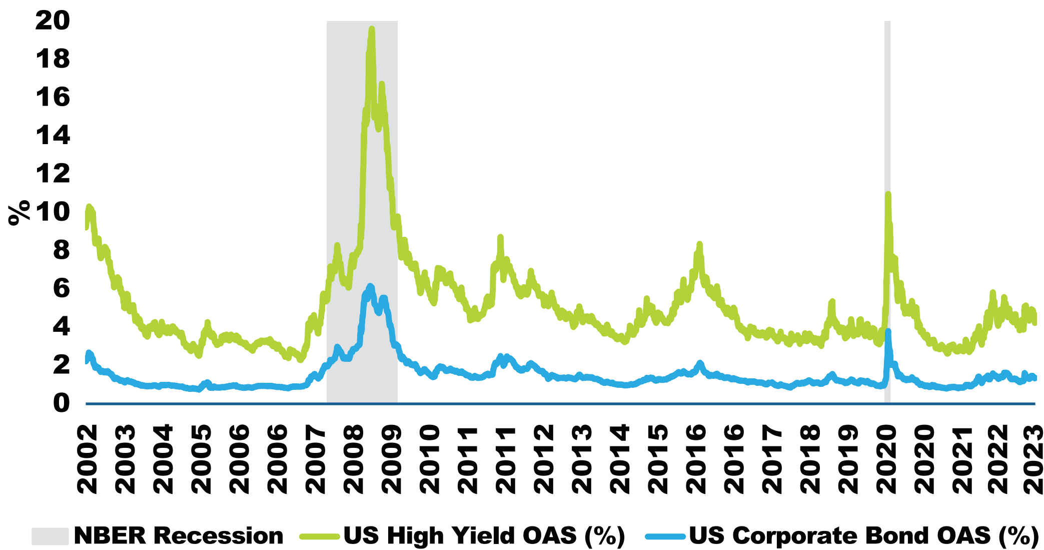


**FIGURE 2**

**US Corporate & High Yield OAS Spreads** (%)

Source: Bloomberg and FRED data November 2001 through June 5, 2023. NBER recession between April 2001 and November 2001 largely predates OAS credit spread data series. NBER recession ended as credit spreads peaked.

## Economic indicators of a recession

In addition to market indicators of recessions, there are various economic indicators that may provide perspective on the track of the economy including income and sales signals, GDP and industrial production, home construction, and unemployment.

### Income and sales signals

Consumer health can be a key indicator for calling the onset of a recession. If consumer demand is healthy, then companies can feel more confident that customers will continue to generate revenue. If revenues fall due to weaker demand, companies must often retrench, cut expenses, and delay investments. While these corporate cost reductions may help stabilize corporate earnings, the impact will likely be weaker economic growth.

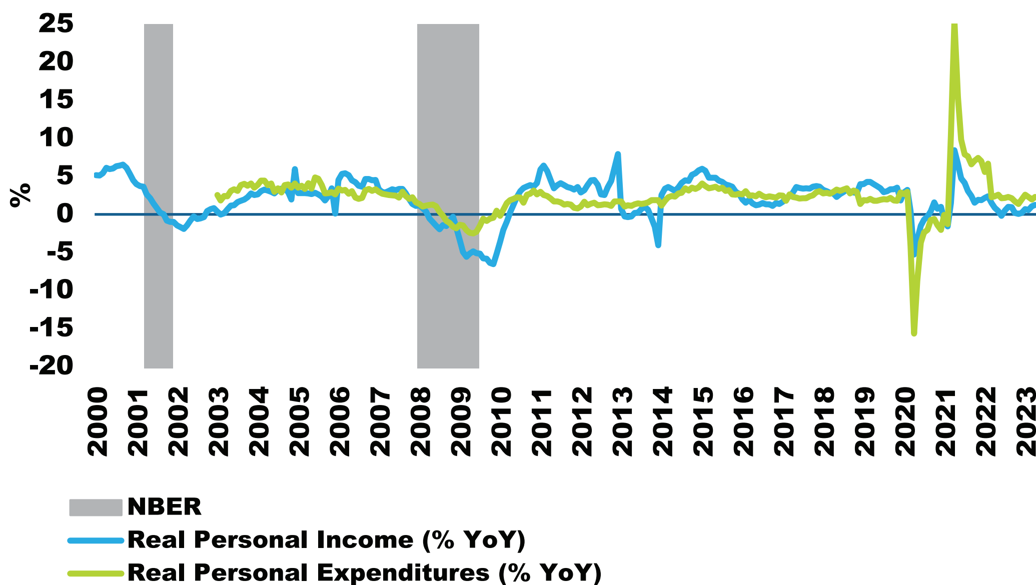


**FIGURE 3**

**Personal Income & Consumption** (% y-o-y)

Source: FRED as of June 12, 2023. Trailing data shown through April 2023.

When adjusted for inflation, personal income and consumption have been falling since a reopening surge in 2021 but have not yet fallen into negative territory (see Figure 3).


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Likewise, wholesale and retail sales are falling but remain above negative levels (see Figure 4).

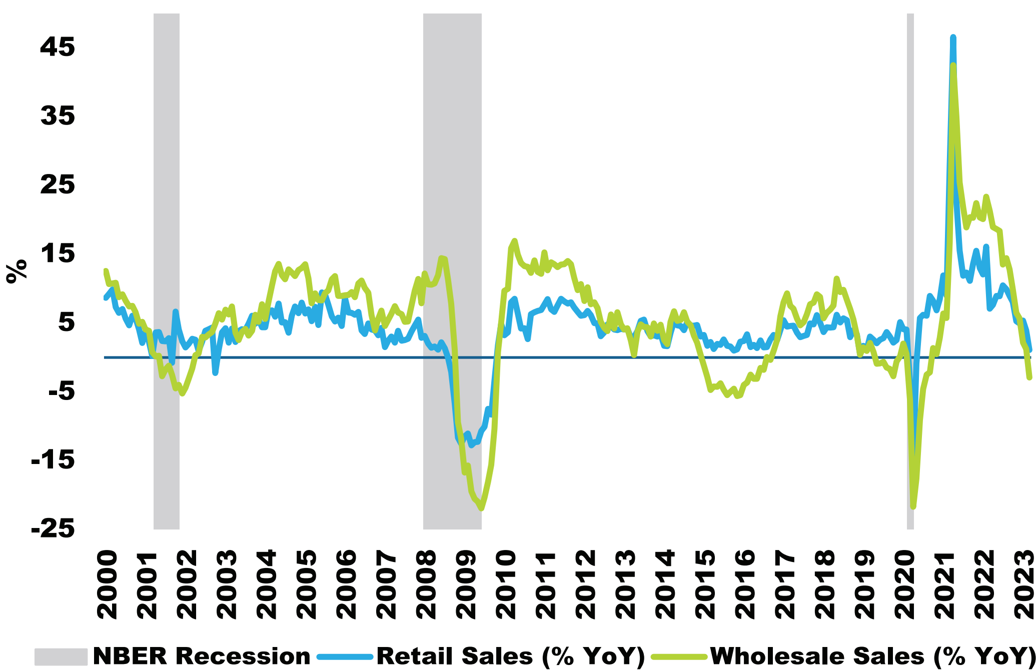


FIGURE 4
**Wholesale & Retail Sales** (% y-o-y)
Source: FRED as of June 12, 2023 Trailing quarterly data as of March 2023.

## GDP and industrial production

US GDP grew at an annualized rate of 1% for 2022 in spite of the Federal Reserve's aggressive interest rate hikes. Indicators such as unemployment, income, spending, and sales all remained stronger than normal. If economic growth and industrial production return to more normal levels, it may well signal the start of the recession.

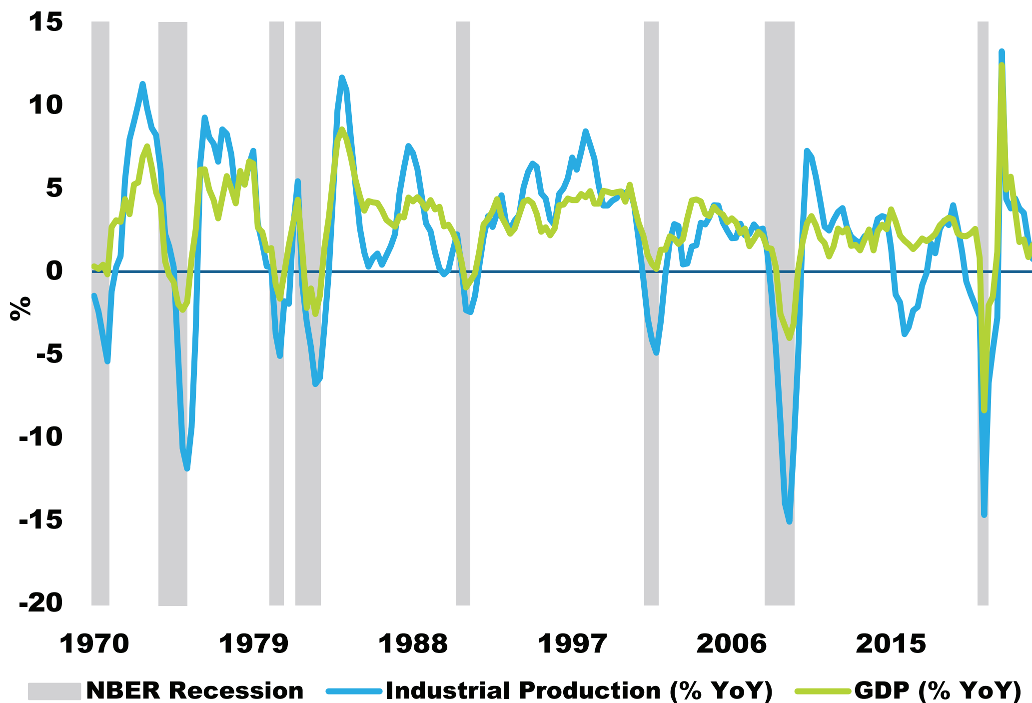


FIGURE 5
**US GDP & Industrial Production** (% y-o-y)
Source: FRED as of June 12, 2023. Trailing quarterly data as of January 2023.


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## Home construction

Home building permits are another indicator of future economic growth. Residential construction accounts for about 3-5% of US GDP, and housing related services such as rent account for 13-15% of GDP.[13] When homebuilders anticipate healthy demand for new residences, they typically will pull building permits for future building projects. Like new orders, building permits may indicate future economic activity.

13 Source: National Association of Home Builders estimates may vary slightly from the Bureau of Economic Analysis. Total contribution to GDP may be 18%.

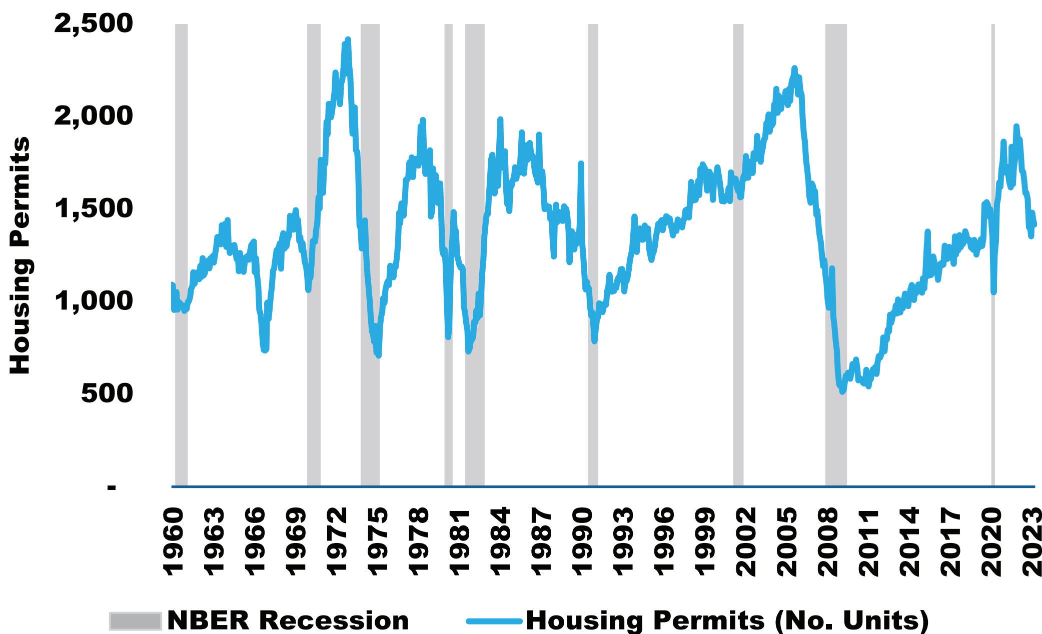


**FIGURE 6**
**Housing Permits (% y-o-y)**
Source: FRED as of April 2023.

## Unemployment

Finally, we can look at employment conditions for perspective on how the economy may track going forward. Recessions are often accompanied by rising unemployment. The unemployment rate itself is a lagging economic indicator as it represents changes in the economy that have already taken place. We can look at initial jobless claims though for some perspective on the future. Initial jobless claims are reported weekly and represent the number of people who have filed for unemployment benefits for the first time. Despite the unemployment rate remaining at remarkably low levels, we have begun to see initial jobless claims start to rise from their lows of late last year.[14]

14 Source: Bureau of Labor Statistics May 2023 Unemployment rate.

The unemployment rate tends to rise near the start of a recession. In general, unemployment starts to break above its lowest point in the months around the start of a recession. The Sahm Rule states that "a recession occurs when the three-month moving average of the overall unemployment rate has risen at least half a percentage point above its minimum over the previous twelve months."[15] From our current unemployment rate of 3.7%, we may need to see unemployment rise to over 4% to mark the possible start of a recession. For now, initial jobless claims remain low in spite of significant layoffs in the technology sector in the past year.

15 Source: San Francisco Federal Reserve, T. Mertens "Recession Prediction on the Clock," FRBSF Economic Newsletter, December 2022. See also, Claudia Sehms, "Direct Stimulus Payments to Individuals," in *Recession Ready: Fiscal Policies to Stabilize the American Economy*, 2019.


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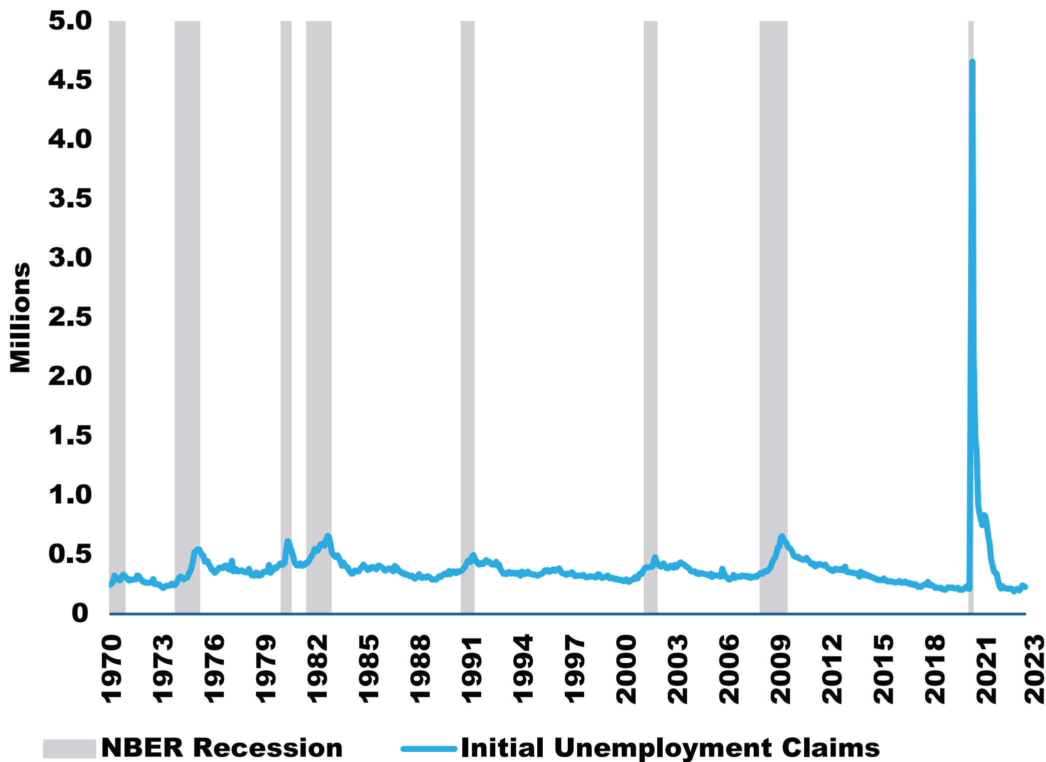


FIGURE 7
**Initial Jobless Claims**
Source: FRED as of May 2023.

## Conclusion

Although there are several market and economic indicators that have been used as signs of a coming recession, these indicators cannot tell us exactly when a recession begins or accurately predict its severity or duration. We will have to wait and see how the Fed's aggressive rate hikes and quantitative tightening impact the health of the economy. Headline inflation has fallen but core inflation remains elevated. We have witnessed companies shedding workers and delaying capital investments in response to a cooling economy. We have yet to see how public and private investments respond to a potential recession.


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