

The cover page features a light blue background with a subtle grid pattern. On the left side, the text 'MarketDesk' is in a dark blue box, followed by 'Weekly Quant Pack' in a large, bold, dark blue font, and 'October 7, 2022' in a smaller, dark blue font. The right side of the page is decorated with several large, semi-transparent blue triangles of various sizes and orientations, creating a dynamic, abstract design.

MarketDesk

# Weekly Quant Pack

October 7, 2022

## Quant Coverage Areas

- ▶ U.S. Equities
- ▶ U.S. Credit
- ▶ Global Economics
- ▶ Asset Allocation
- ▶ Market Trading Tools

## Introduction

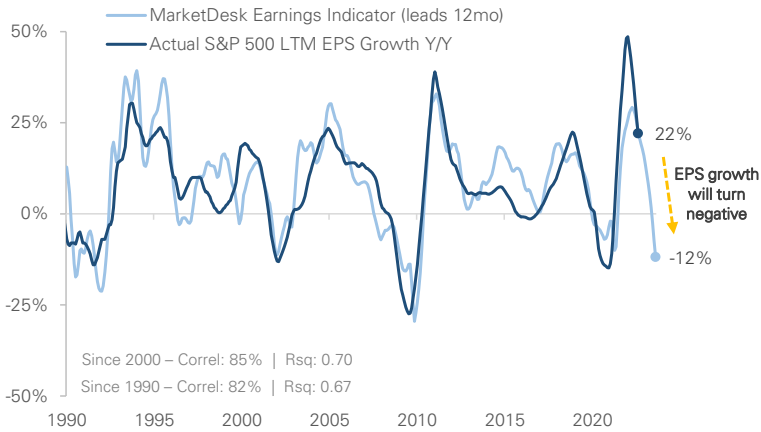
The Quant Pack is a collection of proprietary indicators and risk-management tools developed by MarketDesk to help simplify investment decisions. The quantitative tools decrease market noise by focusing on the facts and data to guide core asset allocation. Refer to each indicator's page for the latest reading, implied forward guidance, and an overview of how to use the tool. The indicators are refreshed weekly.

At the core of the Quant Pack is MarketDesk's investment philosophy of evidencebased investing. Rather than basing decisions on near-term trends or 'expert' opinions, our team focuses on historical data, leading indicators, and statistical probabilities to guide core asset allocation ratings and tactical ideas. This quantitative overlay rewards facts, not opinions.

As new quantitative signals are discovered by our team we will continue to build dynamic tools to help clients understand sources of portfolio risk and return, capitalize on new opportunities, and avoid unnecessary portfolio risk.

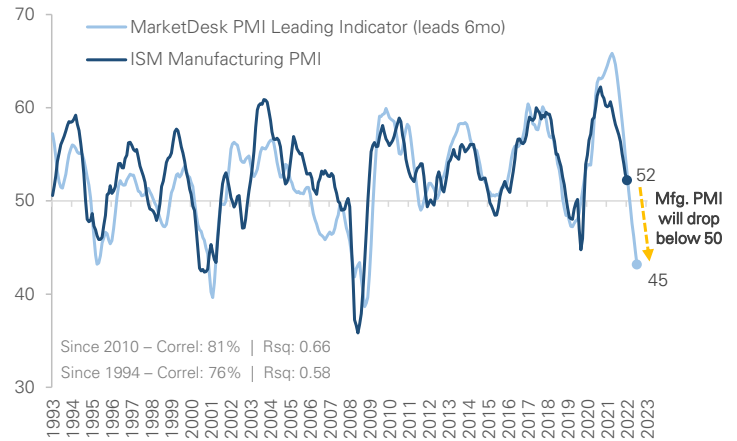
# Key Proprietary Indicators in Focus

**Figure 1: MarketDesk S&P 500 Earnings Leading Indicator**



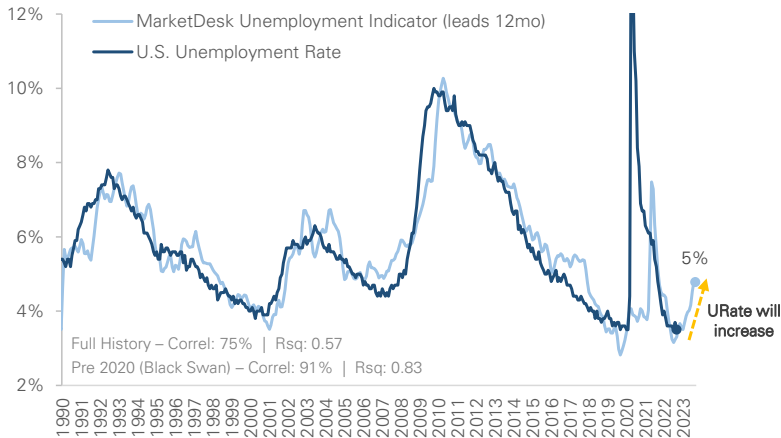
Source: www.QuantPack.com

**Figure 2: MarketDesk Manufacturing PMI Leading Indicator**



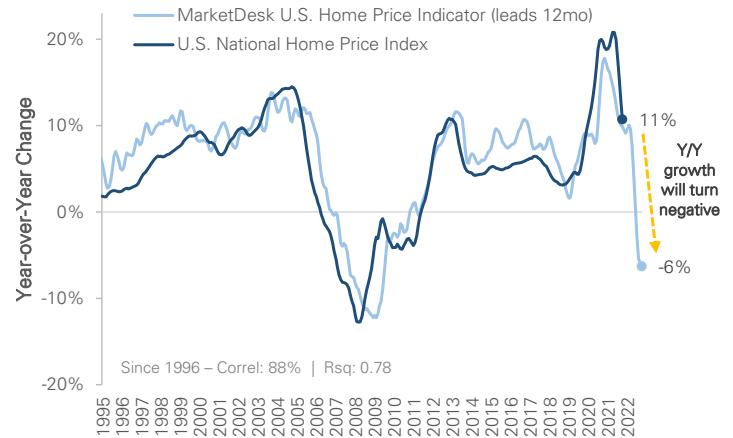
Source: www.QuantPack.com

**Figure 3: MarketDesk U.S. Unemployment Leading Indicator**



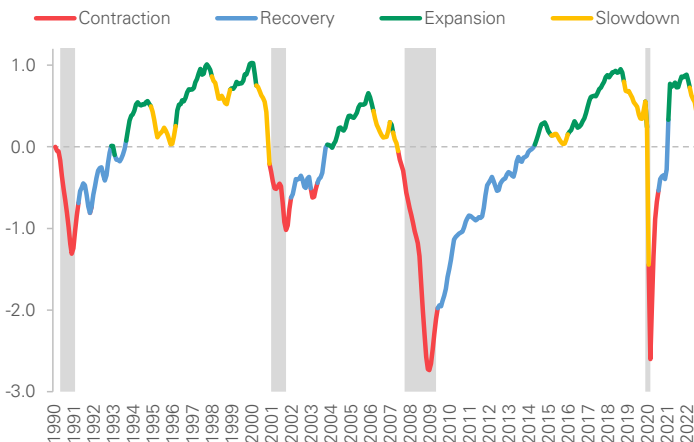
Source: www.QuantPack.com

**Figure 4: MarketDesk U.S. Home Price Leading Indicator**



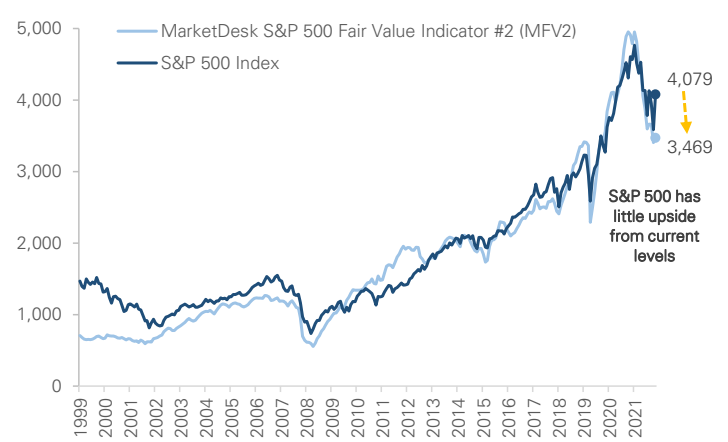
Source: www.QuantPack.com

**Figure 5: MarketDesk U.S. Business Cycle Indicator**



Source: www.QuantPack.com

**Figure 6: MarketDesk S&P 500 Fair Value Model #2**



Source: www.QuantPack.com

# Weekly Quant Pack

This is a complimentary version (from October 7, 2022) showing one of the many indicators included in the Weekly Quant Pack.

Select a Subscription Below to See the Latest Readings for All Indicators:

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\$1,495/year



### Quantitative Indicator Overview

### Latest Forecasts & Trends

Page	Indicator	Type	Forecast	Frequency	As of Date	Prior	Latest	Flag
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#### Market Trading Tools

6	U.S. Investor Sentiment Indicator	Sentiment	Real-Time	Weekly	7-Oct	Risk Off	Risk off	
7	U.S. Risk Demand Index	Positioning	Real-Time	Weekly	7-Oct	-1.0	-0.8	■ Improving
8	U.S. Capitulation Indicator	Timing	Real-Time	Weekly	7-Oct	-1.2	-0.9	
9	U.S. Bear Market Probability Indicator	Drawdowns	12 Months	Weekly	7-Oct	93%	93%	▲ Risk

#### U.S. Equities

11	S&P 500 Earnings Indicator	Earnings	12 Months	Monthly	30-Sep	-7%	-12%	▲ Risk
12	S&P 500 Price Target Model	Valuation	Real-Time	Weekly	7-Oct	3,327	3,296	▲ Risk
13	- S&P 500 Fair Value Indicator #1	Valuation	Real-Time	Weekly	7-Oct	3,185	3,188	▲ Risk
14	- S&P 500 Fair Value Indicator #2	Valuation	Real-Time	Weekly	7-Oct	3,469	3,404	▲ Risk

#### U.S. Economics

16	U.S. Business Cycle Indicator	Cycle	Real-Time	Monthly	30-Sep	Slowdown	Slowdown	▲ Risk
17	U.S. GDP Indicator	GDP	6 Months	Monthly	30-Sep	0.8%	0.6%	▲ Risk
18	U.S. Financial Conditions Index	Credit	Real-Time	Monthly	30-Sep	2.2	2.1	▲ Risk
19	U.S. PMI Leading Indicator	Mfg.	6 Months	Monthly	30-Sep	43	42	▲ Risk
20	U.S. PMI Momentum Indicator	Mfg.	12 Months	Monthly	30-Sep	-10	-9	▲ Risk
21	U.S. CPI Leading Indicator	Inflation	3 Months	Monthly	30-Sep	6.3%	4.7%	■ Improving
22	- U.S. CPI Shelter Indicator	Inflation	6 Months	Monthly	30-Sep	5.9%	5.1%	
22	- U.S. CPI Food Indicator	Inflation	6 Months	Monthly	30-Sep	6.9%	6.4%	
22	- U.S. CPI Energy Indicator	Inflation	3 Months	Monthly	30-Sep	10.8%	1.1%	
22	- U.S. CPI Services Indicator	Inflation	3 Months	Monthly	30-Sep	5.9%	5.1%	
22	- U.S. CPI Commodities Indicator	Inflation	3 Months	Monthly	30-Sep	2.9%	0.4%	
23	U.S. Home Price Indicator	Housing	12 Months	Monthly	30-Sep	-6%	-6%	▲ Risk
24	U.S. Unemployment Indicator	Labor	12 Months	Monthly	30-Sep	4.8%	4.8%	▲ Risk
25	U.S. Consumer Health Indicator	Consumers	Real-Time	Monthly	30-Sep	57%	56%	■ Improving

#### U.S. Credit

27	U.S. Lending Standards Indicator	Credit	12 Months	Monthly	30-Sep	40%	34%	▲ Risk
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#### Global Economics

29	USD Technical Indicator	FX	3 Months	Monthly	30-Sep	10.2%	11.4%	
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#### Table Legend

Yellow shading denotes updated releases this week.

## Market Trading Indicators

MarketDesk Weekly Quant Pack

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- Page 6      **U.S. Investor Sentiment Indicator**  
Summary of Current Positioning, Flows, & Hedging
- Page 7      **U.S. Risk Demand Index**  
Real-time Measure of Investors' Willingness to Take Risk
- Page 8      **U.S. Capitulation Indicator**  
Quantitative Tool to Identify and Time Market Bottoms
- Page 9      **U.S. Bear Market Probability Indicator**  
Forecasting Drawdown Risk Over the Next 12 Months

**Current Takeaway** Investors remain cautious across asset classes; Historically risk-on momentum is needed for above average market returns

### Overview of Indicator

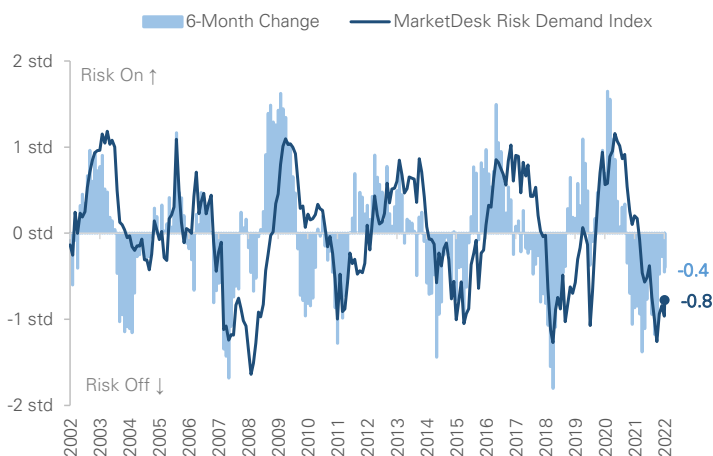
In order for markets to move higher you need a counterparty that is willing to buy what you are selling at a higher price. The MarketDesk Risk Demand Index is a quantitative model built to measure investors' willingness (or lack thereof) to increase portfolio risk. The composite index measures momentum across several asset classes including: equities, equity derivatives, credit markets, and foreign currencies. The index provides context on the current environment and signals future trend changes in investor preferences. See the "Composite Inputs" table for the underlying inputs and current readings.

### How to Use

The MarketDesk Risk Demand Index should be viewed as a momentum signal rather than a contrarian signal. Historically, risk demand drops off well before the top in the market. This is why forward S&P 500 returns and win rates (i.e. the % of positive outcomes) tend to increase as the composite index moves above zero, and vice versa when the index moves below zero. When the composite index is above (below) zero, investors should consider increasing (decreasing) overall portfolio risk.

**Figure 11 – MarketDesk Risk Demand Index**

Latest Composite Index Reading and Current 6-Month Trend Change



Source: www.QuantPack.com

**Figure 12 – Forward Performance Based on Historical Readings**

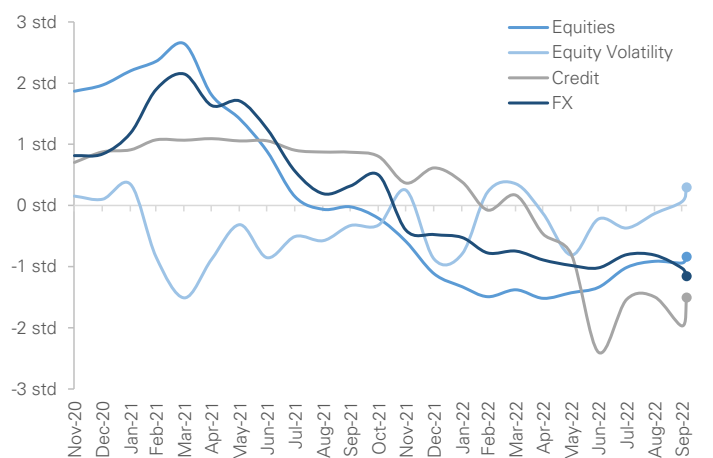
Historical Forward S&P 500 Returns (%) Since 2000

MarketDesk Risk Demand Index	3 Months		6 Months		9 Months		12 Months		
	Avg	Win %	Avg	Win %	Avg	Win %	Avg	Win %	
Risk On	> +1.0 std	4.1	73%	4.1	60%	7.7	87%	12.0	100%
	> +0.8 std	3.6	79%	6.4	76%	9.8	94%	12.4	91%
	> +0.6 std	3.3	78%	6.9	82%	10.4	94%	12.7	92%
	> +0.4 std	3.5	83%	7.1	84%	9.5	89%	11.5	87%
	> +0.2 std	3.5	80%	6.5	83%	8.5	82%	10.3	80%
All Past Events		1.4	64%	3.0	68%	4.7	72%	6.5	72%
Risk Off	< -0.2 std	-0.3	53%	-0.8	55%	0.8	60%	2.6	62%
	< -0.4 std	0.0	55%	-1.0	51%	-0.3	56%	1.7	57%
	< -0.6 std	-0.8	49%	-1.6	48%	-2.0	50%	0.0	54%
	< -0.8 std	<b>-0.9</b>	<b>53%</b>	<b>-0.7</b>	<b>50%</b>	<b>-1.7</b>	<b>53%</b>	<b>-0.2</b>	<b>53%</b>
	< -1.0 std	-5.7	35%	-6.1	33%	-7.0	43%	-7.2	43%

Source: www.QuantPack.com. Note: Win % = # of positive events / total # of events.

**Figure 13 – Risk Demand Indicator by Asset Class**

Last 24 Months of Readings for Equities, Equity Volatility, Credit, and FX



Source: www.QuantPack.com

**Figure 14 – MarketDesk Risk Demand Composite Inputs**

Underlying Inputs of the Composite Index for each Asset Class

Asset Class	Composite Input	Measure	Z-Score	Reading
Equities	EM vs DM	Y/Y%	-0.43	Neutral
	US Cycl. vs Defen.	Y/Y%	-1.48	Risk Off
	Small vs Large Caps	Y/Y%	-0.36	Neutral
	High Beta vs Low Vol	Y/Y%	-1.08	Risk Off
Equity Vol	VIX & VSTOXX	Y/Y	0.96	Risk On
	CBOE Skew	Y/Y	-1.28	Risk Off
Credit	US HY vs IG	Spreads	-1.02	Risk Off
	EUR HY vs IG	Spreads	-1.52	Risk Off
	US IG	Spreads	-1.56	Risk Off
	EUR IG	Spreads	-1.93	Risk Off
FX	JPY/AUD	Y/Y%	-0.14	Neutral
	CHF/GBP	Y/Y%	-1.61	Risk Off
	USD Index	Y/Y%	-1.72	Risk Off

Source: www.QuantPack.com

# MarketDesk U.S. Capitulation Indicator

Quantitative Tool to Identify and Time Market Bottoms

Market Timing

**Current Takeaway** Market selling has not reached elevated levels of capitulation since the week of June 17th, 2022 (-2.5 std)

## Overview of Indicator

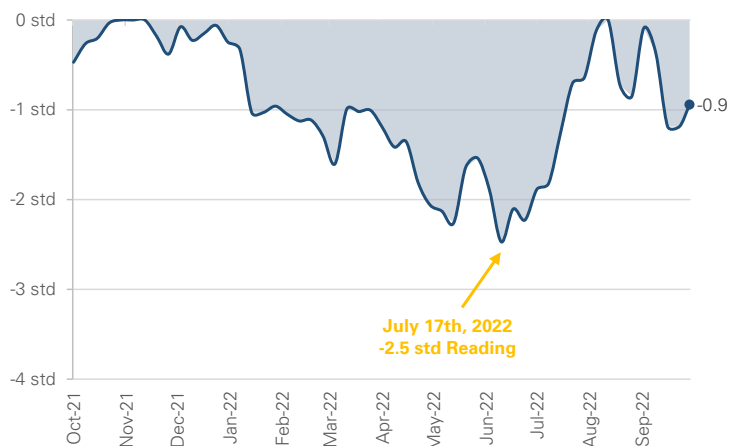
Equity market bottoms are usually found at the intersection of aggressive selling, elevated emotions, doomsday headlines, and investor panic. While buying the exact market bottom is nearly impossible in practice, putting this process into a mathematical model increases the odds of success. The MarketDesk U.S. Capitulation Indicator is a composite of rolling returns across key areas in the market. The indicator is put into rolling z-score to adjust for volatility.

## How to Use

The MarketDesk U.S. Capitulation Indicator is built to be used during periods of equity market drawdowns. The indicator works in two stages. First, as the selloff intensifies, the volatility adjusted framework quantifies each leg of the selloff (i.e. -15% may feel emotionally significant, but is it statistically significant?). Second, as the indicator falls below -2.5 std and approaches -3 std, investors should start identifying an entry point into risk on areas of the market. The indicator is calibrated so that levels below -3 std historically have provided investors optimal entry points and minimized further drawdown risk.

**Figure 15 – MarketDesk U.S. Capitulation Indicator**

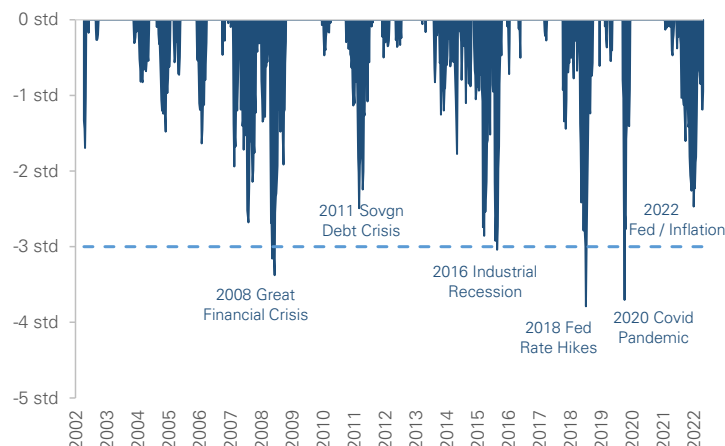
Weekly Signal Over the Last 12 Months



Source: MarketDesk

**Figure 16 – Recent History Over the Last 20 Years**

MarketDesk Indicator & Key Recent Events



Source: MarketDesk

**Figure 17 – Last 10 Indicator Readings Below -3 std**

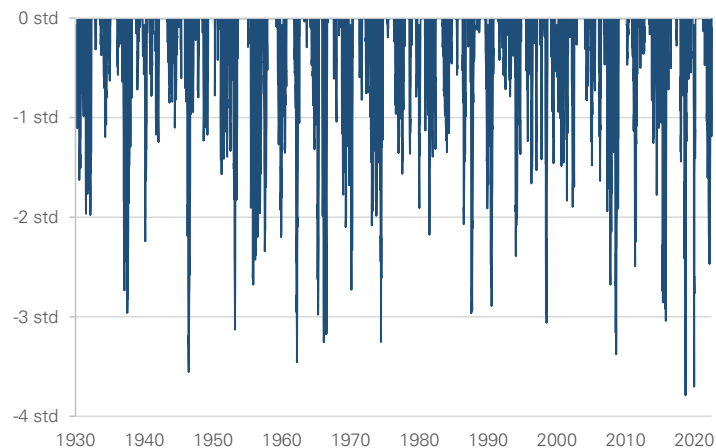
Indicator Track Record of Identifying the Market Bottom

Date	Capitulation Indicator	# Weeks to Bottom	% to Bottom	Forward Returns		
				3mo	6mo	12mo
Aug 30, 1946	-3.3	11	-12%	-4%	-8%	-5%
Jun 5, 1953	-3.2	13	-3%	4%	12%	20%
Jun 8, 1962	-3.3	1	-6%	12%	18%	26%
May 6, 1966	-3.3	21	-14%	-4%	2%	9%
Sep 6, 1974	-3.3	3	-4%	30%	39%	28%
Oct 9, 1998	-3.1	0	0%	37%	43%	36%
Oct 24, 2008	-3.2	19	-22%	-1%	12%	23%
Feb 5, 2016	-3.1	0	-1%	16%	11%	22%
Dec 21, 2018	-3.8	0	0%	22%	24%	33%
Mar 20, 2020	-3.8	0	0%	44%	61%	70%
<b>Average</b>	<b>-3.3</b>	<b>6.8</b>	<b>-6.2%</b>	<b>16%</b>	<b>21%</b>	<b>26%</b>
<b>Median</b>	<b>-3.3</b>	<b>2.0</b>	<b>-3.6%</b>	<b>14%</b>	<b>15%</b>	<b>24%</b>

Source: MarketDesk

**Figure 18 – MarketDesk U.S. Capitulation Indicator Since 1930**

Historical Signal Over the Last Century



Source: MarketDesk

# MarketDesk U.S. Bear Market Probability Indicator

Drawdowns

Forecasting Drawdown Risk Over the Next 12 Months

**Current Takeaway** Further drawdown risk remains elevated suggesting 2022's drawdown was event-driven (i.e. Fed Policy) rather than cyclical

## Overview of Indicator

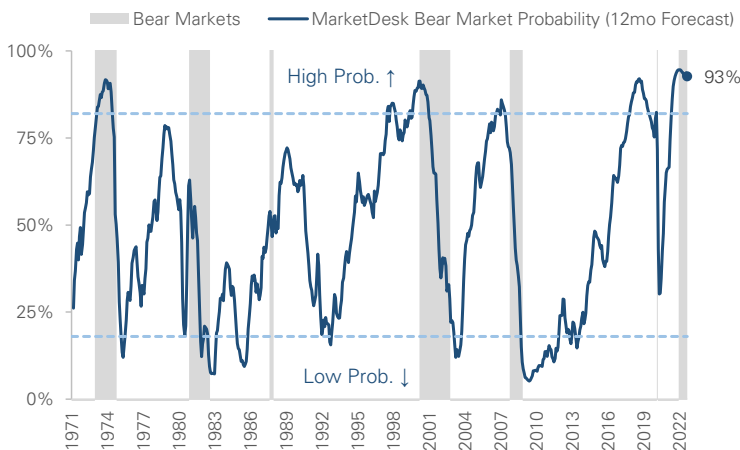
Bear markets are an unavoidable part of investing. Market drawdowns can quickly erase years of investment gains over only a few short months. However, these inflection points also offer investors new opportunities. This MarketDesk U.S. Bear Market Probability Indicator combines 12 key macro inputs to assess the risk of a bear market (i.e. 20% drawdown in the S&P 500) over the next 12 months.

## How to Use

The MarketDesk U.S. Bear Market Probability Indicator is calibrated such that levels above 80% (below 20%) indicate opportunities to start reducing (increasing) overall portfolio risk. There are two model outputs to focus on: (1) the current probability level of a bear market over the next 12 months, and (2) the expectations gap of investors. We measure the expectations gap as the difference in probabilities between the MarketDesk Indicator and the implied probability based on S&P 500 put options activity. Investors will benefit most when the indicator is at extreme levels and the expectations gap is wide (i.e. nothing is priced in to the markets).

**Figure 19 – MarketDesk U.S. Bear Market Probability Indicator**

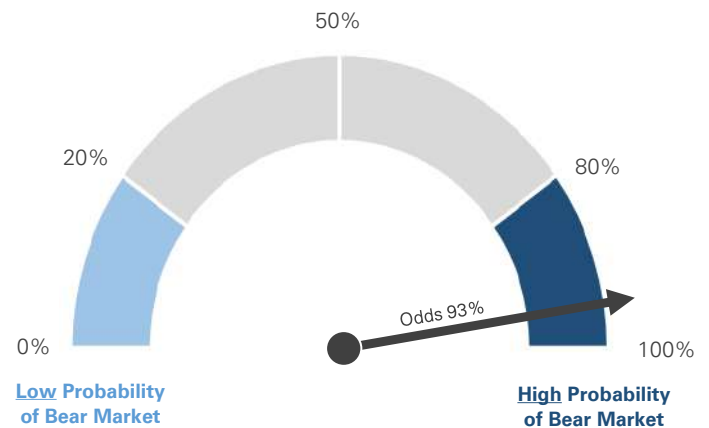
Historical Probability of 20% Market Drawdown in the Next 12 Months



Source: www.QuantPack.com

**Figure 20 – U.S. Bear Market Probability Gauge**

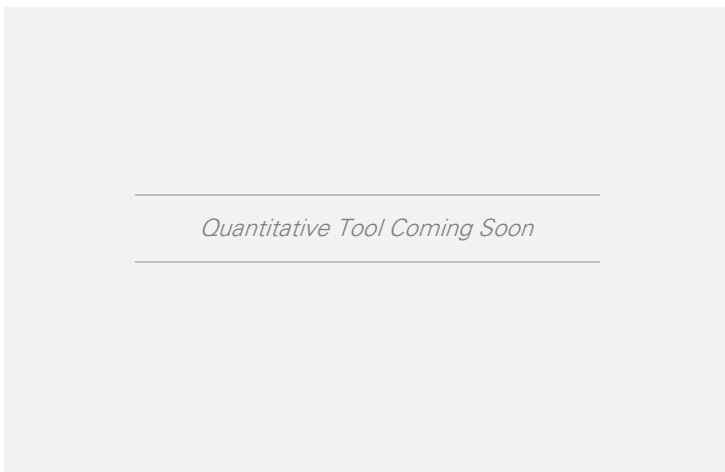
Below 20% = Increase Risk | Above 80% = Reduce Risk



Source: www.QuantPack.com

**Figure 21 – Implied Probabilities of S&P 500 Drawdown Levels**

Calculations are based on the 12 month forward SPY put options



Source: www.QuantPack.com

**Figure 22 – Forward Performance Based on Historical Readings**

Indicator Performance Track Record

Historical Forward S&P 500 Returns (%) Since 1970s

Indicator Reading	6 Months		9 Months		12 Months		18 Months		
	Avg	Win %	Avg	Win %	Avg	Win %	Avg	Win %	
Risk Off	> 90%	-6.2	28%	-8.1	38%	-8.3	30%	-5.2	32%
	> 80%	-0.1	56%	-1.0	55%	-0.9	51%	0.3	49%
	> 70%	2.2	61%	3.4	67%	4.5	66%	6.9	65%
	> 60%	2.8	63%	4.6	69%	6.0	68%	8.0	68%
All Past Events		4.3	70%	6.6	74%	9.0	75%	13.9	79%
Risk On	< 40%	6.4	76%	9.8	82%	13.1	86%	18.8	90%
	< 30%	7.9	82%	12.1	86%	15.7	92%	21.5	95%
	< 20%	9.5	83%	14.5	89%	18.9	96%	25.4	98%
	< 10%	11.6	83%	18.4	89%	21.9	100%	26.0	100%

Source: www.QuantPack.com. Win % = # of positive events / total # of events.



## U.S. Equity Indicators

MarketDesk Weekly Quant Pack

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Page 11	<b>S&amp;P 500 Earnings Indicator</b> Forecasting Next 12-Month Earnings Growth & Estimate Revisions
Page 12	<b>S&amp;P 500 Real-Time Price Target Model</b> Implied Upside / Downside from Current Market Levels
Page 13	<b>S&amp;P 500 Fair Value Indicator #1 (MFV1)</b> Based on Equity Risk Premium Analysis
Page 14	<b>S&amp;P 500 Fair Value Indicator #2 (MFV2)</b> Based on Cost of Capital Analysis

**Current Takeaway** Revisions breadth remains weak, but the indicator suggests NTM consensus estimates continue to have material downside risk

### Overview of Indicator

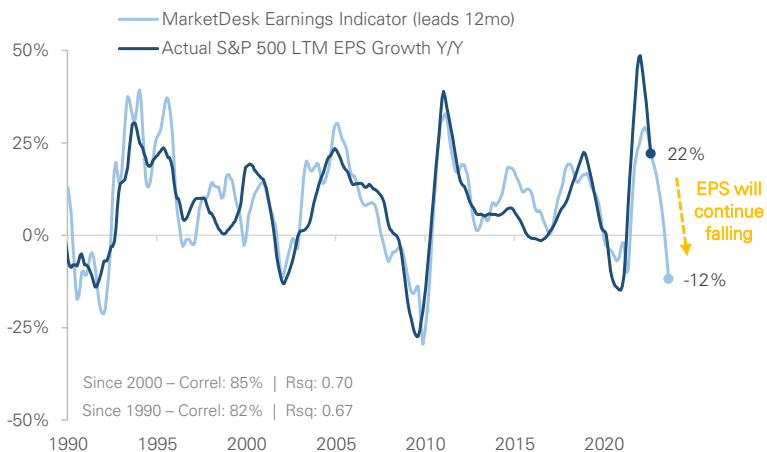
Earnings growth is an important input into equity market valuations. The S&P 500 Earnings Indicator is a combination of 15 macro inputs that historically exhibit a high statistical correlation with future S&P 500 earnings growth. Note: The indicator is not built to forecast the exact per share dollar amount of S&P 500 earnings, but rather the directional path of S&P 500 earnings growth over the next 12 months.

### How to Use

The S&P 500 Earnings Indicator is built to forecast and spot key 'turning points' in S&P 500 earnings throughout economic cycles. There are two model outputs to focus on: (1) the direction of earnings growth over the next 12 months, and (2) the gap between the indicator estimate and current NTM consensus estimates. One historical trend to note – markets are forward-looking and equity prices historically bottom 6-12 months before actual EPS bottoms. This bottoming process is important to consider when tilting portfolios risk off / on ahead of earnings peaks and troughs.

**Figure 23 – Actual Earnings Growth vs MarketDesk Indicator**

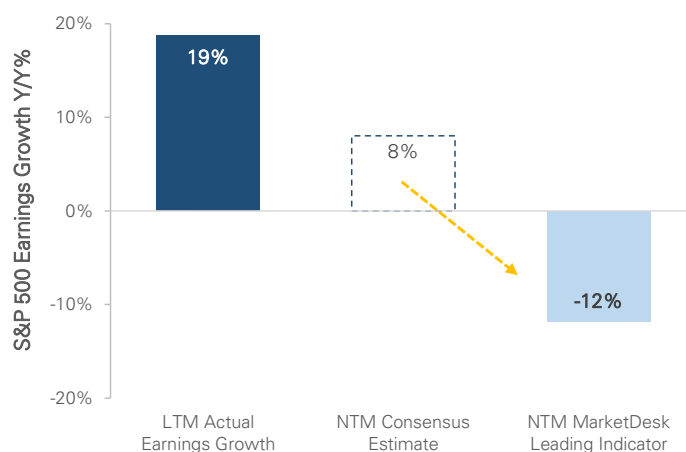
Relationship Between MarketDesk Earnings Model and Actual Earnings Growth



Source: www.QuantPack.com. Both lines smoothed with a rolling 3-month average.

**Figure 24 – NTM Consensus Estimate vs MarketDesk Indicator**

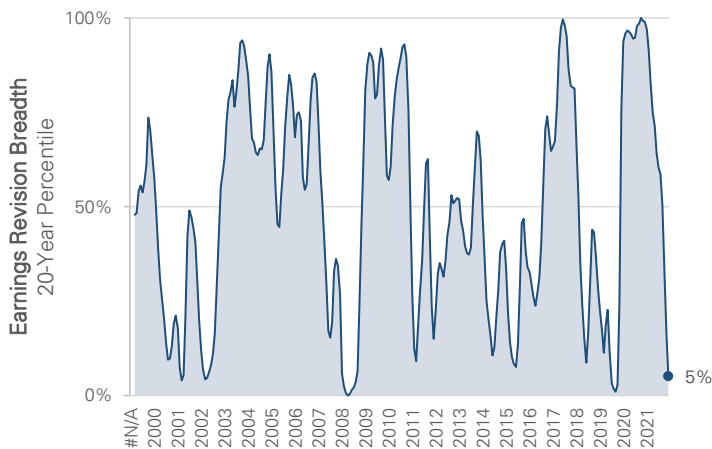
Wall Street NTM Earnings Estimate vs the MarketDesk S&P 500 Earnings Model



Source: www.QuantPack.com. Consensus estimate as of most recent month end.

**Figure 25 – S&P 500 Net Upward Earnings Revision Breadth**

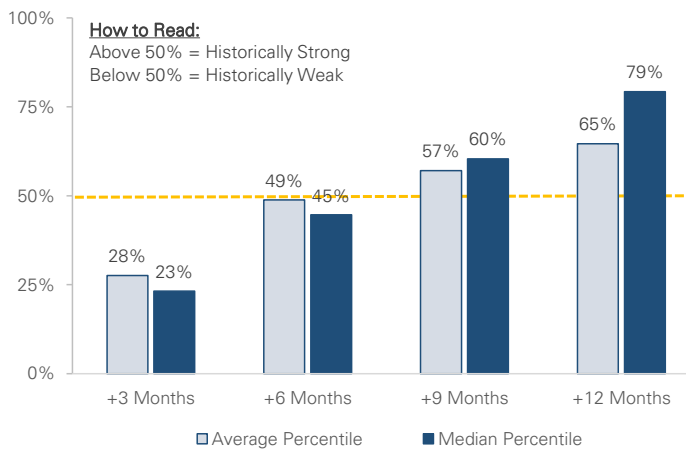
Highlights the Current Trend in Wall Street Estimates vs the Last 20 Years



Source: www.QuantPack.com. Breadth = (# Up minus # Down) / Total Revisions.

**Figure 26 – Implied Future Breadth Percentile Based on Current Levels**

Future EPS Revision Trends Based on Current Percentile (See Chart on Left)



Source: www.QuantPack.com. Based on monthly data points since 2000.

# MarketDesk S&P 500 Real-Time Price Target Model

Implied Upside / Downside from Current Market Levels

Valuation

**Current Takeaway** Unattractive risk / reward setup with average fair value well below S&P 500; Increase defensive equity exposure

## Overview of Indicator

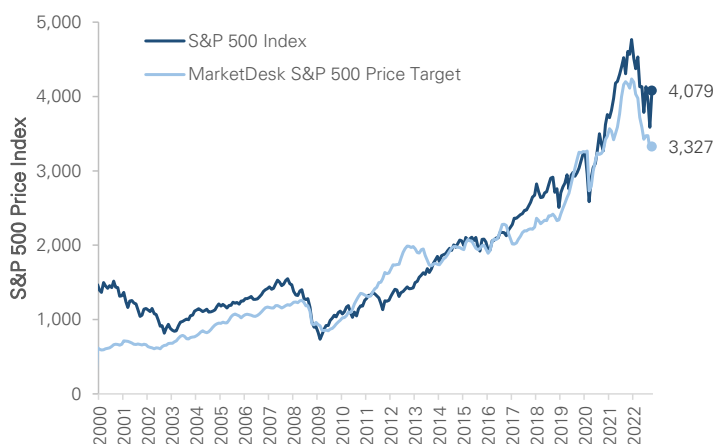
The S&P 500 Real-Time Price Target Model combines two well-known fair value frameworks: (1) equity risk premium and (2) cost of capital. The following two pages calculate a fair value using the equity risk premium (MFV1) and cost of capital (MFV2) methodologies, and this page averages the two fair value outputs to arrive at a S&P 500 price target.

## How to Use

The bottom right table compares forward S&P 500 returns when the Real-Time Price Target Model is above and below the S&P 500's current price. It shows the S&P 500's median and average forward returns are stronger with higher win rates when the fair value is above the S&P 500. In addition, the average risk / reward is significantly more attractive when the fair value is above the current price level, which we attribute to a lower average loss. The takeaway – when the Real-Time Price Target is above the current price, the S&P 500 historically produces strong risk-adjusted returns.

**Figure 27 – S&P 500 vs MarketDesk Real-Time Price Target**

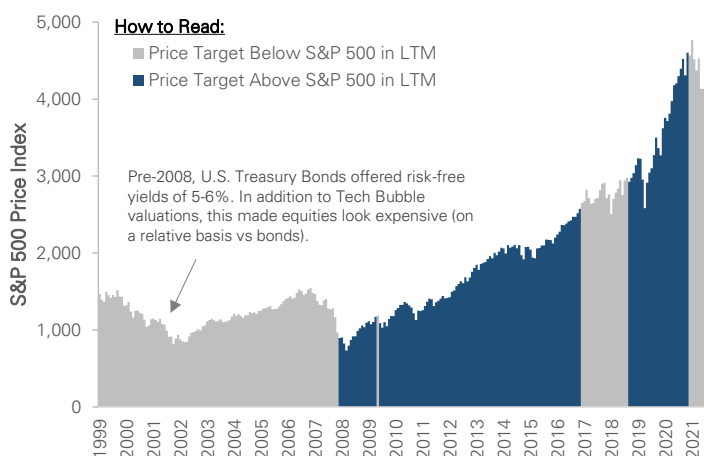
MarketDesk Price Target = Average of MFV1 and MFV2 (see next pages)



Source: www.QuantPack.com

**Figure 28 – Historical Relationship of S&P 500 Price & Price Target**

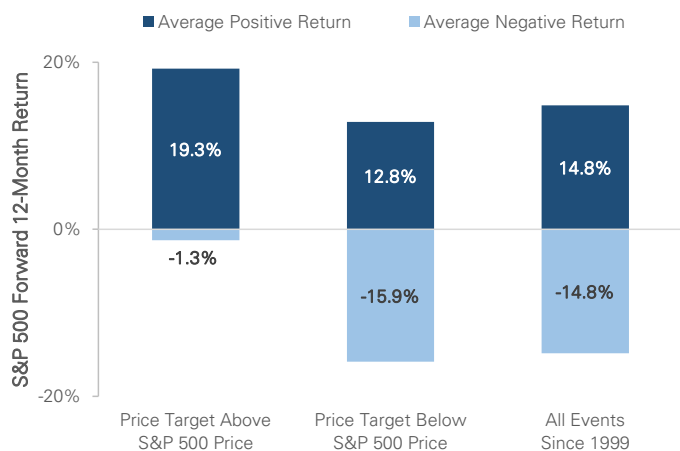
Analysis Below Assumes You Own S&P 500 for NTM when MarketDesk PT > Price



Source: www.QuantPack.com. LTM = last 12-months. Graphic above assumes you own S&P 500 for next 12 months whenever the MarketDesk Price Target is above the S&P 500 Index.

**Figure 29 – S&P 500 Average NTM Upside / Downside Based on Fair Value**

S&P 500 Average Next 12-month Return Based on Fair Value Category



Source: www.QuantPack.com. Based on month end datapoint since 1999.

**Figure 30 – Historical Performance of S&P 500 Based on Fair Value**

S&P 500 Next 12-Month Performance Statistics Based on Fair Value Category

Statistics	Price Target Above S&P 500 Price	Price Target Below S&P 500 Price	All Events Since 1999
<b>Average</b>	<b>17.6%</b>	<b>3.1%</b>	<b>6.7%</b>
Median	16.2%	6.6%	9.8%
# of Events	64	197	261
<b>% Positive</b>	<b>92%</b>	<b>66%</b>	<b>72%</b>
% Negative	8%	34%	28%
Avg Positive	19.3%	12.8%	14.8%
Avg Negative	-1.3%	-15.9%	-14.8%
<b>Risk / Reward</b>	<b>14.8</b>	<b>0.8</b>	<b>1.0</b>
Max Positive	53.7%	43.6%	53.7%
Max Negative	-2.6%	-44.8%	-44.8%
<b>Risk / Reward</b>	<b>20.3</b>	<b>1.0</b>	<b>1.2</b>

Source: www.QuantPack.com. Based on month end datapoint since 1999. Risk / Reward is the ratio of positive returns to negative returns.

# MarketDesk S&P 500 Fair Value Indicator #1 (MFV1)

Equity Risk Premium Analysis

Valuation

**Current Takeaway** Unattractive risk / reward setup with average fair value well below S&P 500; Favors defensive equity exposure

## Overview of Indicator

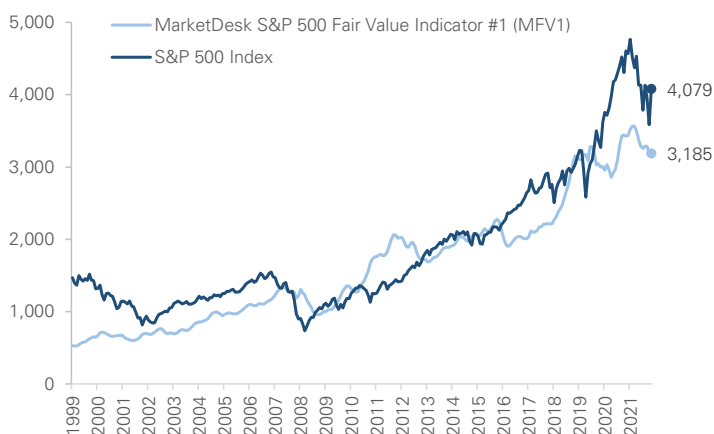
The Equity Risk Premium (ERP) methodology is based on the theory that investors require a risk premium as compensation for investing in equities, which are inherently riskier than bonds. The first step is to forecast the appropriate ERP, which is then added to the risk free rate to arrive at an earnings yield. The second step divides the market's current S&P 500 NTM EPS estimate by the earnings yield to arrive at a fair value. MarketDesk's ERP estimate is based on a regression of historical ISM Manufacturing PMIs and ERPs. (Note: Our ERP methodology tends to be more contrarian due to the formula used to forecast the ERP.)

## How to Use

Fair value estimates are not meant to be automatic buy or sell indicators. Instead, we use them to determine reasonable buy and sell prices. We prefer to buy and are more risk-on when the S&P 500's fair value estimate is more than its market price, because it provides a margin of safety in case the fair value estimate is too optimistic. In contrast, we prefer to sell and are more cautious when the S&P 500's fair value estimate is below its market price.

**Figure 31 – Historical Relationship of S&P 500 vs MFV1**

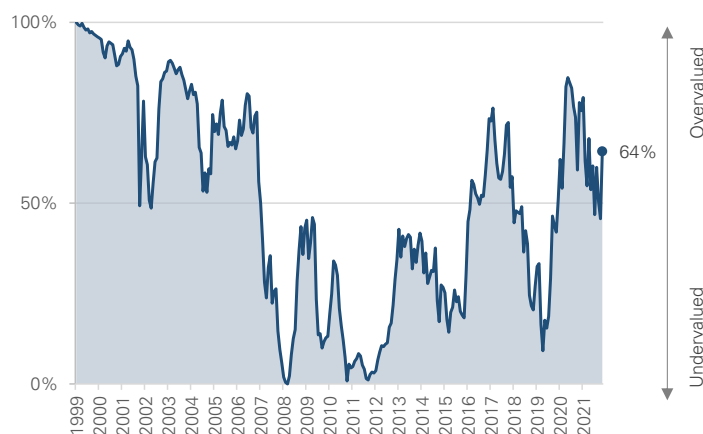
Equity Risk Premium Fair Value = NTM EPS Estimate / (ERP minus 10Y Yield)



Source: www.QuantPack.com

**Figure 32 – Historical Percentile of Premium / Discount to Fair Value**

Based on Monthly Price Gap Data Since 1999 (S&P 500 vs MFV1)



Source: www.QuantPack.com

**Figure 33 – S&P 500 Fair Value Matrix (Equity Risk Premium Analysis)**

Use the range of inputs in the matrix on the 10-Year Treasury and NTM EPS to see how the price target would change.

		S&P 500 Next 12-Month Earnings Per Share									
		\$220	\$225	\$230	\$235	\$235	\$245	\$250	\$255	\$260	\$265
10-Year Treasury Yield	2.70%	3,190	3,263	3,335	3,408	3,412	3,553	3,625	3,698	3,770	3,843
	2.80%	3,145	3,216	3,288	3,359	3,363	3,502	3,573	3,645	3,716	3,788
	2.90%	3,100	3,171	3,241	3,312	3,315	3,453	3,523	3,594	3,664	3,734
	3.00%	3,057	3,127	3,196	3,266	3,269	3,405	3,474	3,544	3,613	3,683
	3.10%	3,015	3,084	3,152	3,221	3,224	3,358	3,427	3,495	3,564	3,632
	3.19%	2,979	3,046	3,114	3,182	<b>3,185</b>	3,317	3,385	3,452	3,520	3,588
	3.30%	2,935	3,002	3,068	3,135	3,138	3,268	3,335	3,402	3,469	3,535
	3.40%	2,896	2,962	3,028	3,094	3,097	3,225	3,291	3,357	3,423	3,489
	3.50%	2,859	2,924	2,989	3,054	3,057	3,183	3,248	3,313	3,378	3,443
	3.60%	2,822	2,886	2,950	3,014	3,018	3,143	3,207	3,271	3,335	3,399
3.70%	2,786	2,850	2,913	2,976	2,979	3,103	3,166	3,229	3,293	3,356	

Source: www.QuantPack.com. **MarketDesk Fair Value #1** = NTM EPS / Earnings Yield. **Earnings Yield** = Equity Risk Premium minus the 10-Year Treasury Yield. **Equity Risk Premium (ERP)** represents the expected market return minus the risk-free return investors can earn. MarketDesk's ERP estimate is based on a regression of ISM Mfg. PMIs and historical ERPs. **Next 12-month (NTM) EPS** is based on current consensus estimates, however you can refer to the MarketDesk S&P 500 Earnings Indicator for our internal view of whether NTM consensus estimates are too high or too low. Note: MarketDesk uses the 3-month average for 10-Year Treasury Yield to decrease the model's market noise.

**Current Takeaway** Unattractive risk / reward setup with average fair value well below S&P 500; Favors defensive equity exposure

### Overview of Indicator

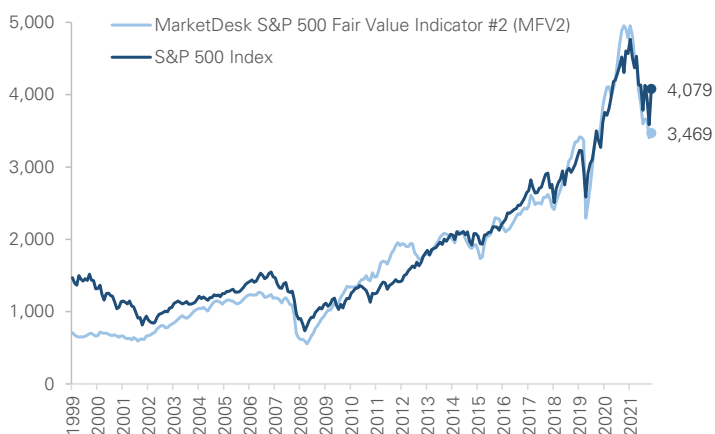
The Cost of Capital methodology values the S&P 500 based on the blended cost of equity and debt capital. The first step estimates the cost of capital, which is based on U.S. interest rates, corporate bond yields, and dividend yields. The second step divides the market's current S&P 500 NTM EPS estimate by the cost of capital to arrive at a fair value.

### How to Use

Fair value estimates are not meant to be automatic buy or sell indicators. Instead, we use them to determine reasonable buy and sell prices. We prefer to buy and are more risk-on when the S&P 500's fair value estimate is more than its market price, because it provides a margin of safety in case the fair value estimate is too optimistic. In contrast, we prefer to sell and are more cautious when the S&P 500's fair value estimate is below its market price.

**Figure 34 – Historical Relationship of S&P 500 vs MFV2**

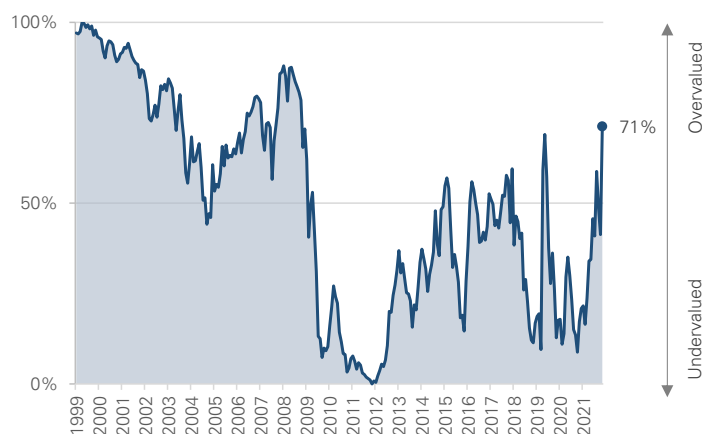
Cost of Capital Fair Value = NTM EPS Estimate / Cost of Capital



Source: www.QuantPack.com

**Figure 35 – Historical Percentile of Premium / Discount to Fair Value**

Based on Monthly Price Gap Data Since 1999 (S&P 500 vs MFV2)



Source: www.QuantPack.com

**Figure 36 – S&P 500 Fair Value Matrix (Cost of Capital Analysis)**

Use the range of inputs in the matrix on the WACC and NTM EPS to see how the price target would change.

		S&P 500 Next 12-Month Earnings Per Share									
		\$220	\$225	\$230	\$235	\$235	\$245	\$250	\$255	\$260	\$265
Cost of Capital (WACC)	5.8%	3,793	3,879	3,966	4,052	4,056	4,224	4,310	4,397	4,483	4,569
	6.0%	3,667	3,750	3,833	3,917	3,921	4,083	4,167	4,250	4,333	4,417
	6.2%	3,548	3,629	3,710	3,790	3,795	3,952	4,032	4,113	4,194	4,274
	6.4%	3,438	3,516	3,594	3,672	3,676	3,828	3,906	3,984	4,063	4,141
	6.6%	3,333	3,409	3,485	3,561	3,565	3,712	3,788	3,864	3,939	4,015
	6.8%	3,244	3,318	3,392	3,465	<b>3,469</b>	3,613	3,687	3,760	3,834	3,908
	7.0%	3,143	3,214	3,286	3,357	3,361	3,500	3,571	3,643	3,714	3,786
	7.2%	3,056	3,125	3,194	3,264	3,267	3,403	3,472	3,542	3,611	3,681
	7.4%	2,973	3,041	3,108	3,176	3,179	3,311	3,378	3,446	3,514	3,581
	7.6%	2,895	2,961	3,026	3,092	3,096	3,224	3,289	3,355	3,421	3,487
7.8%	2,821	2,885	2,949	3,013	3,016	3,141	3,205	3,269	3,333	3,397	

Source: www.QuantPack.com. **MarketDesk Fair Value #2** = NTM EPS / WACC. **Weighted Average Cost of Capital (WACC)** represents the average cost firms are expected to pay to finance their ongoing operations. MarketDesk calculates the WACC based on recent trends in U.S. interest rates, corporate bond yields, and dividend yields. **Next 12-month (NTM) EPS** is based on current consensus estimates, however you can refer to the MarketDesk S&P 500 Earnings Indicator for our internal view of whether NTM consensus estimates are too high or too low.

## U.S. Economic Indicators

MarketDesk Weekly Quant Pack

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Page 16	<b>U.S. Business Cycle Indicator</b> Composite of Leading Consumer and Business Cycle Data Points
Page 17	<b>U.S. GDP Indicator</b> 6-Month Forecast of U.S. GDP Growth
Page 18	<b>U.S. Financial Conditions Index</b> Real-World Measure of the Cost and Availability of Accessing Capital
Page 19	<b>PMI Leading Indicator</b> 6-Month Forecast of the ISM Manufacturing PMI
Page 20	<b>PMI Momentum Indicator</b> 12-Month Forecast of the Y/Y Change in the ISM Manufacturing PMI
Page 21	<b>U.S. Inflation Indicators</b> Forecasting U.S. Inflation Trends
Page 23	<b>U.S. Home Price Indicator</b> 12-Month Forecast of the Y/Y Change in the U.S. National Home Price Index
Page 24	<b>U.S. Unemployment Indicator</b> 12-Month Forecast of the U.S. Unemployment Rate
Page 27	<b>U.S. Consumer Health Indicator</b> Economic Pulse of Consumer Behavior

**Current Takeaway** The U.S. economy entered the "slowdown" phase in April 2022; Labor markets remain the largest source of strength

### Overview of Indicator

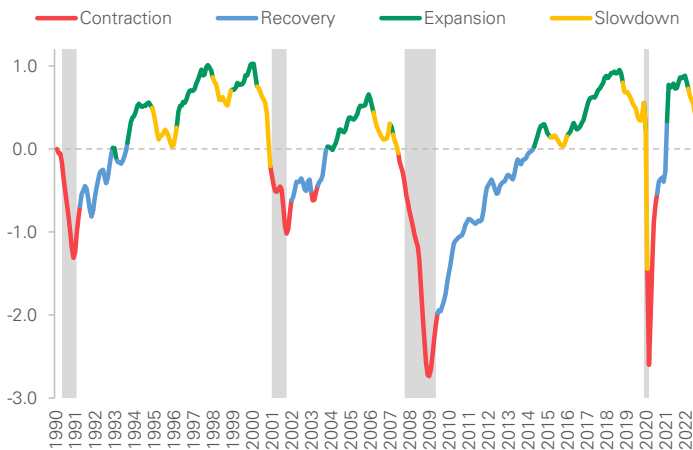
The U.S. Business Cycle Indicator aggregates key data points to objectively label where we are in the current economic cycle. There are four stages of the business cycle: Early Cycle (Recovery), Mid Cycle (Expansion), Late Cycle (Slowdown), and End of Cycle (Contraction). The indicator tracks eight macro inputs that are historically correlated to the business cycle and uses collective changes in the datapoints to identify the current stage of the business cycle.

### How to Use

Defining the current stage of the business cycle is a crucial step to developing an asset allocation framework. The indicator is best used to identify the overall macro environment and associated investment themes, such as cyclical vs defensive positioning, equity vs credit, and various equity factors. Use the projected business cycle stage to create a short list of asset allocation ideas that will allow you to position in line with macro tailwinds and avoid macro headwinds, both now and in the coming quarters.

**Figure 37 – MarketDesk U.S. Business Cycle Indicator**

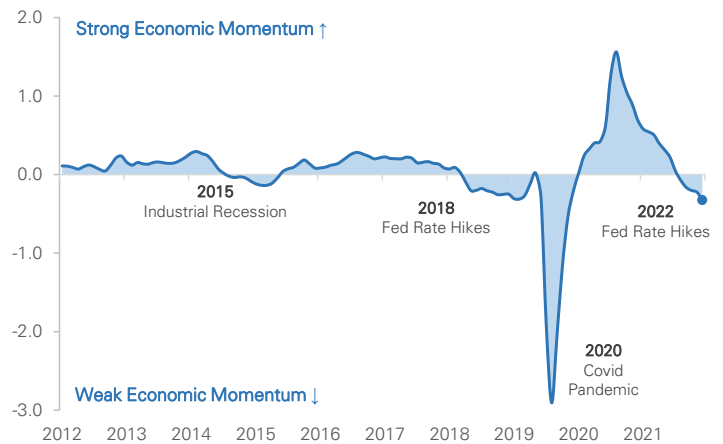
Composite Indicator & Historical Recession Periods



Source: www.QuantPack.com. Grey shaded areas represent NBER recessions.

**Figure 38 – Rolling 6-Month Change in Business Cycle Indicator**

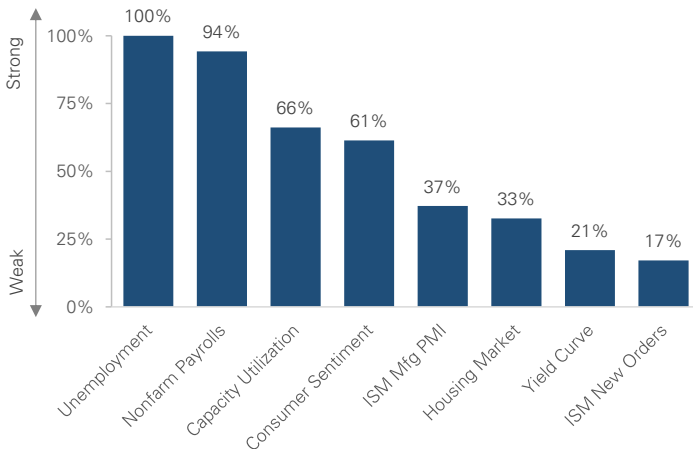
Measuring Near-term Economic Momentum



Source: www.QuantPack.com

**Figure 39 – Business Cycle Composite Inputs**

Historical percentiles based on monthly data since 1980



Source: www.QuantPack.com

**Figure 40 – Asset Class Performance by Business Cycle Stage**

Next 12-month Price Return vs the Historical NTM Average Price Return since 1990

	U.S. Equities	Contraction	Recovery	Expansion	Slowdown
S&P 500		-7.2%	2.2%	2.1%	0.3%
S&P 500 - Growth		-11.6%	2.6%	2.1%	1.5%
S&P 500 - Value		-11.0%	4.9%	1.9%	-1.7%
<b>Global Equities</b>					
MSCI EAFE		-8.5%	3.5%	3.2%	-1.5%
MSCI EM		6.2%	11.0%	-11.8%	-3.0%
<b>FX</b>					
U.S. Dollar		-1.0%	0.0%	1.1%	-0.2%
<b>U.S. Bonds</b>					
Trsy Bonds (5-10Y)		0.5%	-0.9%	0.3%	0.4%
Trsy Bonds (+10Y)		-1.2%	0.3%	0.0%	0.9%
Corp Bonds (IG)		2.6%	-0.4%	-1.0%	0.0%
Corp Bonds (HY)		7.3%	1.7%	-3.7%	-2.1%

Source: www.QuantPack.com

**Current Takeaway** Macro inputs suggest downside risks to 1H23 GDP; Indicator's estimates appear aggressive but are likely not directionally wrong

### Overview of Indicator

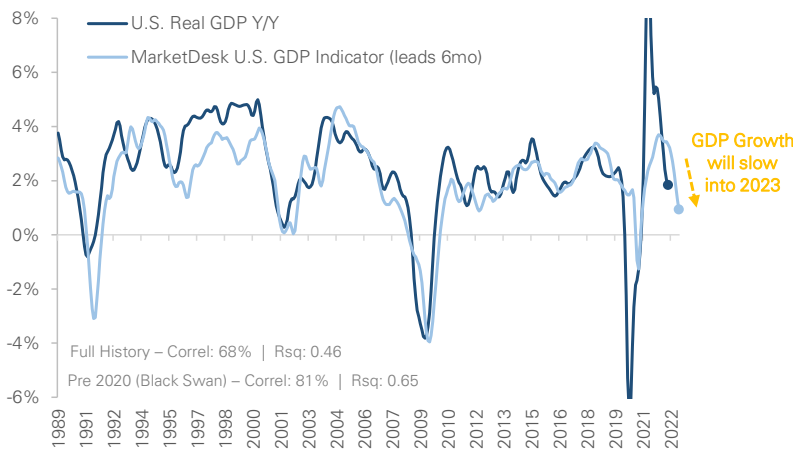
Gross Domestic Product (GDP) measures the total value of goods and services produced in the United States. The U.S. GDP Indicator is a combination of seven macro inputs that historically exhibit a high statistical correlation with future economic activity. The indicator forecasts the year-over-year change in U.S. GDP. The aim of the model is to provide a quick and easy way to understand the current state of the U.S. economy.

### How to Use

The U.S. GDP Indicator is built to forecast and spot key 'turning points' in U.S. economic activity. The indicator is not built to forecast with exact precision; however, that is rarely needed for successful asset allocation. Instead, there are two key model outputs to focus on: (1) the indicator's forecasted direction of GDP growth over the next 6 months, and (2) the expectations gap between the indicator estimate and current consensus estimates.

**Figure 41 – Quarterly GDP Growth (% Y/Y)**

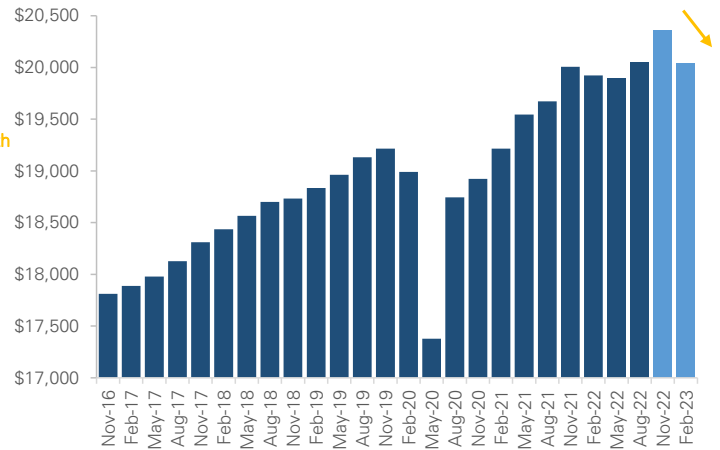
Relationship Between MarketDesk GDP Indicator and Actual GDP Growth



Source: www.QuantPack.com. Both lines smoothed with a rolling 3-month average.

**Figure 42 – Historical U.S. GDP in \$ Billions**

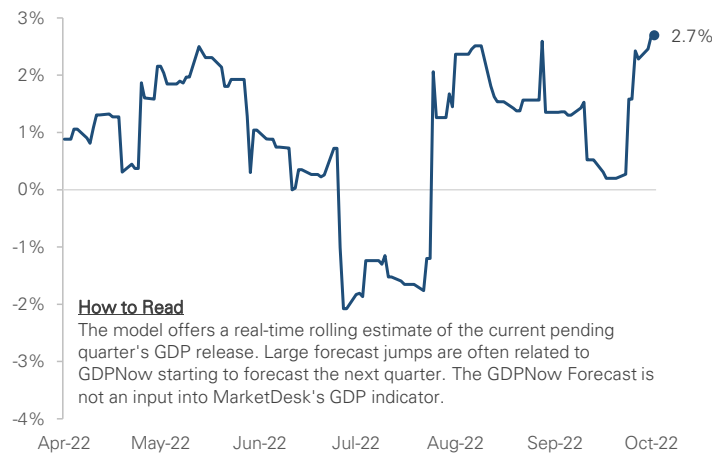
Path of U.S. GDP Since 2015 and MarketDesk's Forecast for the Next 2 Quarters



Source: www.QuantPack.com, U.S. Bureau of Economic Analysis (seasonally adjusted)

**Figure 43 – Atlanta Fed's GDPNow Cast Model**

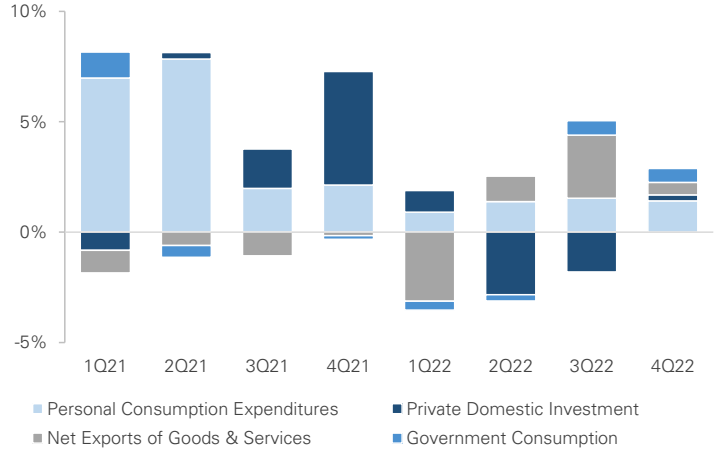
Last 6 Months of the GDPNow Cast's Prediction



Source: www.QuantPack.com, Atlanta Federal Reserve

**Figure 44 – Contribution to % Change in Real GDP vs 1-Quarter Ago**

Breakdown of Key Drivers to U.S. GDP Growth



Source: www.QuantPack.com, U.S. Bureau of Economic Analysis (seasonally adjusted)



**Current Takeaway** Conditions remain in restrictive territory; Expect below average credit expansion and economic growth

### Overview of Indicator

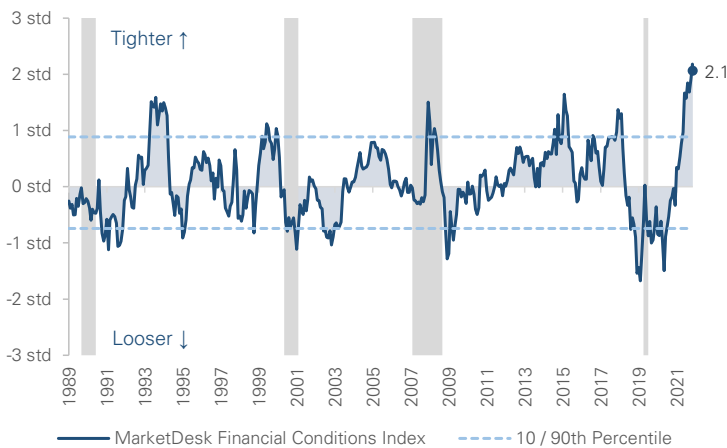
A strong economy relies on access to capital. "Financial Conditions" refers to the ease and cost of obtaining capital for individuals and businesses. While the Federal Reserve's policy rate has a limited direct effect on credit markets, it has a larger indirect impact on financial conditions, such as long-term interest rates, credit spreads, exchange rates, and equity prices. By monitoring these factors, we can get a better understanding of how monetary policy affects credit growth and overall economic activity.

### How to Use

The MarketDesk Financial Conditions Index tracks volatility-adjusted changes in interest rates, credit spreads, lending rates, VIX, equity prices, and the U.S. dollar. The composite value is a rolling 5-Year Z-score of y/y changes across eight underlying components. The Index should be used to forecast periods of economic instability and as a leading indicator for consumer spending and corporate earnings.

**Figure 45 – MarketDesk Financial Conditions Index**

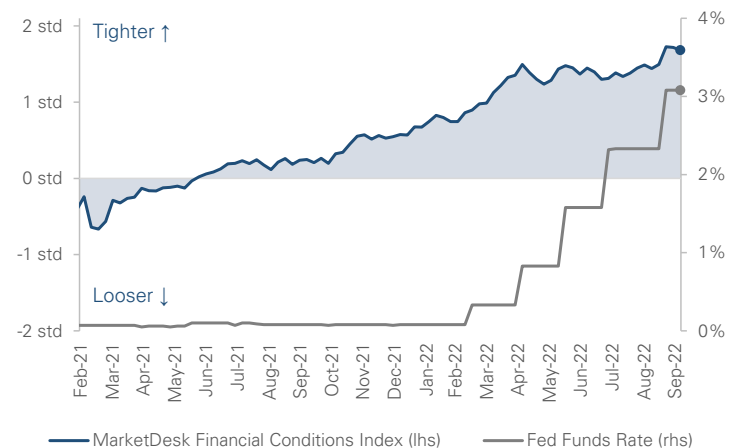
Composite Index is Rolling 5-Year Z-score of Underlying Components



Source: MarketDesk

**Figure 46 – U.S. Financial Conditions vs Fed Monetary Policy**

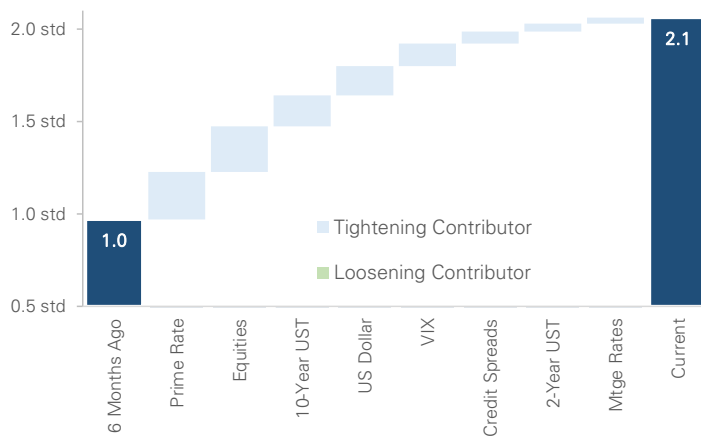
Past 24 Months of the Composite Index and U.S. Federal Reserve Policy Rate



Source: MarketDesk

**Figure 47 – Breakdown of the Index's Change Over the Last 6 Months**

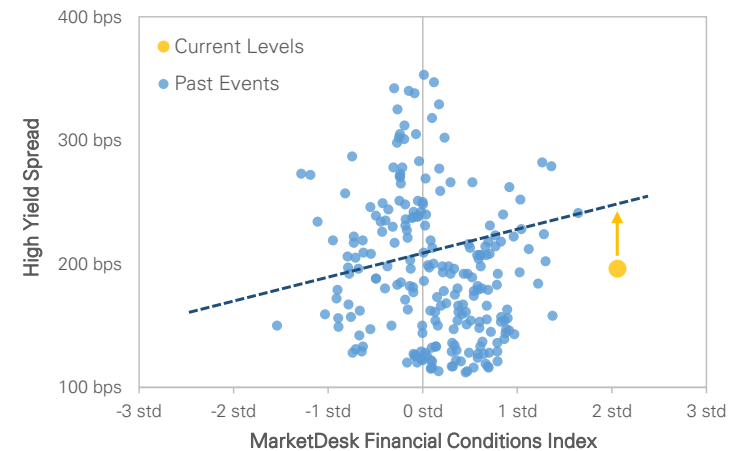
Net Contribution of Underlying Components to the Overall Index



Source: MarketDesk

**Figure 48 – MarketDesk FCI vs High Yield Bond Spread**

Historical Correlation of Financial Conditions and HY Credit Spread



Source: MarketDesk, Federal Reserve

**Current Takeaway** Continues to forecast weaker data (and S&P 500 returns); Falling PMIs = higher probability of downside surprises

### Overview of Indicator

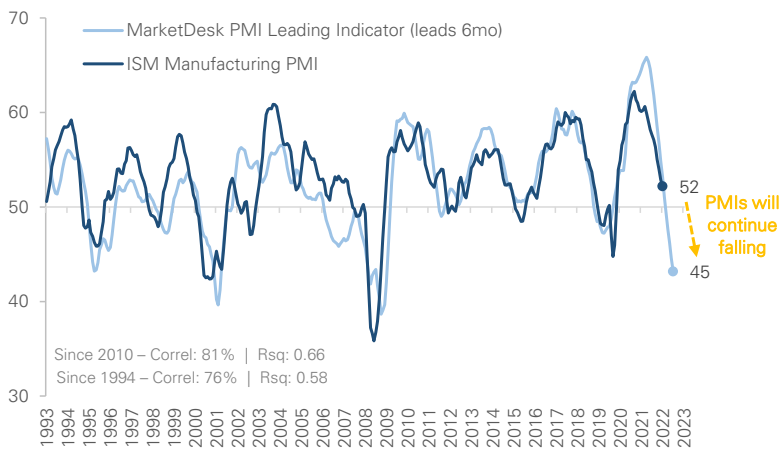
The leading indicator is based on a composite of 12 macro inputs and provides a 6-month forecast of the ISM Manufacturing PMI headline number. The goal of the MarketDesk PMI Leading Indicator is (1) to provide a timely estimate of future PMI levels, which historically have a high correlation with S&P 500 returns, and (2) inform tactical portfolio positioning across asset classes (i.e., cyclical vs defensive equities, long duration vs short duration bonds, etc.). Note: The ISM Manufacturing PMI index is calibrated such that readings above (below) 50 indicates U.S. economy activity is growing (slowing).

### How to Use

When the MarketDesk PMI Leading Indicator implies future PMI levels will be meaningfully above (below) current levels, portfolios positioning should tilt risk on (risk off). As with all quantitative tools, interpreting the indicator is more art than science. The underlying inputs of the composite score have varying lead times and influence on the PMI depending on the stage of the economic cycle. There will be periods when the inputs forecast different PMIs due to idiosyncratic reasons, but it is important to pay attention to the broad trend of the group.

**Figure 49 – Actual PMI vs MarketDesk PMI Leading Indicator**

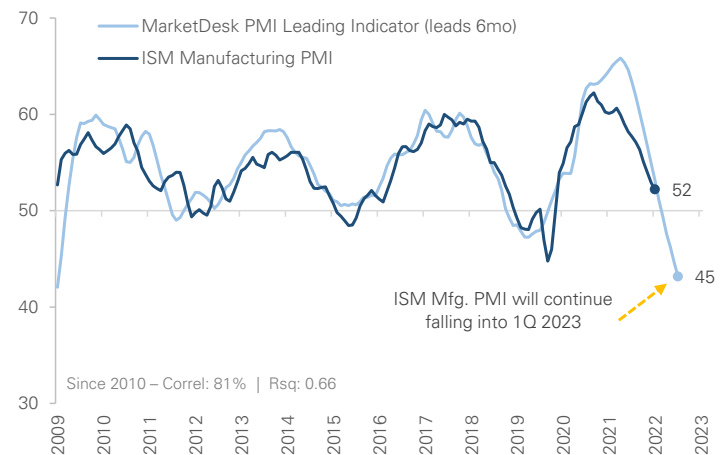
Historical Relationship of the Leading Indicator and Actual PMI Levels



Source: www.QuantPack.com, ISM. Both lines smoothed with 3-month average.

**Figure 50 – MarketDesk PMI Leading Indicator Since 2010**

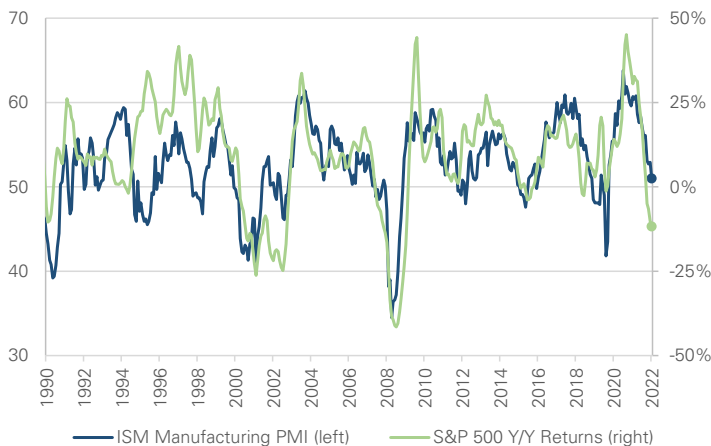
Recent Forecasted History



Source: www.QuantPack.com, ISM. Both lines smoothed with 3-month average.

**Figure 51 – Correlation of S&P 500 Returns & PMI Levels**

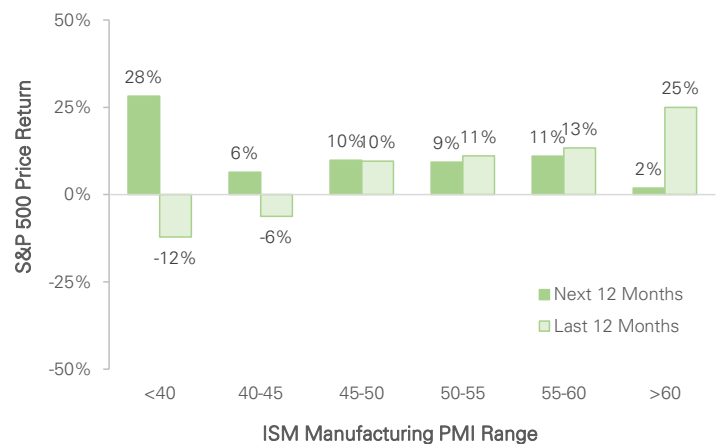
Historically S&P 500 Returns have a High Correlation to PMI Levels



Source: www.QuantPack.com

**Figure 52 – S&P 500 Price Returns Based on PMI Levels**

Market Performance Around Key PMI Ranges



Source: www.QuantPack.com

# MarketDesk PMI Momentum Indicator

Economic Activity

12-Month Forecast of the Y/Y Change in the ISM Manufacturing PMI

**Current Takeaway** The pace of Y/Y decline in the ISM Manufacturing PMI should trough this summer and begin to improve into 2H23

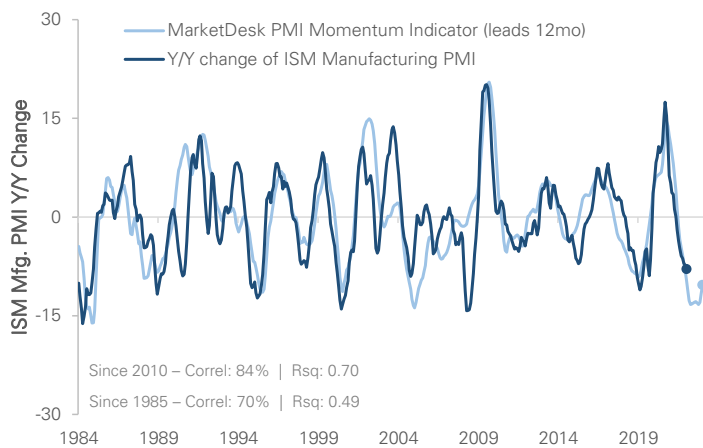
## Overview of Indicator

The leading indicator is based on a composite of 14 macro inputs and provides a 12-month forecast of the year-over-year change in the ISM Manufacturing PMI. The goal of the MarketDesk Manufacturing PMI Momentum Indicator is (1) to provide a longer-term view into the overall direction of manufacturing and economic activity, and (2) inform strategic portfolio positioning across asset classes (i.e., cyclical vs defensive equities, long duration vs short duration bonds, etc.).

## How to Use

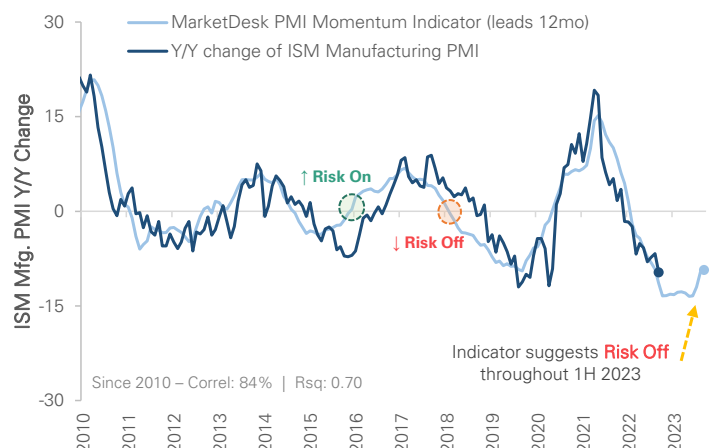
The MarketDesk PMI Momentum Indicator typically leads the actual year-over-year change in ISM Manufacturing PMI by 1-2 months. When our indicator (blue line below) crosses above (below) zero, it suggests owning cyclical (defensive) areas of the market. The bottom right chart is a simplistic stock / cash model to demonstrate how the indicator can inform risk-on vs risk-off positioning. The model was only allocated to stocks 53% of the months since 2000 (i.e. when Y/Y is below zero it held 100% cash), but returned +347% vs S&P's 500 +136% return.

**Figure 53 – Actual Y/Y Change vs MarketDesk PMI Momentum Indicator**  
Historical Relationship of the Indicator and Y/Y Changes in Manufacturing PMI



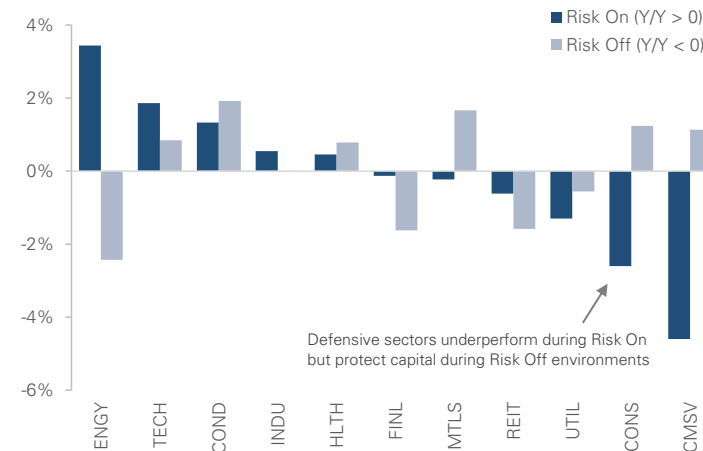
Source: www.QuantPack.com, ISM. Both lines smoothed with 3-month average.

**Figure 54 – MarketDesk PMI Momentum Indicator Since 2010**  
Recent Forecasted History



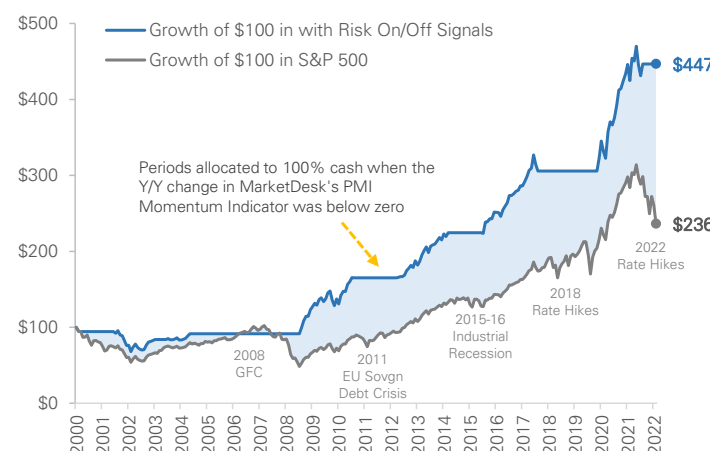
Source: www.QuantPack.com, ISM

**Figure 55 – Sector Returns Based on MarketDesk's Y/Y Indicator**  
Average Trailing 6-Month Relative Return vs S&P 500



Source: www.QuantPack.com. Returns from 8/31/2000 to 9/30/2022.

**Figure 56 – Stock / Cash Model Based on MarketDesk's Y/Y Indicator**  
Simplistic Model to Demonstrate the Effectiveness of the MarketDesk Indicator



Source: www.QuantPack.com. Returns from 8/31/2000 to 9/30/2022.

**Current Takeaway** Broad inflation pressures quickly fading; Fed still focused on Services CPI (notoriously the most difficult to forecast)

### Overview of Indicators

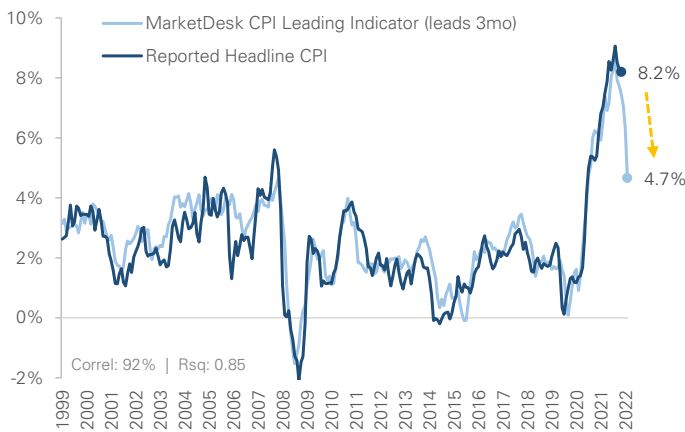
MarketDesk maintains indicators for inflation based on headline consumer price index (CPI) data and five main CPI categories: Food, Shelter, Energy, Commodities (ex Food & Energy), and Services. These indicators use 21 macroeconomic inputs that have been shown to have a high statistical correlation with future inflation trends, including wages, employment, money supply, commodity prices, energy prices, home values, movements in the value of the U.S. dollar, regional Federal surveys, and freight indices.

### How to Use

The U.S. Inflation Indicator is designed to forecast the direction and approximate magnitude of changes in inflation over the next three to six months. It is important to note that inflation is difficult to model accurately due to one-time, idiosyncratic factors. As a result, the indicator is not intended to provide exact predictions of future inflation rates. Instead, investors should focus on the two main model outputs: the direction of headline CPI and the movement of each underlying category in order to understand the current drivers of inflation. By analyzing these outputs, investors can gain insight into the likely trajectory of inflation.

**Figure 57 – MarketDesk U.S. CPI Leading Indicator**

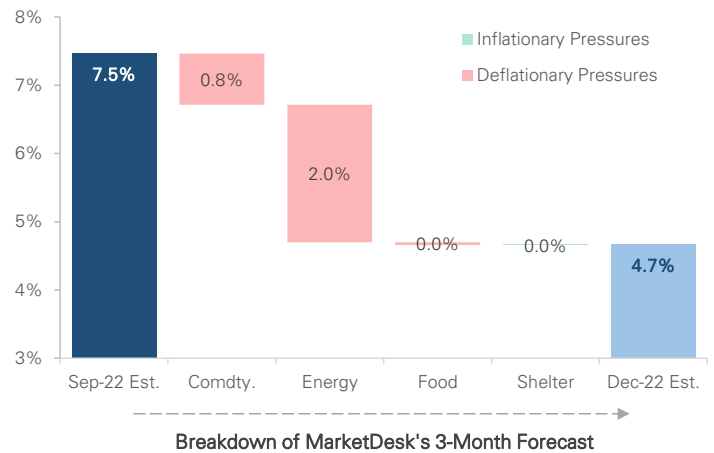
Composite Indicator & Historical U.S. Headline CPI since 2000



Source: www.QuantPack.com, U.S. Department of Labor (DOL)

**Figure 58 – Breakdown of MarketDesk's CPI Forecast by Category**

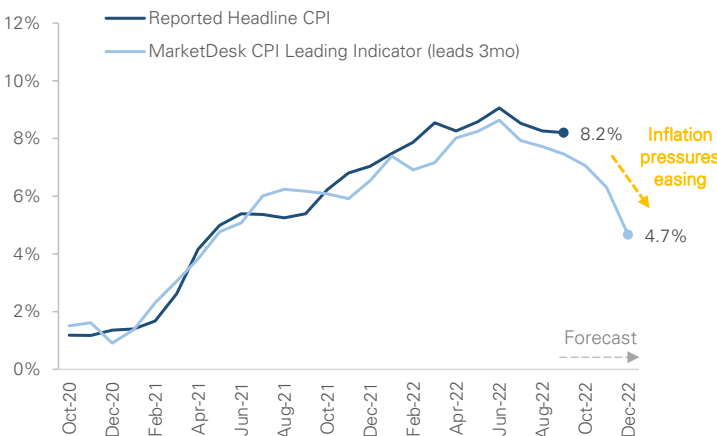
Next Three Month Change in the Indicator's Forecast by Category



Source: www.QuantPack.com. Note: Our Services CPI Indicator (see next page) is not included in the calculation of our Headline CPI Forecast due to lower accuracy.

**Figure 59 – Recent History of MarketDesk U.S. CPI Leading Indicator**

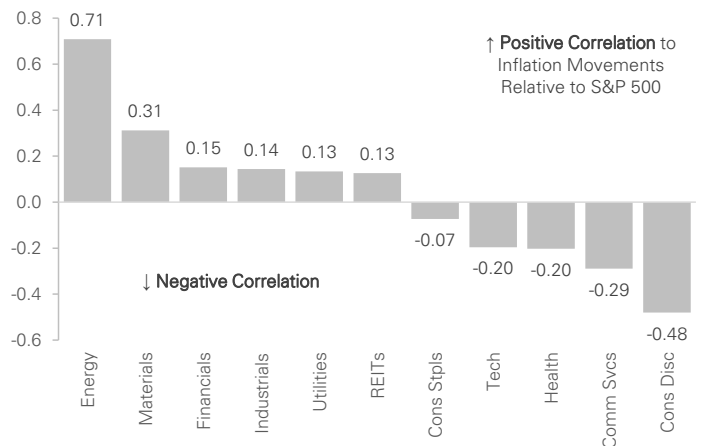
Last Two Years of Composite Indicator & Historical U.S. Headline CPI



Source: www.QuantPack.com, U.S. Department of Labor (DOL)

**Figure 60 – U.S. Sector Correlation to Inflation Movements**

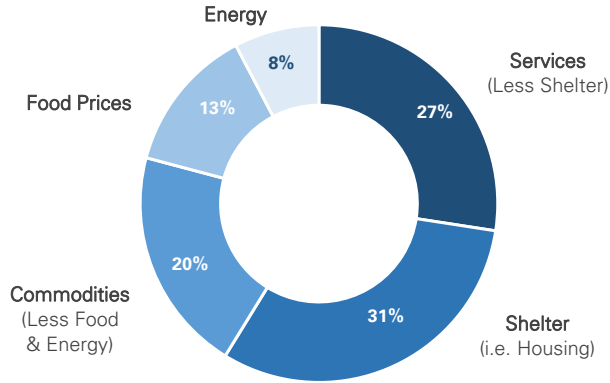
Calculations Based on Relative Y/Y Returns vs S&P 500 over the Last 20 Years



Source: www.QuantPack.com

**Figure 61 – Key Components of U.S. Headline CPI**

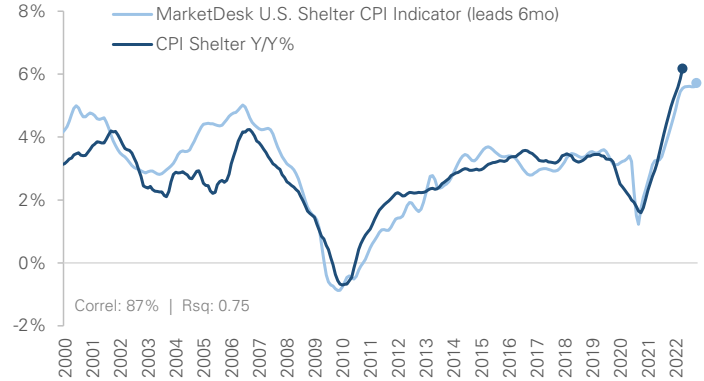
CPI Category Weights



Source: www.QuantPack.com, U.S. Department of Labor (DOL)

**Figure 62 – MarketDesk U.S. Shelter CPI Indicator**

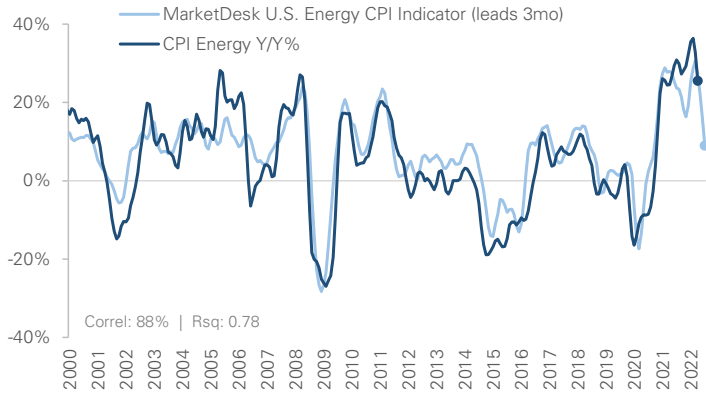
Historical Relationship Since 2000



Source: www.QuantPack.com, DOL. Both lines smoothed by rolling 3-month average.

**Figure 63 – MarketDesk U.S. Energy CPI Indicator**

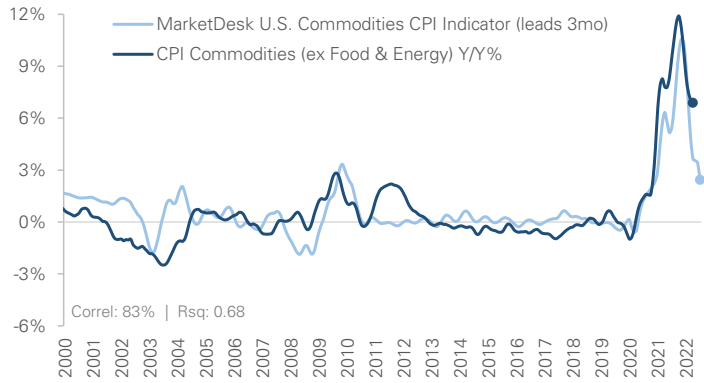
Historical Relationship Since 2000



Source: www.QuantPack.com, DOL. Both lines smoothed by rolling 3-month average.

**Figure 64 – MarketDesk U.S. Commodities CPI Indicator**

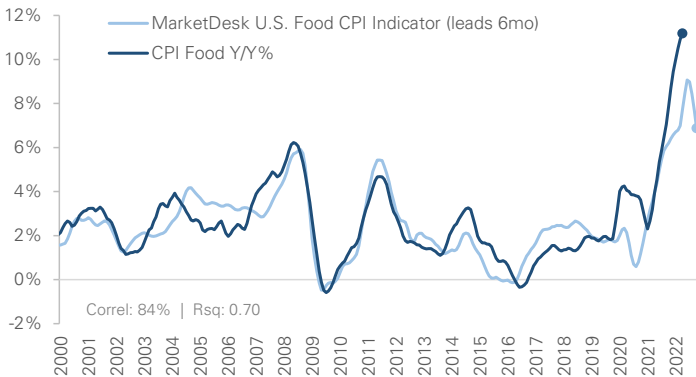
Historical Relationship Since 2000; Commodities excludes Food & Energy



Source: www.QuantPack.com, DOL. Both lines smoothed by rolling 3-month average.

**Figure 65 – MarketDesk U.S. Food CPI Indicator**

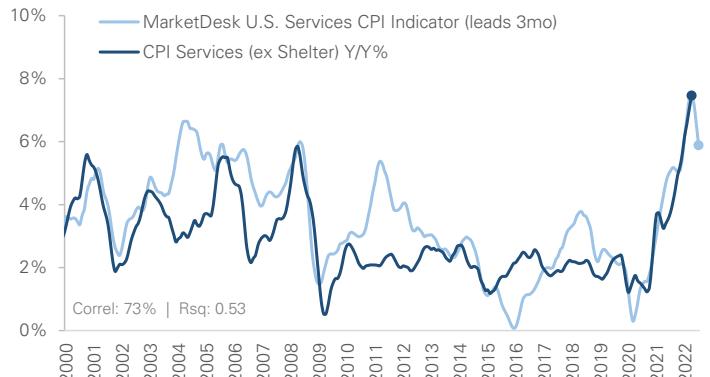
Historical Relationship Since 2000



Source: www.QuantPack.com, DOL. Both lines smoothed by rolling 3-month average.

**Figure 66 – MarketDesk U.S. Services CPI Indicator**

Historical Relationship Since 2000; Services excludes Shelter



Source: www.QuantPack.com, DOL. Both lines smoothed by rolling 3-month average.

# MarketDesk U.S. Home Price Indicator

12-Month Forecast of the Y/Y Change in the U.S. National Home Price Index

**Current Takeaway** Prices should continue to see downward pressure over the next 12 months due to elevated inventory levels and interest rates

## Overview of Indicator

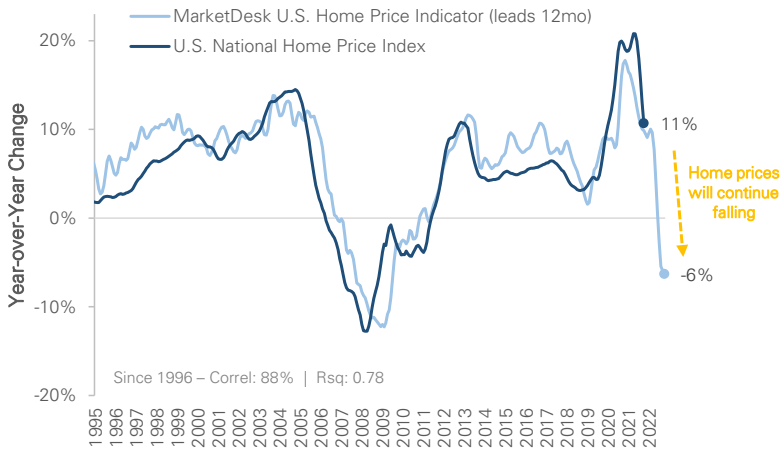
Housing is a critical input into the business cycle – Over the past 40 years, housing (construction and consumption of housing services) accounted for 15-18% of annual U.S. GDP. In addition to housing's direct impact on economic activity, home prices also impact consumer confidence and spending and banks' willingness to lend capital. The U.S. Home Price Indicator is a combination of five macro inputs that historically exhibit a high statistical correlation with future changes in the U.S. national home price index.

## How to Use

The U.S. Home Price Indicator is built to forecast the direction and approximate magnitude of changes in home prices over the next 12 months. Use the indicator to forecast and spot key 'turning points' in home prices throughout economic cycles and subsequent impacts on housing related macro variables, such as construction activity and purchases of furniture and other fixtures. While changes in home prices are not directly actionable in public markets, home prices indirectly impact multiple macro variables via the consumer wealth effect.

**Figure 67 – Actual Home Price Change vs MarketDesk Indicator**

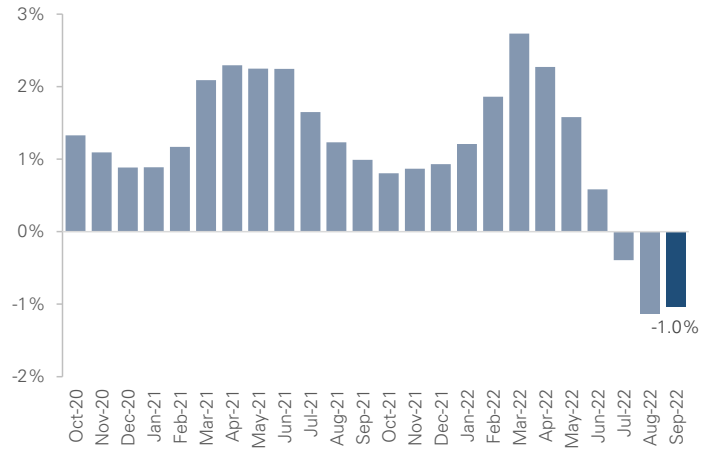
Relationship Between MarketDesk Forecasts and Actual Y/Y Price Changes



Source: www.QuantPack.com, Case-Shiller National Index

**Figure 68 – Rolling 1-Month Change in U.S. Home Prices**

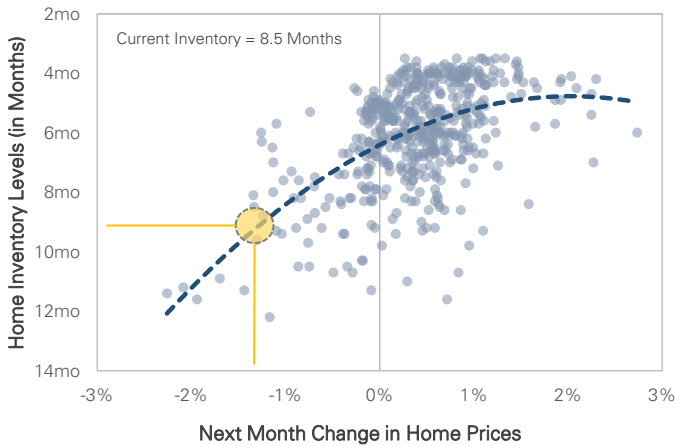
Short-Term Trend in Home Prices Over the Last 36 Months



Source: www.QuantPack.com, Case-Shiller National Index

**Figure 69 – Inventory Levels vs Home Price Changes Since 1980**

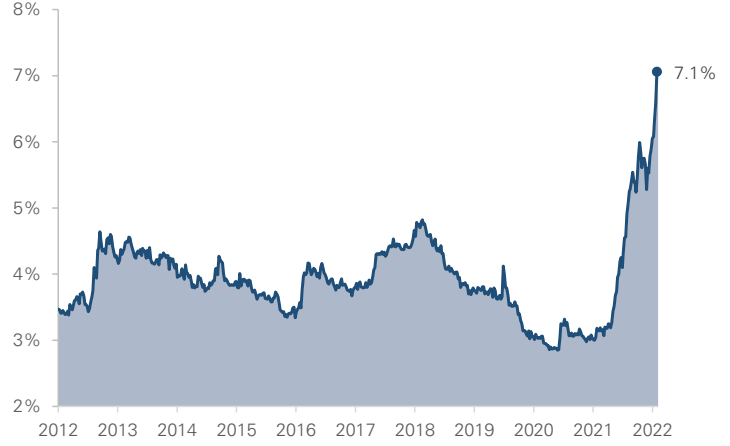
Higher (Lower) Inventory Levels Historically Cause Prices to Fall (Rise)



Source: www.QuantPack.com. Inventory = # Homes for Sale / # Homes Sold.

**Figure 70 – Current 30-Year Fixed Rate Mortgage**

Rolling 30-Year Fixed Mortgage Rate Over the Last 10 Years (U.S. National Average)



Source: www.QuantPack.com, Federal Reserve

**Current Takeaway** U.S. labor market should soften over the next 12 months; Unemployment rate likely ticks above 5% by the end of 4Q23

### Overview of Indicator

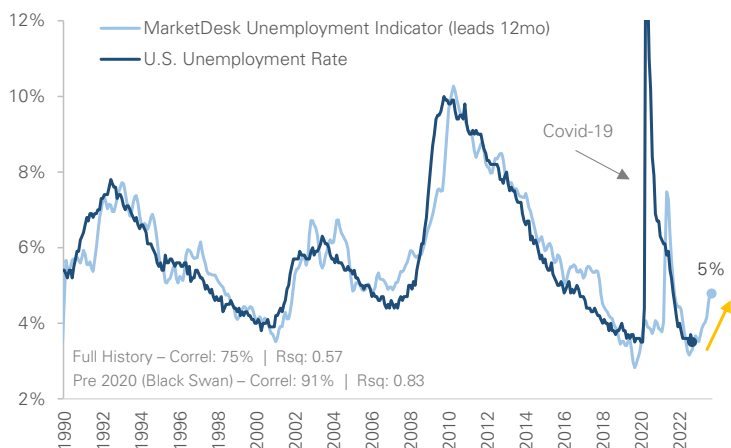
Unemployment is a key measure of the overall health of the economy. Changes in unemployment carry ripple effects across every aspect of the economy, impacting consumer financial health, retail spending, loan defaults, and consumer sentiment. In addition, the level of unemployment is a key input into U.S. monetary policy due to the Federal Reserve's dual mandate of stable prices and maximum employment. The U.S. Unemployment Indicator is a combination of six macro inputs that historically exhibit a high statistical correlation with future unemployment trends.

### How to Use

The U.S. Unemployment Indicator is built to forecast the direction and approximate magnitude of changes in the U.S. unemployment rate over the next 12 months. Use the indicator to forecast and spot key 'turning points' in unemployment trends throughout economic cycles. Forecasted increases in the unemployment rate signal weaker labor demand and suggests businesses are growing more cautious. In contrast, falling unemployment rates signal strengthening labor demand and an improving macro backdrop.

**Figure 71 – Actual Unemployment Rate vs MarketDesk Indicator**

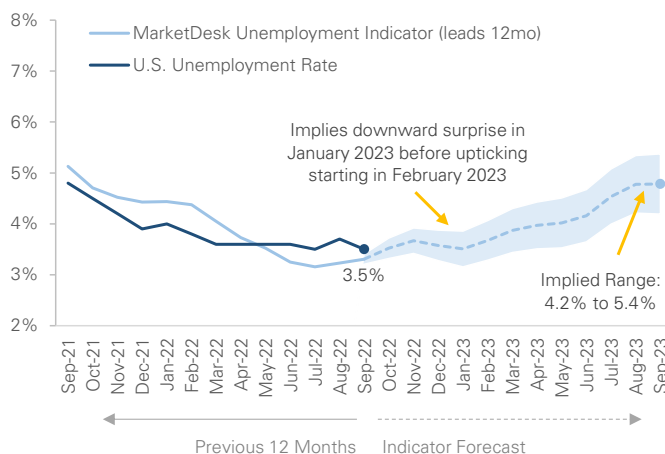
Relationship Between MarketDesk Forecasts and Actual Unemployment Rate



Source: www.QuantPack.com, Bureau of Labor Statistics

**Figure 72 – Recent History & MarketDesk Indicator Forecast**

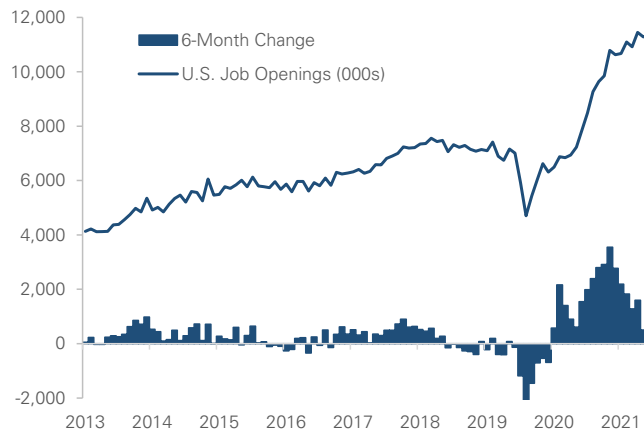
Forecast of U.S. Unemployment Rate Based on the MarketDesk Indicator



Source: www.QuantPack.com, Bureau of Labor Statistics

**Figure 73 – Number of U.S. Job Openings**

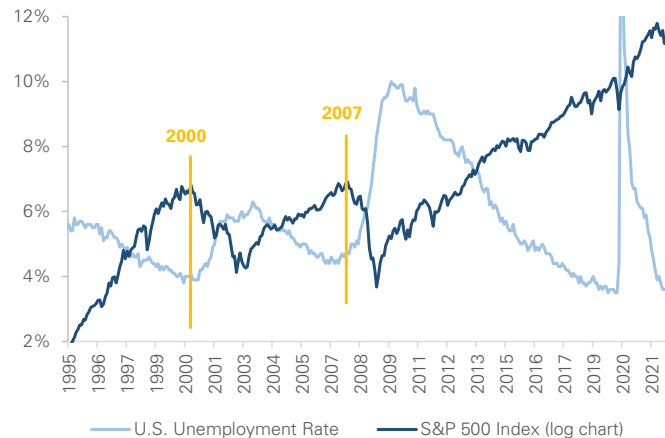
Job openings are an important indicator for the labor market and wage inflation



Source: www.QuantPack.com, Bureau of Labor Statistics

**Figure 74 – Equities Historically Peak Near Troughs in Unemployment**

Relationship Between S&P 500 and Unemployment Rate



Source: www.QuantPack.com, Bureau of Labor Statistics

# MarketDesk U.S. Consumer Health Indicator

Economic Pulse of Consumer Behavior

Consumers

**Current Takeaway** The indicator is approaching recession levels; Labor Markets continue to be a key source of strength for consumers

## Overview of Indicator

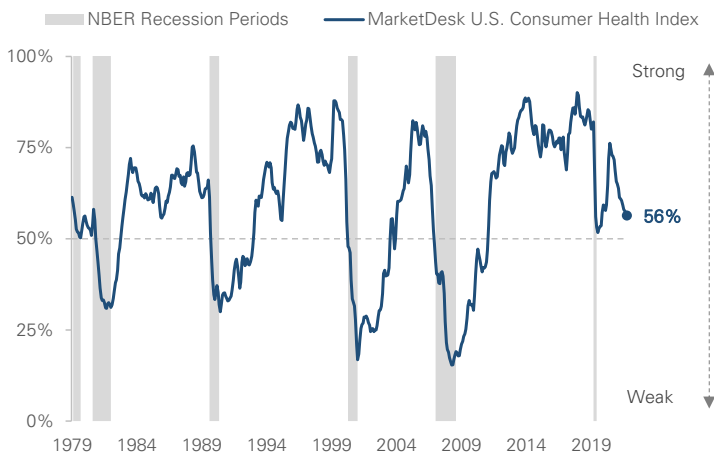
Consumer Health is a critical component of the U.S. business cycle. During the past 70 years, private consumption (consumer spending on goods and services) accounted for ~63% of annual U.S. GDP. The health of the U.S. consumer is a key input into both consumers' willingness and ability to spend. The U.S. Consumer Health Index is a combination of five consumer-related inputs: Labor Markets, Net Worth / Savings, Personal Income, Household Debt, and Sentiment. A high (low) reading indicates consumer health is strong (weak). The indicator historically exhibits a 3- to 6-month lead time to past U.S. recessions.

## How to Use

The U.S. Consumer Health Indicator provides a succinct snapshot of consumers' ability (or lack thereof) to consume and spend money. The indicator is designed to track consumer health over time and is best used to identify medium and longer term trends rather than month-to-month moves. Large shifts in consumer health, both positive and negative, tend to happen around cyclical inflection points and warrant more in-depth analysis. The bottom figure tracks the indicator's underlying components and provides additional insight into each of the factors impacting consumer health.

**Figure 75 – MarketDesk U.S. Consumer Health Indicator**

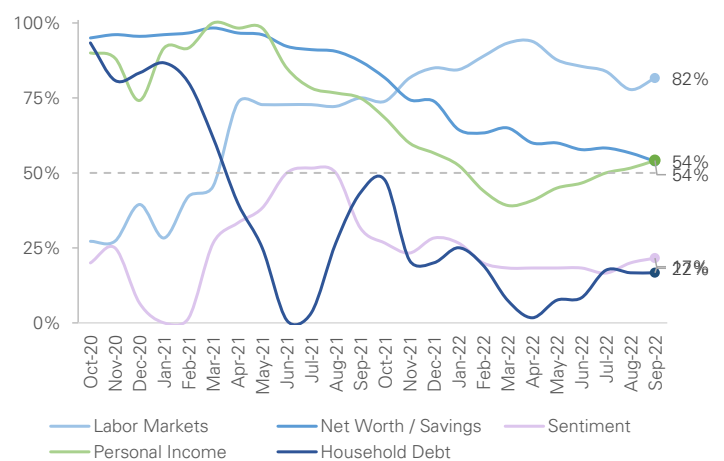
Composite Indicator and Historical U.S. Recessions



Source: MarketDesk, National Bureau of Economic Research

**Figure 76 – Rolling 5-Year Percentiles of Key Composite Inputs**

Trends in Underlying Categories of Composite During the Last Two Years



Source: MarketDesk

**Figure 77 – MarketDesk U.S. Consumer Health Indicator Components**

Latest Reading and Current Trend Across All MarketDesk Inputs

5-Year Historical Percentile

>75% = Strong; <25% = Weak

Composite Input	Category	6m Ago	3m Ago	1m Ago	Latest	Current	5-Year Range
Unemployment Rate (%)	Labor Markets	3.6%	3.6%	3.7%	3.5%	▲ Strong	●
Quit Rates (%)	Labor Markets	2.9%	2.7%	2.8%	2.6%	— Neutral	●
Nonfarm Payrolls (Y/Y Growth)	Labor Markets	5.0%	4.2%	3.6%	3.2%	— Neutral	●
S&P 500 (Proxy for 401k Values)	Net Worth / Savings	4,530	3,785	3,955	3,586	— Neutral	●
U.S. Home Prices	Net Worth / Savings	295k	308k	307k	307k	▲ Strong	●
Personal Savings Rate (%)	Net Worth / Savings	4.3%	3.2%	3.1%	3.2%	▼ Weak	●
Personal Income (Y/Y Growth)	Income	16.2%	16.6%	17.4%	17.8%	— Neutral	●
Disposable Income (Y/Y Growth)	Income	12.3%	12.9%	13.6%	13.8%	— Neutral	●
Non-Revoluting Credit (Y/Y Growth)	Household Debt	6%	7%	6%	5%	— Neutral	●
Revolving Credit (Y/Y Growth)	Household Debt	18%	15%	15%	12%	▼ Weak	●
Consumer Sentiment Index	Sentiment	108	103	99	102	▼ Weak	●

Source: MarketDesk, Bureau of Labor Statistics. Note regarding the 5-Year Range: ● denotes current & — denotes the datapoint's 6-month change.



## U.S. Credit Indicators

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### U.S. Lending Standards

12-Month Forecast of Changes in Bank Lending Standards

# MarketDesk U.S. Lending Standards Indicator

Bank Lending

12-Month Forecast of Changes in Bank Lending Standards

**Current Takeaway** Macro conditions warrant further tightening of bank lending standards over the next 12 months; Expect U.S. loan growth to slow

## Overview of Indicator

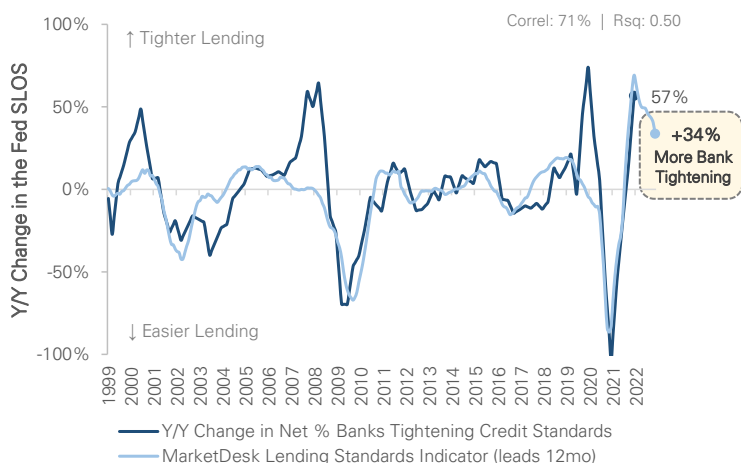
The *Senior Loan Officer Opinion Survey (SLOS)* on Bank Lending Practices is a quarterly survey conducted by the Federal Reserve. The survey gathers key information on lending practices as well as changes in the supply of credit and demand for loans. A key measure watched by economists and policymakers is the net % of banks tightening their lending standards. All else equal, tighter (easier) lending leads to lower (higher) loan growth, which leads to slower (higher) economic growth. The MarketDesk U.S. Lending Standards Indicator is a combination of six macro inputs that historically exhibit a high statistical correlation with U.S. banks lending practices and risk tolerance.

## How to Use

The MarketDesk U.S. Lending Standards Indicator is built to forecast the directional trend and year-over-year change in the net % of banks tightening lending standards. The indicator should be used as a leading indicator to assess the level of future credit growth and economic activity over the next 12 months. In general, periods of easier (tighter) lending practices would suggest risk-on (risk-off) portfolio positioning.

**Figure 78 – Y/Y Change in Net % Tightening vs MarketDesk Y/Y Indicator**

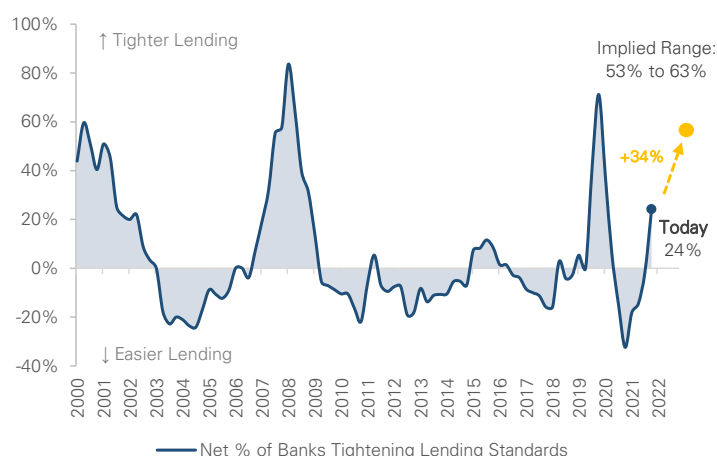
Historical relationship over the last 20 years



Source: www.QuantPack.com, Federal Reserve

**Figure 79 – Net % of Banks Tightening Lending Standards & Forecast**

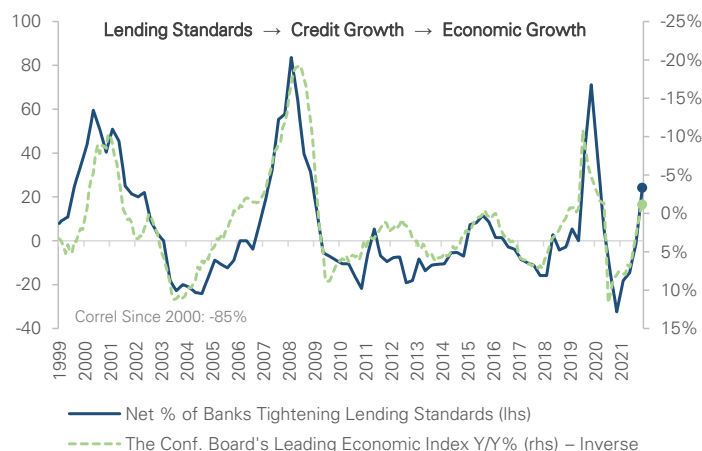
Based on the Senior Loan Officer Opinion Survey from the Federal Reserve



Source: www.QuantPack.com, Federal Reserve

**Figure 80 – Historical Lending Conditions & U.S. Economic Growth**

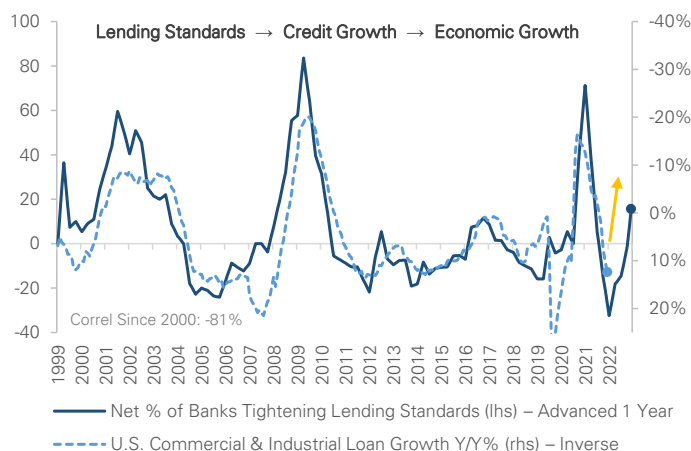
Lending conditions are key to U.S. economic growth



Source: www.QuantPack.com, Federal Reserve, The Conference Board

**Figure 81 – Historical Lending Standards & U.S. Loan Growth**

Bank Lending Standards lead U.S. loan growth by 12-months



Source: www.QuantPack.com, Federal Reserve

# Global Economic Indicators

MarketDesk Weekly Quant Pack

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## USD Technical Indicator

3-Month Forecast of the U.S. Dollar Index

# MarketDesk USD Technical Indicator

3-Month Forecast of the U.S. Dollar Index

**Current Takeaway** The indicator suggests recent weakness in USD will slow over the next 3 months

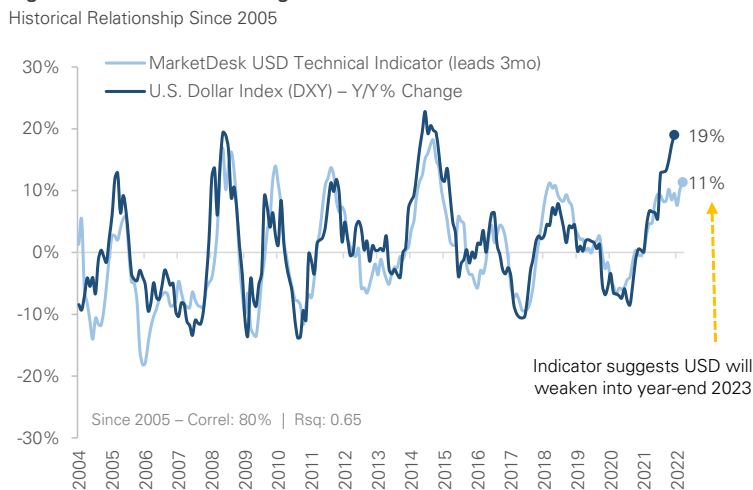
## Overview of Indicator

The U.S. dollar is considered to be the world's dominant currency and is widely used as a reserve currency by central banks, financial institutions, and governments around the world. USD also plays a significant role in international trade as many commodity prices, including oil, are quoted in U.S. dollars. Furthermore, the U.S. dollar is seen as a safe-haven currency during times of financial uncertainty as investors flock to USD. The MarketDesk USD Technical Indicator is built to forecast major near-term moves in the currency over the next 3 months.

## How to Use

The direction of USD is important for asset allocation decisions, especially when investing in emerging market equities and bonds, global commodities, U.S. treasuries, and U.S. equities that derive a large portion of their revenue from overseas. The indicator should be used to highlight potential turning points and the directional momentum of the U.S. Dollar.

**Figure 82 – Actual Y/Y Change vs MarketDesk Indicator**



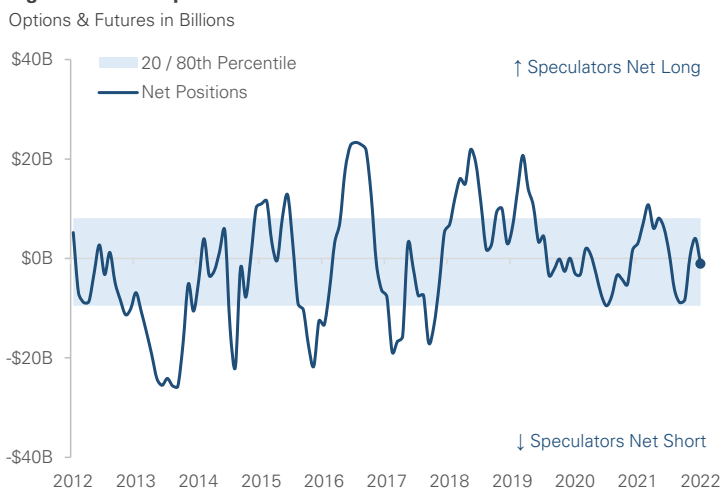
Source: MarketDesk

**Figure 83 – U.S. Dollar Index Over the Last 10 Years**



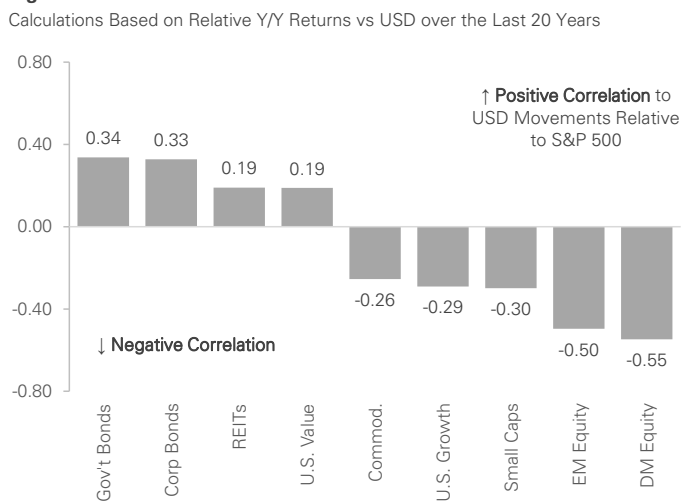
Source: MarketDesk

**Figure 84 – Net Speculative Positions in USD Futures**



Source: MarketDesk, Commodity Futures Trading Commission (CFTC)

**Figure 85 – Asset Class Correlation to USD Movements**



Source: MarketDesk

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