MarketDesk S&P 500 Real-Time Price Target Model

Valuation

Implied Upside / Downside from Current Market Levels

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

Overview of Indicator

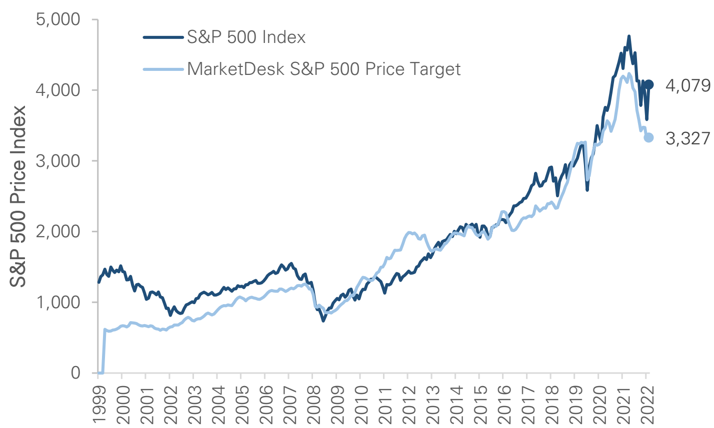
The S&P 500 Real-Time Price Target Model combines two well-known fair value frameworks: (1) equity risk premium and (2) cost of capital. The following two pages calculate a fair value using the equity risk premium (MFV1) and cost of capital (MFV2) methodologies, and this page averages the two fair value 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 21 – S&P 500 vs MarketDesk Real-Time Price Target

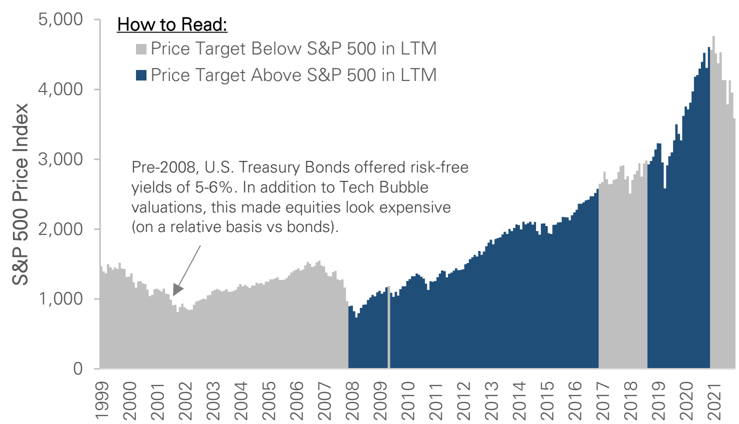
MarketDesk Price Target = Average of MFV1 and MFV2 (see next pages)



Source: www.QuantPack.com

Figure 22 – Historical Relationship of S&P 500 Price & Price Target

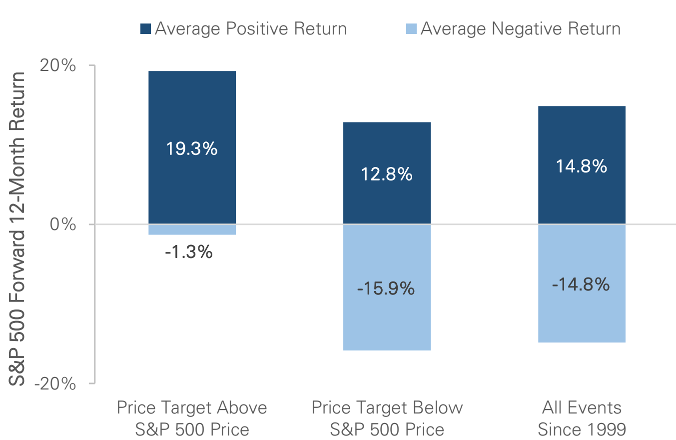
Analysis Below Assumes You Own S&P 500 for NTM when MarketDesk PT > Price



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 23 – 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 24 – 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
Average	**17.6%**	**3.1%**	**6.7%**
Median	16.2%	6.6%	9.8%
# of Events	64	197	261
% Positive	**92%**	**66%**	**72%**
% Negative	8%	34%	28%
Avg Positive	19.3%	12.8%	14.8%
Avg Negative	-1.3%	-15.9%	-14.8%
Risk / Reward	**14.8**	**0.8**	**1.0**
Max Positive	53.7%	43.6%	53.7%
Max Negative	-2.6%	-44.8%	-44.8%
Risk / Reward	**20.3**	**1.0**	**1.2**

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

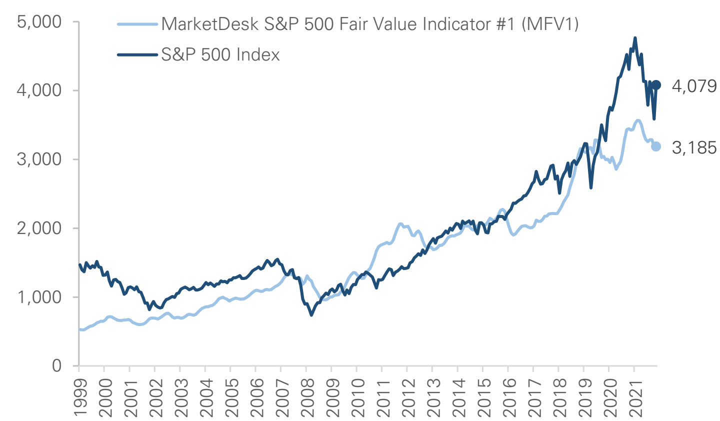
The Equity Risk Premium (ERP) methodology is based on the theory that investors require a risk premium as compensation for investing in equities, which are inherently riskier than bonds. The first step is to forecast the appropriate ERP, which is then added to the risk free rate to arrive at an earnings 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 25 – Historical Relationship of S&P 500 vs MFV1

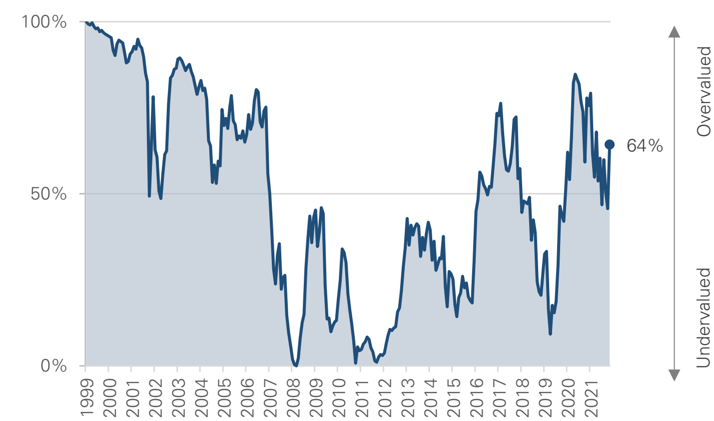
Equity Risk Premium Fair Value = NTM EPS Estimate / (ERP minus 10Y Yield)



Source: www.QuantPack.com

Figure 26 – 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 27 – 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	**3,185**	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.

MarketDesk S&P 500 Fair Value Indicator #2 (MFV2)

Cost of Capital Analysis

Valuation

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

Overview of Indicator

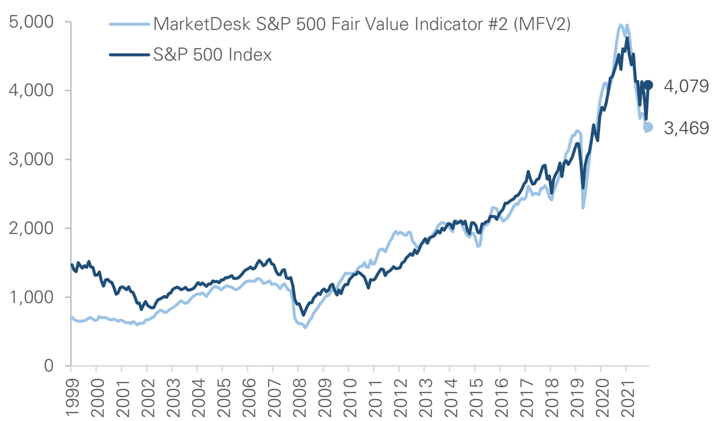
The Cost of Capital methodology values the S&P 500 based on the blended cost of equity and debt capital. The first step estimates the cost of capital, which is based on U.S. interest rates, corporate bond yields, and dividend yields. The second step divides the market's current S&P 500 NTM EPS estimate 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 28 – Historical Relationship of S&P 500 vs MFV2

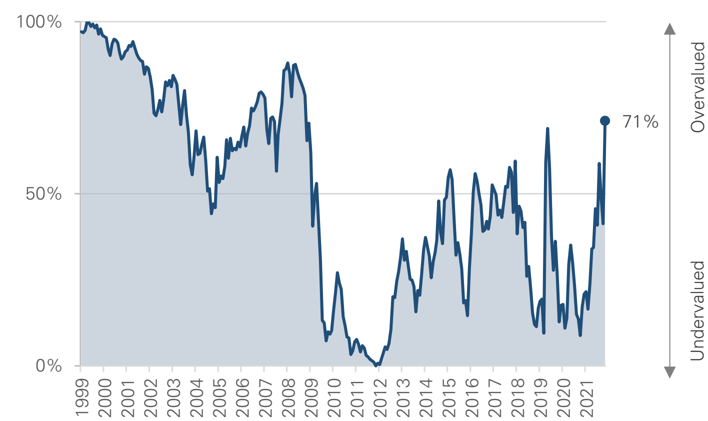
Cost of Capital Fair Value = NTM EPS Estimate / Cost of Capital



Source: www.QuantPack.com

Figure 29 – 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 30 – 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									
Cost of Capital (WACC)	$220	$225	$230	$235	$235	$245	$250	$255	$260	$265
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	**3,469**	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.

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