

# U.S. Bear Market Probability Indicator

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## Report Overview

The Model Signal Reports translate Quant Pack Leading Indicators into asset allocation insights. This report provides the historical performance data of each sample model since 2000 and will be updated on an annual basis going forward. You can find more information on the indicator and its latest model signal in the MarketDesk Quant Pack published each Friday.

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## Overview of Indicator

- The U.S. Bear Market Probability Indicator forecasts the probability of -20% or more market drawdown over the next 12 months.
- Based on a composite of 12 macro inputs (labor markets, stock market valuation, interest rates, inflation, Federal Reserve monetary policy, etc.) that exhibit a high statistical correlation with the year-over-year change in S&P 500 earnings growth.
- The leading indicator (1) provides an early warning signal when the risk of a major market selloff is rising, and (2) allows investors to proactively manage portfolio risk by adjusting portfolio allocations.

## Overview of Model Signal

If the U.S. Bear Market Probability Indicator has had a reading above 75% over the last 18 months, own 100% Risk-Off Exposure (i.e., Defensive Sectors, High-Quality Credit, and Bonds). If the U.S. Bear Market Probability Indicator has not had a reading above 75% over the last 18 months, own 100% Risk-On Exposure (i.e., Cyclical Sectors, Low-Quality Credit, and Stocks). All sample model portfolios are rebalanced monthly to equal weight.

**Figure 1: Historical Model Signals (Risk-On vs Risk-Off)**

The table shows the indicator's historical model reading for each month since 2000

Model Signals Based on U.S. Bear Market Probability Indicator												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2000	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2001	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2002	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-On	Risk-On	Risk-On	Risk-On
2003	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2004	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2005	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2006	Risk-On	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2007	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2008	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2009	Risk-Off	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2010	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2011	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2012	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2013	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2014	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2015	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2016	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On
2017	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-On	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2018	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2019	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2020	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2021	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2022	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off	Risk-Off
2023	Risk-Off	Risk-Off	Risk-Off	Risk-Off								

**Figure 2: Annual Model Returns**

	Page 3	Page 4	Page 5
S&P 500	U.S. Sector Rotation	U.S. Credit Rotation	Stock/Bond Rotation
-4%	33%	15%	12%
-12%	-16%	6%	8%
-22%	-18%	16%	3%
29%	36%	30%	29%
11%	15%	11%	11%
5%	0%	2%	5%
16%	15%	7%	7%
5%	14%	8%	7%
-37%	-22%	16%	5%
26%	47%	46%	37%
15%	26%	17%	15%
2%	-1%	1%	2%
16%	18%	17%	16%
32%	36%	14%	32%
14%	9%	6%	14%
1%	0%	-4%	1%
12%	14%	18%	12%
22%	13%	8%	12%
-4%	1%	0%	0%
31%	25%	11%	9%
18%	9%	11%	8%
29%	21%	-3%	-2%
-18%	0%	-20%	-13%
9%	1%	5%	4%

Source: MarketDesk Quant Pack. Data as of 4/30/2023. Past performance does not guarantee future results. Performance is shown as total returns with dividends and income reinvested. The performance information shown herein does not reflect the deduction of advisory and/or other fees normally incurred in the management of a portfolio. Hypothetical performance results are presented for illustrative purposes only.

## Indicator Signal Overview – U.S. Sector Rotation Model

If the U.S. Bear Market Probability Indicator has had a reading above 75% over the last 18 months, own 100% Risk-Off Exposure. If the U.S. Bear Market Probability Indicator has not had a reading above 75% over the last 18 months, own 100% Risk-On Exposure. The sample model is rebalanced monthly to equal weight. Refer to page 2 to see when the model held Risk-On or Risk-Off exposure for each month since January 2000.

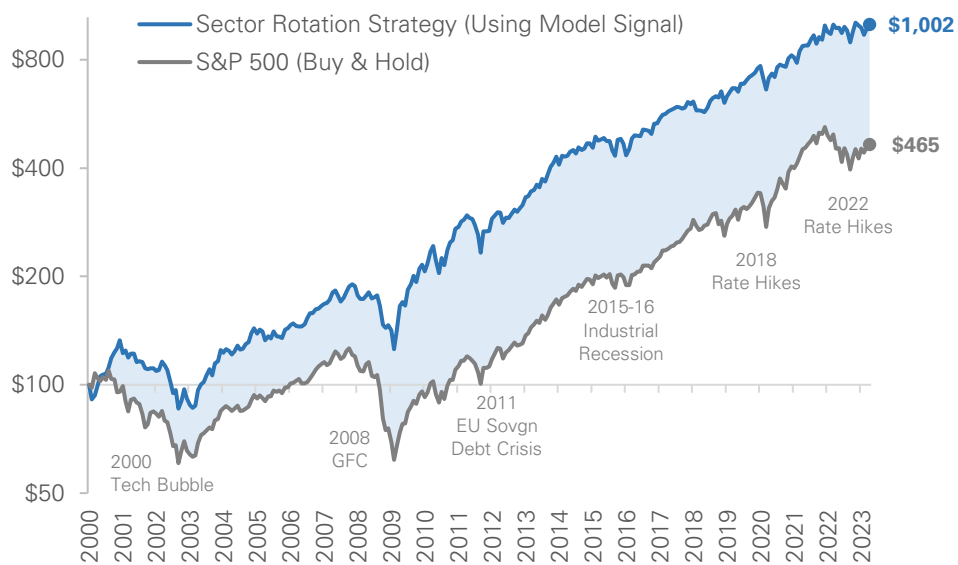
- **Risk-On** = Cyclical Sectors (Industrials, Materials, Cons. Discretionary)
- **Risk-Off** = Defensive Sectors (Utilities, Health Care, Cons. Staples)

Figure 3: Performance Statistics – U.S. Sector Rotation Model

Annual Statistics of Returns & Risks	S&P 500 (Benchmark)	U.S. Sector Rotation Model
Average Return	8.2%	11.9%
<b>Strategy CAGR</b>	<b>6.8%</b>	<b>10.4%</b>
Maximum Drawdown	-51%	-35%
<b>% of Positive Years</b>	<b>74%</b>	<b>78%</b>
Upside Capture	100%	104%
Downside Capture	100%	23%
<b>Net Capture</b>	<b>0%</b>	<b>+81%</b>
Max Positive Year	32%	47%
Max Negative Year	-37%	-22%
<b>Max Risk / Reward Ratio</b>	<b>0.88</b>	<b>2.14</b>

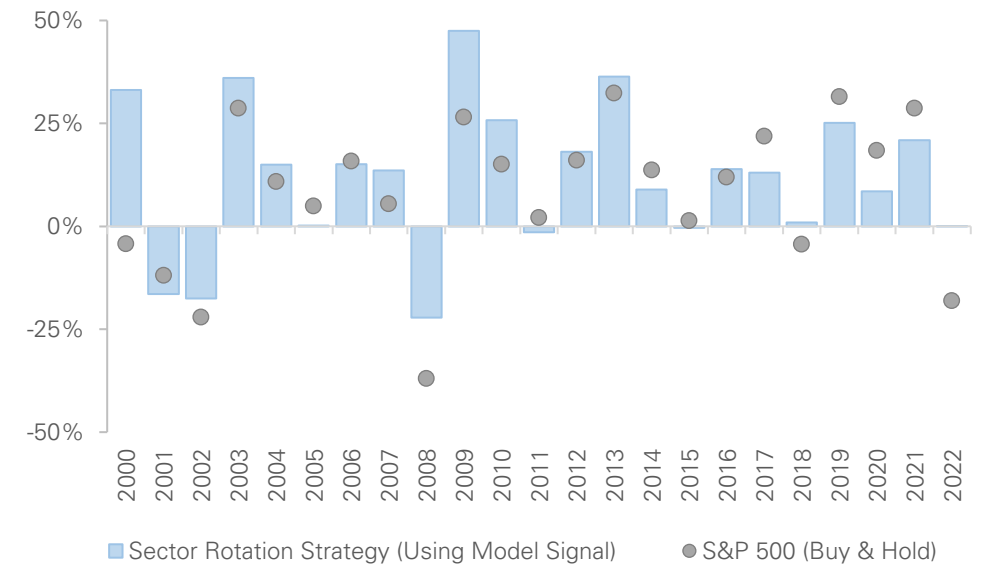
Source: MarketDesk Quant Pack. Based on annual calendar year returns since 2000.

Figure 4: Total Returns – U.S. Sector Rotation Model



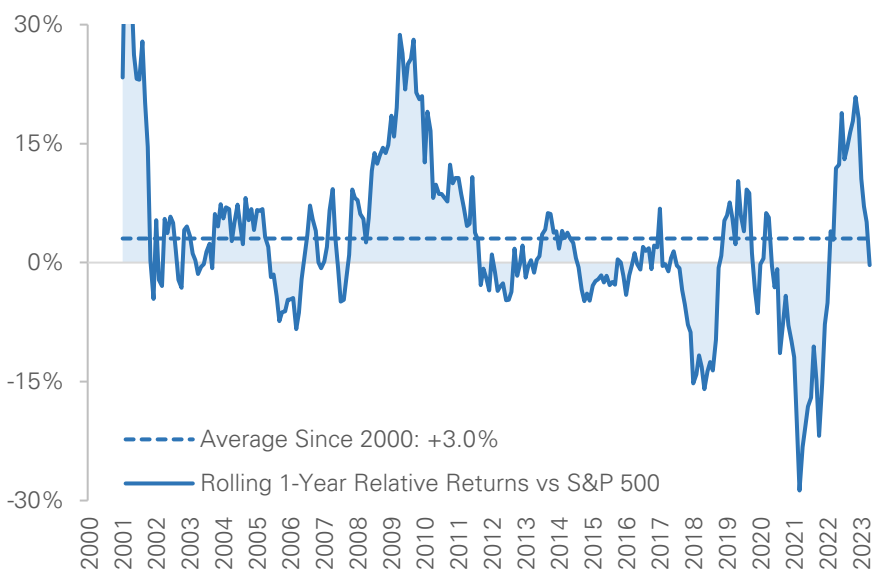
Source: MarketDesk Quant Pack. The portfolio is rebalanced monthly.

Figure 5: Historical Annual Returns – U.S. Sector Rotation Model



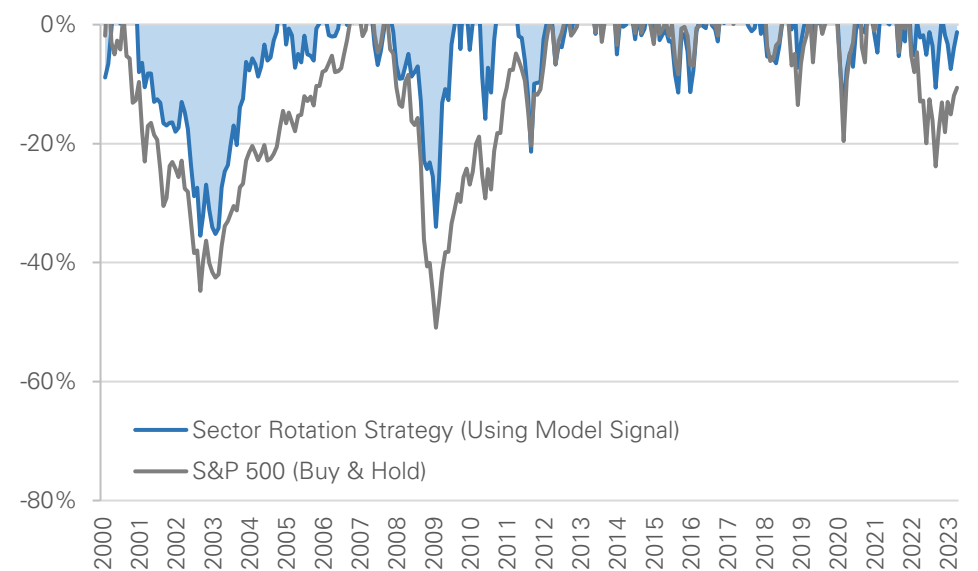
Source: MarketDesk Quant Pack

Figure 6: 1-Year Relative Returns – U.S. Sector Rotation Model



Source: MarketDesk Quant Pack

Figure 7: Portfolio Drawdowns – U.S. Sector Rotation Model



Source: MarketDesk Quant Pack

## Indicator Signal Overview – U.S. Credit Rotation Model

If the U.S. Bear Market Probability Indicator has had a reading above 75% over the last 18 months, own 100% Risk-Off Exposure. If the U.S. Bear Market Probability Indicator has not had a reading above 75% over the last 18 months, own 100% Risk-On Exposure. The sample model is rebalanced monthly to equal weight. Refer to page 2 to see when the model held Risk-On or Risk-Off exposure for each month since January 2000.

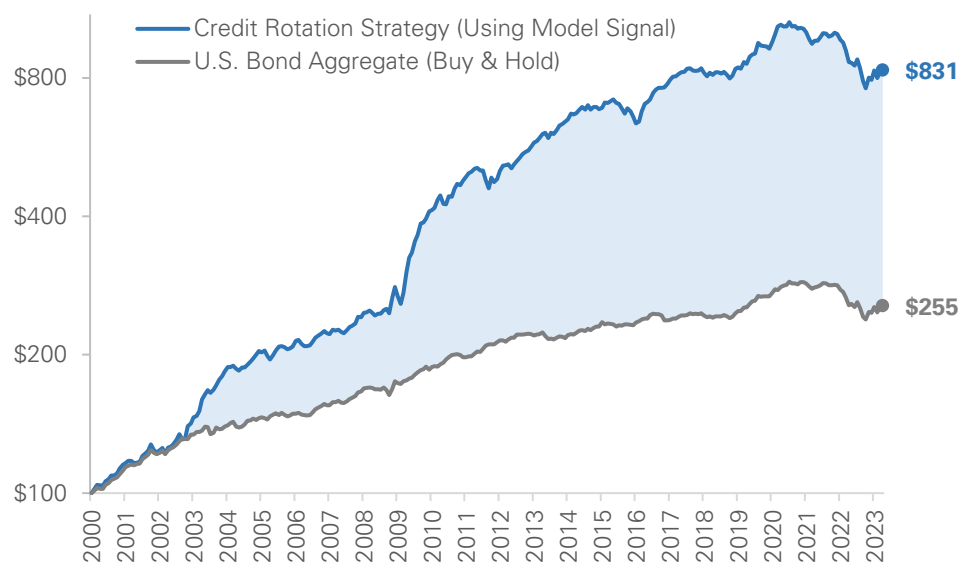
- **Risk-On** = Low-Quality Credit (High Yield, Fallen Angels, Convertibles)
- **Risk-Off** = High-Quality Credit (U.S. Treasuries & MBS)

Figure 8: Performance Statistics – U.S. Credit Rotation Model

Annual Statistics of Returns & Risks	US Bond Aggregate (Benchmark)	Credit Sector Rotation Model
Average Return	4.1%	10.1%
<b>Strategy CAGR</b>	<b>4.1%</b>	<b>9.5%</b>
Maximum Drawdown	-17%	-28%
<b>% of Positive Years</b>	<b>87%</b>	<b>83%</b>
Upside Capture	100%	217%
Downside Capture	100%	57%
<b>Net Capture</b>	<b>0%</b>	<b>+160%</b>
Max Positive Year	12%	46%
Max Negative Year	-13%	-20%
<b>Max Risk / Reward Ratio</b>	<b>0.92</b>	<b>2.26</b>

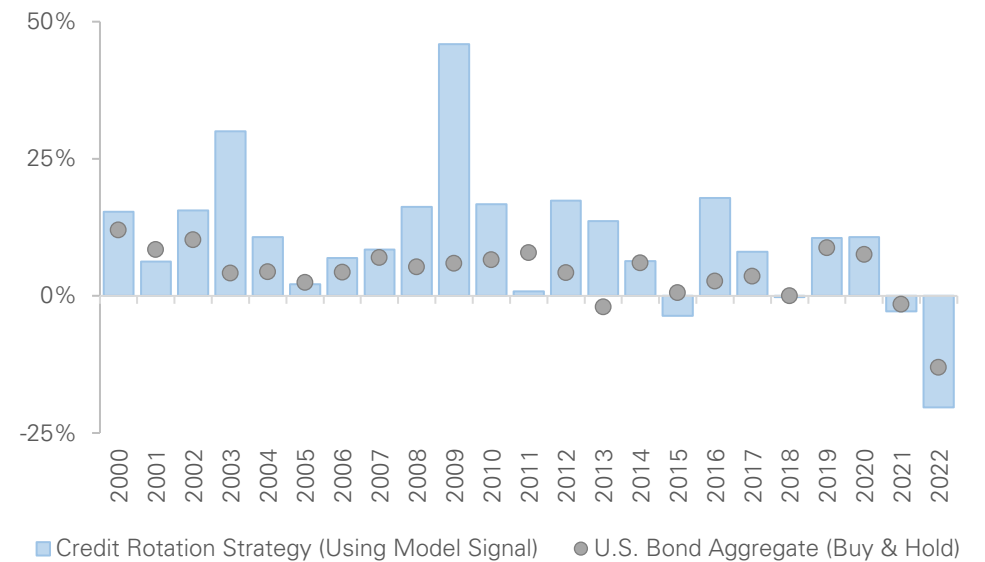
Source: MarketDesk Quant Pack. Based on annual calendar year returns since 2000.

Figure 9: Total Returns – U.S. Credit Rotation Model



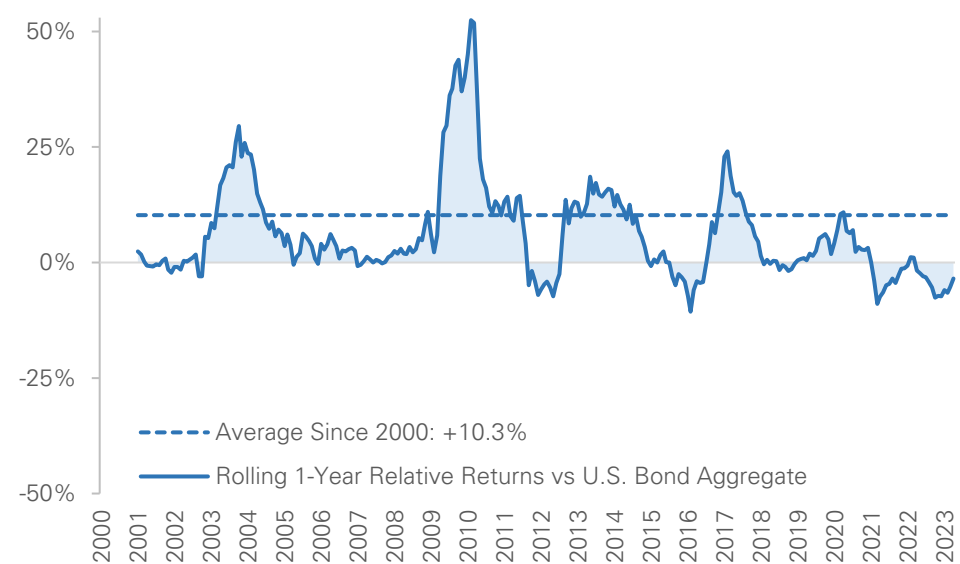
Source: MarketDesk Quant Pack. The portfolio is rebalanced monthly.

Figure 10: Historical Annual Returns – U.S. Credit Rotation Model



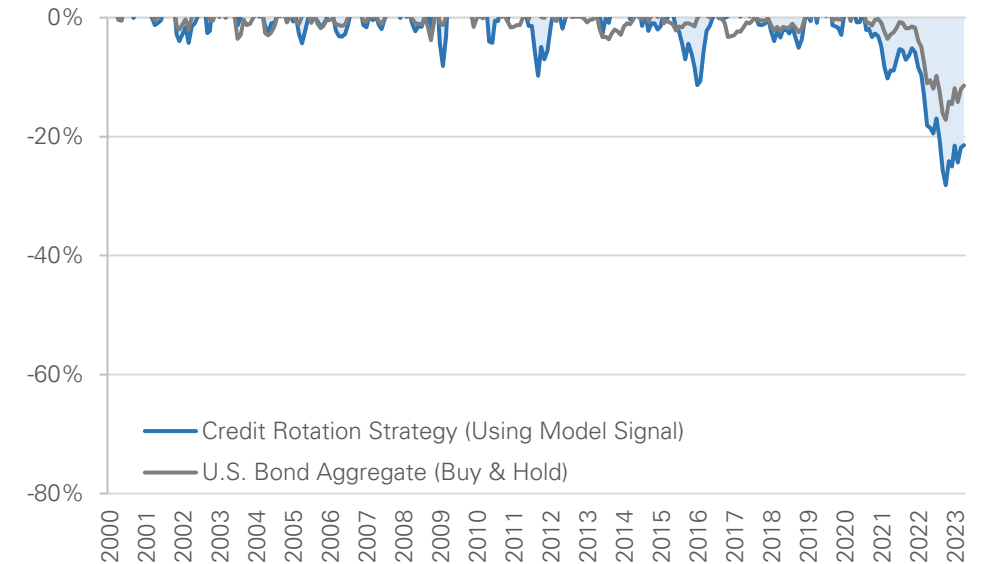
Source: MarketDesk Quant Pack

Figure 11: 1-Year Relative Returns – U.S. Credit Rotation Model



Source: MarketDesk Quant Pack

Figure 12: Portfolio Drawdowns – U.S. Credit Rotation Model



Source: MarketDesk Quant Pack

## Indicator Signal Overview – Stock / Bond Rotation Model

If the U.S. Bear Market Probability Indicator has had a reading above 75% over the last 18 months, own 100% Risk-Off Exposure. If the U.S. Bear Market Probability Indicator has not had a reading above 75% over the last 18 months, own 100% Risk-On Exposure. Refer to page 2 to see when the model held Risk-On or Risk-Off exposure for each month since January 2000.

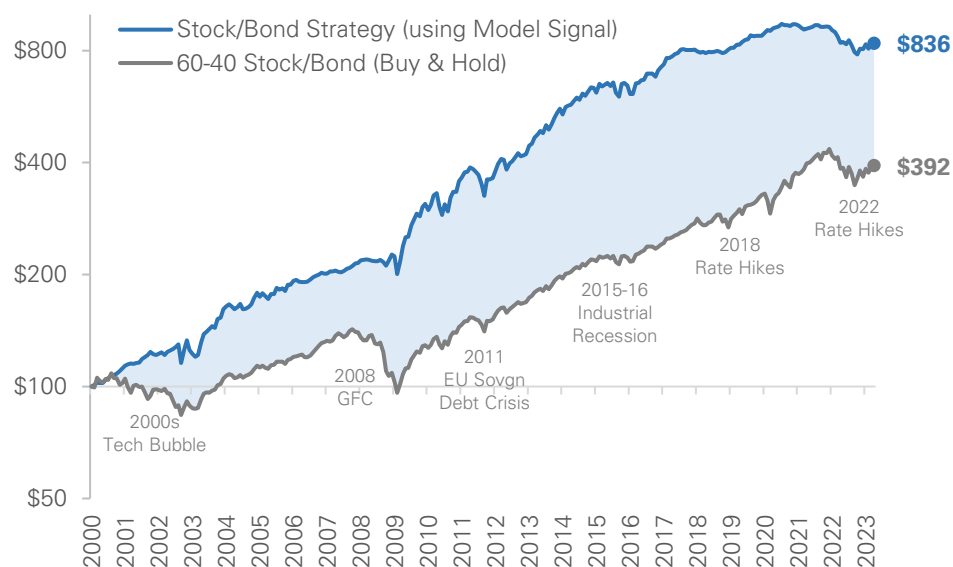
- **Risk-On** = Stocks (S&P 500 Index)
- **Risk-Off** = Bonds (U.S. Bond Aggregate Index)

Figure 13: Performance Statistics – Stock / Bond Rotation Model

Annual Statistics of Returns & Risks	60-40 Stock/Bond (Benchmark)	Stock / Bond Rotation Model
Average Return	6.4%	10.0%
<b>Strategy CAGR</b>	<b>6.1%</b>	<b>9.6%</b>
Maximum Drawdown	-33%	-17%
<b>% of Positive Years</b>	<b>78%</b>	<b>91%</b>
Upside Capture	100%	112%
Downside Capture	100%	-7%
<b>Net Capture</b>	<b>0%</b>	<b>+120%</b>
Max Positive Year	22%	37%
Max Negative Year	-22%	-13%
<b>Max Risk / Reward Ratio</b>	<b>1.01</b>	<b>2.84</b>

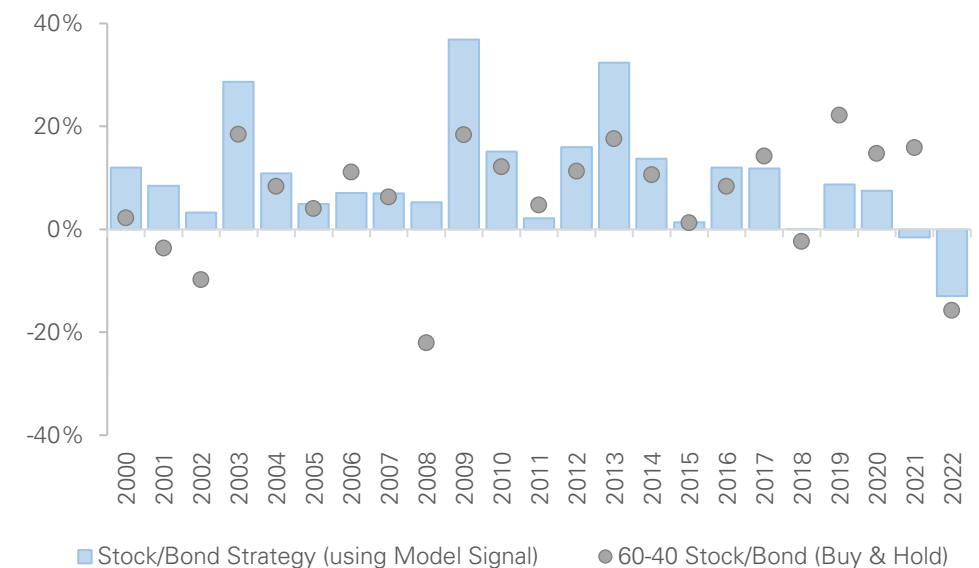
Source: MarketDesk Quant Pack. Based on annual calendar year returns since 2000.

Figure 14: Total Returns – Stock / Bond Rotation Model



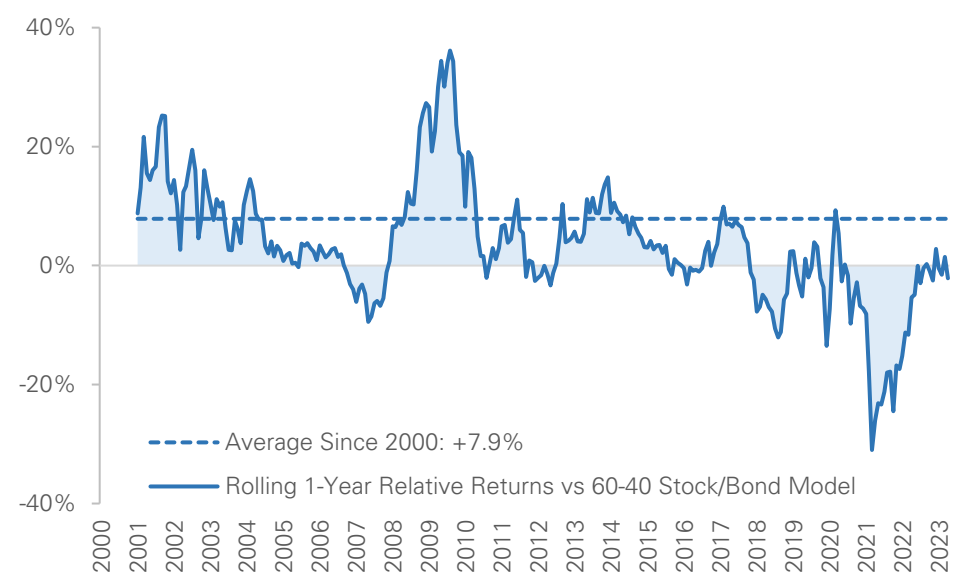
Source: MarketDesk Quant Pack. The portfolio is rebalanced monthly.

Figure 15: Historical Annual Returns – Stock / Bond Rotation Model



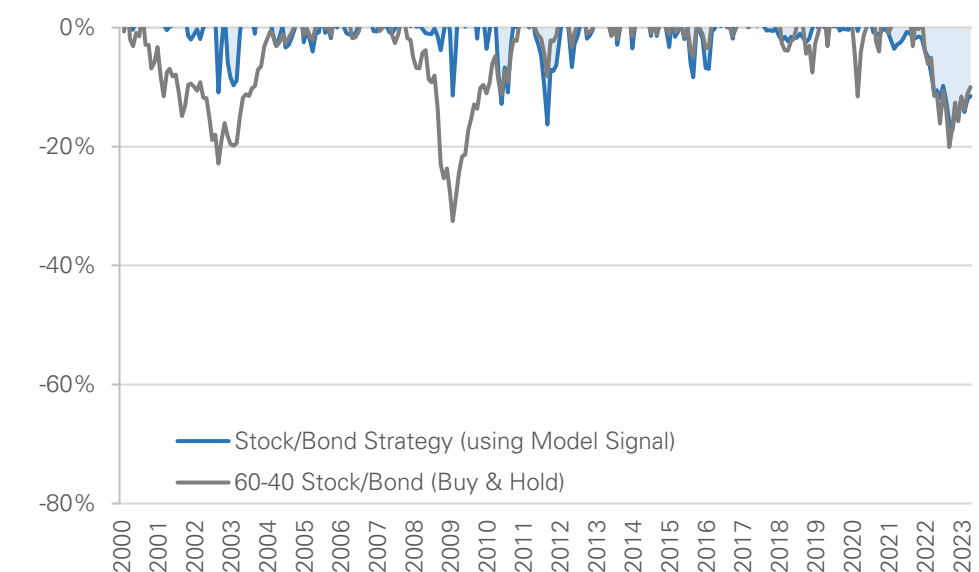
Source: MarketDesk Quant Pack

Figure 16: 1-Year Relative Returns – Stock / Bond Rotation Model



Source: MarketDesk Quant Pack

Figure 17: Portfolio Drawdowns – Stock / Bond Rotation Model



Source: MarketDesk Quant Pack

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