MarketDesk Quant Pack Leading Indicators

# U.S. Risk Demand Indicator

## Real-time Measure of Investors' Willingness to Take Risk

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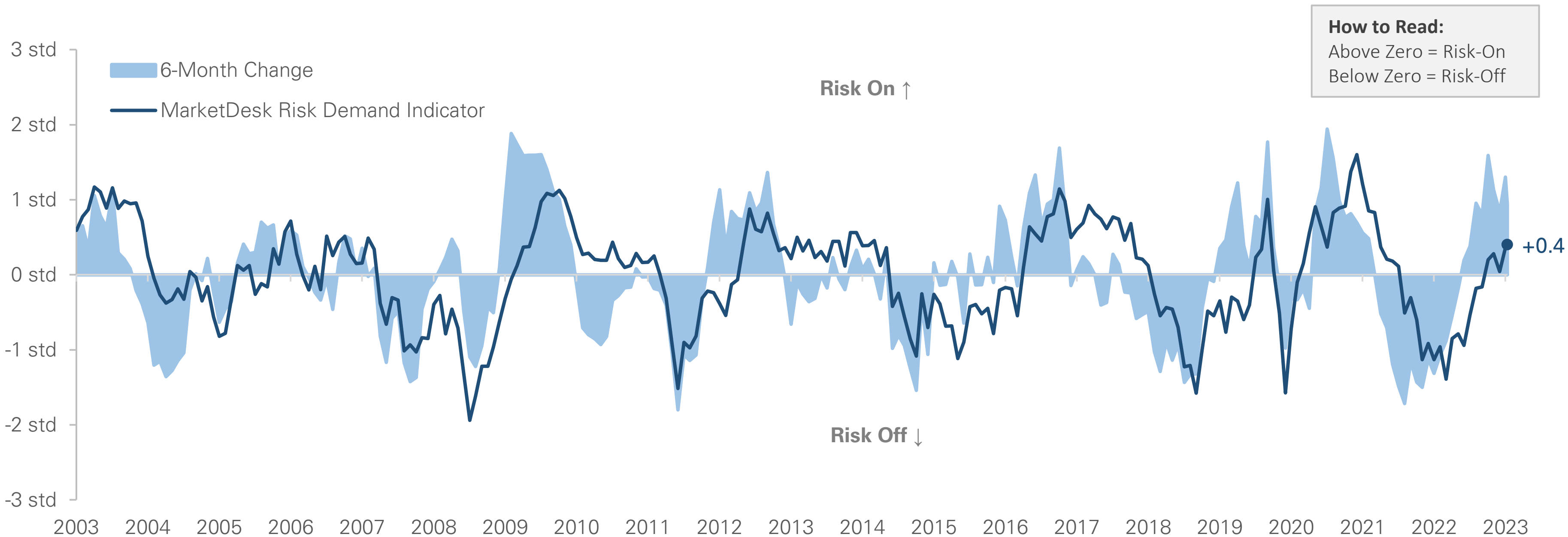
# Indicator Overview

- The *U.S. Risk Demand Indicator* provides real-time measure of investors' willingness to take risk
- The indicator measures momentum across several asset classes: equity markets, equity volatility, credit markets, and FX.
- For markets to move higher you need a counterparty (i.e., another investor somewhere in the world) that is willing to buy what you are selling at a higher price. The leading indicator (1) is built to measure investors' willingness (or lack thereof) to increase portfolio risk, and (2) signals future trend changes in investor risk appetite.




Data as of 4/30/2023. Visit [www.QuantPack.com/plans](www.QuantPack.com/plans) to see the indicator's latest forecast.

# What is Risk Demand?

- Risk Demand = Measures investors’ willingness (or lack thereof) to increase portfolio risk

- Risk demand can be measured several different ways. However, it is often measured based on the relative price performance of risky assets relative to safe ones. For example, the relative performance between Small Cap stocks and Large Cap stocks gauges investor’s willingness to own more volatile stocks. Additionally, the relative performance between High Yield Bonds and Investment Grade Bonds gauges investors’ willingness to own lower-quality bonds.

- Risk demand provides context on the current environment and signals future trend changes in investors’ preferences.

# Market Impacts

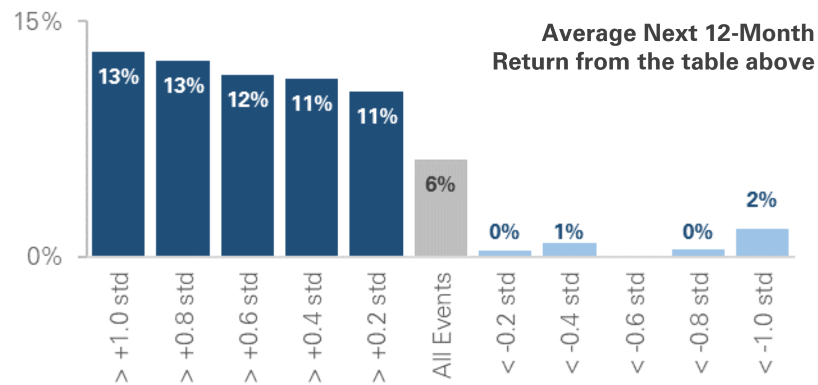
## Figure 1 – Future S&P 500 Performance

- The table shows historical forward returns for the S&P 500 based on the indicator's readings (see page 3).
- The data shows as the indicator increases, the S&P 500's forward returns and percentage of positive return outcomes both increase well above the average (represented by the 'All Past Events' row). As the indicator decreases, the S&P 500's forward returns and the percentage of positive return outcomes decrease.
- The U.S. Risk Demand Indicator should be viewed as a momentum signal rather than a contrarian signal. Historically, risk demand drops off well before the top in the market. When the composite index is above (below) zero, investors should consider increasing (decreasing) overall portfolio risk.

Historical Forward S&P 500 Returns (%) Since 2000

| U.S. Risk Demand Indicator | | 3 Months | | 6 Months | | 9 Months | | 12 Months | |
|---|---|---|---|---|---|---|---|---|---|
| | | Avg | Win % | Avg | Win % | Avg | Win % | Avg | Win % |
| Risk On | > +1.0 std | 3.5 | 83% | 5.4 | 67% | 9.0 | 92% | 13.1 | 92% |
| | > +0.8 std | 3.5 | 81% | 6.7 | 78% | 9.1 | 91% | 12.5 | 88% |
| | > +0.6 std | 2.6 | 78% | 5.9 | 76% | 8.5 | 86% | 11.6 | 86% |
| | **> +0.4 std** | **2.4** | **78%** | **6.3** | **82%** | **9.0** | **88%** | **11.4** | **84%** |
| | > +0.2 std | 2.8 | 78% | 6.1 | 78% | 8.5 | 85% | 10.5 | 81% |
| All Past Events | | 1.4 | 65% | 3.0 | 68% | 4.5 | 71% | 6.2 | 71% |
| Risk Off | < -0.2 std | -0.4 | 53% | -0.7 | 52% | -0.6 | 54% | 0.4 | 56% |
| | < -0.4 std | -0.3 | 54% | -0.7 | 48% | 0.0 | 52% | 0.9 | 54% |
| | < -0.6 std | -0.5 | 50% | -0.6 | 43% | -0.7 | 47% | 0.0 | 49% |
| | < -0.8 std | 0.0 | 54% | 0.9 | 49% | 0.5 | 53% | 0.4 | 51% |
| | < -1.0 std | -2.5 | 41% | -0.6 | 41% | 1.5 | 55% | 1.8 | 52% |

Source: MarketDesk Quant Pack. Note: Win % = # Positive vs Total Events.

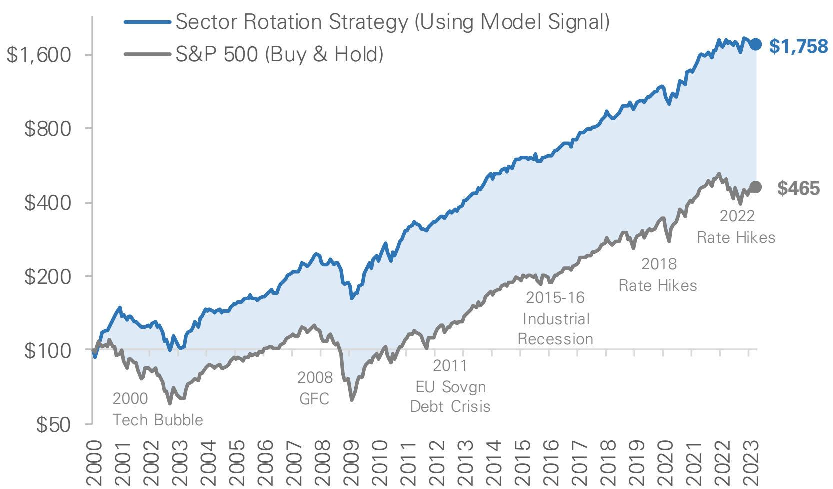



Data as of 4/30/2023

# Model Signal #1 – Sector Rotation Strategy

- **Model Signal** – When *U.S. Risk Demand Indicator* is below zero (page 3), own Defensive Sector ETFs (XLU, XLV, XLP). When it is above zero, own Cyclical Sector ETFs (XLB, XLI, XLY). The portfolio is rebalanced monthly to equal weight.
- Compared to a buy and hold S&P 500 strategy, the model signal produces a higher average annual return, higher net capture ratio, lower down capture ratio, and higher max risk / reward ratio.

**Total Returns – U.S. Sector Rotation Model**




Source: MarketDesk Quant Pack. Defensive Sector ETFs: XLU, XLV, XLP. Cyclical Sector ETFs: XLB, XLI, XLY. The portfolio is rebalanced monthly to equal weight.

**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% | 14.8% |
| **Strategy CAGR** | **6.8%** | **13.1%** |
| Max Drawdown | -51% | -34% |
| **% of Positive Years** | **74%** | **87%** |
| Up Capture | 100% | 118% |
| Down Capture | 100% | -3% |
| **Net Capture** | **-** | **+122%** |
| Max Positive Year | 32% | 49% |
| Max Negative Year | -37% | -22% |
| **Max Risk / Reward** | **0.88** | **2.19** |

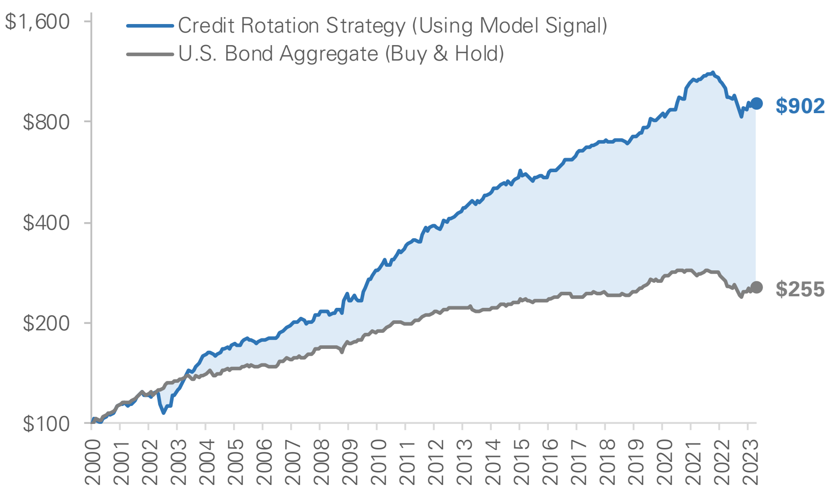
Source: MarketDesk Quant Pack. Based on annual calendar year returns.

Data as of 4/30/2023. Past performance does not guarantee future results. 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.

# Model Signal #2 – Credit Rotation Strategy

- **Model Signal** – When *U.S. Risk Demand Indicator* is below zero (see page 3), own High-Quality Credit Sectors (MBS and U.S. Treasuries). When it is above zero, own Low-Quality Credit Sectors (High Yield, Fallen Angels, and Convertible Bonds). The portfolio is rebalanced monthly to equal weight.
- Compared to a buy and hold Bond Aggregate strategy, the model signal produces a higher average annual return, higher percentage of positive returns, higher up capture ratio, lower down capture ratio, and higher max risk / reward ratio.

**Total Returns – Credit Sector Rotation Model**




Source: MarketDesk Quant Pack. High-Quality Credit Sectors: 10Y U.S. Treasuries and Mortgage Backed Securities (MBS). Low-Quality Credit Sectors: High Yield, Fallen Angels, and Convertibles. The portfolio is rebalanced monthly to equal weight.

**Performance Statistics – Credit Sector Rotation Model**

| Annual Statistics of Returns & Risks | Bond Aggregate (Benchmark) | Credit Sector Rotation Model |
|---|---|---|
| Average Return | 4.1% | 10.3% |
| **Strategy CAGR** | **4.1%** | **9.9%** |
| Max Drawdown | -17% | -26% |
| **% of Positive Years** | **87%** | **96%** |
| Up Capture | 100% | 215% |
| Down Capture | 100% | 14% |
| **Net Capture** | **-** | **+201%** |
| Max Positive Year | 12% | 30% |
| Max Negative Year | -13% | -20% |
| **Max Risk / Reward** | **0.92** | **1.47** |

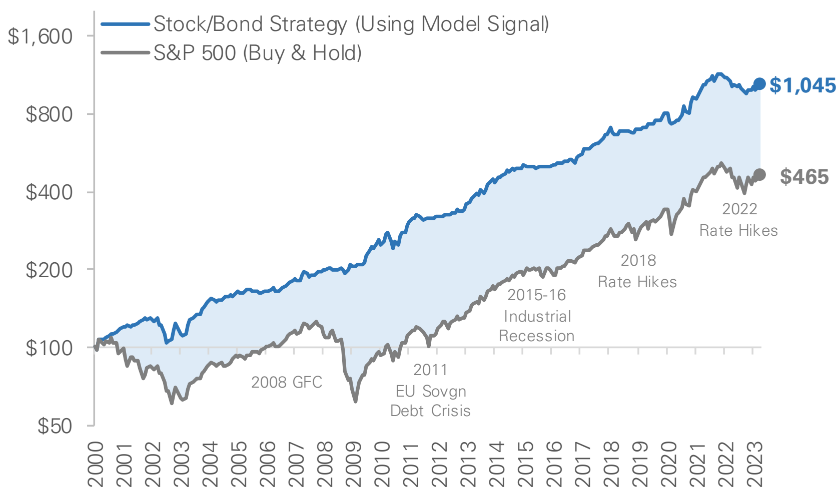
Source: MarketDesk Quant Pack. Based on annual calendar year returns.

Data as of 4/30/2023. Past performance does not guarantee future results. 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.

# Model Signal #3 – Stock / Bond Rotation Strategy

- **Model Signal** – When *U.S. Risk Demand Indicator* is below zero (see page 3), own 100% Bond Exposure (AGG ETF). When it is above zero, own 100% Stock Exposure (SPY ETF). The portfolio is rebalanced monthly.
- Compared to a buy and hold S&P 500 strategy, the model signal produces a higher average annual return, higher percentage of positive returns, higher up capture ratio, lower down capture ratio, and higher max risk / reward ratio.

**Total Returns – Stock/Bond Rotation Model**




Source: MarketDesk Quant Pack. Stock exposure: S&P 500 (SPY ETF). Bond exposure: U.S. Bloomberg Bond Aggregate (AGG ETF). The portfolio is rebalanced monthly.

**Performance Statistics – Stock/Bond Rotation Model**

| Annual Statistics of Returns & Risks | S&P 500 (Benchmark) | Stock / Bond Rotation Model |
|---|---|---|
| Average Return | 8.2% | 11.0% |
| **Strategy CAGR** | **6.8%** | **10.6%** |
| Max Drawdown | -51% | -20% |
| **% of Positive Years** | **74%** | **91%** |
| Up Capture | 100% | 84% |
| Down Capture | 100% | -14% |
| **Net Capture** | **-** | **+98%** |
| Max Positive Year | 32% | 32% |
| Max Negative Year | -37% | -13% |
| **Max Risk / Reward** | **0.88** | **2.49** |

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

Data as of 4/30/2023. Past performance does not guarantee future results. 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.

# Key Takeaways

- Risk Demand measures investors' willingness (or lack thereof) to increase portfolio risk

- How to Use the Indicator:
  1. For markets to move higher you need another investor willing to buy what you are selling at a higher price
  2. Historically, risk demand drops off well before the top in the market
  3. When the composite index is above (below) zero, investors should consider increasing (decreasing) overall portfolio risk

- Model Signals Average Annual Returns:
  1. Sector Rotation Strategy +14.8% (vs S&P 500 8.2%)
  2. Credit Rotation Strategy +10.3% (vs Bond Aggregate +4.1%)
  3. Stock/Bond Rotation Strategy +11.0% (vs S&P 500 8.2%)

- The *U.S. Risk Demand Indicator* provides an early signal of future trend changes in investor preferences, allowing you to proactively manage risk and optimize portfolio positioning. The *Quant Pack* is a data subscription with access to 20+ proprietary leading indicators built to guide asset allocation decisions, eliminate guesswork, enhance investment returns, and decrease your research workload.

# [BONUS] Free Copy of the U.S. Macro Regime Indicator

## MarketDesk U.S. Macro Regime Indicator (USMRI)

A Framework for Managing Portfolios Throughout Economic Cycles

Primer Report

### What is a "Macro Regime"?

Macro regime refers to the prevailing set of macroeconomic trends within a particular time frame. It represents the broader market environment, which is characterized by factors such as economic growth, inflation, interest rates, fiscal and monetary policy, and global trade. Macro regimes hold significance for investment committees, as they influence how various asset classes perform and provide a roadmap to guide asset allocation decisions.

### Understanding Macro Regimes is Key to Portfolio Management

Macro regimes are classified as either "Risk-On" (i.e., increase portfolio beta) and "Risk-Off" (i.e., decrease portfolio beta). The two regime styles impact markets in different ways, including which asset classes outperform, the degree of market volatility, and the risk of a major market sell-off. The MarketDesk U.S. Macro Regime Indicator (USMRI) allows investors to manage the portfolio beta exposure of their equity (i.e., large vs small, cyclical vs defensive) and credit (i.e., investment grade vs high yield corporate bonds) allocations in response to changes in the macro regime. Aligning portfolios with the correct macro regime improves risk-adjusted returns and decreases portfolio drawdown risk, while mismanaging betas produces lower risk-adjusted returns and is the equivalent of swimming against the current. This primer explains the USMRI, discusses how the two regime styles impact financial markets, and provides a portfolio guide for each regime.

### How is the USMRI Framework Different from my Current Process?

The reality is most investors incorporate data that is already known by the majority of market participants (i.e., therefore also largely priced into markets), which means its holds little to no explanatory power regarding future performance. Regardless of your investment style (i.e., Growth, Value, Momentum, or Technicals), the USMRI framework is built to be additive to your process as it solves for the above flaws. USMRI is fundamentally different in that only uses 6- to 12-month leading indicators, which have a proven track record since 1980 of accurately forecasting the trajectory of the U.S. economy. History doesn't repeat, but it often rhymes, and the USMRI's data-driven approach provides a robust, repeatable framework to manage portfolios throughout business cycles.

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Figure 1 – MarketDesk U.S. Macro Regime Indicator (USMRI)



| Indicator Components (Equal-Weighted) | Reading | Status |
|---|---|---|
| Business & Consumer Demand | -1.28 | Risk-Off |
| Manufacturing Activity | -0.87 | Risk-Off |
| Corporate Earnings | -0.80 | Risk-Off |
| Labor Market | -0.67 | Risk-Off |
| Interest Rates | -0.82 | Risk-Off |

Source: MarketDesk Quant Pack. As of 4/9/2023.

Figure 2 – Historical U.S. Macro Regime Indicator (USMRI)

Historical USMRI Since 1980 and Next 12-Month Forecast



Source: MarketDesk Quant Pack. As of 4/9/2023. Refer to the next page for key dates.



April 14, 2023 **MarketDesk Quant Pack** | USMRI Primer | . 1

### Report Overview

This primer provides an overview of the macro regime indicator and how to implement it into your portfolio management process.

### MarketDesk U.S. Macro Regime Indicator

The MarketDesk U.S. Macro Regime Indicator (USMRI) utilizes a data-driven process to (1) define the current macro environment and (2) forecast the trajectory of the U.S. economy over the next 12 months. It aggregates 20+ Quant Pack indicators to produce one straightforward signal to increase or decrease your portfolio risk.

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