A Brief History of Yield Curve Inversions

Yield curve inversions have long been seen as a harbinger of economic downturns. This article delves into the history of yield curve inversions, focusing on the 10YR/2YR curve, by examining market performance during and after inversions.

> *"Because I was inverted."*
>
> *- Maverick, Top Gun*

As a quick primer, a yield curve represents the difference in yields of similar bonds, such as US Treasuries, across different maturities. This is often defined as the spread between two maturities. Normally, the spread is positive reflecting a higher yield on the longer-term bonds. The yield curve is said to be inverted when that spread turns negative, yielding higher short-term rates than long-term.

The following tables list the inversion bottoms for the 10YR/3MO and 10YR/2YR yield curves since 1983 along with their depth and overall durations. Today, we are in the midst of an inversion that began on July 5, 2022 for the 10YR/2YR, potentially bottoming on March 8, 2023.

10YR / 3MO Inversion Bottoms:

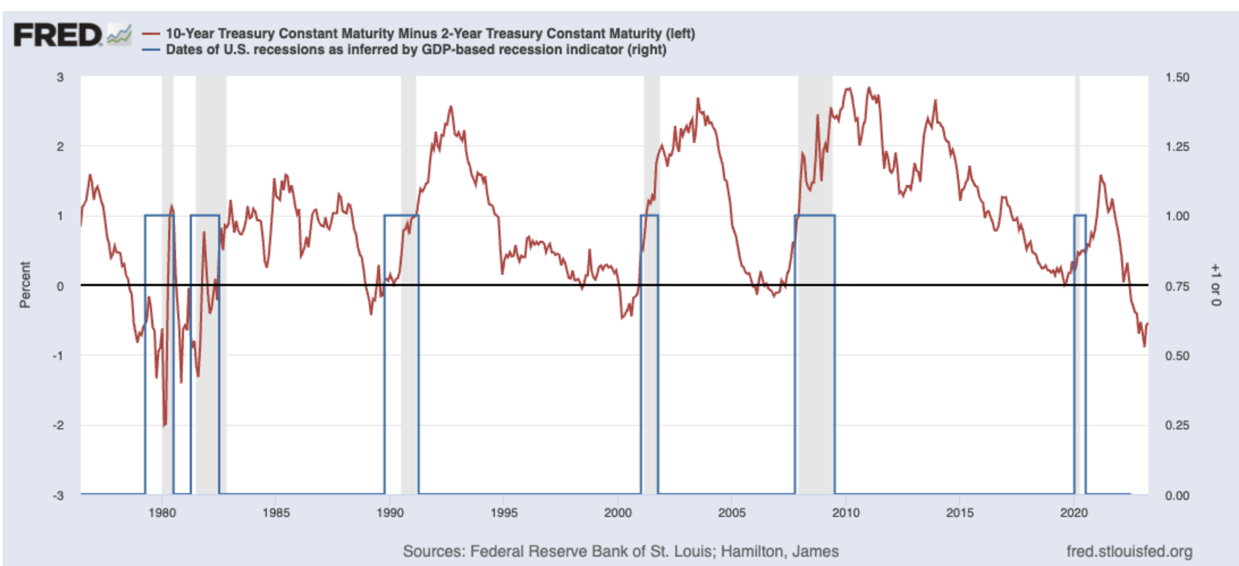
04 Jul 1989, -0.15% (29 May - 13 Dec 1989)
23 Sep 1998, -0.16% (10 Sep - 6 Oct 1998)
28 Dec 2000, -0.85% (4 Apr 2000 - 24 Jan 2001)
27 Feb 2007, -0.66% (17 Jan 2006 - 14 Aug 2007)
28 Aug 2019, -0.54% (22 Mar - 11 Oct 2019)
26 Feb 2020, -0.23% (30 Jan - 9 Mar 2020)
13 Mar 2023, -1.31% (26 Oct 2022 -)

10YR / 2YR Inversion Bottoms:

29 Mar 1989, -0.47% (13 Dec 1988 - 5 Apr 1990)
25 Jun 1998, -0.08% (25 May - 5 Aug 1998)
07 Apr 2000, -0.53% (2 Feb 2000 - 2 Jan 2001)
16 Nov 2006, -0.20% (27 Dec 2005 - 7 Jun 2007)
28 Aug 2019, -0.04% (23 Aug 2019 - 4 Sep 2019)
01 Apr 2022, -0.069% (01 Apr 2022 - 05 Apr 2022)
08 Mar 2023, -1.07% (05 July 2022 -)

Historically, there have been several notable yield curve inversions, with varying levels of severity and duration. While not every inversion leads to a recession, it is important to note that every recession in recent history has been preceded by a yield curve inversion. On average, a recession occurs approximately 18 months after an inversion of the 10YR/2YR curve, though this timeframe has ranged from 10 to 36 months. Over the last five recessions, excluding the COVID pandemic, that timeframe has been reduced to 13 months. We are presently 10 months post-inversion.

The stock market generally appreciates between the start of inversion, through the bottom of inversion, until the onset of a recession. For instance, during the Great Recession, the 10YR/2YR curve inverted in December 2005, bottoming on November 16, 2006. The recession began in December 2007, where the S&P 500 rose by 24.1% prior.



Through the early 1990s recession, which shares similarities with current conditions, the S&P 500 saw a gain of 29.5% in the 15 months post-inversion. During the dot-com bust and the subsequent early 2000s recession, the S&P 500 gained 11.1%

over the 8 months prior to recession. The average return following an inversion to the market peak is 22%.

The recession of the early 90's is the most recent that has several parallels to current conditions. Inflation pressures at the end of a long peacetime expansion caused the Fed to start a rate hiking cycle from 1988-89. This combined with debt accumulation in the late '80s and a weakened consumer sentiment were ultimately the cause for this recession. The 1990 oil price shock is sometimes credited with starting the recession, however that event occurred due to the Iraqi invasion of Kuwait on 2 August 1990. Preceding this recession, the yield curve inverted in December of '88 with the economic contraction beginning July of 1990.

Further parallels from 1990 to today are the stock market correction leading into the yield curve inversion along with an ongoing banking crisis. In the late '80s & early '90s this was the savings and loan crisis. Today we are dealing with the aftermath of the collapse of Credit Suisse, Silvergate, Silicon Valley, and Signature Banks. In both cases this was brought on by rapidly rising rates causing an asset-liability mismatch at those institutions. In 1987, the S&P 500 experienced a 30.3% correction. Presently, the S&P 500 contracted 25.4% from the peak in January to a bottom in October of 2022. In contrast to the early 1990s, the current inversion had started at the conclusion of the correction, providing this post-inversion market with less time to run.

The best-performing sectors in this late-stage period have tended to be utilities and energy, which have averaged a 24% and 17% return respectively following inversion. In the current environment, Utilities (XLU) are approximately flat on a total return basis and the best performing sector has been Energy (XLE). Areas to avoid include banking and financials, as long-term lending against short-term deposits becomes less profitable during inversions. With the recent fallout of bank failures, this is all the more evident.

Timelines of an Inversion

Observations of prior cycles often highlight the duration of time between the initial inversion of the yield curve and the onset of the following recession. As stated above, this occurs, on average, approximately 18 months following the inversion of the 10YR/2YR curve, with a range from 10 to 36 months. Another metric to study is the duration from the bottom of inversion to the onset of the recession.

10YR/2YR Curve Inversion	Initial Inversion	Inversion Peak	Magnitude of Inversion	Recession Onset
1978 - 1981	October 1978	March 1980	-2.41%	Q2 1979, Q2 1981
1988 - 1990	December 1988	March 1989	-0.47%	Q3 1990
2000 - 2001	February 2000	April 2000	-0.53%	Q1 2001
2006 - 2009	December 2005	November 2006	-0.20%	Q4 2007
2023 -	July 2022	March 2023	-1.07%	-

The durations from the bottom of curve inversion to onset of the next recession have been 12, 3, 16, 11, and 12 months respectively for the early ‘80s double dip, early ‘90s, dot com bust, and financial crisis recessions. This leads to a mean duration of 9.5 months from bottom to outset of recession.

The 10YR/3MO demonstrates a similar pattern, albeit with the inversion bottom occurring closer to the onset of economic contraction. These durations were 0, 4, 11, 1, and 7 months respectively for the early ‘80s double dip, early ‘90s, dot com bust, and financial crisis recessions. The mean time from bottom to recession is just 5 months. By the time you notice this indicator bottomed, it is likely time to start exercising caution.

If we are to assume, and as of this writing, that the yield curve inversion bottomed on March 8, 2023 then the likelihood of a recession starting on or about January 2024 according to this indicator is fairly significant.

FOMC Tightening Episodes: 1983 to 2018						
First Tightening Action	**Initial FFTR Target (%)**	**Final Tightening Action**	**Final FFTR Target (%)**	**Total Tightening**	**Yield Curve Inversion?**	**Business Expansion Peak**
Mar 31, 1983	8.50	Aug 9, 1984	11.50	3.00	No	N/A
Mar 29, 1988	6.50	May 16, 1989	9.81	3.31	Yes	Jul 1990
Feb 4, 1994	3.00	Feb 1, 1995	6.00	3.00	No	N/A
Jun 30, 1999	4.75	May 16, 2000	6.50	1.75	Yes	Mar 2001
Jun 30, 2004	1.00	Jun 29, 2006	5.25	4.25	Yes	Dec 2007
Dec 16, 2015	0.00 - 0.25	Dec 19, 2018	2.25 - 2.50	2.25	Yes	Feb 2020
Average tightening across all six episodes:				2.93		

Source: Federal Reserve Bank of St. Louis, 'A Look at Fed Tightening Episodes since the 1980s'

According to the St. Louis Federal Reserve, economic expansion often peaks 15 months after the last rate increase. Presently, the rate hike cycle began in March 2022. If the FOMC stops hiking rates in the fall of 2023 as expected, the cumulative tightening will be 500 bps or more. This may have already resulted in over-tightening due to the fight against high inflation, being the largest Fed funds rate hike since 1980 under Paul Volcker. Based on these timelines, the resulting recession could potentially commence around the fall of 2024. However, our belief is the FOMC conducted their rate tightening action too late in the cycle and this should be taken into account.

These two metrics taken together would suggest that our chances of entering an economic recession by early to mid 2024 are very good. However, while yield curve inversions can provide valuable insights into potential economic downturns, it is essential to consider the broader market context and other factors that may influence market performance. As it has been said, "history doesn't repeat itself, but it often rhymes", every situation will have its own unique nuances.

Timing the Market

While timing the market is a fool's errand, let's indulge. In three of our four prior examples, the S&P 500 appreciated through inversion and topped prior to the onset of recession. In 1980 and 2000, the market peaked exactly four months before the US entered a recession. In 1990, this was just 2 months. In 2007 the market continued to climb until just as the recession was beginning.

Recession	Gain from Inversion Onset	Gain from Inversion Peak	Market Peak from Recession	Loss in Recession
1981	52%	38%	4 mo prior	-24%
1990	30%	22%	2 mo prior	-19%
2001	11%	5%	4 mo prior	-46%
2007	24%	11%	0 mo prior	-53%

As the table above illustrates, the S&P 500 continues to climb following the yield curve setting an inversion bottom. The mean market gain from the initial inversion is 25.3%, with 9.7% of that gain occurring prior to the bottom of the curve.

Significant gains can be made following the bottoming of inversion, however it would feel a bit like playing with fire as history would show that a downturn is very likely to swiftly follow. The current market sentiment is typified by headlines such as "Stocks Brush Off Financial Sector Risks" and "Bonds Rise as Factory Data Temper Inflation Angst". That good factory data news was in reality US manufacturing output contracting more than expected. In fact, goods-producing employment was one of the first segments of the market to fall in 1989.

Since we're on this fool's errand together, we're led to believe that the market is in danger of a significant correction prior to the end of 2023. Potential catalysts we see on the horizon are declining financial leverage, rapidly declining M2 supply, resumption of student loan payments, and an unemployment time bomb. Despite significant layoffs, particularly in the tech sector, employment data remains strong. The large technology companies that have significantly cut staff often provide very generous severance packages. Those packages will begin to run out through the second half of this year. There is potential for a weakening employment picture, combined with the delay in unemployment filings from tech employees rapidly changing the investor sentiment. Do keep in mind that the yield curve is just one data point flashing a recessionary warning and it is the responsibility of each investor to analyze this in conjunction with other economic signals they may use.

A Bold Prediction

Sentiment may be that we have successfully engineered a soft landing and dodged a recession, and history would suggest that feeling may persist in the short term. The bull market trend will continue. However, by winter, Santa Claus will be bringing us coal rather than a rally.

Currently the S&P 500 sits 17.1% higher than the 2022 low it put in following the 10YR/2YR curve inversion. 7.9% of that appreciation occurred prior to the curve inversion bottoming. This is tracking in-line with the expectations from past cycles. Going forward, we would expect a further ~7% gain in the S&P 500 through September of 2023. Around that same time we should be looking for the 10YR/3MO curve to have put in a bottom. At which point we expect to be entering a recession with the associated market declines at the end of these cycles usually significant.

And a Bit of Optimism

While recessions can be difficult and disruptive, it's important to remember that they are a natural part of the business cycle and can actually have some positive long-term outcomes. For one, recessions help to weed out weaker businesses that cannot viably compete in the market, which allows for new, more innovative companies to grow into the gaps formed. This ultimately creates the next set of opportunities for investors like us which we will eagerly await down the road.

To that point, history has shown that some of the best companies of our time were founded during times of economic difficulty. The great recession birthed the gig economy platforms such as Uber and Airbnb. The dot com bust saw the formation of Google, Salesforce, and Akamai Technologies to name a few. And the 1981 recession gave rise to Costco and Compaq Computers. They serve as a reminder that recessions can be a breeding ground for creativity and innovation, as entrepreneurs are forced to develop new solutions to the challenges they face. So while recessions can certainly be challenging, they can also be a time of great opportunity and growth. By keeping a positive outlook, we can weather the storm and come out even stronger on the other side.

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Appendix A

The 1990 Analogy

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>
> *- Mark Twain*

— From Above —

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