Which Leading Indicators Best Predict Market Declines?

YCHARTS

Introduction

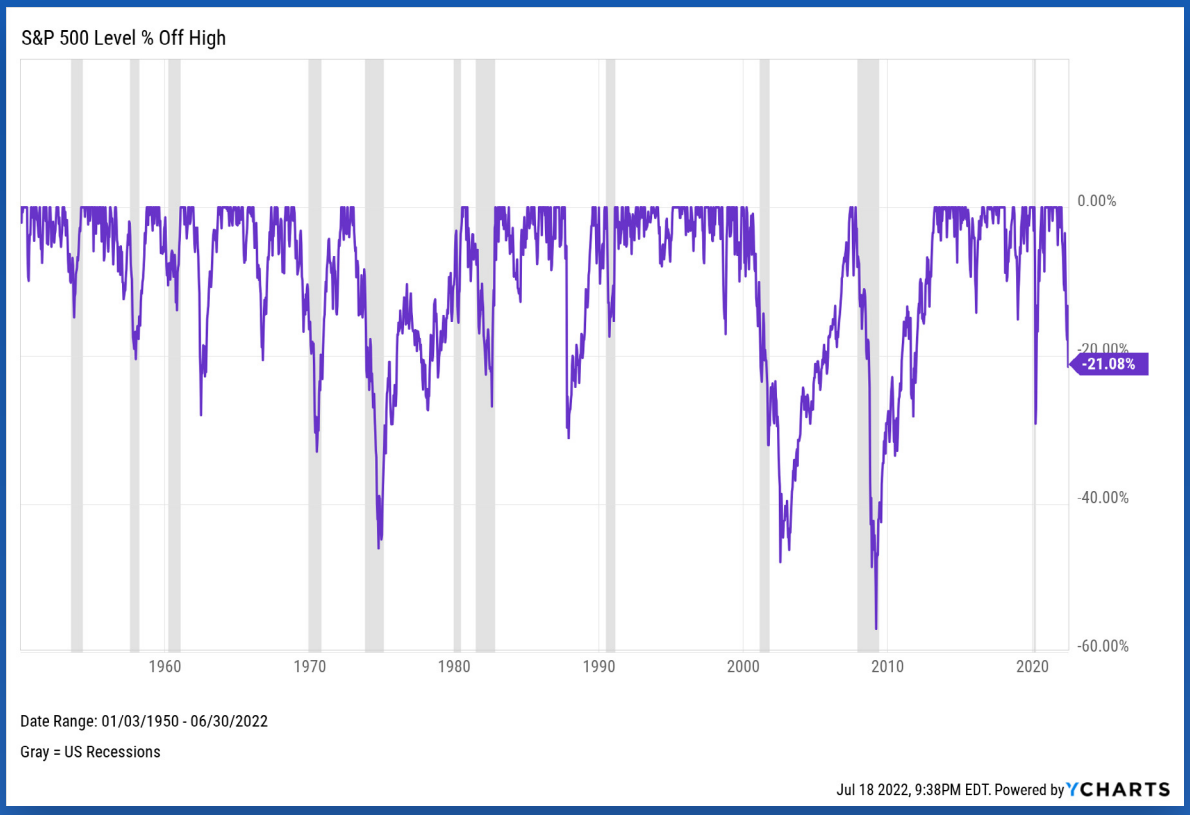
At the close of June 2022, the **S&P 500** had drawn down more than 20% from its most recent all-time high, set on the first trading day of January 2022. This marked the 11th time since 1950 that the benchmark stock market index drew down by at least 20% from an all-time high. In total, the index has declined by 10% or more from its recent high 21 times since 1950.

Much of the blame for 2022's bear market has been placed on factors including supply chain shortages, **US inflation** surpassing 40-year highs, and unprecedented **rate hikes** as the Federal Reserve attempts to tame rising prices.

While major market declines are nearly impossible to predict, that hasn't stopped market pundits and doomsday planners from doing so. But dramatics aside, is there any fool-proof, or at least somewhat reliable, way to stay ahead of stock market declines? Similarly, can advisors develop any actionable plan to communicate what might be around the corner to their clients?

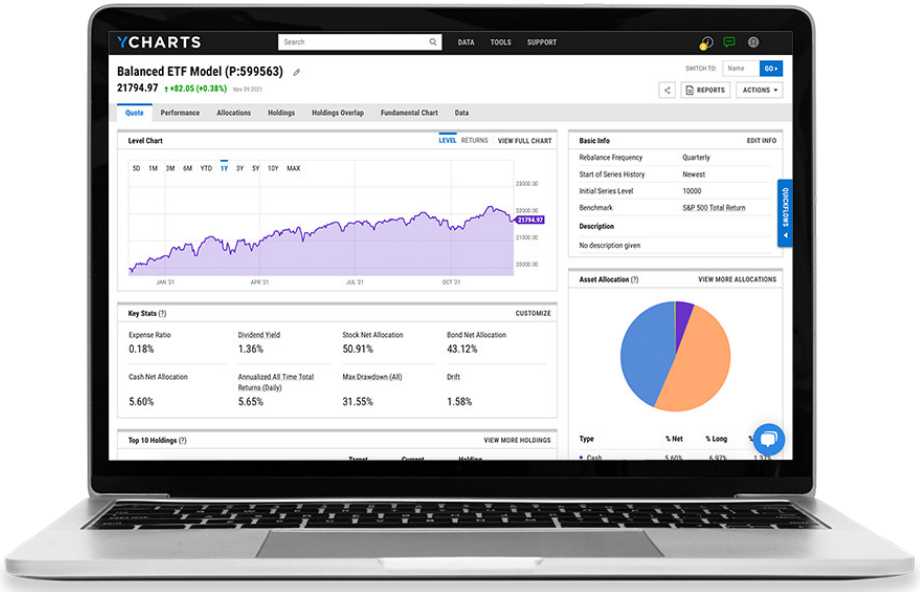
Certain market valuation indicators have been used to gauge whether there is an increased risk of a market crash. Ranging from market-wide price-to-earnings ratios to GDP measurements named after legendary investor Warren Buffett, investors and advisors alike have used a suite of valuation indicators to assess whether the market is about to tumble downhill, and take their portfolios with it.

To shine light on which valuation metrics are effective at foretelling market declines—if any—we analyzed seven of the most commonly used indicators and measured their accuracy in predicting 21 major market declines (as measured by the S&P 500) since 1950.



This analysis answers questions like...

- *Do any valuation indicators consistently predict major market declines?*
- *When valuation indicators have signaled a major decline, how much warning was given?*
- *Which valuation indicators have strong correlations to forward S&P 500 returns, based on historical data?*
- *Which popular valuation indicators have historically failed to warn of market declines?*
- *Which have spotty track records of predicting declines?*



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Key Findings:

Of seven leading indicators studied, none have consistently predicted major market declines dating back to 1950. Even the most consistent indicators provided a warning signal for only about half of major declines.

Yield Spreads, along with the "Buffett Indicator" in more recent years, are historically the most accurate predictors of major declines. Since 2000 the 10-2 Year Yield Spread, 10 Year-3 Month Spread, and "Buffet Indicator" gave warning signals 10.5, 12.9, and 10.8 months, respectively, before a major market decline.

The "Buffett Indicator", 10 Year-3 Month Yield Spread inversions, and the S&P 500 CAPE Ratio are historically the most consistent predictors of major declines.

In recent years, the S&P 500 P/E Ratio has become increasingly less reliable for predicting major market declines. Using its 2000-to-date average to calculate a "critical threshold", it has signaled just 2 of 7 major declines in that time.

Most indicators have first signaled overvaluation 10 to 30 months prior to the S&P 500's peak and subsequent major decline, on average. This variability may make it difficult to rely on valuation indicators for buy and sell decisions.

Based on its consistency (warning of 8 out of 16 major market declines since 1962), accuracy (preceding those 8 declines by 12.9 months on average), and the simplicity of its warning signal (a negative versus positive value), **the 10 Year-3 Month Yield Spread inversion might be considered the standout valuation indicator of the group.**

Summary Table of Key Findings:

Indicator:	Examined Timeframe	Major Declines in Timeframe	% of Major Declines Preceded by Overvaluation Signal	# of Major Declines - Late Signal	Average Time, Signal to S&P 500 Peak
The Buffett Indicator	1971-to-Date	14	50%	-	24.18 Months
	2000-to-Date	7	57%	-	10.82 Months
Tobin's Q	1950-to-Date	21	38%	-	31.62 Months
	2000-to-Date	7	43%	-	10.50 Months
S&P 500 P/E Ratio	1989-to-Date	10	40%	-	21.17 Months
	2000-to-Date	7	29%	1	36.21 Months
S&P 500 CAPE Ratio	1950-to-Date	21	48%	-	33.96 Months
	2000-to-Date	7	43%	-	6.04 Months
10-2 Year Yield Spread	1978-to-Date	13	46%	1	10.57 Months
10 Year-3 Month Yield Spread	1962-to-Date	16	50%	-	12.88 Months
S&P 500 YoY Earnings Growth	1950-to-Date	21	43%	3	17.59 Months

Background and Information:

We chose the seven indicators examined in this research because of their wide use for determining the market's valuation level at any point in time. They have also been frequently cited in leading research publications about market valuation, periods of overvaluation, and declines.

Four of these indicators have generally accepted thresholds that for when the market may be overvalued:

- "Buffett Indicator" > 100%
- Tobin's Q > 1
- Yield Spreads = Negative
- S&P 500 YoY earnings growth = Negative

But for two indicators without definitive thresholds, the S&P 500 P/E Ratio and S&P 500 CAPE Ratio, overvaluation is determined by comparing the indicator's current value to its own historical average.

Because the values of nearly all these indicators also ebb and flow around their definitive thresholds or historical averages, and thus oscillate between signaling over- and undervaluation, we applied a 20% "handicap" to each.

This approach may in fact be more practical for any decision-making based on these valuation indicators. With a higher bar for overvaluation signals, threshold level + 20%, advisors and investors would only take action when signals reach a significant level and become hard to ignore. Our findings show that even with this higher threshold, indicators still provide months or years of warning—an attribute or drawback, depending on your time horizon.

For example, a "Buffett Indicator" reading of greater than 100% is considered a signal of overvaluation. But historically, it often floats around the 100% mark—some quarters slightly above it, others slightly below.

Therefore, we classified any value above the following thresholds as clearly overvalued:

- "Buffett Indicator" ≥ 120%
- Tobin's Q ≥ 1.2
- S&P 500 P/E Ratio ≥ 29.29 (20% above its all-time historical average of 24.41)
- S&P 500 CAPE Ratio ≥ 24.05 (20% above its 1950-to-Date average of 20.04)

Furthermore, it's understood that equity market dynamics in recent years differ greatly from those 50 or 75 years ago. For this reason, we also evaluated select indicators against their more recent 2000-to-Date averages in addition to all-time averages.

Lastly, with respect to each indicator's signal of overvaluation, and the relative S&P 500 peaks and troughs they preceded, we used the following definitions:

- "Major Decline" = a decline of 10% or greater from the S&P 500's most recent all-time high
- "Peak Date" = date of the S&P 500's newly set all-time high
- "Trough Date" = date of the S&P 500's relative low point following its latest all-time high
- "Trough Max Drawdown" = the S&P 500's max percent drawdown, from Peak Date through Trough Date close

We identified 21 major market declines since 1950, and this list forms the basis of our research:

Year(s) of Major Declines	Peak Date	Trough Date	Trough Max Drawdown
1950	6/12/1950	7/26/1950	-14.02%
1953	1/5/1953	9/14/1953	-14.82%
1956-57	8/3/1956	10/22/1957	-21.48%
1959-60	8/3/1959	10/25/1960	-13.85%
1961-62	12/12/1961	6/26/1962	-27.97%
1966	2/9/1966	10/7/1966	-22.18%
1968-70	11/29/1968	5/26/1970	-36.06%
1973-74	1/11/1973	10/3/1974	-48.20%
1980-82	11/28/1980	8/12/1982	-27.11%
1983-84	10/10/1983	7/24/1984	-14.38%
1987	8/25/1987	12/4/1987	-33.51%
1990	7/16/1990	10/11/1990	-19.92%
1998	7/17/1998	8/31/1998	-19.34%
1999	7/16/1999	10/15/1999	-12.08%
2000-02	3/24/2000	10/9/2002	-49.50%
2007-09	10/9/2007	3/9/2009	-56.78%
2015-16	5/21/2015	2/11/2016	-14.16%
Early 2018	1/26/2018	2/8/2018	-10.16%
Late 2018	9/20/2018	12/24/2018	-19.78%
2020	2/19/2020	3/23/2020	-33.93%
2022	1/3/2022	6/30/2022*	-21.08%

Major Decline
a decline of 10% or greater from the S&P 500's most recent all-time high

Peak Date
date of the S&P 500's newly set all-time high

Trough Date
date of the S&P 500's relative low point following its latest all-time high

Trough Max Drawdown
the S&P 500's max percent drawdown, from Peak Date through Trough Date close

** As of 6/30/2022, a new S&P 500 all-time high was yet to be set.*

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S&P 500 CAPE Ratio

What is it?

The S&P 500 Shiller Cyclically Adjusted Price-Earnings (CAPE) Ratio is defined as the ratio between the S&P 500's current price divided by the 10-year moving average of inflation-adjusted earnings. The metric was invented by American economist Robert Shiller and has become a popular way to understand long-term stock market valuations. Much like the S&P 500 P/E Ratio, a higher S&P 500 CAPE ratio means the S&P 500's index level is outpacing the 10-year moving average of inflation-adjusted earnings from its constituents.

How Well Do S&P 500 CAPE Ratios Correlate to Forward S&P 500 Returns?

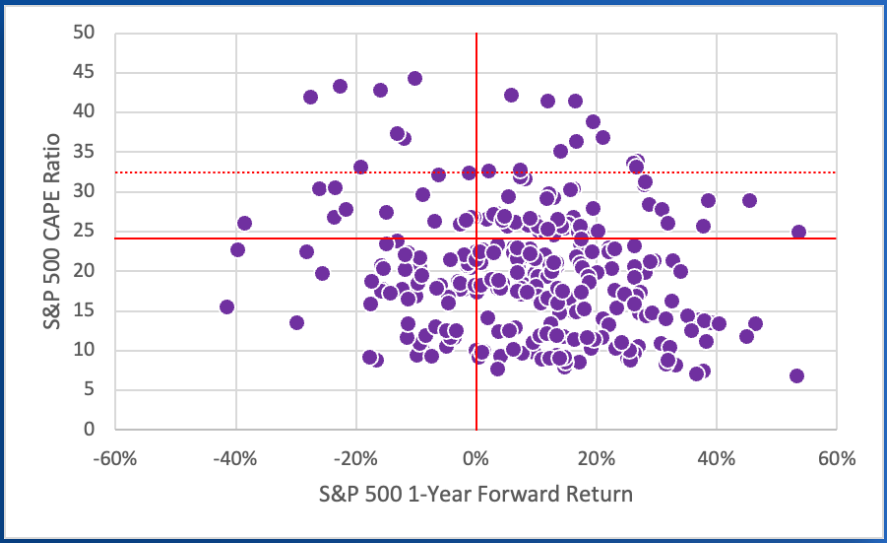
Because periods in which the S&P 500 CAPE Ratio is above its historical average are taken as signals of overvaluation, most data points would appear in **Quadrant II** and **Quadrant IV** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants I & III** point to less accurate prediction of subsequent returns.

The S&P 500 CAPE Ratio also does not have a discrete threshold for determining whether the market is overvalued. Rather, investors more often compare the value at a point in time against the metric's own historical average.

To set a clear threshold of overvaluation that would be difficult to ignore, we added a 20% premium to the S&P 500 CAPE Ratio's long-term average since 1950. since 1950 of 20.04. That level, 24.05, is represented by the solid horizontal red line in the following Scatter Plots. To accommodate for modern market conditions, we also captured the average S&P 500 CAPE Ratio from 2000 to present, 26.98, and applied the same 20% increase for a "hard to ignore" threshold of 32.38, which is represented by the dashed red line.

Most 1Y, 3Y, and 5Y forward returns fall in Quadrant IV for both thresholds, representing lower S&P 500 CAPE ratios and positive forward returns for the index itself. That said, Quadrant III (negative forward S&P 500 returns despite lower S&P 500 CAPE ratios) is fairly crowded on the 1-year forward return scatter plot, something that would detract from the near-term accuracy of the S&P 500 CAPE Ratio. Over the longer-term, however, the data more strongly confirms its accuracy.

QUADRANT II	QUADRANT I
Indicator signals: **Overvaluation**	Indicator signals: **Overvaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Undervaluation**	Indicator signals: **Undervaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



S&P 500 CAPE Ratio vs. S&P 500 1-Year Forward Price Return

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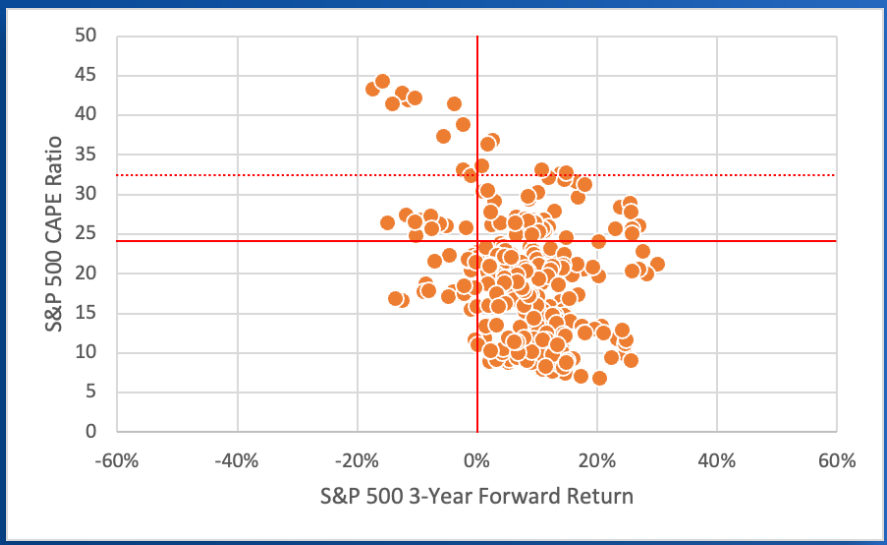

S&P 500 CAPE Ratio vs. S&P 500 3-Year Forward Price Return

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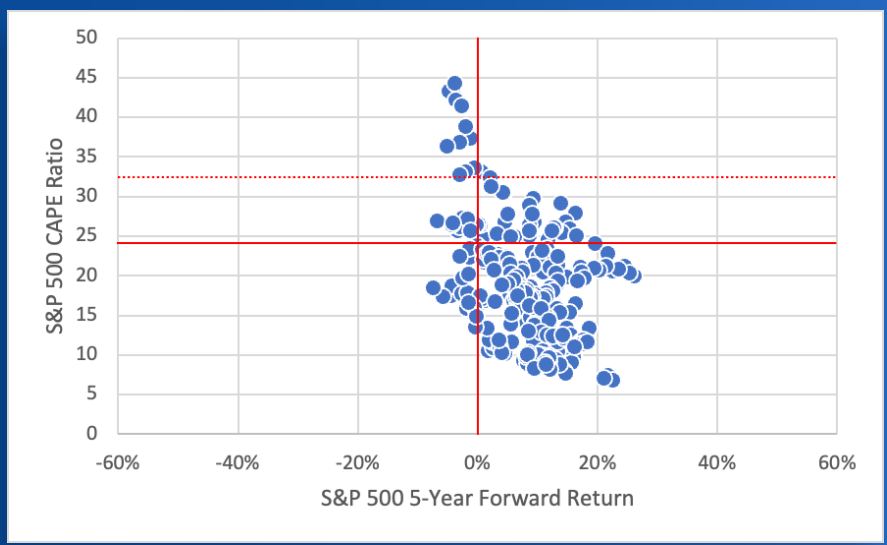

S&P 500 CAPE Ratio vs. S&P 500 5-Year Forward Price Return

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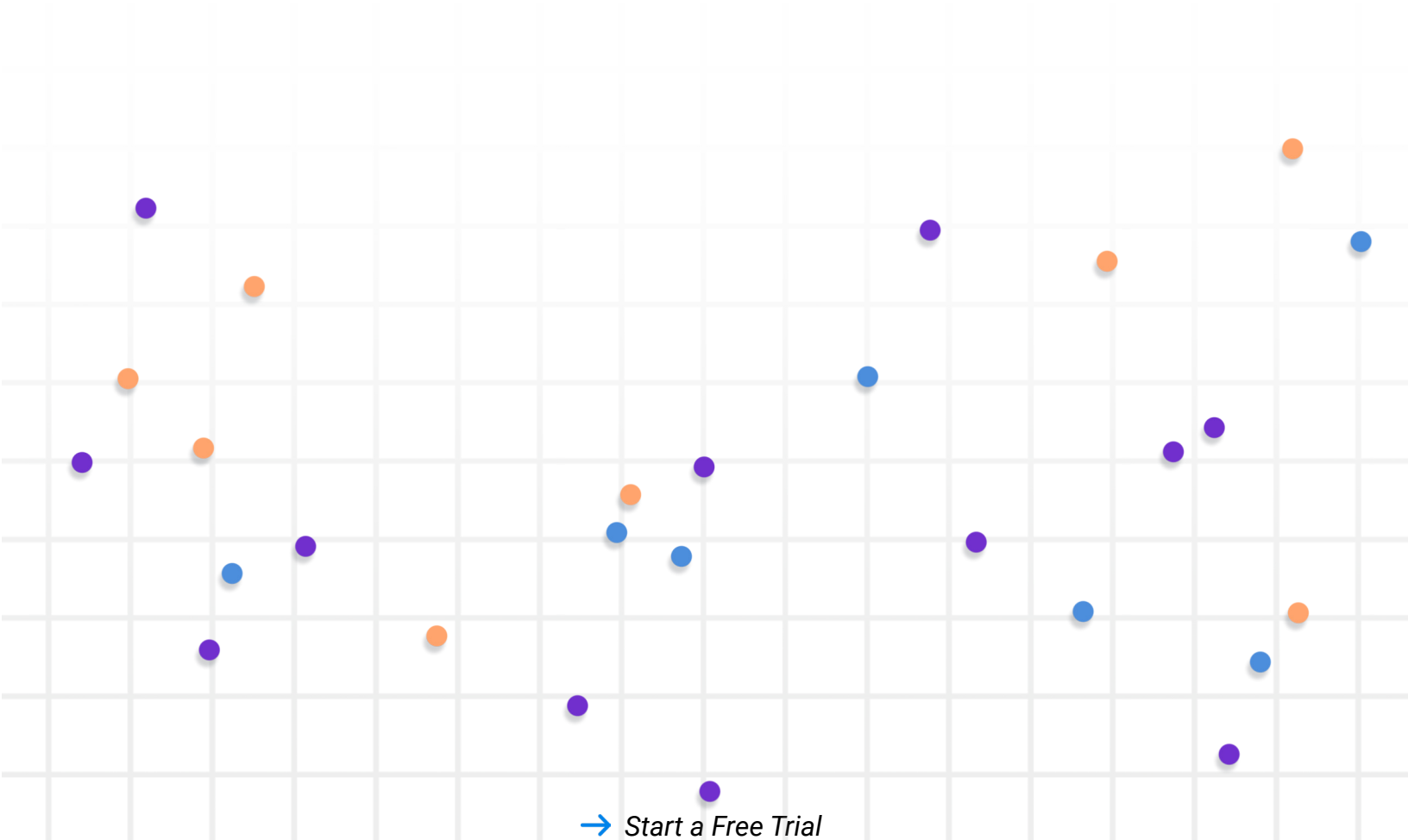
How Accurate Are S&P 500 CAPE Ratios At Predicting Market Declines?

1950-to-Date History:

Out of a possible 21 major market declines dating back to 1950, S&P 500 CAPE Ratio levels of 24.05 or greater provided warning to 10 of them. Despite being relatively quiet until 1998, the S&P 500 CAPE Ratio breached its warning signal threshold just 9 days before the S&P 500 index's peak in 1966, and subsequent market decline.

The S&P 500 CAPE Ratio has flashed its overvaluation signal before every market decline since 1998… but with a catch.

Based on the average S&P 500 CAPE Ratio since 1950, the indicator gave an "Overvalued" reading from November 1995 all the way through June 2002. Not only did the S&P 500 CAPE Ratio give warning to the 1998 market decline 31 months in advance, but two other major market declines occurred while the alarm was still sounding. The same phenomenon occurred in March 2016, where four market declines happened under this constant Overvaluation signal, one that was still flashing as of May 2022.



Accuracy For Predicting Major Market Declines: S&P 500 CAPE Ratio, 1950-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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Red line marks overvaluation level of 24.05 or greater (20% above 1950-to-date average of 20.04)

Date Range: 12/31/1949 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
January 1966 Signal: 1/31/66 Peak: 2/9/66 Trough: 10/7/66	0 Months, 9 Days	66.86% (1.27%)	7 Months, 28 Days	-31.70% (-22.18%)	8 Months, 6 Days	-29.46% (-21.19%)	January 1966
November 1995 Signal: 11/30/95 Peak: 7/17/98 Trough: 8/31/98	31 Months, 17 Days	29.17% (96.04%)	1 Month, 14 Days	-82.50% (-19.34%)	33 Months, 1 Day	18.11% (58.13%)	
Peak: 7/16/99 Trough: 10/15/99	43 Months, 16 Days	26.47% (134.4%)	2 Months, 29 Days	-40.33% (-12.08%)	46 Months, 15 Days	20.50% (106.1%)	June 2002
Peak: 3/24/00 Trough: 10/9/02	51 Months, 23 Days	23.91% (152.3%)	30 Months, 15 Days	-23.33% (-49.15%)	82 Months, 9 Days	3.70% (28.31%)	
June 2003 Signal: 6/30/03 Peak: 10/9/07 Trough: 3/9/09	51 Months, 9 Days	11.71% (60.61%)	17 Months, 0 Days	-44.69% (-56.78%)	68 Months, 7 Days	-6.21% (-30.58%)	December 2007
November 2013 Signal: 11/30/13 Peak: 5/21/15 Trough: 2/11/16	17 Months, 21 Days	11.88% (18.00%)	8 Months, 21 Days	-18.90% (-14.16%)	26 Months, 12 Days	0.58% (1.29%)	January 2016
March 2016 Signal: 3/31/16 Peak: 1/26/18 Trough: 2/8/18	21 Months, 26 Days	20.00% (39.48%)	0 Months, 13 Days	-95.06% (-10.16%)	22 Months, 8 Days	12.89% (25.31%)	
Peak: 9/20/18 Trough: 12/24/18	29 Months, 20 Days	15.32% (42.29%)	3 Months, 4 Days	-57.12% (-19.78%)	32 Months, 23 Days	4.96% (14.15%)	
Peak: 2/19/20 Trough: 3/23/20	46 Months, 19 Days	13.63% (64.40%)	1 Month, 4 Days	-98.98% (-33.93%)	47 Months, 21 Days	2.10% (8.63%)	May 2022 (So far)
Peak: 1/3/22 Trough: TBD (as of 6/30/22)	69 Months, 3 Days	15.79% (132.9%)	5 Months, 27 Days	-38.46% (-21.08%)	74 Months, 30 Days	10.22% (83.78%)	
Simple Averages (Total of 10 Rows)	36.36 Months	23.47% Annualized Return			44.28 Months	3.74% Annualized Return	

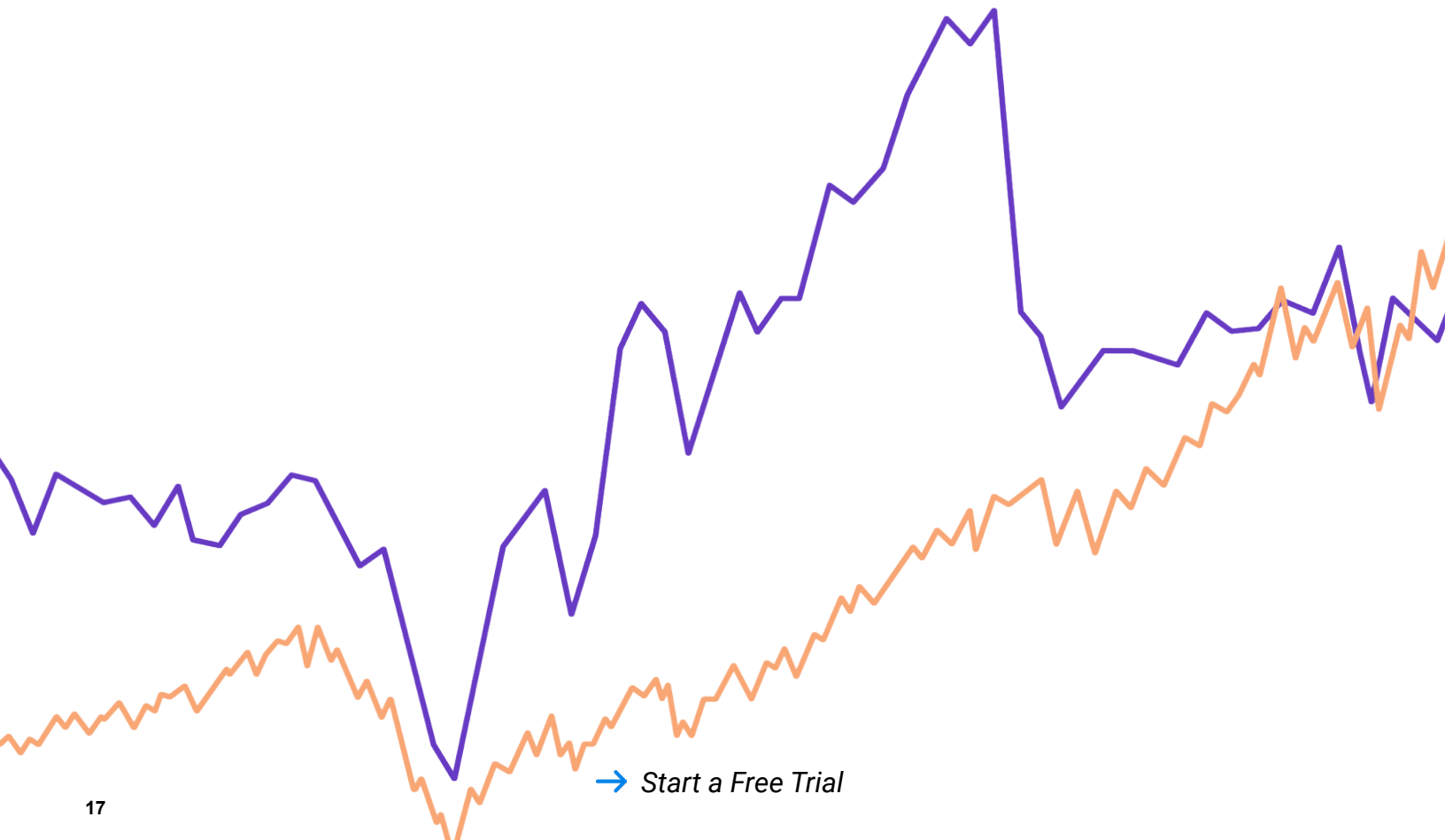
How Accurate Are S&P 500 CAPE Ratios At Predicting Market Declines?

Recent History, 2000-to-Date:

Out of a possible 7 major market declines since 2000, S&P 500 CAPE Ratio levels of 32.38 or greater provided warning to three of them.

Though the 2000-to-Date average S&P 500 CAPE Ratio missed four major market declines, it gave more well-timed warnings to the three that it did precede, as compared to the 1950-to-Date average (+20%).

In only one instance did the 2000-to-Date S&P 500 CAPE Ratio give multiple warnings to a single market decline. For the Late 2018 major decline, one overvaluation signal came a little under eight months before the start of that decline, and the other a well-timed 20 days beforehand. Finally, the S&P 500 CAPE Ratio did not flash a warning sign for the 2020 market decline, but did so in November 2020, 13 months before the start of the 2022 decline.



Accuracy For Predicting Major Market Declines: S&P 500 CAPE Ratio, 2000-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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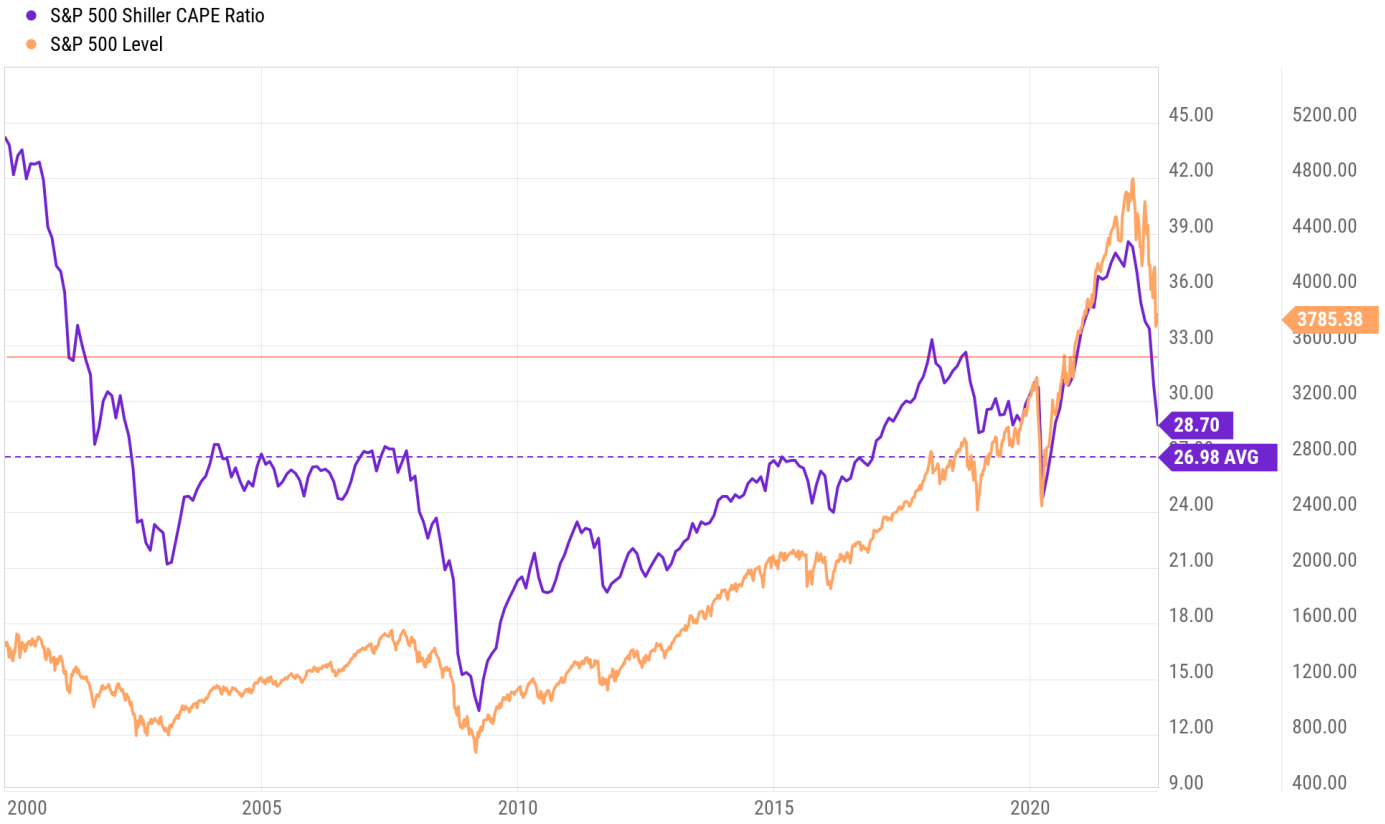
Red line marks overvaluation level of 32.38 or greater (20% above recent, 2000-to-date average of 26.98)



Date Range: 12/31/1999 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
December 1999 Signal: 12/31/99 Peak: 3/24/00 Trough: 10/9/02	2 Months, 22 Days	18.39% (3.96%)	30 Months, 15 Days	-23.33% (-49.15%)	33 Months, 8 Days	-20.52% (-47.13%)	February 2001
January 2018 Signal: 1/31/18 Peak: 9/20/18 Trough: 12/24/18	7 Months, 20 Days	6.02% (3.79%)	3 Months, 4 Days	-57.12% (-19.78%)	10 Months, 23 Days	-18.49% (-16.74%)	January 2018
August 2018 Signal: 8/31/18 Peak: 9/20/18 Trough: 12/24/18	0 Months, 20 Days	20.07% (1.01%)	3 Months, 4 Days	-57.12% (-19.78%)	3 Months, 23 Days	-48.71% (-18.97%)	September 2018
November 2020 Signal: 11/30/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	13 Months, 4 Days	29.31% (32.44%)	5 Months, 27 Days	-38.46% (-21.08%)	19 Months, 0 Days	2.84% (4.52%)	May 2022 (So far)
Simple Averages (Total of 4 Rows)	6.04 Months	18.45% Annualized Return			16.70 Months	-21.22% Annualized Return	

Tobin's Q

What is it?

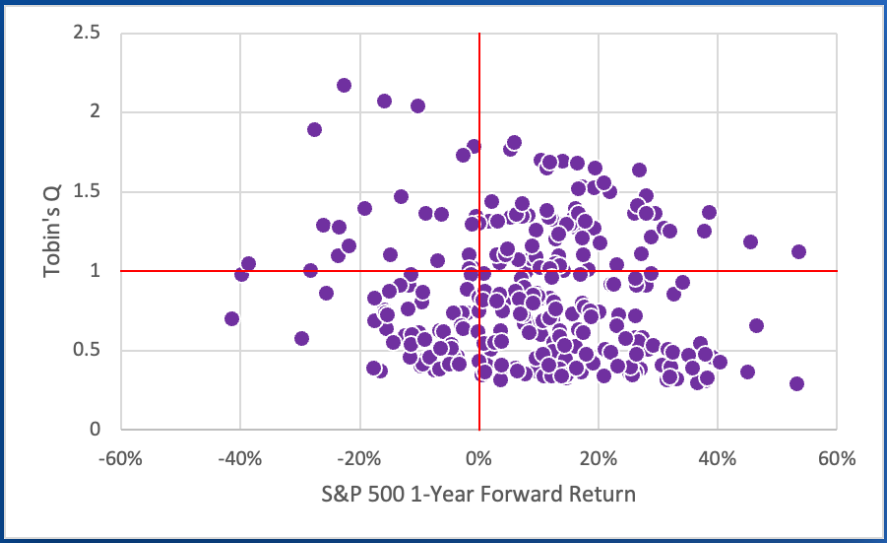
Tobin's Q measures the market value of one or all public companies in the US, divided by total replacement cost. A Tobin's Q level above 1 would mean a company's stock is more expensive than the replacement cost of its physical assets, implying that the stock is overvalued. At the total market level, many macroeconomists consider the market to be overvalued when Tobin's Q is above its long-term mean and undervalued when below the long-term mean.

How Well Does Tobin's Q Correlate to Forward S&P 500 Returns?

Because Tobin's Q levels above 1 are taken as signals of overvaluation, most data points would appear in **Quadrant II** and **Quadrant IV** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants I & III** point to less accurate prediction of subsequent returns.

Most data points fell in Quadrant IV—indicating low Tobin's Q levels align with positive forward returns—and that effect only increased in the longer, 3Y and 5Y forward return periods. The shape of all data points in the 3Y and 5Y scatter plots shows fairly strong correlation. However, a fair amount of data points landed in Quadrants I and III, making for strikes against the accuracy of Tobin's Q.

QUADRANT II	QUADRANT I
Indicator signals: **Overvaluation**	Indicator signals: **Overvaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Undervaluation**	Indicator signals: **Undervaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



Tobin's Q vs. S&P 500
1-Year Forward Return

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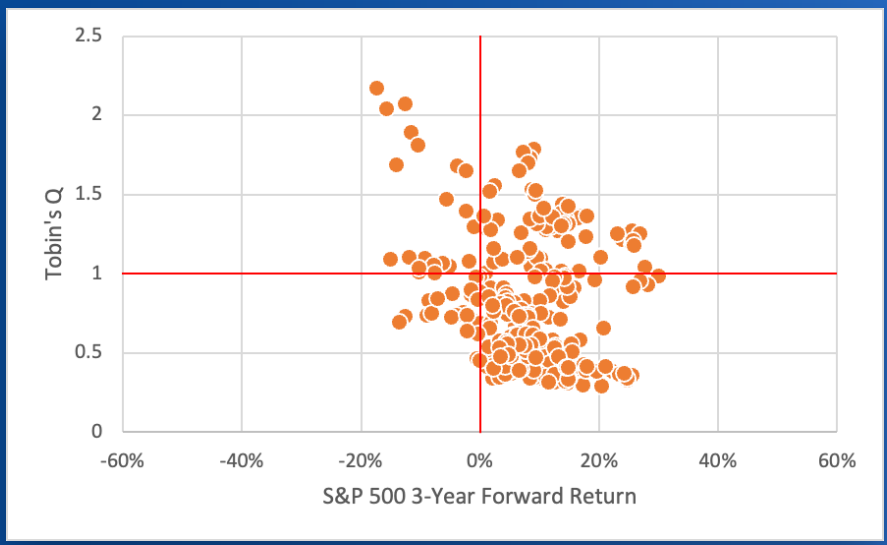

Tobin's Q vs. S&P 500
3-Year Forward Return

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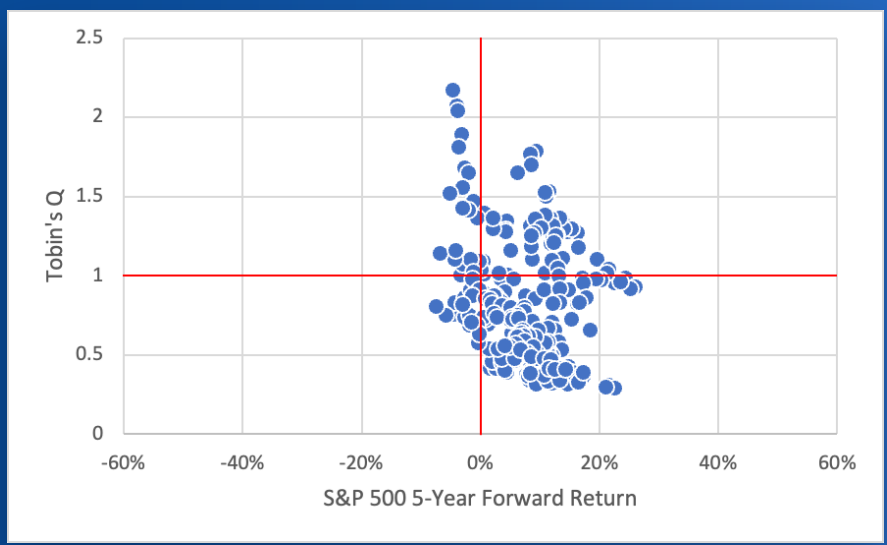

Tobin's Q vs. S&P 500
5-Year Forward Return

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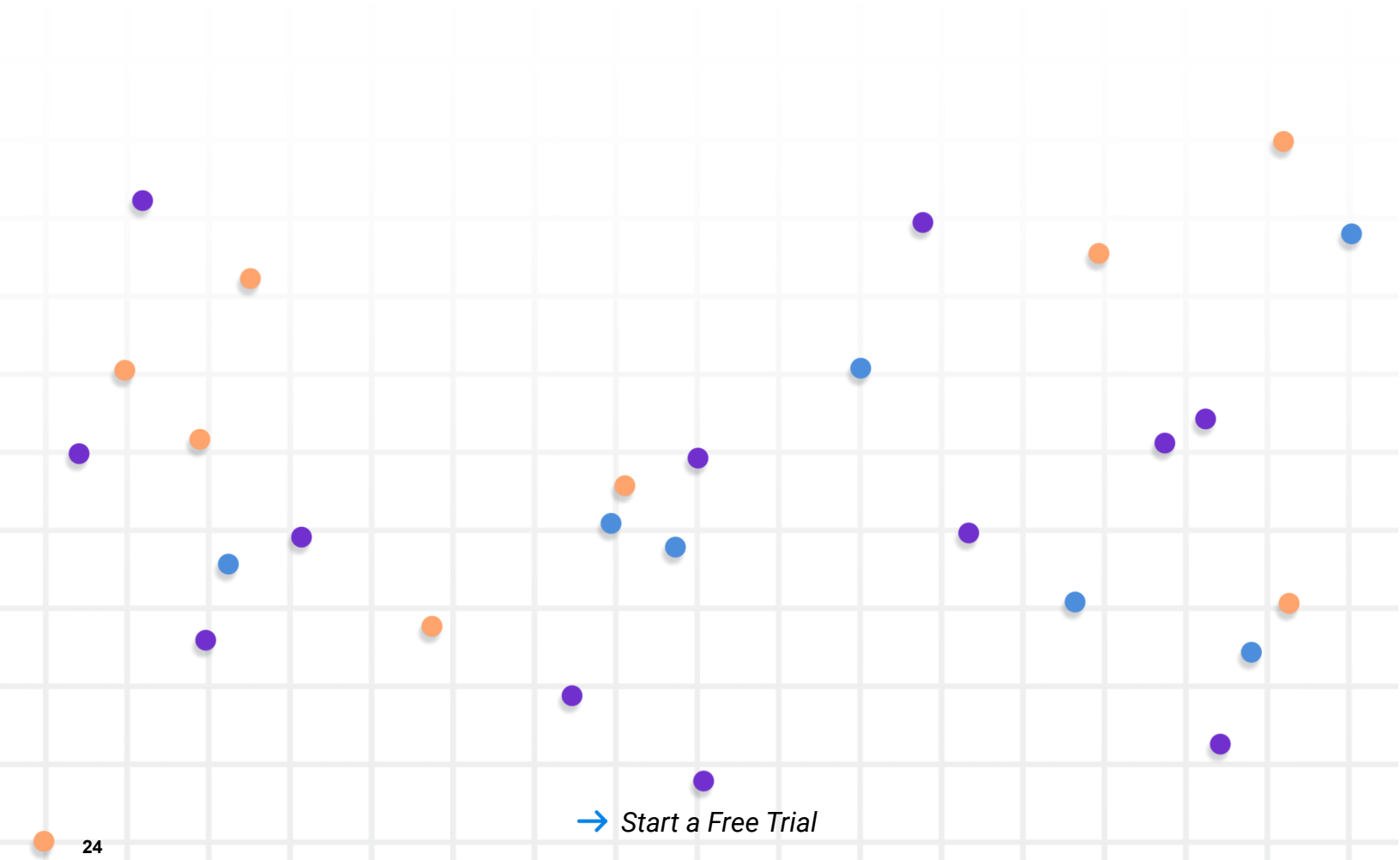
How Accurate Is Tobin's Q At Predicting Market Declines?

1950-to-Date History:

Out of a possible 21 major market declines dating back to 1950, when S&P 500 index data was first available, Tobin's Q levels of 1.2 or greater provided warning to just 8 of them. At no point until 1998 did Tobin's Q provide a signal of overvaluation which was hard to ignore (20% higher than its critical level, or 1.2).

Using readings above 1.2, a Tobin's Q signal has preceded every major market decline since 1998, except for 2007-09. However, there were two instances where a Tobin's Q warning signal persisted through more than one major decline—a drawback for those acting on signals from Tobin's Q. The warning signal given in Q2 1997 preceded the 1998 decline by 12 months and 17 days, but stayed flashing through Q2 2001. During this time, the market declines of 1999 and 2000-02 also occurred. The overvaluation signal given in Q4 2015 similarly didn't reset until after Q4 2019. This signal preceded the Early 2018 decline by a little over two years, but the declines of Late 2018 and 2020 also occurred while Tobin's Q signal "stayed on".



Accuracy For Predicting Major Market Declines: Tobin's Q, 1950-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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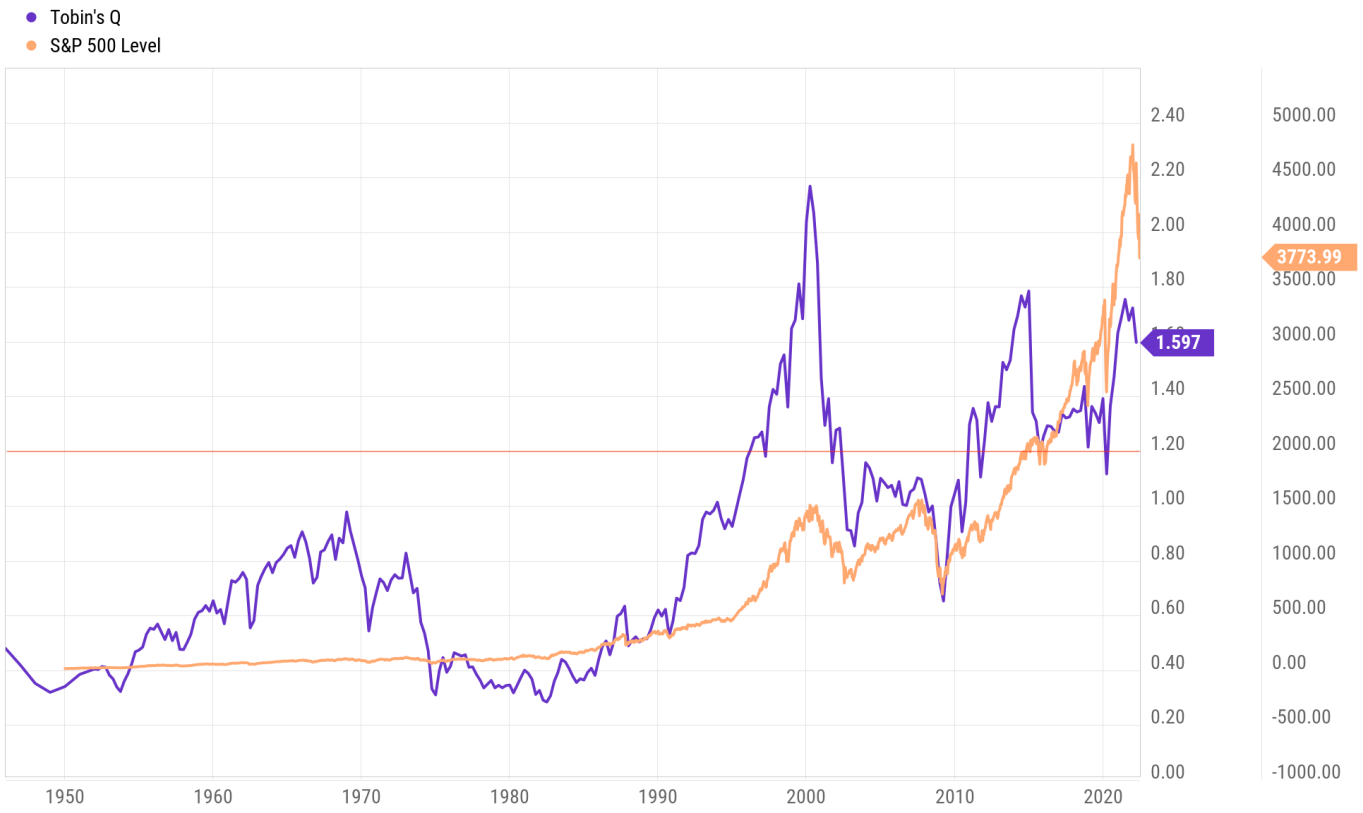
Red line marks overvaluation level of 1.2 or greater (20% above 1)



Date Range: 12/31/1945 - 06/30/2022

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Tobin's Q provided plenty of notice to investors for the market declines it did signal in advance. Historically, 31.6 months have passed between Tobin Q's first warning signal and the S&P 500's relative peak, on average. In 1998, the warning signal given by Tobin's Q was especially timely, flashing 12 months and 17 days before the S&P 500 peaked and began a major decline.

Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q1 1996 Signal: 3/31/96 Peak: 7/17/98 Trough: 8/31/98	27 Months, 16 Days	30.29% (83.85%)	1 Month, 14 Days	-82.50% (-19.34%)	29 Months, 0 Days	17.65% (48.30%)	Q4 1996
Q2 1997 Signal: 6/30/97 Peak: 7/17/98 Trough: 8/31/98	12 Months, 17 Days	32.34% (34.07%)	1 Month, 14 Days	-82.50% (-19.34%)	14 Months, 1 Day	6.93% (8.15%)	
Peak: 7/16/99 Trough: 10/15/99	24 Months, 16 Days	25.97% (60.29%)	2 Months, 29 Days	-40.33% (-12.08%)	27 Months, 15 Days	16.14% (40.93%)	Q2 2001
Peak: 3/24/00 Trough: 10/9/02	32 Months, 23 Days	22.09% (72.57%)	30 Months, 15 Days	-23.33% (-49.15%)	63 Months, 9 Days	-2.44% (-12.24%)	
Q4 2010 Signal: 12/31/10 Peak: 5/21/15 Trough: 2/11/16	52 Months, 20 Days	12.76% (69.43%)	8 Months, 21 Days	-18.90% (-14.16%)	61 Months, 11 Days	7.59% (45.44%)	Q2 2011
Q4 2011 Signal: 12/31/11 Peak: 5/21/15 Trough: 2/11/16	40 Months, 20 Days	16.82% (69.43%)	8 Months, 21 Days	-18.90% (-14.16%)	49 Months, 11 Days	9.52% (45.44%)	Q2 2015
Q4 2015 Signal: 12/31/15 Peak: 1/26/18 Trough: 2/8/18	24 Months, 26 Days	17.84% (40.56%)	0 Months, 13 Days	-95.06% (-10.16%)	25 Months, 8 Days	11.69% (26.28%)	
Peak: 9/20/18 Trough: 12/24/18	32 Months, 20 Days	14.15% (43.39%)	3 Months, 4 Days	-57.12% (-19.78%)	35 Months, 23 Days	4.80% (15.03%)	Q4 2019
Peak: 2/19/20 Trough: 3/23/20	49 Months, 19 Days	12.97% (65.67%)	1 Month, 4 Days	-98.98% (-33.93%)	50 Months, 21 Days	2.16% (9.46%)	
Q2 2020 Signal: 6/30/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	18 Months, 4 Days	33.45% (54.71%)	5 Months, 27 Days	-38.46% (-21.08%)	24 Months, 0 Days	10.50% (22.10%)	Q1 2022
Simple Averages (Total of 10 Rows)	31.62 Months	21.87% Annualized Return			38.06 Months	8.45% Annualized Return	

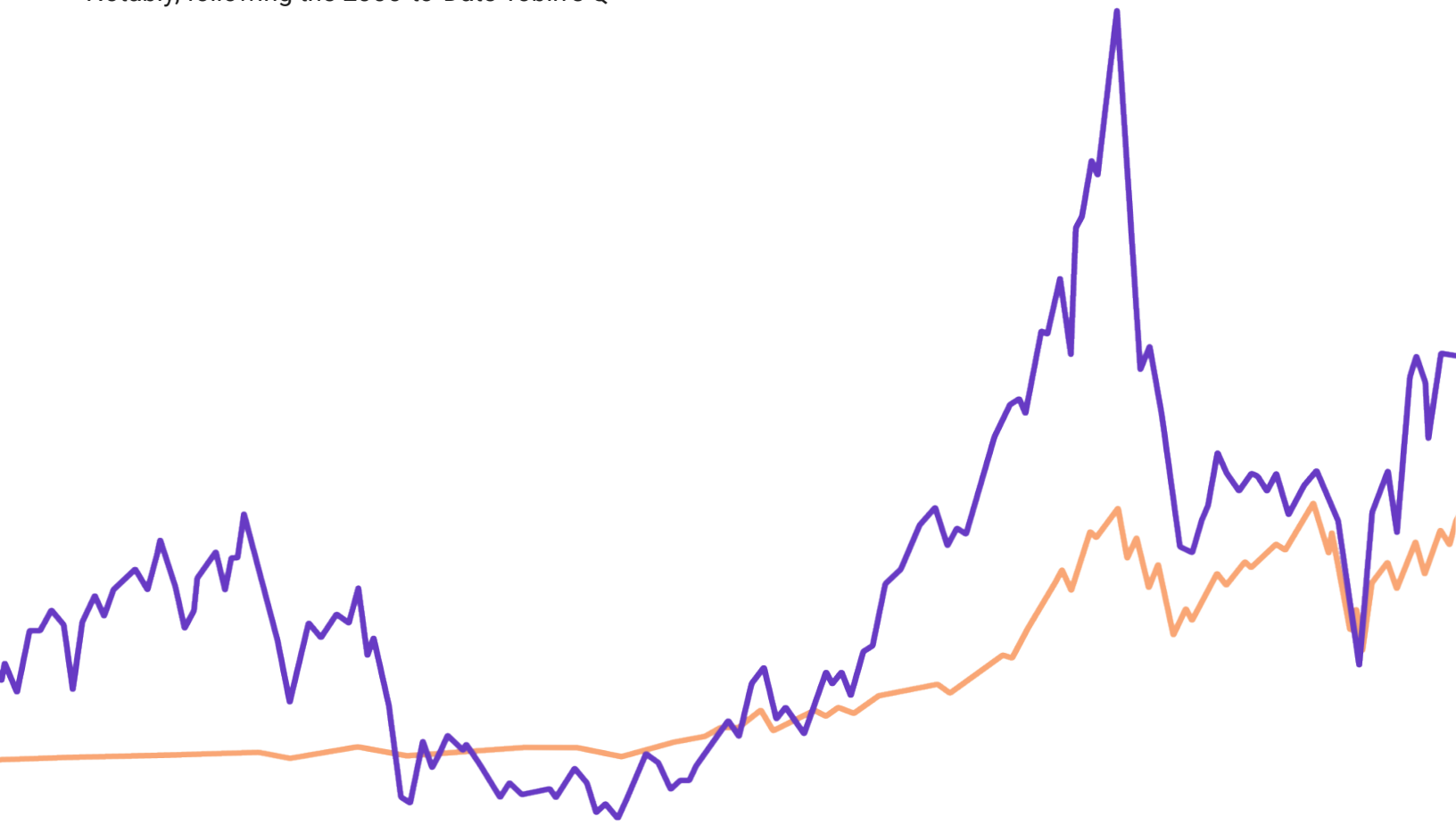
How Accurate Is Tobin's Q At Predicting Market Declines?

Recent History, 2000-to-Date:

To accommodate for modern equity market dynamics, we also examined the average level of Tobin's Q from 2000-to-Date, 1.282. Similarly, we applied the 20% handicap to arrive at 1.538 as the overvaluation threshold of the twenty-first century. **Out of a possible 7 major market declines dating back to 2000, this updated Tobin's Q signal provided warning to three of them.**

This elevated threshold helped the indicator provide more "well-timed" warnings of impending market declines. The average time from the initial warning signal to the S&P 500's relative peak was cut to 10 and a half months—a reduction of 18 months. Notably, following the 2000-to-Date Tobin's Q (1.538) would have provided you 12 months' notice of the 2022 market decline, while the original Tobin's Q threshold of overvaluation (1.2) was breached two whole quarters earlier. Taking the earlier cue to exit the S&P 500 would have led to missing out **on 21.2% of additional gains from 6/30/2020 to 12/31/2020.**

Similar to the 2000-to-Date "Buffett Indicator", one downside of following the elevated 2000-to-Date Tobin's Q level was not receiving any tip-off before the Early 2018, Late 2018, and 2020 market declines.



Accuracy For Predicting Major Market Declines: Tobin's Q, 2000-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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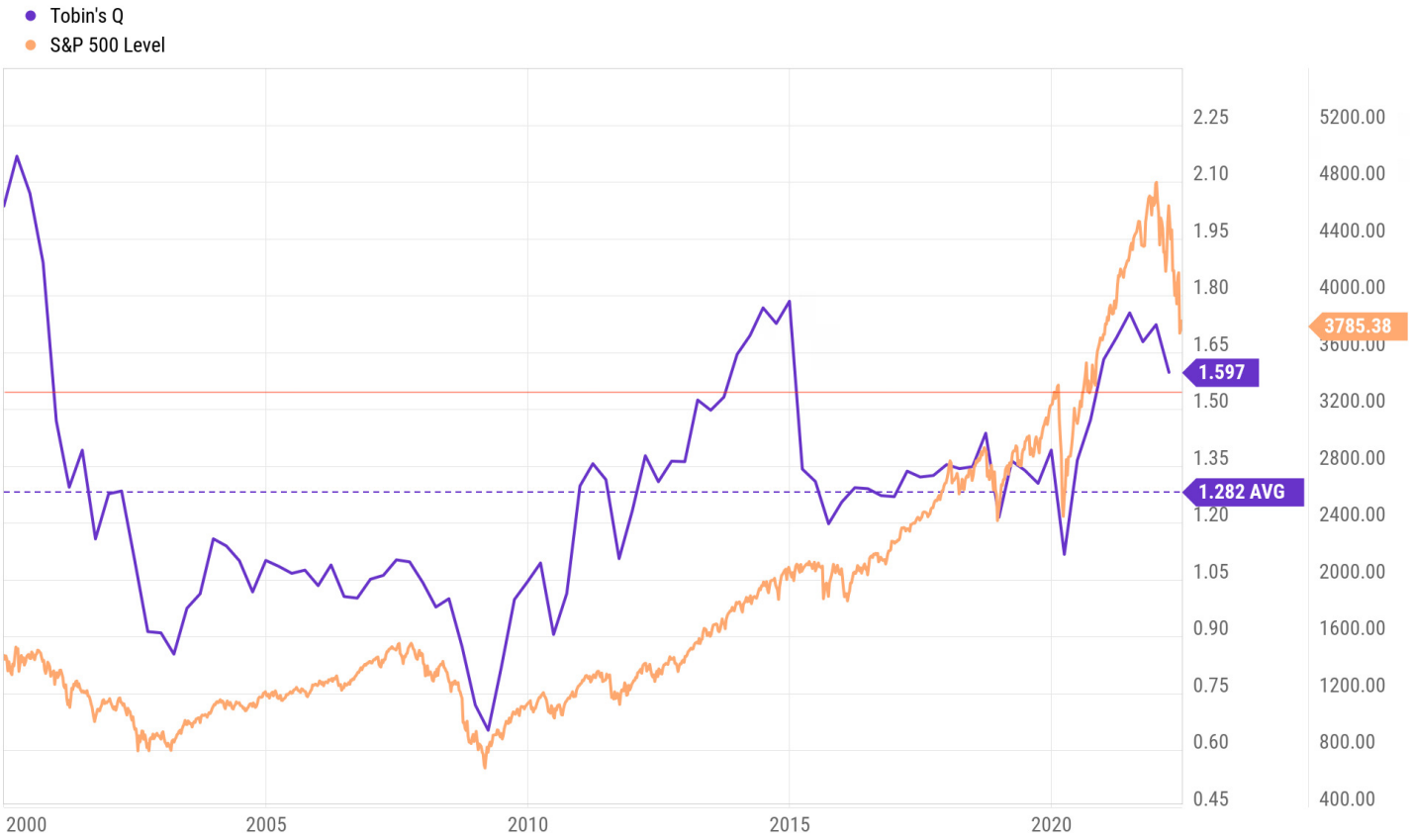
Red line marks overvaluation level of 1.538 or greater (20% above 2000-to-date average of 1.282)



Date Range: 12/31/1999 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q4 1999 Signal: 12/31/99 Peak: 3/24/00 Trough: 10/9/02	2 Months, 22 Days	18.39% (3.96%)	30 Months, 15 Days	-23.33% (-49.15%)	33 Months, 8 Days	-20.52% (-47.13%)	Q3 2000
Q4 2013 Signal: 12/31/13 Peak: 5/21/15 Trough: 2/11/16	16 Months, 20 Days	10.80% (15.28%)	8 Months, 21 Days	-18.90% (-14.16%)	25 Months, 11 Days	-0.49% (1.04%)	Q4 2014
Q4 2020 Signal: 12/31/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	12 Months, 3 Days	27.45% (27.70%)	5 Months, 27 Days	-38.46% (-21.08%)	17 Months, 30 Days	0.52% (0.78%)	Q1 2022
Simple Averages (Total of 3 Rows)	10.50 Months	18.88% Annualized Return			25.54 Months	-6.83% Annualized Return	

Negative S&P 500 YoY Earnings Growth

What is it?

S&P 500 Year-Over-Year (YoY) Earnings Growth is the change in aggregate **S&P 500 earnings** from one calendar year ago. Negative S&P 500 YoY Earnings Growth signals a reduction in corporate earnings from the same quarter of the year prior, and declining earnings can jeopardize advances from the S&P 500, like they have done before.

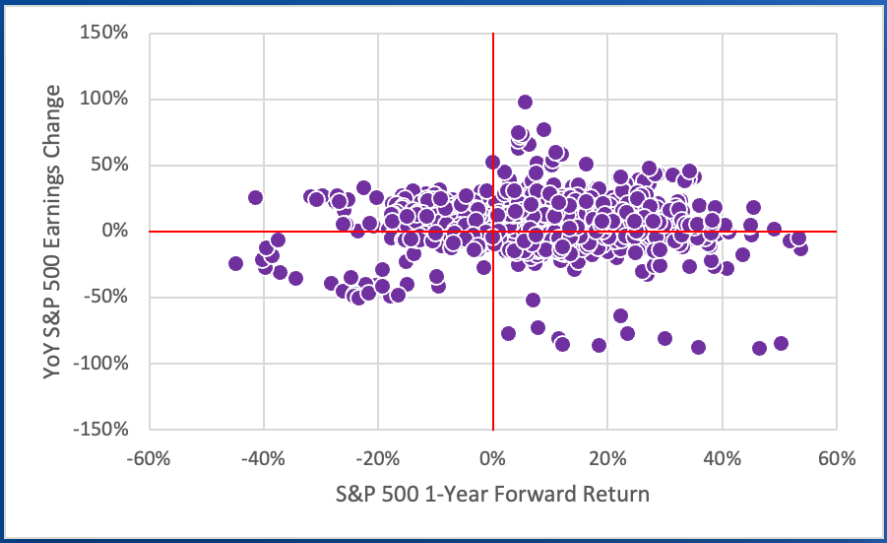
How Well Does S&P 500 YoY Earnings Growth Correlate to S&P 500 Forward Returns?

Because Negative S&P YoY Earnings Growth is taken as a signal of overvaluation, most data points would appear in **Quadrant I** and **Quadrant III** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants II & IV** point to less accurate prediction of subsequent returns.

Most data points fell in Quadrant IV—indicating low Tobin's Q levels align with positive forward returns—and that effect only increased in the longer, 3Y and Most 1Y, 3Y, and 5Y forward returns fall in Quadrant I, representing positive forward returns aligning with positive YoY S&P 500 Earnings Growth. While this result confirms one piece of the indicator's accuracy, the relatively small number of data points in Quadrant III (negative forward returns with negative YoY earnings) somewhat negates its efficacy of forecasting future returns.

A considerable amount of values lies in Quadrant IV, where positive forward returns occur alongside negative S&P 500 YoY Earnings Growth. Most notably, a string of sizable YoY earnings declines between October 2007 and October 2009 were followed by substantially positive forward returns. Perhaps positive returns have followed negative earnings growth because investors perceived a "bottoming out"?

QUADRANT II	QUADRANT I
Indicator signals: **Positive YoY Earnings**	Indicator signals: **Positive YoY Earnings**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Negative YoY Earnings**	Indicator signals: **Negative YoY Earnings**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



Negative S&P 500 YoY Earnings vs. S&P 500 1-Year Forward Return

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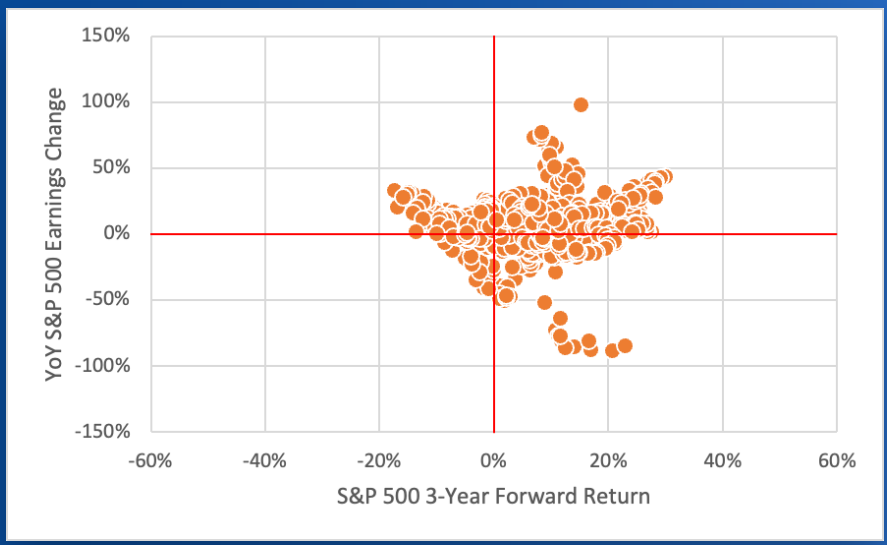

Negative S&P 500 YoY Earnings vs. S&P 500 3-Year Forward Return

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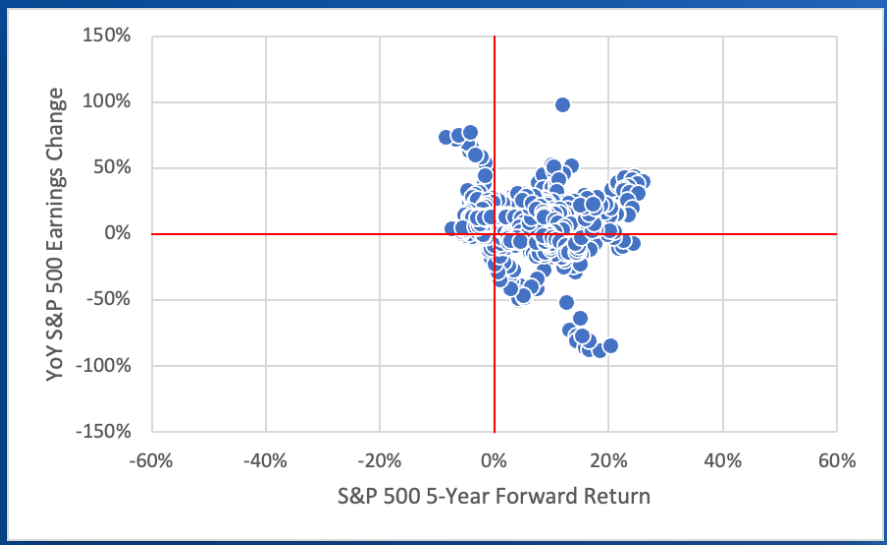

Negative S&P 500 YoY Earnings vs. S&P 500 5-Year Forward Return

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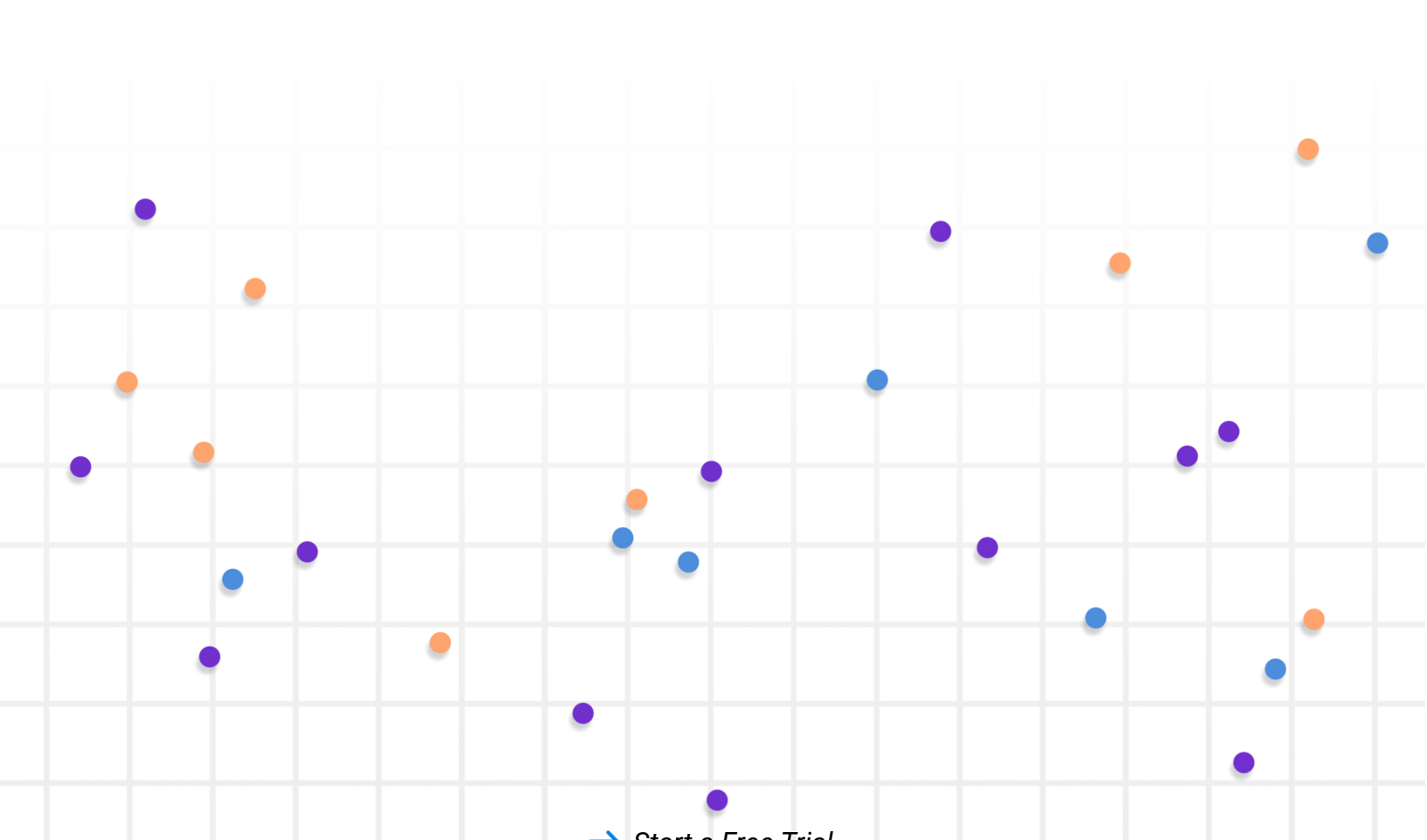
How Accurate Is Negative S&P 500 YoY Earnings Growth At Predicting Market Declines?

Out of a possible 21 major market declines dating back to 1950, Negative S&P 500 YoY Earnings Growth provided advance warning to nine of them. The indicator also provided a late warning to three major market declines: 1956-57 (late by 3 months), 2000-02 surrounding the dot-com bubble (by 10 months) and 2007-2009, encompassing the Great Financial Crisis (by less than one month).

Negative S&P 500 YoY Earnings Growth, as an indicator of market declines, hasn't come without its imperfections. There were 11 total distinct stretches in which the indicator flashed a warning signal, matching up with just nine market declines. In other words, S&P 500 YoY Earnings went back-and-forth between negative and positive growth more than once before a relative market peak. This means the Negative S&P 500 YoY Earnings indicator was guilty of providing too much warning in some cases.



Accuracy For Predicting Major Market Declines: Negative YoY Earnings, 1950-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline	Late Signal Given

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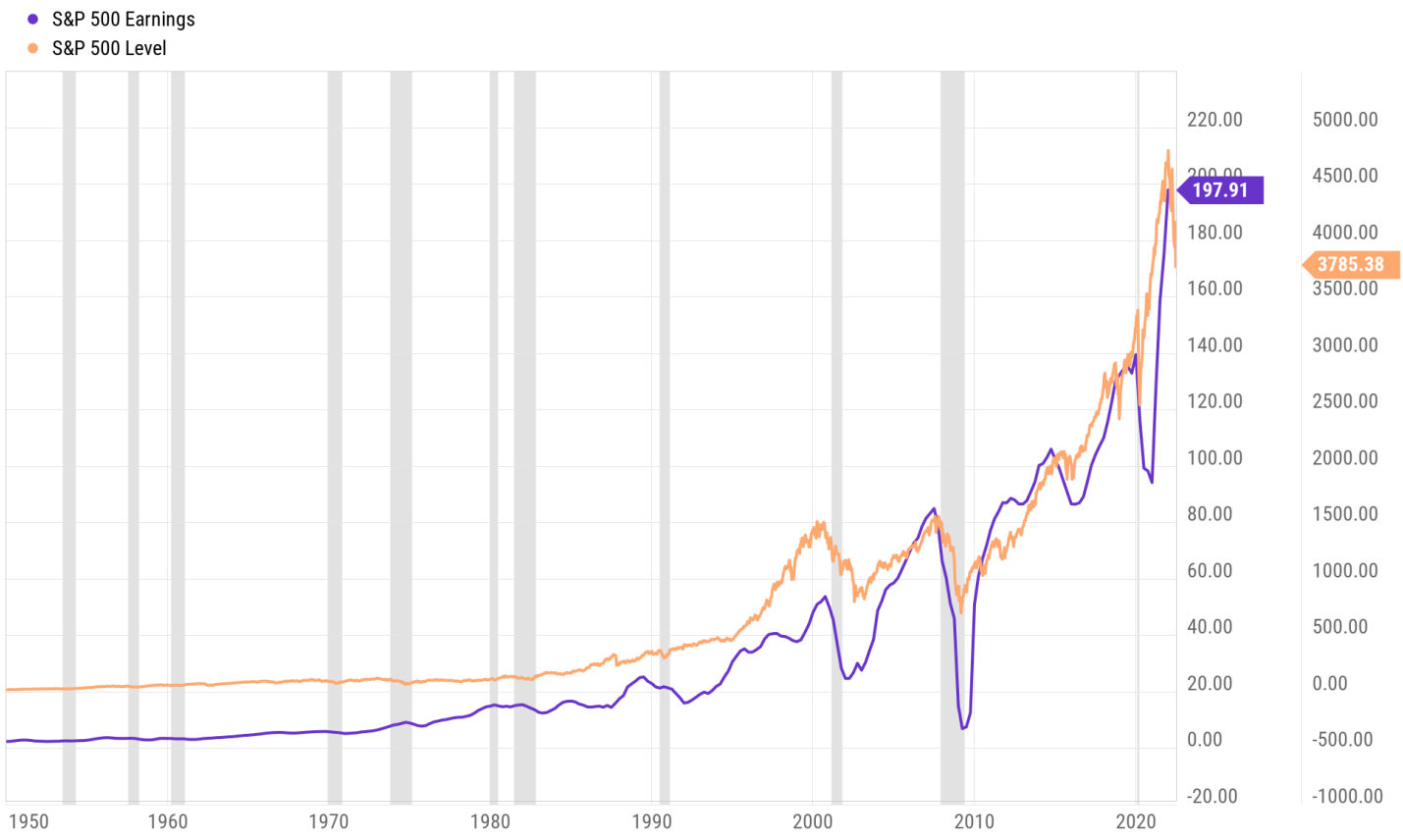
Negative S&P 500 Earnings



Date Range: 12/31/1949 - 06/30/2022

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Highlights of Negative S&P 500 YoY Earnings Growth as a leading indicator of market declines include those of 1998 and 2015-16. In both instances, Negative S&P 500 YoY Earnings Growth was reported five months or fewer before the S&P 500's decline began. In addition, Negative S&P 500 YoY Earnings warned of the 1980-82 and 2020 market declines less than one month before each started. Overall, Negative S&P 500 YoY Earnings Growth preceded market declines by an average of 17.59 months.

Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
August 1951 Signal: 8/31/51 Peak: 1/5/53 Trough: 9/14/53	16 Months, 5 Days	10.56% (14.52%)	8 Months, 9 Days	-20.73% (-14.82%)	24 Months, 14 Days	-1.21% (-2.45%)	June 1952
June 1960 Signal: 6/30/60 Peak: 12/12/61 Trough: 6/26/62	17 Months, 12 Days	18.29% (27.62%)	6 Months, 14 Days	-45.72% (-27.97%)	23 Months, 27 Days	-4.15% (-8.08%)	December 1961
May 1967 Signal: 5/31/67 Peak: 11/29/68 Trough: 5/26/70	17 Months, 29 Days	13.95% (21.65%)	17 Months, 27 Days	-25.97% (-36.06%)	35 Months, 25 Days	-8.06% (-22.22%)	March 1968
April 1975 Signal: 4/30/75 Peak: 11/28/80 Trough: 8/12/82	66 Months, 29 Days	8.89% (60.96%)	20 Months, 15 Days	-16.94% (-27.11%)	87 Months, 13 Days	2.22% (17.32%)	February 1976
October 1980 Signal: 10/31/80 Peak: 11/28/80 Trough: 8/12/82	0 Months, 28 Days	256.29% (10.24%)	20 Months, 15 Days	-16.94% (-27.11%)	21 Months, 12 Days	-11.56% (-19.65%)	May 1981
May 1985 Signal: 5/31/85 Peak: 8/25/87 Trough: 12/4/87	26 Months, 25 Days	29.32% (77.67%)	3 Months, 9 Days	-77.12% (-33.51%)	30 Months, 3 Days	6.86% (18.13%)	June 1987
November 1989 Signal: 11/30/89 Peak: 7/16/90 Trough: 10/11/90	7 Months, 16 Days	10.83% (6.64%)	2 Months, 25 Days	-60.62% (-19.92%)	10 Months, 11 Days	-16.72% (-14.60%)	August 1992
February 1998 Signal: 2/28/98 Peak: 7/17/98 Trough: 8/31/98	4 Months, 19 Days	37.83% (13.09%)	1 Month, 14 Days	-82.50% (-19.34%)	6 Months, 3 Days	-16.57% (-8.77%)	April 1999
September 2012 Signal: 9/30/12 Peak: 5/21/15 Trough: 2/11/16	31 Months, 21 Days	15.96% (47.90%)	8 Months, 21 Days	-18.90% (-14.16%)	40 Months, 12 Days	7.33% (26.96%)	March 2013
February 2015 Signal: 2/28/15 Peak: 5/21/15 Trough: 2/11/16	2 Months, 23 Days	5.62% (1.25%)	8 Months, 21 Days	-18.90% (-14.16%)	11 Months, 14 Days	-13.64% (-13.09%)	September 2016
January 2020 Signal: 1/31/20 Peak: 2/19/20 Trough: 3/23/20	0 Months, 19 Days	154.38% (4.98%)	1 Month, 4 Days	-98.98% (-33.93%)	1 Month, 21 Days	-92.33% (-30.63%)	February 2021
Simple Averages (Total of 11 Rows)	17.59 Months	51.08% Annualized Return			26.65 Months	-13.44% Annualized Return	

Negative Yield Spreads

What are they?

A yield spread is the difference between yields on two fixed income instruments of different durations. In the world of treasury spreads, a negative yield spread occurs when the rate on the longer-term treasury is less than that of the shorter-term product. Yield spreads that turn negative signify a flattening or **inverted yield curve**, and are commonly viewed as warnings of a recession and their (typically) accompanying market declines.

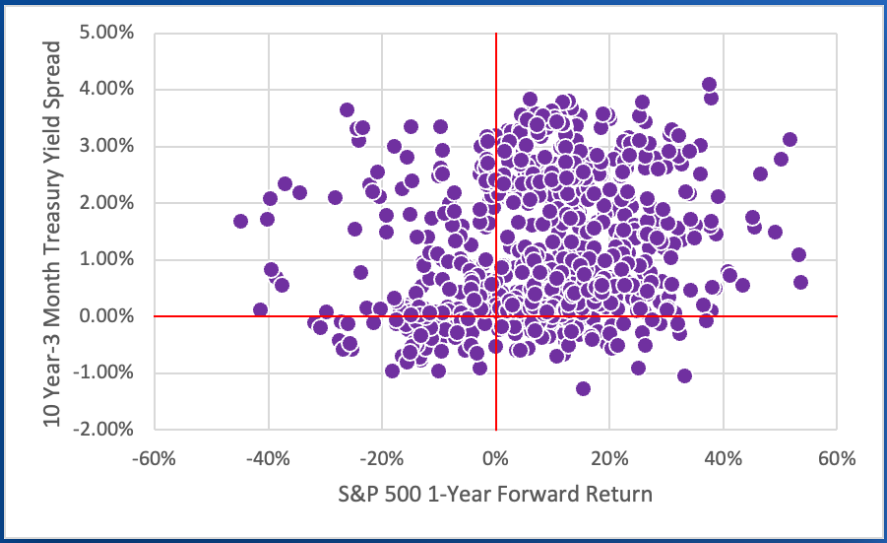
Because of their consistent track records of signaling recessions, two of the most closely followed spreads are the **10 Year-3 Month Yield Spread** and the **10-2 Year Yield Spread.**

How Well Do 10 Year-3 Month Yield Spreads Correlate to Forward S&P 500 Returns?

Because a negative ("inverted") 10 Year-3 Month Yield Spread is taken as a recession signal and subsequent equity performance tends to suffer, most data points would appear in **Quadrant I** and **Quadrant III** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants II & IV** point to less accurate prediction of subsequent returns.

The following scatter plots show the relationship between the 10 Year-3 Month Yield Spread, taken at the end of each calendar month, and forward 1Y, 3Y, and 5Y S&P 500 returns. To determine how well negative 10 Year-3 Month Spreads correlate to S&P 500 forward returns, one should pay the closest attention to Quadrants III and IV.
Of all data points in negative yield spread territory, more landed in Quadrant IV than Quadrant III for each of the three forward return periods. Translation: there were more instances of positive forward 1Y, 3Y, and 5Y returns when the 10 Year-3 Month Spread was negative than the opposite, which detracts from how strongly the indicator is correlated with forward returns.

QUADRANT II	QUADRANT I
Indicator signals: **No Recession**	Indicator signals: **No Recession**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Recession**	Indicator signals: **Recession**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



10 Year-3 Month Treasury Yield Spread vs. S&P 500 1-Year Forward Return

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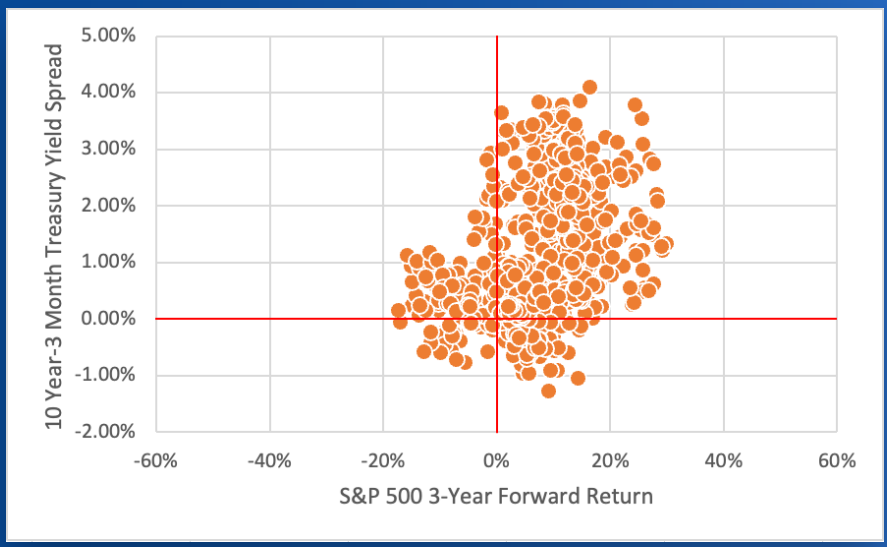

10 Year-3 Month Treasury Yield Spread vs. S&P 500 3-Year Forward Return

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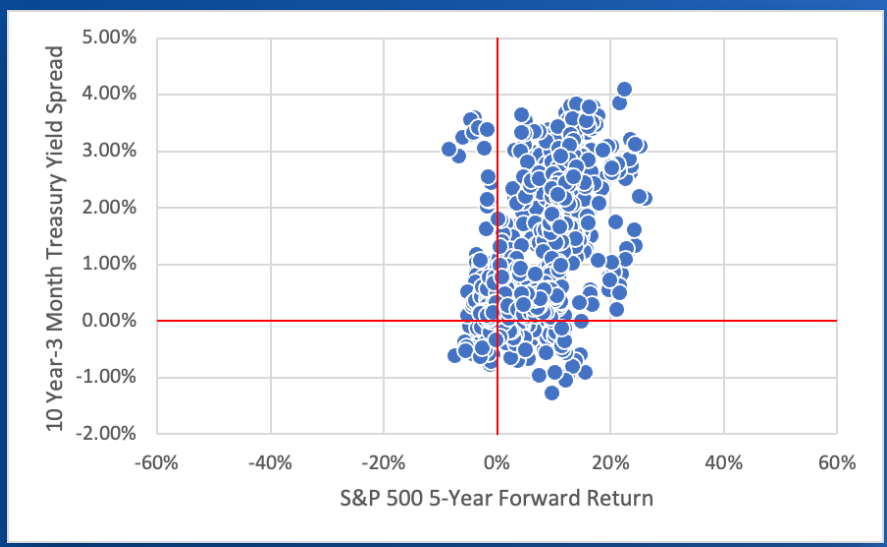

10 Year-3 Month Treasury Yield Spread vs. S&P 500 5-Year Forward Return

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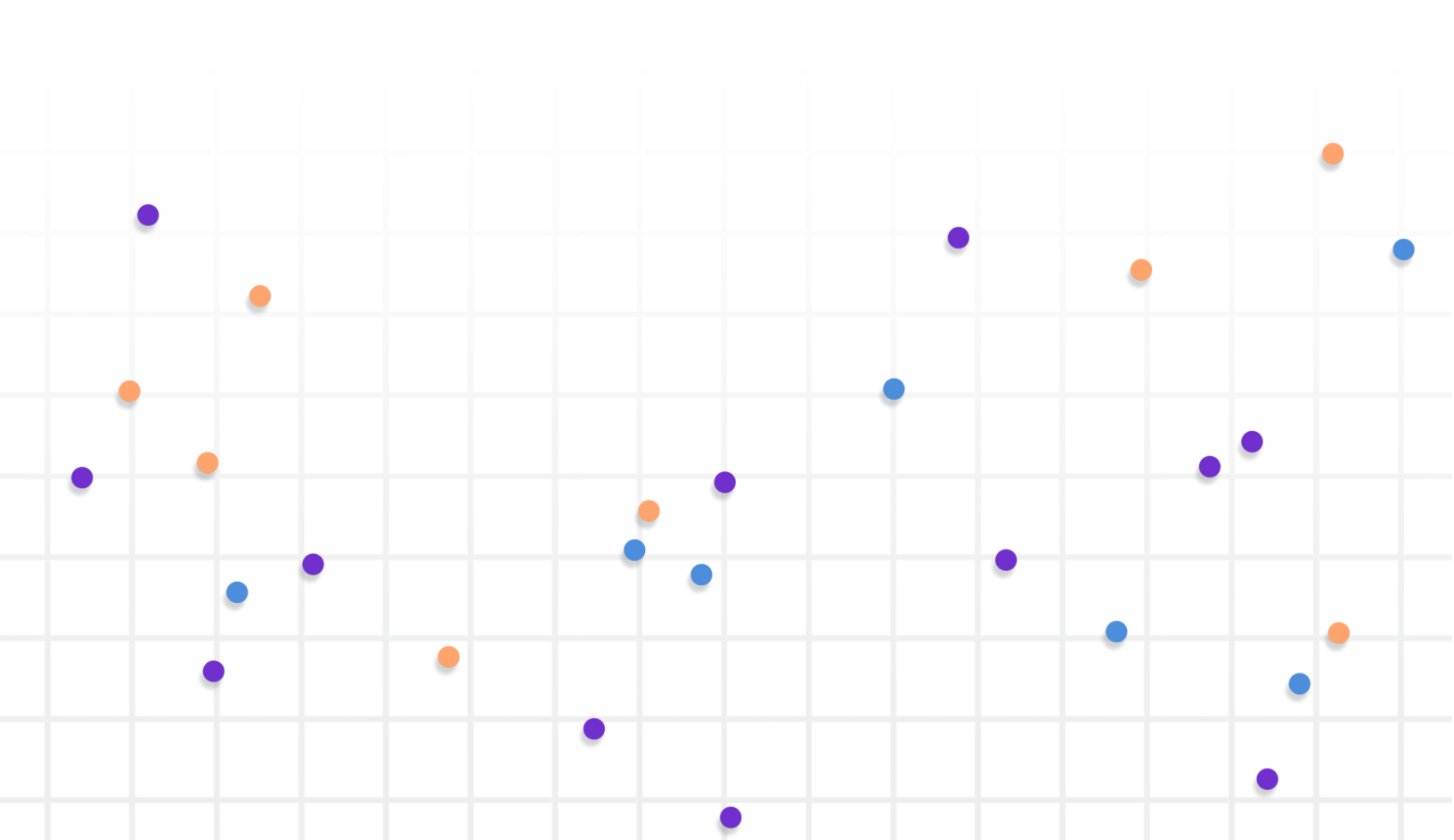
How Accurate Are Negative 10 Year-3 Month Yield Spreads At Predicting Market Declines?

Jan 1962-to-Date History:

Out of a possible 16 major market declines dating back to January 1962, the 10 Year-3 Month Treasury Yield Spread provided warning to 8 of them through inversion. There were 17 distinct warning signals, matching up with just 8 market declines. (In periods where the 10 Year-3 Month Spread has inverted, it has oscillated above and below zero for a short time.) Therefore, the 10 Year-3 Month Spread provided more than one warning signal for the market declines of 1968-70 (2 distinct signals), 1980-82 (3), 1990 (3), and 2007-09 (3).

Because of this, those trying to time the market may not have found the 10 Year-3 Month Spread to be a useful indicator. Though long-term investors may have appreciated that the indicator gave at least three warning signals for four of the eight market declines it preceded.



Accuracy For Predicting Major Market Declines: 10 Year-3 Month Yield Spread, 1962-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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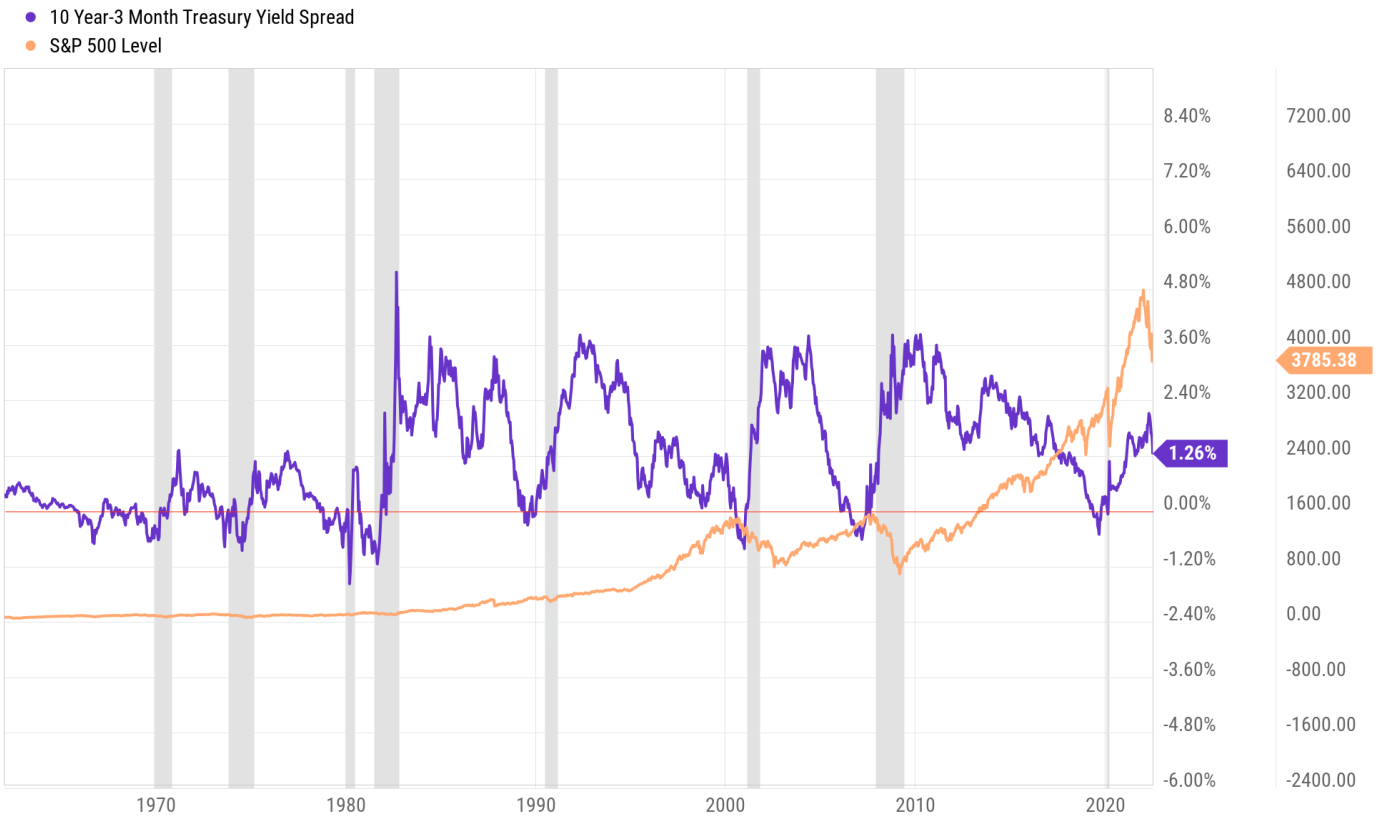

Date Range: 01/02/1962 - 06/30/2022

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The 10 Year-3 Month Yield Spread's accuracy at timing market declines is like that of the 10-2 Year Yield Spread, giving 12.88 months notice for the S&P 500's impending relative peak (across 17 warning signals and 8 major declines). In an equally similar fashion to the 10-2 Year Spread, the 10 Year-3 Month Yield Spread gave more warning signals than there were market declines. The 10 Year-3 Month Spread gave two warning signals for the market decline of 1968-70, and three separate signals for the declines of 1980-82, 1990, 2007-09, and 2020.

Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
11/3/1965 Signal: 11/3/65 Peak: 2/9/66 Trough: 10/7/66	3 Months, 6 Day	7.25% (1.90%)	7 Months, 28 Days	-31.70% (-22.18%)	11 Months, 4 Days	-22.16% (-20.70%)	3/14/1967
8/22/1967 Signal: 8/22/67 Peak: 11/29/68 Trough: 5/26/70	15 Months, 7 Days	12.06% (15.61%)	17 Months, 27 Days	-25.97% (-36.06%)	33 Months, 4 Days	-10.37% (-26.08%)	11/9/1967
12/15/67 Signal: 12/15/67 Peak: 11/29/68 Trough: 5/26/70	11 Months, 14 Days	14.68% (14.04%)	17 Months, 27 Days	-25.97% (-36.06%)	29 Months, 11 Days	-12.11% (-27.09%)	8/14/1968
6/29/1971 Signal: 6/29/71 Peak: 1/11/73 Trough: 10/3/74	18 Months, 13 Days	13.59% (21.68%)	20 Months, 22 Days	-31.69% (-48.20%)	39 Months, 4 Days	-13.18% (-36.98%)	8/11/1971
8/23/1978 Signal: 8/23/78 Peak: 11/28/80 Trough: 8/12/82	27 Months, 5 Days	13.75% (33.94%)	20 Months, 15 Days	-16.94% (-27.11%)	47 Months, 20 Days	-0.60% (-2.37%)	9/21/1978
10/25/1978 Signal: 10/25/78 Peak: 11/28/80 Trough: 8/12/82	25 Months, 3 Days	19.16% (44.40%)	20 Months, 15 Days	-16.94% (-27.11%)	45 Months, 18 Days	1.36% (5.25%)	5/1/1980
9/12/1980 Signal: 9/12/80 Peak: 11/28/80 Trough: 8/12/82	2 Months, 16 Days	70.63% (11.93%)	20 Months, 15 Days	-16.94% (-27.11%)	23 Months, 0 Days	-10.08% (-18.24%)	11/5/1981
3/27/1989 Signal: 3/27/89 Peak: 7/16/90 Trough: 10/11/90	15 Months, 19 Days	20.10% (26.97%)	2 Months, 25 Days	-60.62% (-19.92%)	18 Months, 14 Days	1.09% (1.68%)	3/27/1989
5/22/1989 Signal: 5/22/89 Peak: 7/16/90 Trough: 10/11/90	13 Months, 24 Days	12.56% (14.59%)	2 Months, 25 Days	-60.62% (-19.92%)	16 Months, 19 Days	-6.00% (-8.24%)	8/25/1989
10/27/1989 Signal: 10/27/89 Peak: 7/16/90 Trough: 10/11/90	8 Months, 19 Days	14.37% (10.11%)	2 Months, 25 Days	-60.62% (-19.92%)	11 Months, 14 Days	-12.33% (-11.82%	12/28/1989
9/10/1998 Signal: 9/10/98 Peak: 3/24/00 Trough: 10/9/02	18 Months, 14 Days	33.46% (55.83%)	30 Months, 15 Days	-23.33% (-49.15%)	48 Months, 29 Days	-5.54% (-20.75%)	10/5/1998
1/17/2006 Signal: 1/17/06 Peak: 10/9/07 Trough: 3/9/09	20 Months, 22 Days	12.21% (22.00%)	17 Months, 0 Days	-44.69% (-56.78%)	37 Months, 20 Days	-18.42% (-47.27%)	3/1/2006
7/17/2006 Signal: 7/17/06 Peak: 10/9/07 Trough: 3/9/09	14 Months, 22 Days	21.28% (26.79%)	17 Months, 0 Days	-44.69% (-56.78%)	31 Months, 20 Days	-20.33% (-45.20%)	5/29/2007
7/20/2007 Signal: 7/20/07 Peak: 10/9/07 Trough: 3/9/09	2 Months, 19 Days	9.45% (2.02%)	17 Months, 0 Days	-44.69% (-56.78%)	19 Months, 17 Days	-39.33% (-55.90%)	8/27/2007
3/22/2019 Signal: 3/22/19 Peak: 2/19/20 Trough: 3/23/20	10 Months, 28 Days	23.05% (20.90%)	1 Month, 4 Days	-98.98% (-33.93%)	12 Months, 1 Day	-20.02% (-20.11%)	3/28/2019
5/13/2019 Signal: 8/27/19 Peak: 2/19/20 Trough: 3/23/20	9 Months, 6 Days	27.19% (20.42%)	1 Month, 4 Days	-98.98% (-33.93%)	10 Months, 10 Days	-23.26% (-20.43%)	10/10/2019
1/31/2020 Signal: 1/31/20 Peak: 2/19/20 Trough: 3/23/20	0 Months, 19 Days	154.38% (4.98%)	1 Month, 4 Days	-98.98% (-33.93%)	1 Month, 21 Days	-92.33% (-30.63%)	3/2/2020
Simple Averages (Total of 17 Rows)	12.88 Months	28.19% Annualized Return			25.76 Months	-17.86% Annualized Return	

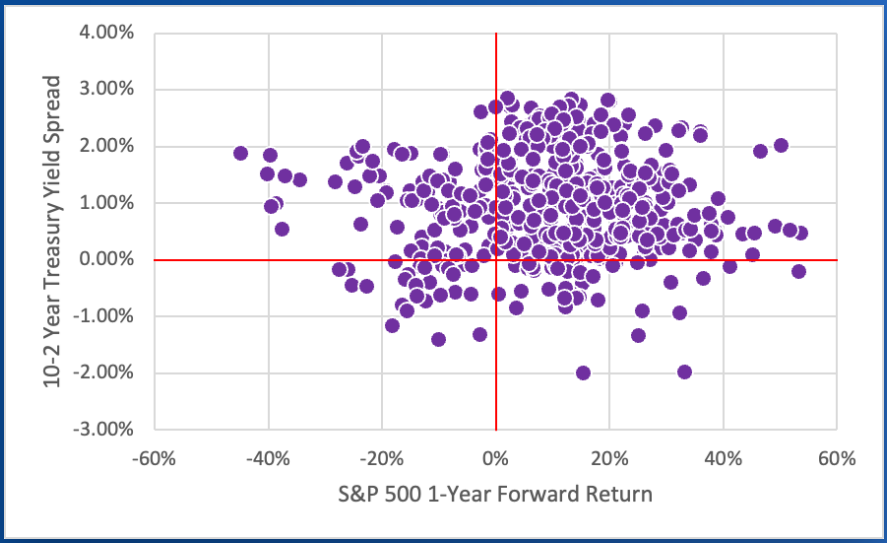
How Well Do 10-2 Year Yield Spreads Correlate to Forward S&P 500 Returns?

Because a negative ("inverted") 10-2 Year Yield Spread is taken as a recession signal and subsequent equity performance tends to suffer, most data points would appear in **Quadrant I** and **Quadrant III** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants II & IV** point to less accurate prediction of subsequent returns.

The following scatter plots show the relationship between the 10-2 Year Yield Spread (as of each calendar month, and forward 1Y, 3Y, and 5Y S&P 500 returns. To determine how well negative 10-2 Year Spreads correlate to S&P 500 forward returns, one should pay the closest attention to Quadrants III and IV.

Of the negative yield spread data points, more landed in Quadrant IV than Quadrant III for all three forward return periods. There were more instances of positive forward 1Y, 3Y, and 5Y returns when the 10-2 Year Spread was negative than the opposite, which detracts from how strongly the indicator is correlated with forward returns. Perhaps most notable among outliers in Quadrant IV, substantially positive forward returns were delivered following 10-2 Year Spreads of -2% in February and March 1980.

QUADRANT II	QUADRANT I
Indicator signals: **No Recession**	Indicator signals: **No Recession**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Recession**	Indicator signals: **Recession**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



10-2 Year Treasury Yield Spread vs. S&P 500 1-Year Forward Return

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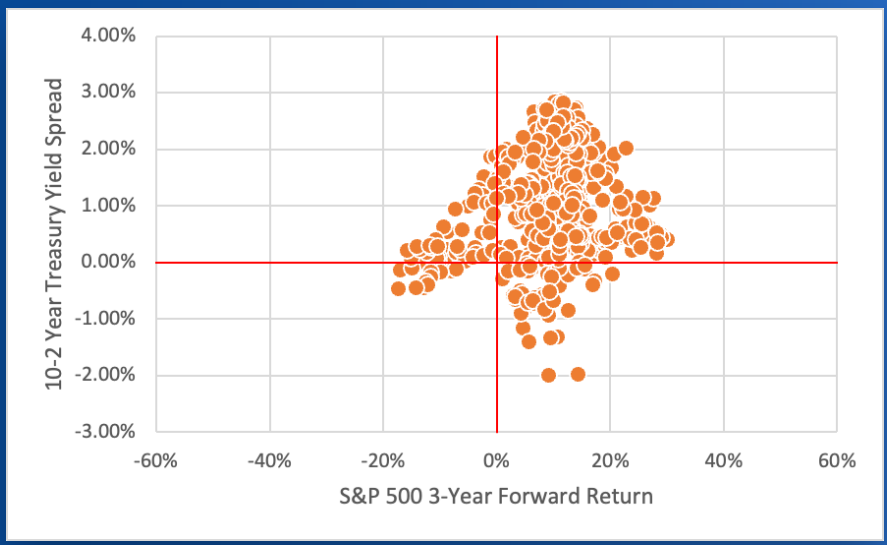

10-2 Year Treasury Yield Spread vs. S&P 500 3-Year Forward Return

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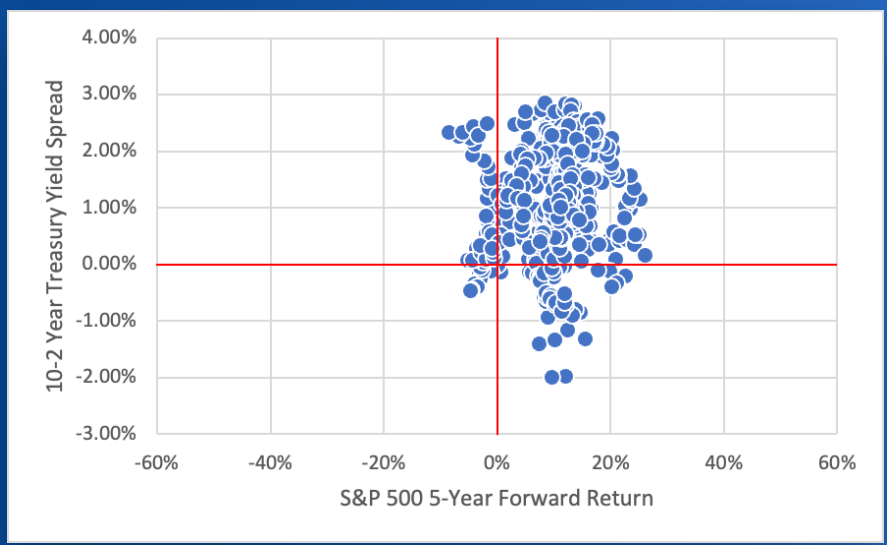

10-2 Year Treasury Yield Spread vs. S&P 500 5-Year Forward Return

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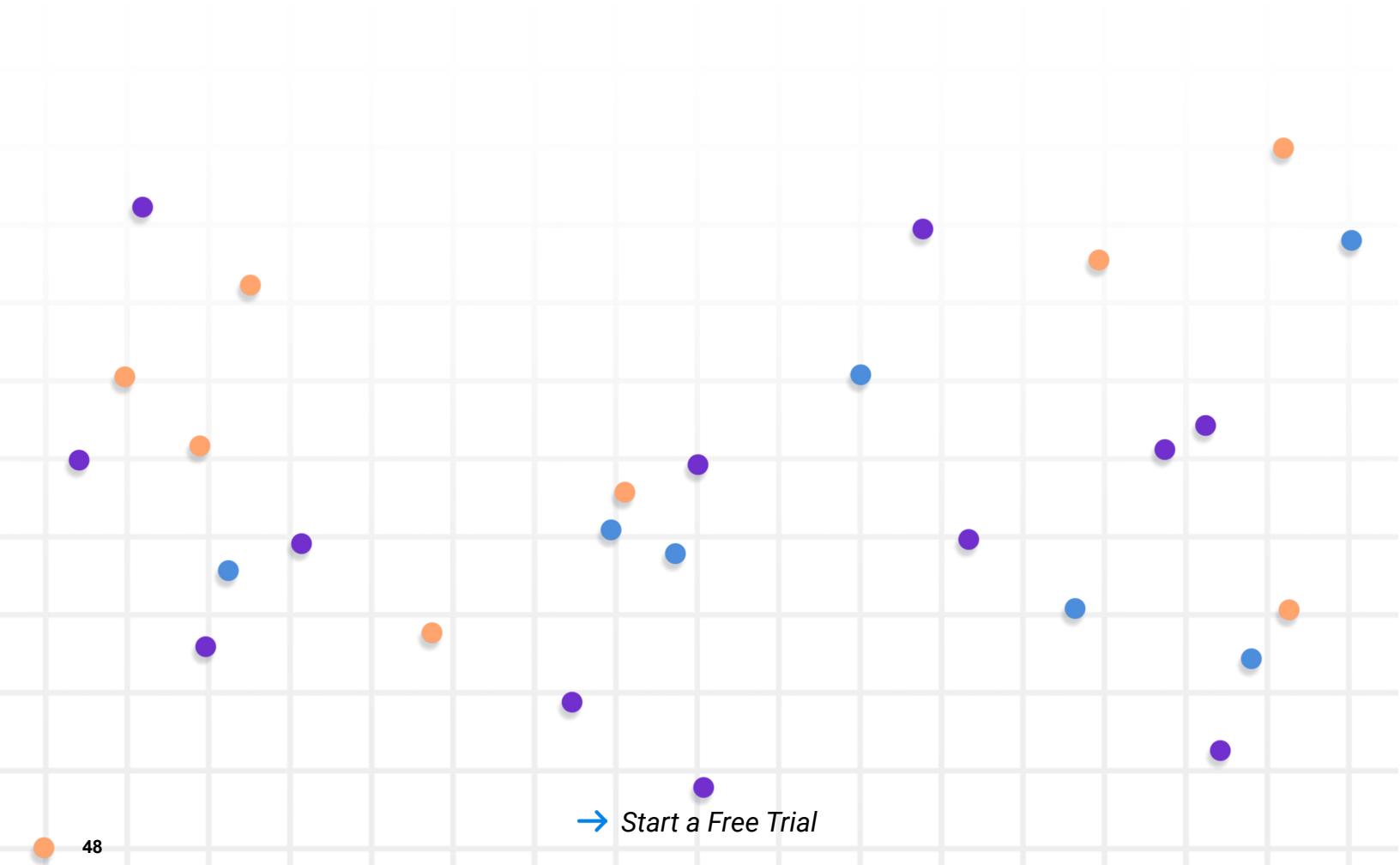
How Accurate Are Negative 10-2 Year Yield Spreads At Predicting Market Declines?

May 1976-to-Date History

Out of a possible 13 major market declines dating back to May 1976, the 10-2 Year Treasury Yield Spread flipped negative and provided warning to 6 of them. The indicator's warning signal was late to the market decline of 2022, coming three months after the S&P 500 reached a relative peak.

While the 10-2 Year Spread preceded six market declines, it flashed a warning signal on 11 distinct occasions. This is because in periods where the 10-2 Year Spread has inverted, it has oscillated above and below zero for periods of time. Therefore, the 10-2 Year Spread indicator sometimes provided too much warning to market declines. Not one, but two periods of negative yield spreads occurred prior to the market decline of 1980-82, and three distinct warning signals preceded each of the declines in 1990 and 2007-09.

Though not particularly useful for those trying to time the market, long-term investors might have appreciated being given more than one "heads-up" about some of the market declines.



Accuracy For Predicting Major Market Declines: 10-2 Year Yield Spread, 1976-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline	Late Signal Given

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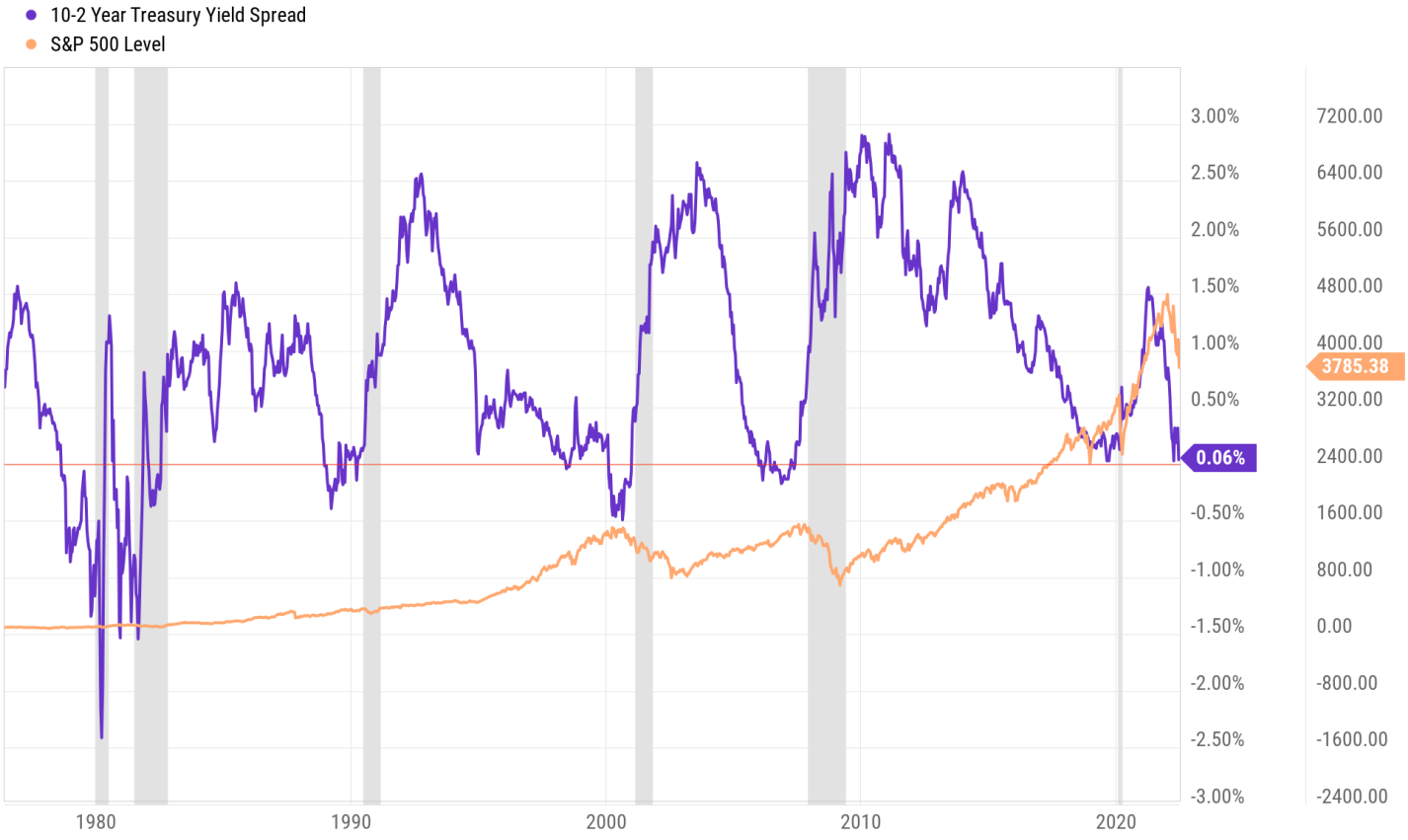

Date Range: 05/28/1976 - 06/30/2022

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Overall, negative 10-2 Year Spreads provided a relatively accurate warning to the six market declines they preceded. The average time from initial warning signal to the S&P 500's relative peak (for all 11 signals across 6 major declines) was 10.57 months. The indicator's best timing of a market decline, arguably, was 2000-02. Had you exited the S&P 500 when the indicator flashed its warning signal on February 2nd, 2000, you would have done so just 1 month, 22 days ahead of the relative market peak.

Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
8/17/1978 Signal: 8/17/78 Peak: 11/28/80 Trough: 8/12/82	27 Months, 11 Days	13.56% (33.73%)	20 Months, 15 Days	-16.94% (-27.11%)	47 Months, 26 Days	-0.64% (-2.53%)	5/1/1980
9/12/1980 Signal: 9/12/80 Peak: 11/28/80 Trough: 8/12/82	2 Months, 16 Days	70.63% (11.93%)	20 Months, 15 Days	-16.94% (-27.11%)	23 Months, 0 Days	-10.08% (-18.42%)	11/5/1981
12/13/1988 Signal: 12/13/88 Peak: 7/16/90 Trough: 10/11/90	19 Months, 3 Days	19.96% (33.53%)	2 Months, 25 Days	-60.62% (-19.92%)	21 Months, 28 Days	3.74% (6.93%)	6/29/1989
8/11/1989 Signal: 8/11/89 Peak: 7/16/90 Trough: 10/11/90	11 Months, 5 Days	7.58% (7.02%)	2 Months, 25 Days	-60.62% (-19.92%)	14 Months, 0 Days	-12.38% (-14.29%)	11/6/1989
3/8/1990 Signal: 3/8/90 Peak: 7/16/90 Trough: 10/11/90	4 Months, 8 Days	25.51% (8.43%)	2 Months, 25 Days	-60.62% (-19.92%)	7 Months, 3 Days	-21.14% (-13.17%)	3/29/1990
5/26/1998 Signal: 5/26/98 Peak: 7/17/98 Trough: 8/31/98	1 Month, 21 Days	77.02% (8.48%)	1 Month, 14 Days	-82.50% (-19.34%)	3 Months, 5 Days	-39.49% (-12.50%)	7/27/1998
2/2/2000 Signal: 2/2/00 Peak: 3/24/00 Trough: 10/9/02	1 Month, 22 Days	78.09% (8.40%)	30 Months, 15 Days	-23.33% (-49.15%)	32 Months, 7 Days	-19.89% (-44.88%)	12/28/2000
12/27/2005 Signal: 12/27/05 Peak: 10/9/07 Trough: 3/9/09	21 Months, 12 Days	13.10% (24.56%)	17 Months, 0 Days	-44.69% (-56.78%)	38 Months, 10 Days	-17.59% (-46.16%)	3/29/2006
6/8/2006 Signal: 6/8/06 Peak: 10/9/07 Trough: 3/9/09	16 Months, 1 Day	17.76% (24.42%)	17 Months, 0 Days	-44.69% (-56.78%)	33 Months, 1 Day	-20.17% (-46.22%)	3/20/2007
5/3/2007 Signal: 5/3/07 Peak: 10/9/07 Trough: 3/9/09	5 Months, 6 Days	9.85% (4.18%)	17 Months, 0 Days	-44.69% (-56.78%)	22 Months, 6 Days	-35.00% (-54.97%)	6/5/2007
8/27/2019 Signal: 8/27/19 Peak: 2/19/20 Trough: 3/23/20	5 Months, 23 Days	41.00% (18.02%)	1 Month, 4 Days	-98.98% (-33.93%)	6 Months, 25 Days	-35.23% (-22.02%)	8/29/2019
Simple Averages (Total of 11 Rows)	10.57 Months	34.01% Annualized Return			21.07 Months	-18.90% Annualized Return	

The "Buffett Indicator"

US Total Stock Market Capitalization as a Percentage of GDP

What is it?

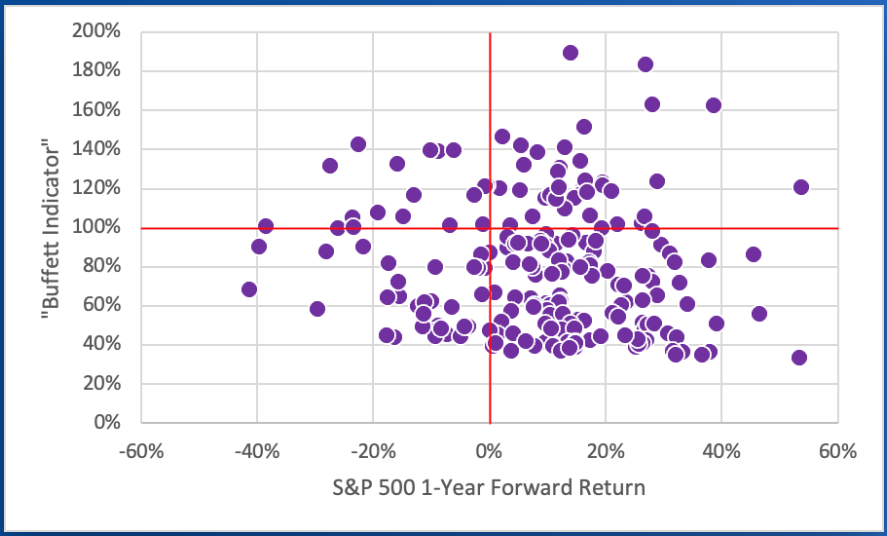
This indicator measures the ratio of all US stocks' combined market capitalization to US Gross Domestic Product (GDP). Known as the "Buffett Indicator", for Warren Buffett once called it **"the best single measure of where valuations stand at any given moment"**, a ratio of 1:1 or 100% deems the market fairly valued. When US Total Market Capitalization surpasses GDP, the indicator points to overvaluation for stocks.

How Well Does the "Buffett Indicator" Correlate to Forward S&P 500 Returns?

Because "Buffett Indicator" levels above 100% are taken as signals of overvaluation, most data points would appear in **Quadrant II** and **Quadrant IV** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants I & III** point to less accurate prediction of subsequent returns.

Most "Buffett Indicator" forward return data points fall in Quadrant IV, where a lower indicator reading translated into positive subsequent returns over the 1Y, 3Y and 5Y periods. However, a fair amount of data points fell in Quadrants I and III, meaning the "Buffett Indicator" isn't a perfect predictor of future returns.

QUADRANT II	QUADRANT I
Indicator signals: **Overvaluation**	Indicator signals: **Overvaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Undervaluation**	Indicator signals: **Undervaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



"Buffett Indicator" Level vs. S&P 500 1-Year Forward Return

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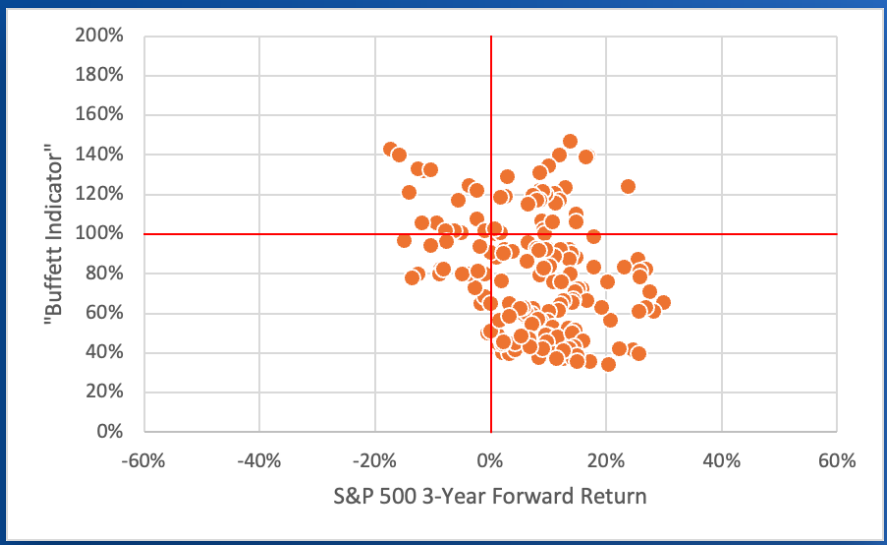

"Buffett Indicator" Level vs. S&P 500 3-Year Forward Return

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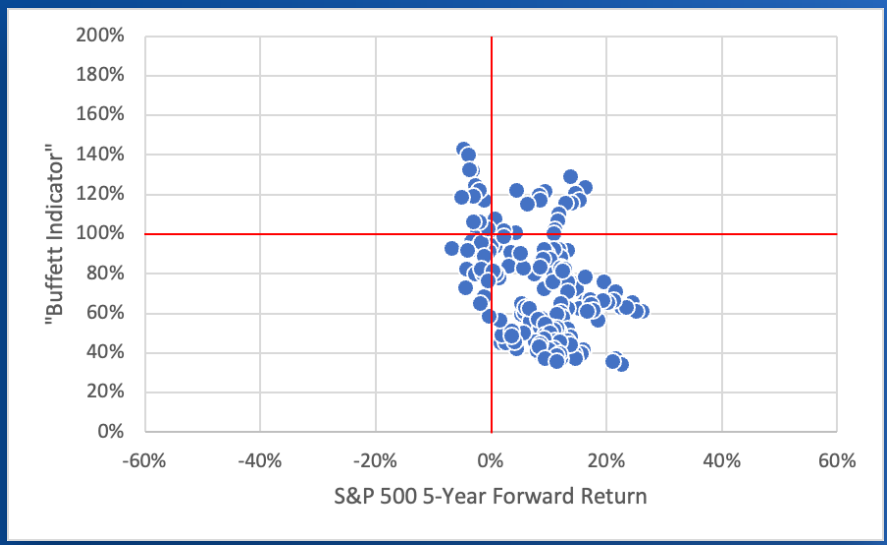

"Buffett Indicator" Level vs. S&P 500 5-Year Forward Return

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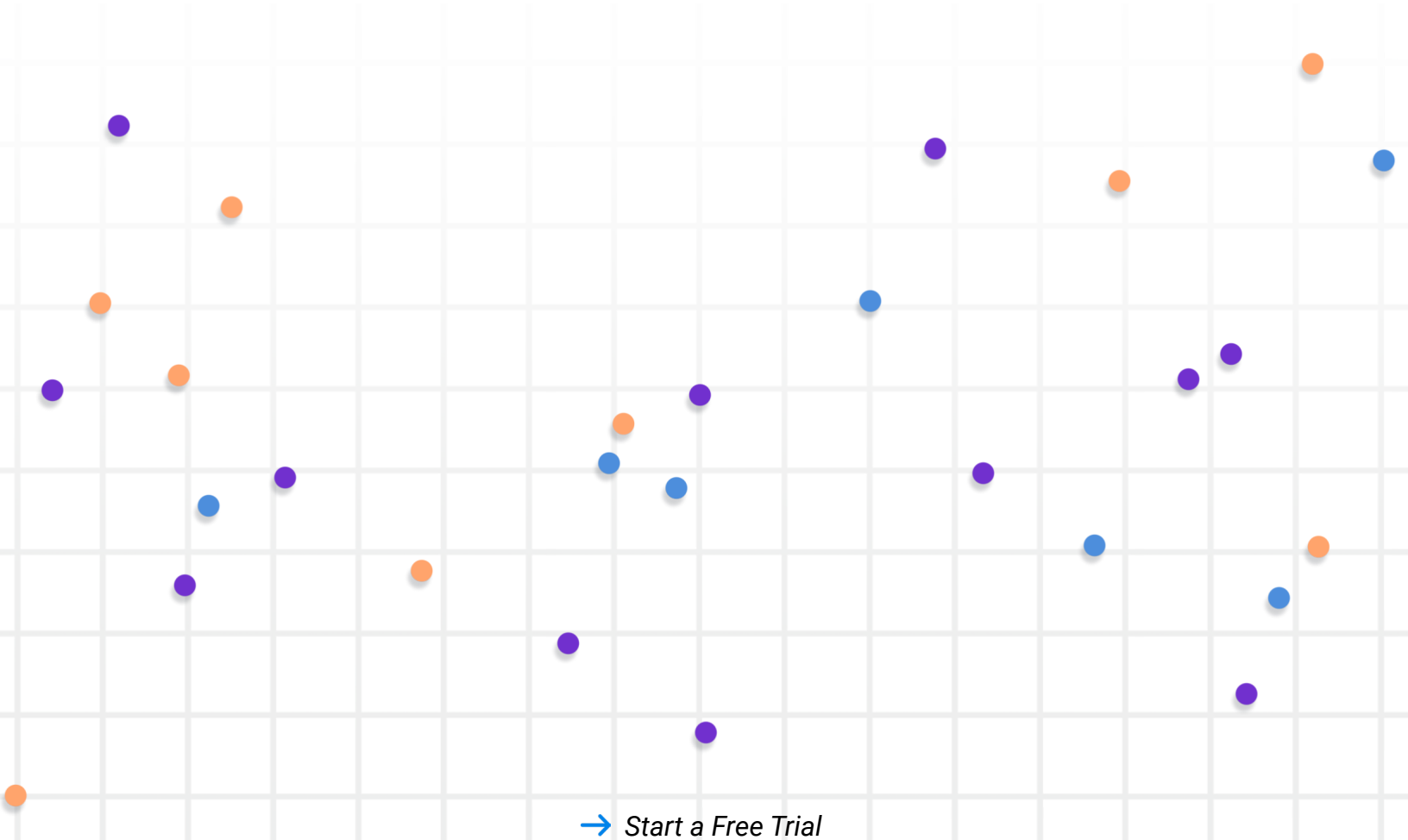
How Accurate Is the "Buffett Indicator" At Predicting Market Declines?

All-Time History, 1971-to-Date:

Out of a possible 14 major market declines dating back to 1971, "Buffett Indicator" levels reaching 120% or greater provided advance warning to 7 of them. The "Buffett Indicator" gave six-and-a-half months' notice to the market decline of 1999, and flashed a warning signal for the decline of 2015-16 less than five months before the decline began.

Warning signs from The "Buffett Indicator" have also preceded every market decline since Early 2018…but with a catch. The indicator has remained above 120% since Q3 2016, and therefore signaled that stocks have been overvalued since then. If you followed the "Buffett Indicator" and exited the S&P 500 on September 30th, 2016, you would have avoided four major declines of 10% or more, but also missed out **on a 10.17% annualized return through June 30th, 2022.**



Accuracy For Predicting Major Market Declines: The "Buffett Indicator", 1971-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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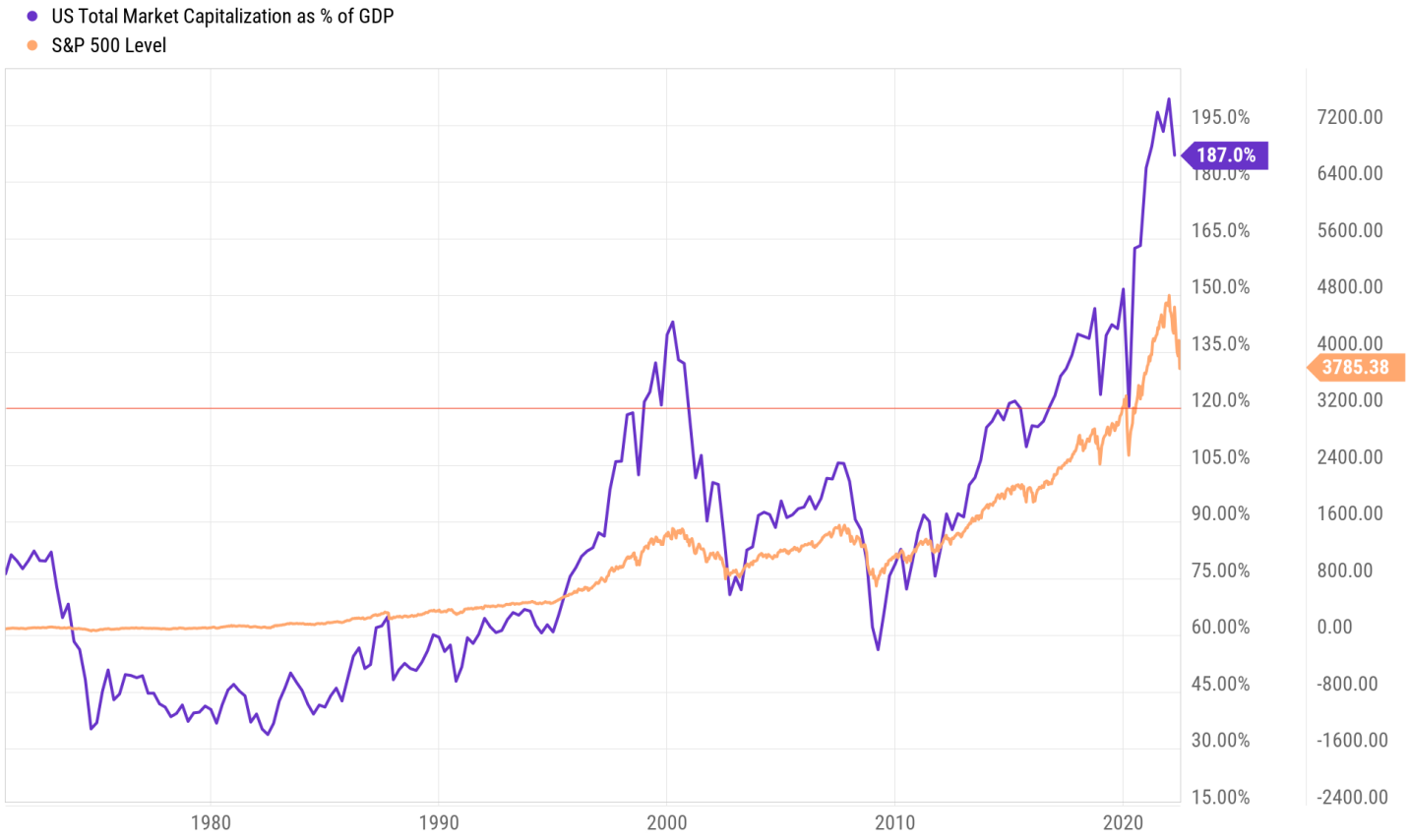
Red line marks overvaluation level of 120% or greater (20% above 100%)



Date Range: 12/31/1970 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q4 1998 Signal: 12/31/98 Peak: 7/16/99 Trough: 10/15/99	6 Months, 15 Days	30.44% (15.42%)	2 Months, 29 Days	-40.33% (-12.08%)	9 Months, 14 Days	1.88% (1.48%)	Q3 2000
Peak: 3/24/00 Trough: 10/9/02	14 Months, 22 Days	19.31% (24.26%)	30 Months, 15 Days	-23.33% (-49.15%)	45 Months, 8 Days	-11.45% (-36.81%)	
Q4 2014 Signal: 12/31/14 Peak: 5/21/15 Trough: 2/11/16	4 Months, 20 Days	9.29% (3.49%)	8 Months, 21 Days	-18.90% (-14.16%)	13 Months, 11 Days	-10.07% (-11.16%)	Q2 2015
Q3 2016 Signal: 9/30/16 Peak: 1/26/18 Trough: 2/8/18	15 Months, 27 Days	23.69% (32.50%)	0 Months, 13 Days	-95.06% (-10.16%)	16 Months, 9 Days	13.68% (19.03%)	Q1 2022
Peak: 9/20/18 Trough: 12/24/18	23 Months, 21 Days	16.50% (35.17%)	3 Months, 4 Days	-57.12% (-19.78%)	26 Months, 24 Days	3.69% (8.43%)	
Peak: 2/19/20 Trough: 3/23/20	40 Months, 20 Days	10.23% (58.91%)	1 Month, 4 Days	-98.98% (-33.93%)	41 Months, 22 Days	0.91% (3.19%)	
Peak: 1/3/22 Trough: TBD (as of 6/30/22)	63 Months, 4 Days	16.28% (121.2%)	5 Months, 27 Days	-38.46% (-21.08%)	69 Months, 0 Days	10.17% (74.58%)	
Simple Averages (Total of 7 Rows)	24.18 Months	17.96% Annualized Return			31.72 Months	1.26% Annualized Return	

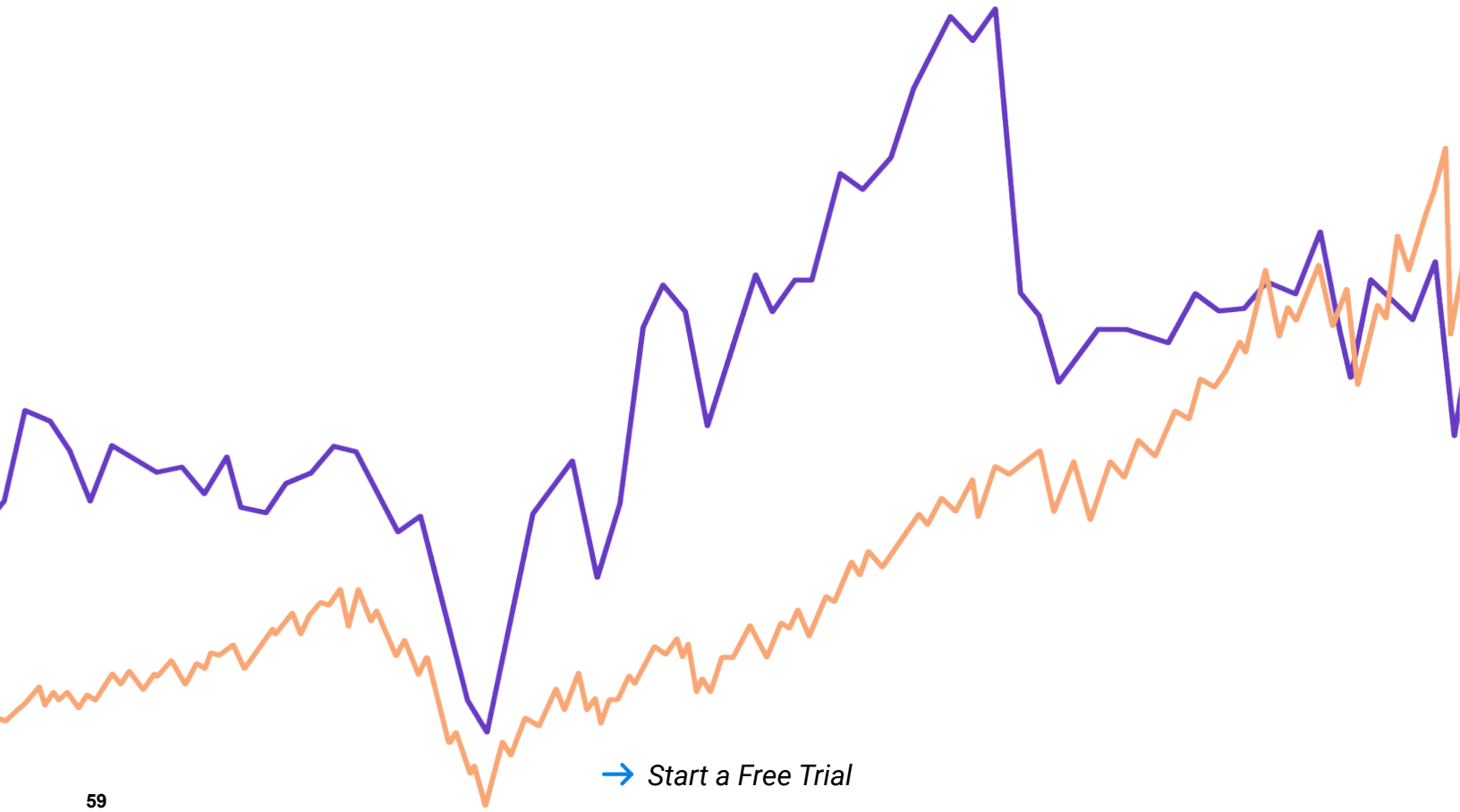
How Accurate Is the "Buffett Indicator" At Predicting Market Declines?

Recent History, 2000-to-Date:

To accommodate for modern equity market dynamics, we also examined the average level of the "Buffett Indicator" from 2000-to-Date, 110.6%. Similarly, we applied the 20% handicap to arrive at 132.7% as the overvaluation threshold of the twenty-first century. Out of a possible 7 major market declines dating back to 2000, this updated "Buffett Indicator" signal provided warning for four of them.

This elevated threshold meant the "Buffett Indicator" provided more "well-timed" warnings of market declines. Overall, the average time an initial overvaluation signal occurred using the 2000-to-Date threshold was a little over 13 months closer to the relative peak of the S&P 500. Each warning sign was distinct—no single overvaluation signal preceded more than one major market decline.

A major downside of following the elevated 2000-to-Date "Buffett Indicator" level: not receiving any heads-up before the market declines of 2007-09, 2015-16 and Early 2018.



Accuracy For Predicting Major Market Declines: The "Buffett Indicator", 2000-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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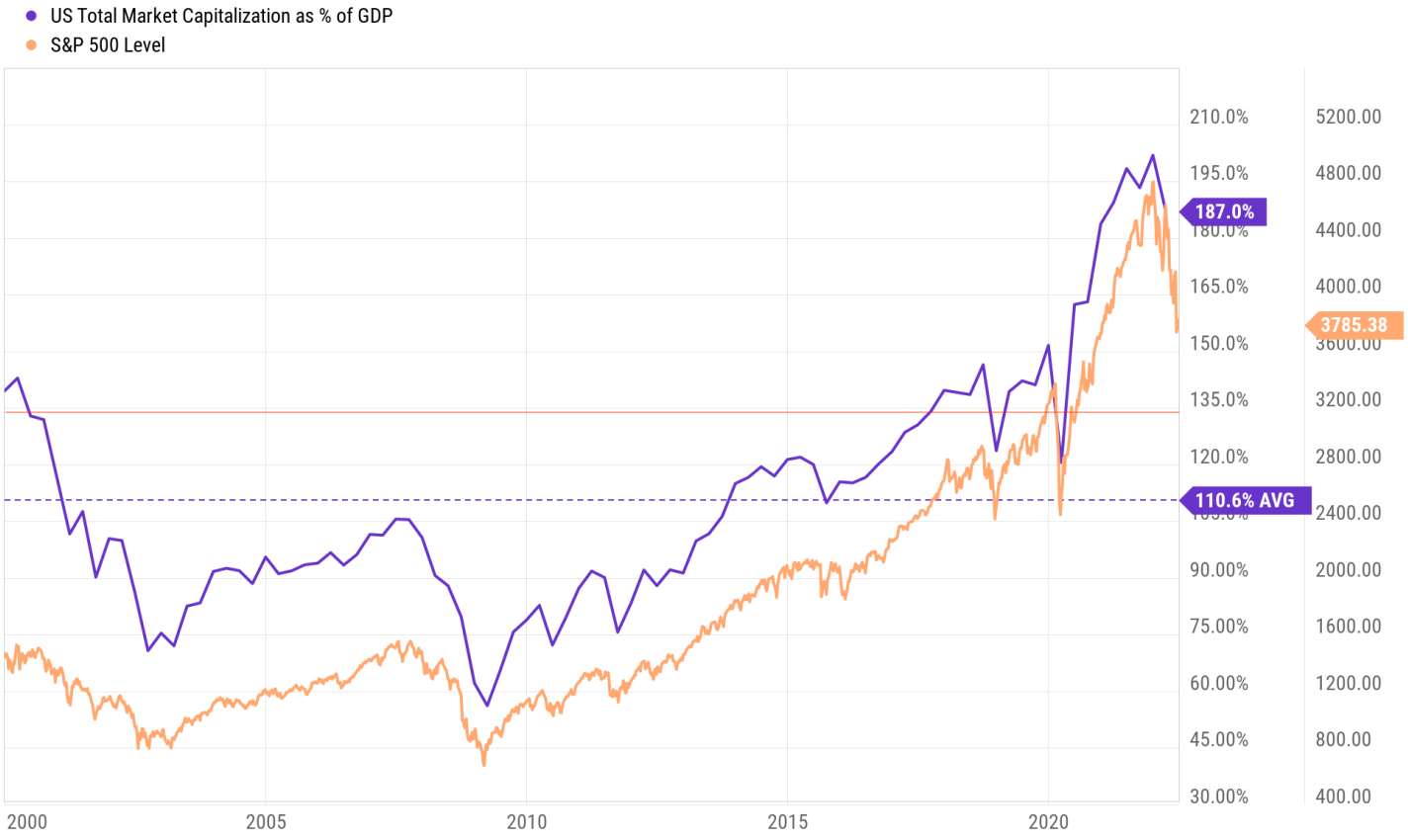
Red line marks overvaluation level of 132.7% or greater (20% above the 2000-to-date average of 110.6%)



Date Range: 12/31/1999 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q4 1999 Signal: 12/31/99 Peak: 3/24/00 Trough: 10/9/0	2 Months, 22 Days	18.39% (3.96%)	30 Months, 15 Days	-23.33% (-49.15%)	33 Months, 8 Days	-20.52% (-47.13%)	Q2 2000
Q3 2017 Signal: 9/30/17 Peak: 9/20/18 Trough: 12/24/18	11 Months, 21 Days	16.77% (16.33%)	3 Months, 4 Days	-57.12% (-19.78%)	14 Months, 24 Days	-5.44% (-6.68%)	Q3 2018
Q1 2019 Signal: 3/31/19 Peak: 2/19/20 Trough: 3/23/20	10 Months, 19 Days	21.96% (19.47%)	1 Month, 4 Days	-98.98% (-33.93%)	11 Months, 21 Days	-21.32% (-21.06%)	Q4 2019
Q2 2020 Signal: 6/30/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	18 Months, 4 Days	33.45% (54.71%)	5 Months, 27 Days	-38.46% (-21.08%)	24 Months, 0 Days	10.50% (22.10%)	Q1 2022
Simple Averages (Total of 4 Rows)	10.82 Months	22.64% Annualized Return			20.97 Months	-9.20% Annualized Return	

S&P 500 P/E Ratio

What is it?

The S&P 500 Price to Earnings Ratio (P/E Ratio) measures the amount paid in US Dollars for $1 of earnings-per-share (EPS). The price to earnings ratio is a valuation metric that gives investors a general idea of how a company's stock is priced compared to all others, but most importantly their industry or sector peers. Aggregated at the market level, a higher S&P 500 P/E ratio signals the S&P 500's index level is outpacing the earnings-per-share growth of its constituents.

How Well Do S&P 500 P/E Ratios Correlate to Forward S&P 500 Returns?

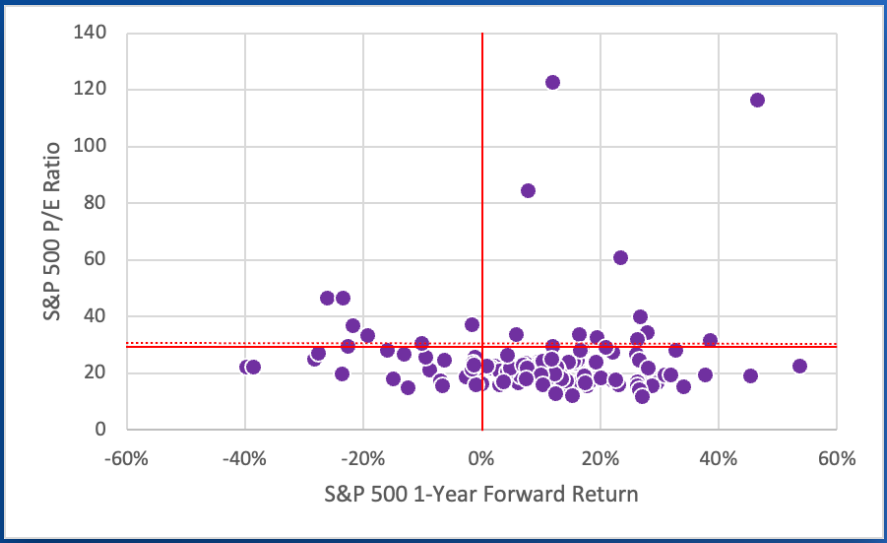
Because periods in which the S&P 500 P/E Ratio sits above its historical average are taken as signals of overvaluation, most data points would appear in **Quadrant II** and **Quadrant IV** if it were an accurate predictor of S&P 500 declines over a timeframe. Conversely, data points in **Quadrants I & III** point to less accurate prediction of subsequent returns.

The S&P 500 P/E Ratio does not have a generally accepted value or level at which the market is deemed overvalued. Rather, investors more often compare the value at a point in time against the metric's own historical average.

To set a clear threshold of overvaluation that would be difficult to ignore, we added a 20% premium to the S&P 500 P/E Ratio's long-term average since Q4 1988 of 24.41. That level, 29.29, is represented by the solid horizontal red line in the following Scatter Plots. To accommodate for modern market conditions, we also captured the average S&P 500 P/E Ratio from 2000 to present (26.25) and applied the same 20% increase for a "hard to ignore" threshold of 31.50, represented by the dashed red line.

Most 1Y, 3Y, and 5Y forward returns fall in Quadrant IV, which represents lower S&P 500 P/E ratios and positive forward returns. This is an expected result, with strong positive returns following periods when S&P 500 stocks were "cheap". However, there are some notable outliers—namely four instances of positive returns following the Great Financial Crisis despite the S&P 500 P/E Ratio being above 60 around that time. Historical data shows it is not uncommon to see negative S&P 500 returns following a low P/E Ratio reading—detracting from the predictive powers of the S&P 500 P/E Ratio.

QUADRANT II	QUADRANT I
Indicator signals: **Overvaluation**	Indicator signals: **Overvaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**
QUADRANT III	**QUADRANT IV**
Indicator signals: **Undervaluation**	Indicator signals: **Undervaluation**
Forward S&P Returns: **Negative**	Forward S&P Returns: **Positive**



S&P 500 P/E Ratio vs.
S&P 500 1-Year Forward Return

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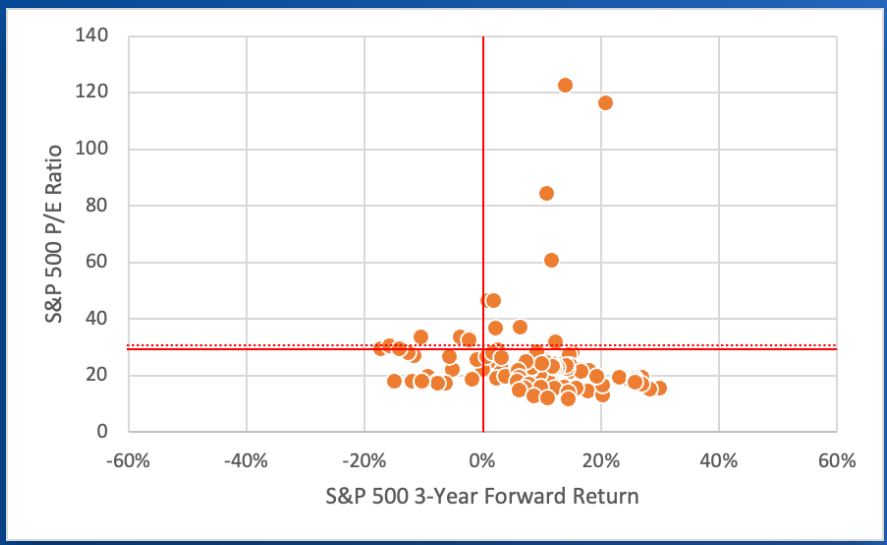

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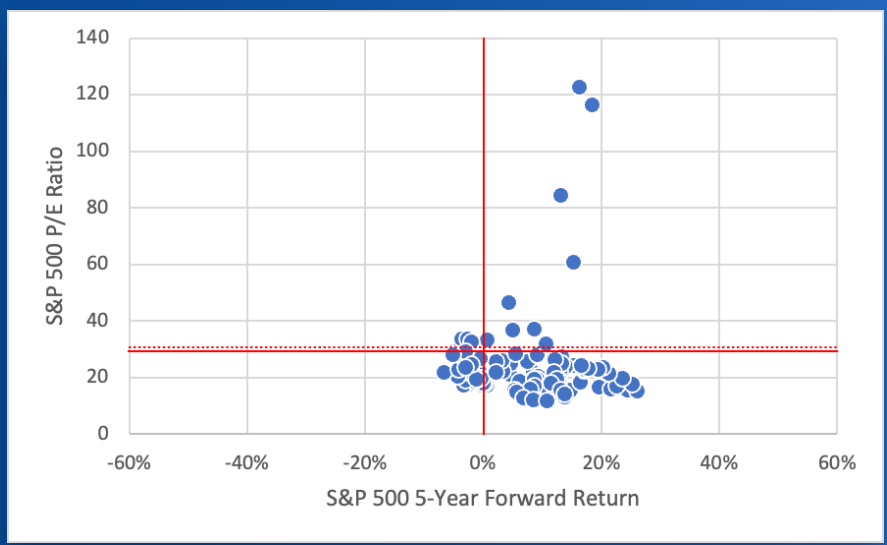

S&P 500 P/E Ratio vs.
S&P 500 5-Year Forward Return

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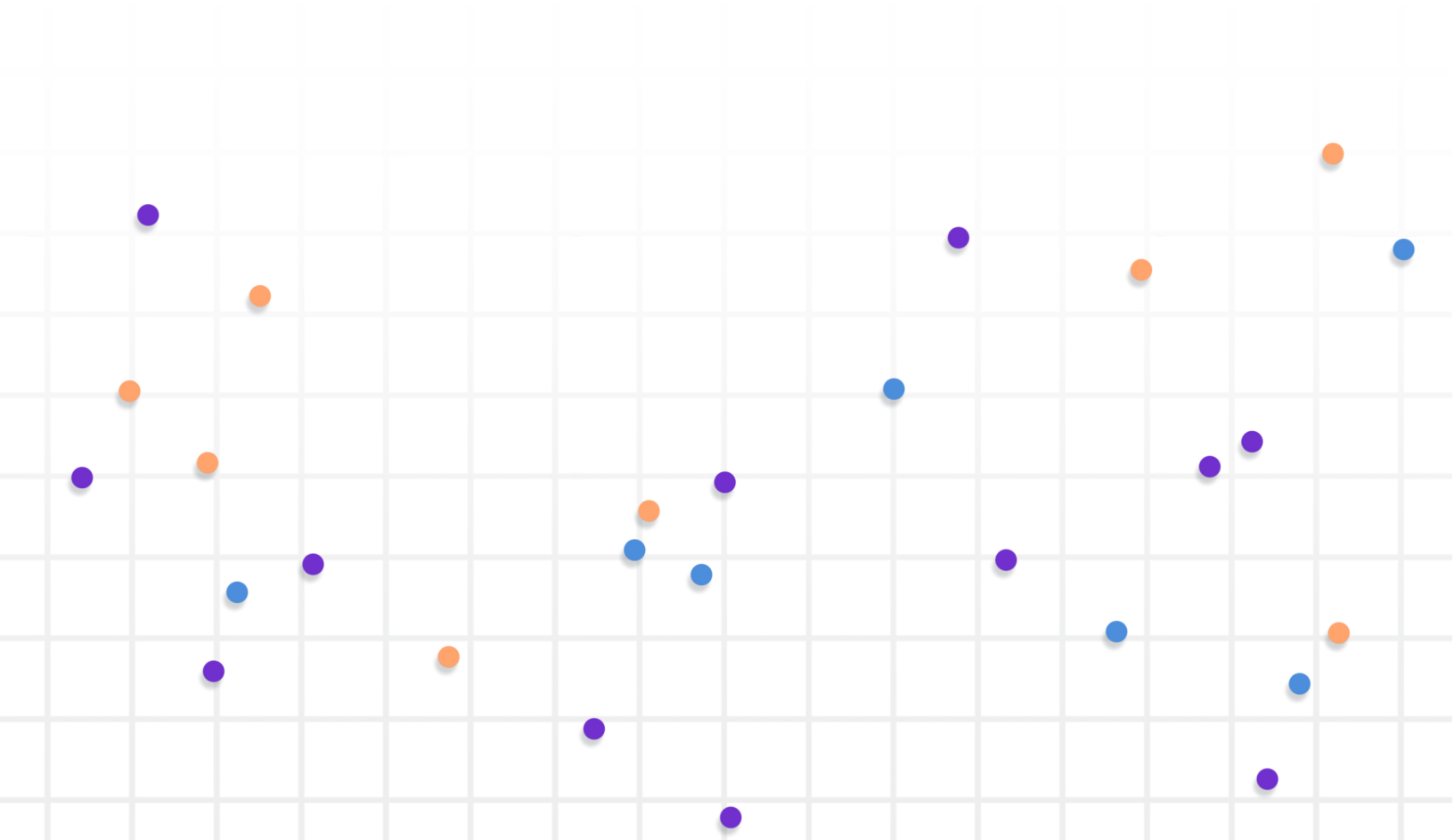
How Accurate Are S&P 500 P/E Ratios At Predicting Market Declines?

All-Time History, 1989-to-Date:

Out of a possible 10 major market declines dating back to Q4 1988, S&P 500 P/E Ratio levels of 29.29 or greater provided advance warning to four of them.

The S&P 500 P/E Ratio stayed quiet through the four market declines from 2015 to 2020, but gave 18 months' notice to the start of the market decline in 2022. Post-2000, the accuracy and timing of warning signals from the S&P 500 P/E Ratio have made it difficult to rely on for decision-making.



Accuracy For Predicting Major Market Declines: S&P 500 P/E Ratio, 1989-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
1953	-14.82%	1980-82	-27.11%	2007-09	-56.78%
1956-57	-21.48%	1983-84	-14.38%	2015-16	-14.16%
1959-60	-13.85%	1987	-33.51%	Early 2018	-10.16%
1961-62	-27.97%	1990	-19.92%	Late 2018	-19.78%
1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline

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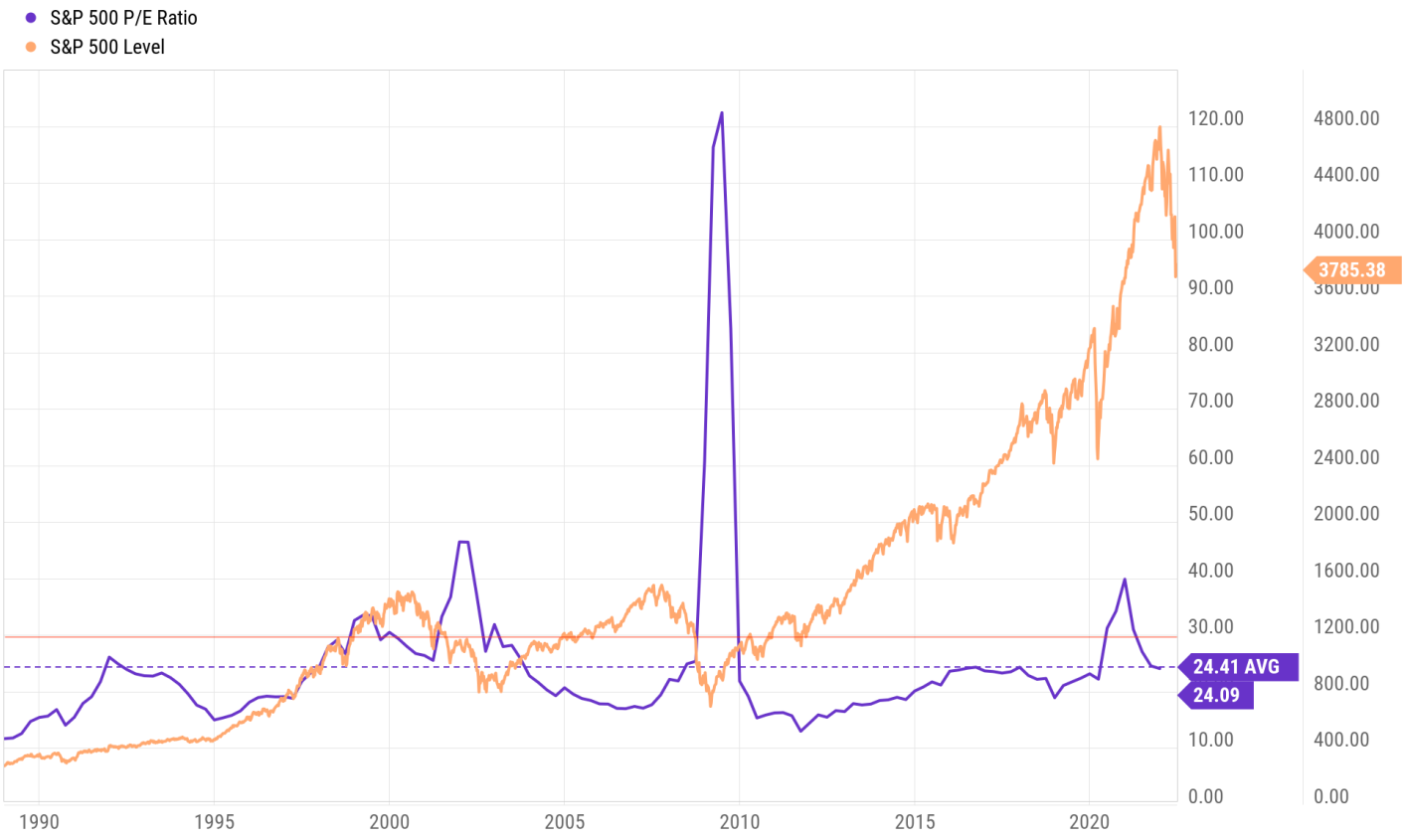
Red line marks overvaluation level of 29.29 or greater (20% above all-time average of 24.41)



Date Range: 12/30/1988 - 06/30/2022

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In sum, the S&P 500 P/E Ratio failed to foretell the declines of 1990 and 1998, but flashed relatively well-timed signals of overvaluation for the declines of 1999 and 2000-02. As for the market decline of 2007-09, the S&P 500 P/E Ratio flashed "overvalued" for one calendar quarter in Q4 2002, but about five years before the S&P 500's peak.

Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q4 1998 Signal: 12/31/98 Peak: 7/16/99 Trough: 10/15/99	6 Months, 15 Days	30.44% (15.42%)	2 Months, 29 Days	-40.33% (-12.08%)	9 Months, 14 Days	1.88% (1.48%)	Q2 1999
Q4 1999 Signal: 12/31/99 Peak: 3/24/00 Trough: 10/9/02	2 Months, 22 Days	18.39% (3.96%)	30 Months, 15 Days	-23.33% (-49.15%)	33 Months, 8 Days	-20.52% (-47.13%)	Q1 2000
Q4 2002 Signal: 12/31/02 Peak: 10/9/07 Trough: 3/9/09	57 Months, 8 Days	1.20% (10.32%)	17 Months, 0 Days	-44.69% (-56.78%)	74 Months, 6 Days	-7.38% (-52.32%)	Q4 2002
Q2 2020 Signal: 6/30/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	18 Months, 4 Days	33.45% (54.71%)	5 Months, 27 Days	-38.46% (-21.08%)	24 Months, 0 Days	10.50% (22.10%)	Q1 2021
Simple Averages (Total of 4 Rows)	21.17 Months	20.87% Annualized Return			35.27 Months	-3.88% Annualized Return	

How Accurate Are S&P 500 P/E Ratios At Predicting Market Declines?

Recent History, 2000-to-Date:

To accommodate for modern equity market dynamics, we also examined the average level of the S&P 500 P/E Ratio from 2000-to-Date, 26.25. Similarly, we applied the 20% handicap to arrive at 31.50 as the overvaluation threshold of the twenty-first century. **Out of a possible 7 major market declines dating back to Q4 1999, using the S&P 500 P/E Ratio of 31.50 or greater provided warning to only two of them.** It was also late in providing notice of the market decline of 2000-02—the S&P 500 P/E Ratio flashed a warning signal in June 2001, 15 months after that relative market peak.

As with its all-time average, the 2000-to-Date S&P 500 P/E Ratio signaled overvaluation for one calendar quarter in Q4 2002, about five years before the market decline of 2007-09. However, using the 2000-to Date threshold of 31.50 would have translated to a 15 month warning of that decline, versus a signal 18 months in advance when anchoring to the long-term historical average. Exiting the S&P 500 three months earlier would have meant missing out on **an additional 8.5% gain from 6/30/2020 to 9/30/2020**.

Accuracy For Predicting Major Market Declines: S&P 500 P/E Ratio, 2000-to-Date

Major Decline	% Off ATH	Major Decline	% Off ATH	Major Decline	% Off ATH
1950	-14.02%	1973-74	-48.20%	2000-02	-49.50%
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1966	-22.18%	1998	-19.34%	2020	-33.93%
1968-70	-36.06%	1999	-12.08%	2022	-21.08%

N/A	No Signal Given	Signal Given Before Decline	Late Signal Given

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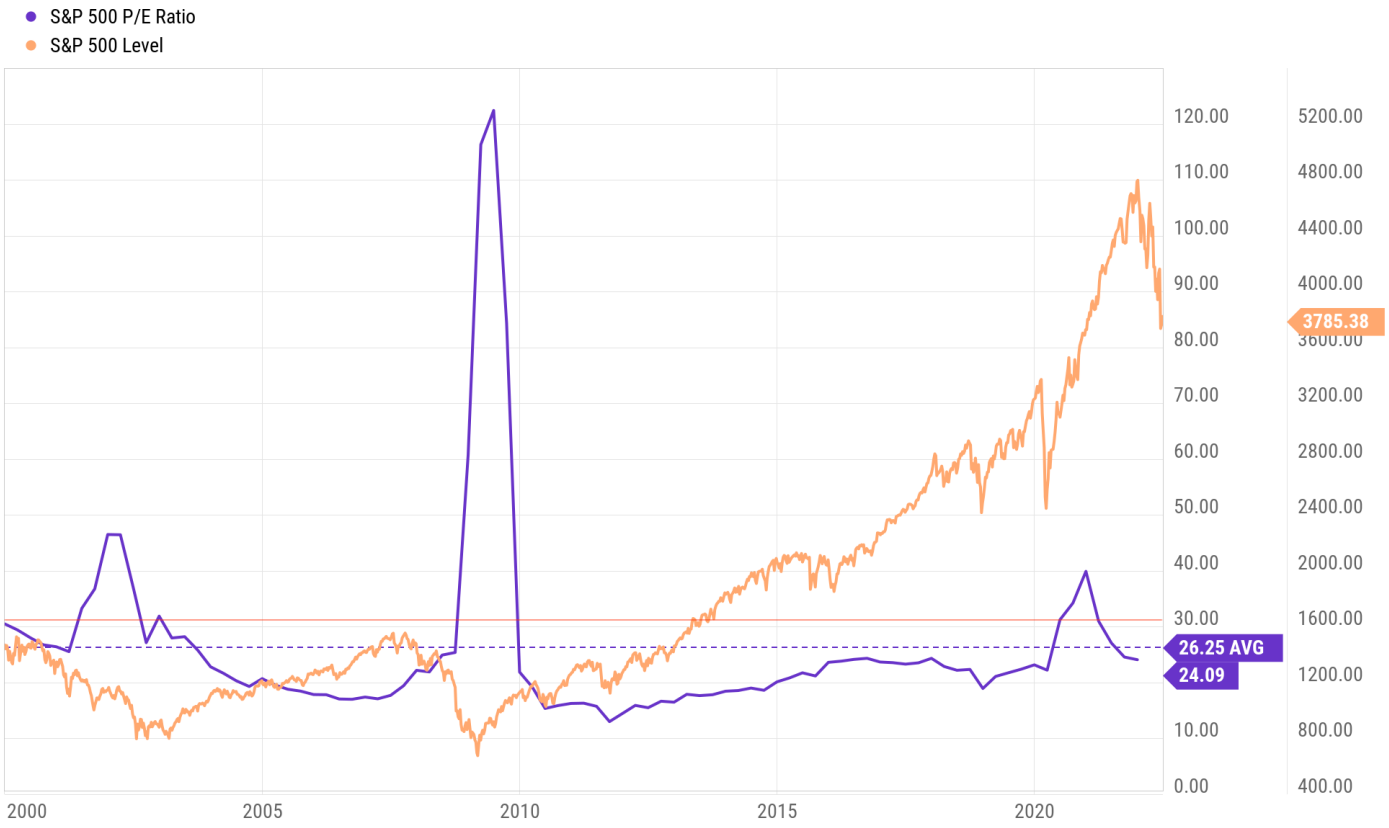
Red line marks overvaluation level of 31.50 or greater (20% above recent, 2000-to-date average of 26.25)



Date Range: 12/31/1999 - 06/30/2022

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Date of First Overvaluation Signal	Time from Signal to S&P 500 Peak (Months, Days)	Annualized Returns (Actual Return)	Time from S&P 500 Peak to Trough (Months, Days)	Annualized Returns (Actual Return)	Time from Signal to S&P 500 Trough (Months, Days)	Annualized Returns (Actual Return)	Overvaluation Signal Lasted Through:
Q4 2002 Signal: 12/31/02 Peak: 10/9/07 Trough: 3/9/09	57 Months, 8 Days	12.82% (77.89%)	17 Months, 0 Days	-44.69% (-56.78%)	74 Months, 6 Days	-4.15% (-23.11%)	Q4 2002
Q3 2020 Signal: 9/30/20 Peak: 1/3/22 Trough: TBD (as of 6/30/22)	15 Months, 4 Days	32.54% (42.63%)	5 Months, 27 Days	-38.46% (-21.08%)	21 Months, 0 Days	7.00% (12.56%)	Q4 2020
Simple Averages (Total of 2 Rows)	36.21 Months	22.68% Annualized Return			47.64 Months	1.43% Annualized Return	

Conclusion

No single valuation indicator has a perfect track-record for predicting any and every major market decline. Likewise, based on loose correlations to forward S&P 500 returns, none appear reliable enough to serve as the basis for regular decision making.

That said, valuation indicators aren't completely without merit. The "Buffett Indicator", Yield Spread inversions, and the S&P 500 CAPE Ratio provided the most consistency and accuracy in predicting major declines, but still were perhaps not sufficient. In hindsight, using multiple indicators in tandem with each other may have been useful in providing confirmation that a market decline was brewing.

There were also times that these indicators provided more than one warning to an upcoming market decline, as was often the case with 10-2 Year and 10 Year-3 Month Treasury Yield Spreads. Though likely not well-received by traders, timing their entry and exit to the minute or second, advisors may appreciate the persistent and repeat signals. Like hitting "snooze" on your alarm clock, it's often the second or third alarm that does the trick.

Also affecting the efficacy of these indicators are the time frame and thresholds used. Using higher overvaluation thresholds combined with a 2000-to-Date lookback improved the timing accuracy of most indicators. That is, they flashed their warnings closer to the S&P 500's peak and subsequent decline. In this case, the "Buffett Indicator" and S&P 500 CAPE Ratio were the most reliable indicators to use out of the bunch. If one were to consider history further back than 2000, then the 10-2 Year and 10 Year-3 Month Treasury Yield Spreads might come across as relatively accurate predictors of major market declines.

Though valuation indicators aren't crystal balls, their ability to hint at potential market declines still warrants attention. There are also many ways to define the bounds and thresholds of these indicators, and ultimately use them in investment decision-making. How you go about "setting the goalposts" is entirely up to you, but these valuation indicators are among the many tools that advisors and investors have at their disposal to make smarter investment decisions.

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