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# TRIVARIATE RESEARCH

## DOES VALUATION WORK? THE ANSWER IS NUANCED

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# RESEARCH SUMMARY AND INVESTMENT CONCLUSIONS

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**Background:** We have learned over the past several years that rarely, if ever, has valuation alone been a good reason to buy or sell a stock. We have written that when stocks get to 50x price-to-forward earnings, on average they begin to lag 9 months later (*Do You Worry About Stocks At 50x Earnings?*) and that when they become too cheap, it is not a positive catalyst (*12X Earnings Is Cheap, But 6X Is Not*). Recently, long-term, long-only, quantitative approaches with a valuation bias have performed better, and we thought it sensible to study valuation and its relevance to US equity investing in today's research.

**Methodology:** We analyzed the top 2000 US equities (excluding Financials and Real Estate) by market capitalization, studying the level and change in Enterprise Value-to-Forecasted Sales, Price-to-Forward Earnings, and Free Cash Flow Yield to predict subsequent stock performance.

**We broke our assessment into five parts:**

**Part 1: What valuation metrics work?** We analyzed the top vs. bottom quintile return spreads and Sharpe ratios for level and change of Enterprise-Value-to-Forecasted Sales, Price-to-Forward Earnings, and Free Cash Flow Yield, and studied which metrics are effective overall, and by size, substance and style.

**1) Valuation level: Free Cash Flow Yield is the most effective metric**, with the highest Sharpe Ratios, owing to lower volatility of efficacy, particularly vs. Price-to-Forward Earnings. **Knowing if a stock is at 10x or 25x Price-to-Forward earnings provides little useful predictive information for security selection.** Free Cash Flow Yield level is the one metric that is just as effective for stock selection among Mega / Large Caps as it is for Mid-and-Small Caps.

**2) Change in valuation:** Knowing whether multiples just expanded or contracted was generally not effective for stock selection in Mega / Large Caps (change in EV-to-forecasted sales has a 50% monthly hit rate). Change in Free Cash Flow Yield was reasonably effective as a metric for small caps, largely owing to low volatility of efficacy. Change in Price-to-Forward Earnings is an equally ineffective metric for stock selection as is level.

**3) By size:** Change in Free Cash Flow yield is best on a volatility-adjusted basis for Mid- and Small-Cap stocks. Both the change and level of Price-to-Forward Earnings are poor metrics for stock selection across the market cap. spectrum. Level of EV-to-Forecasted Sales is efficacious among small caps, though volatile.

## INVESTMENT CONCLUSIONS

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4) **By style:** Among growth stocks, change in Free Cash Flow Yield is the most effective metric, volatility-adjusted, but level of Free Cash Flow Yield generates the highest long-short spread. The classic Price-to-Forward Earnings multiple has limited efficacy for stock selection in the growth universe. **Valuation metrics are less effective for stock selection among value stocks than growth stocks.** For value stocks, change in EV-to-Forecasted Sales and change in Free Cash Flow Yield work best.

5) **By substance:** On a volatility-adjusted basis, change in Free Cash Flow Yield was the most effective valuation-based signal for stock selection among high-quality stocks. **Among junk stocks, valuation was in general less helpful than among high-quality stocks.** Level of EV-to-Forecasted Sales had the highest Q1-Q5 return spread among the six level / change metrics.

**Part 2: When do these valuation metrics work?** We took a traditional metric like Price-to-Forward Earnings and analyzed efficacy in three-year windows to assess when it has failed and worked for security selection.

**Valuation has worked well for stock selection recently:** Valuation metrics were broadly effective from 2001-2006, then failed or were even perverse (with expensive beating cheap) from 2007-2021. Since 2022, however, the Sharpe Ratios and return spreads have worked, **meaning traditional valuation has mattered more for stock selection in the last three years than at anytime in over twenty years.**

**Part 3: Does a combination of change and level of valuation matter?** We studied if cheap and contracting multiples result in better subsequent returns than cheap and expanding multiples, as well as for expensive and contracting vs. expensive and expanding multiples.

1) We studied the Top 1000 US Equities and analyzed quintiles of change and level of Price-to-Forward Earnings. **Cheap stocks with moves in the multiple that were not extreme performed best.** Expensive stocks with multiple expansion performed the worst. Stocks that are in the most expensive 40% on price-to-forward earnings perform best if their multiples were more stable (2<sup>nd</sup> through 4<sup>th</sup> quintile on change), **while expensive stocks with the most multiple expansion or contraction subsequently performed worst.**

2) For stocks in the highest 60% of Free Cash Flow Yield, **multiple contraction the previous month resulted in better subsequent performance than multiple expansion the previous month.**

## INVESTMENT CONCLUSIONS

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**Part 4: How correlated are valuation and momentum metrics?** Traditional long-only quant models use both valuation and momentum as factors and we assess the correlation of these factors over time.

1) The correlation between the two is near a 20-year high. The 36-month rolling correlation between the top quintile on Free Cash Flow Yield and the top quintile in 12-month price momentum is at its highest level since before the Financial Crisis. The correlation is even stronger among bottom quintile stocks. **Valuation and momentum were strongly aligned in 2024, meaning traditional quantitative models should have worked well in 2024.**

2) The correlation between EV-to-Forecasted Sales and 12-month momentum is also at 20-year highs for both top and bottom quintile stocks. The overall correlation values are slightly lower than for the FCF Yield and Momentum correlations, but still noteworthy.

**Part 5: Are there any sector-level nuances worth exploiting?** Valuation metrics seem to work in some sectors of the market and not in others, and we analyzed the change and level of these metrics for each sector and identify quantitatively-derived long-short ideas based on factor efficacy.

1) We looked at nine sectors, and six valuation signals for each, for a total of 54 sector level signal assessments. The highest Sharpe Ratio signal of those 54 metrics was Change in Free Cash Flow Yield among Technology stocks, though that signal has not worked well in the last year.

2) We took the median Sharpe Ratio of the six different valuation metrics we assessed over the last 25 years, by sector, and found that **valuation works best among Industrials stocks, and is perverse on average in Communication Services.**

Quantitatively derived long and short ideas from changes and level in signals that were efficacious at stock selection are shown on Slides 16 and 17.

# AMONG VALUATION LEVEL FACTORS, FCF YIELD IS BEST

Below we show the top vs. bottom quintile spread of three common valuation metrics, Enterprise Value-to-Forecasted Sales, Price-to-Forward Earnings, and Free Cash Flow Yield. We broke the top 2000 US equity universe into three size cohorts, Mega / Large, Mid, and Small-Cap, and studied the top vs. bottom quintile spread from 1999 through January 2025. In general, Free Cash Flow Yield is the most effective metric, with the highest Sharpe Ratios, owing to lower volatility of efficacy, particularly vs. Price-to-Forward Earnings. Free Cash Flow Yield level is the one metric that is just as effective for stock selection among Mega / Large caps as it is for Mid-and-Small Caps. Valuation metrics work better in Small caps than Mega / Large caps.

Performance Statistics by Cohort and Valuation Metric, Q1 vs. Q5 Spread  
Top 2000 US Equities, Ex-Financials & Real Estate  
1999 to End-January, 2025

Statistic	EV-to-Forecast Sales			Price-to-Forward Earnings			Free Cash Flow Yield		
	Mega / Large	Mid	Small	Mega / Large	Mid	Small	Mega / Large	Mid	Small
Annualized Mean Return	5.7%	8.3%	10.6%	7.3%	7.0%	9.2%	8.0%	7.4%	7.9%
Annualized Standard Deviation	15.6%	18.0%	19.2%	22.7%	25.0%	25.2%	12.0%	13.4%	13.9%
Sharpe Ratio	0.36	0.46	0.55	0.32	0.28	0.37	0.67	0.55	0.57
Hit Rate	52%	52%	53%	54%	50%	53%	56%	57%	52%
Asymmetry	1.26	1.41	1.40	1.15	1.30	1.23	1.36	1.21	1.45

# CHANGE IN MULTIPLES FAILED, APART FROM FCF IN SMALL CAPS

Most of us have questioned whether the valuation level of a stock matters, as we know it is at least partially associated with gross margin level and perception about future growth. Hence, we studied whether there was any information in the change in valuation level by studying the Q1 vs. Q5 spreads of monthly changes in multiples. Change in valuation was generally not effective for Mega / Large caps, as evidenced by change in EV-to-forecasted sales having a 50% hit rate among Mega / Large caps. Change in Free Cash Flow Yield was reasonably effective as a metric for Small caps, largely owing to low volatility of efficacy. Change in Price-to-Forward Earnings is not a more effective metric for stock selection than level.

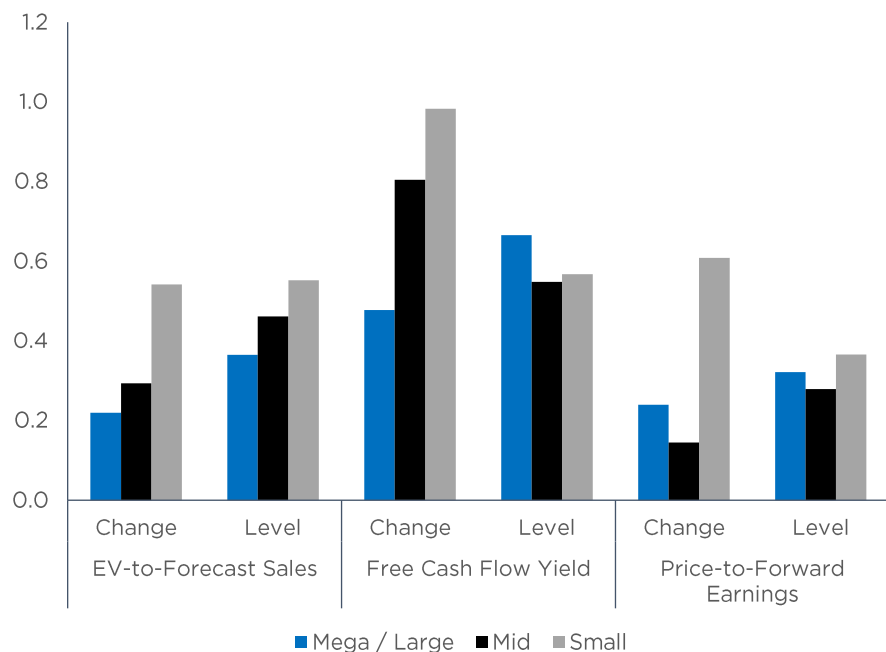
Performance Statistics by Cohort and Valuation Metric (1-Month Change), Q1 vs. Q5 Spread  
Top 2000 US Equities, Ex-Financials & Real Estate  
1999 to End-January, 2025

Statistic	1-Month Change of EV-to-Forecast Sales			1-Month Change of Price-to-Forward Earnings			1-Month Change of Free Cash Flow Yield		
	Mega / Large	Mid	Small	Mega / Large	Mid	Small	Mega / Large	Mid	Small
Annualized Mean Return	2.8%	3.7%	7.3%	3.3%	1.7%	6.8%	4.0%	6.0%	7.9%
Annualized Standard Deviation	12.8%	12.5%	13.5%	13.9%	11.7%	11.2%	8.3%	7.4%	8.0%
Sharpe Ratio	0.22	0.29	0.54	0.24	0.15	0.61	0.48	0.80	0.98
Hit Rate	50%	54%	58%	51%	53%	56%	53%	58%	64%
Asymmetry	1.18	1.08	1.17	1.15	1.01	1.27	1.31	1.33	1.18

# FCF YIELD WORKS FOR MEGA / LARGE CAPS AS WELL AS FOR SMALL

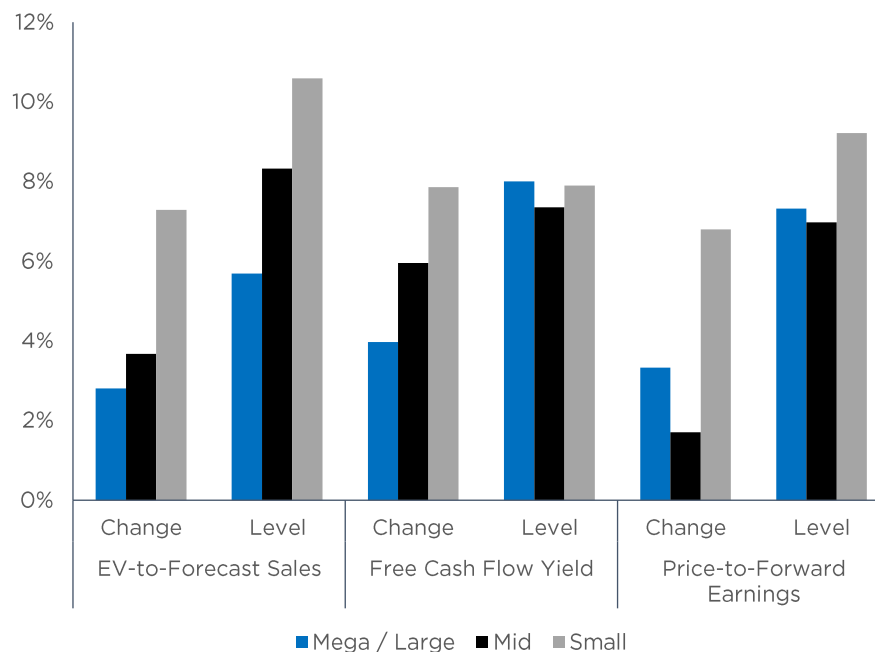
We analyzed factor efficacy, both level and change, for Mega / Large-, Mid-, and Small-cap stocks separately, with the Sharpe Ratios (left) and annualized return spreads (right) shown below. Generally, valuation metrics work best for Small caps, as evidenced by the gray bars being highest. Change in Free Cash Flow yield is best on a volatility-adjusted basis for Mid- and Small-Cap stocks. Change and level of Price-to-Forward Earnings are poor metrics for stock selection across the market cap. spectrum. Level of EV-to-Forecasted Sales is efficacious among small caps, though volatile.

**Sharpe Ratio of Level & Change by Valuation Metric**  
 Top 2000 US Equities by Market Cap. Group  
 Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
 Through End-January, 2025



Source: Trivariate Research

**Mean Annual Return of Level & Change by Valuation Metric**  
 Top 2000 US Equities by Market Cap. Group  
 Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
 Through End-January, 2025



Source: Trivariate Research

# VALUATION METRICS ARE MORE EFFECTIVE IN GROWTH THAN VALUE

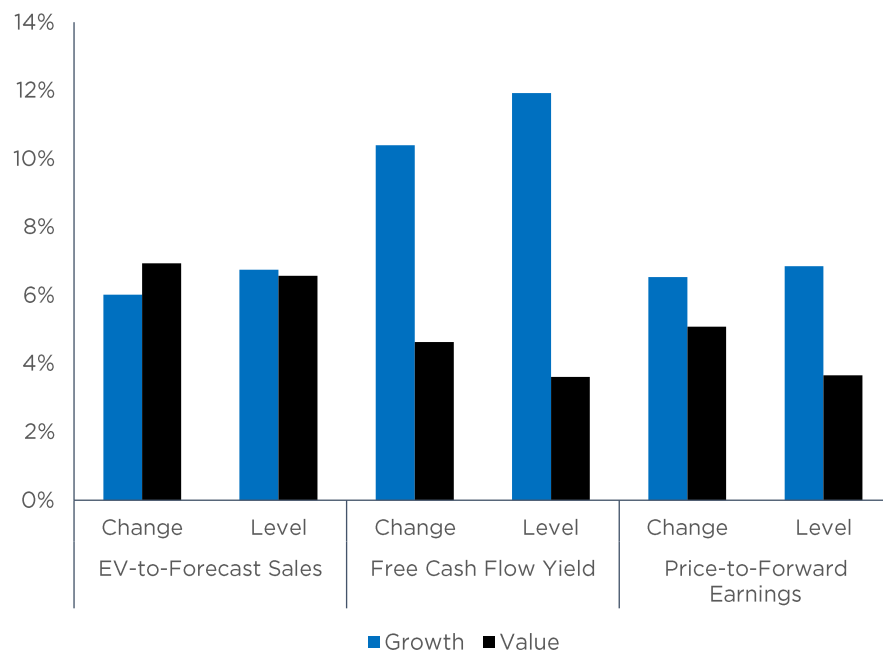
We analyzed factor efficacy, both level and change, for growth and value stocks separately, with the Sharpe Ratios (left) and annualized return spreads (right) shown below. Among growth stocks, change in Free Cash Flow Yield is the most effective metric, volatility-adjustated, but level of Free Cash Flow Yield generates the highest long-short spread. The classic Price-to-Forward Earnings multiple has the lowest Sharpe Ratio for growth stocks. In general, valuation is less effective for stock selection among value stocks than growth stocks as evidenced by the blue bars generally being above the black bars across most level and change metrics. For value stocks, change in EV-to-Forecasted Sales and change in Free Cash Flow Yield work best.

**Sharpe Ratio of Level & Change by Valuation Metric**  
 Top 2000 US Equities, Growth and Value Universe  
 Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
 Through End-January, 2025



Source: Trivariate Research

**Mean Annual Return of Level & Change by Valuation Metric**  
 Top 2000 US Equities, Growth and Value Universe  
 Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
 Through End-January, 2025



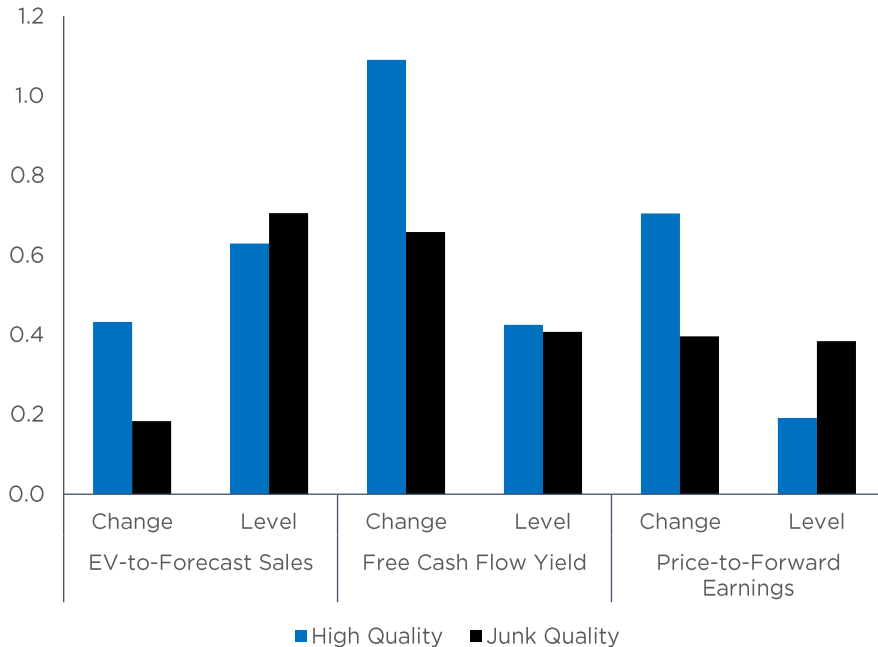
Source: Trivariate Research



# DIFFERENT METRICS WORK FOR HIGH QUALITY THAN JUNK STOCKS

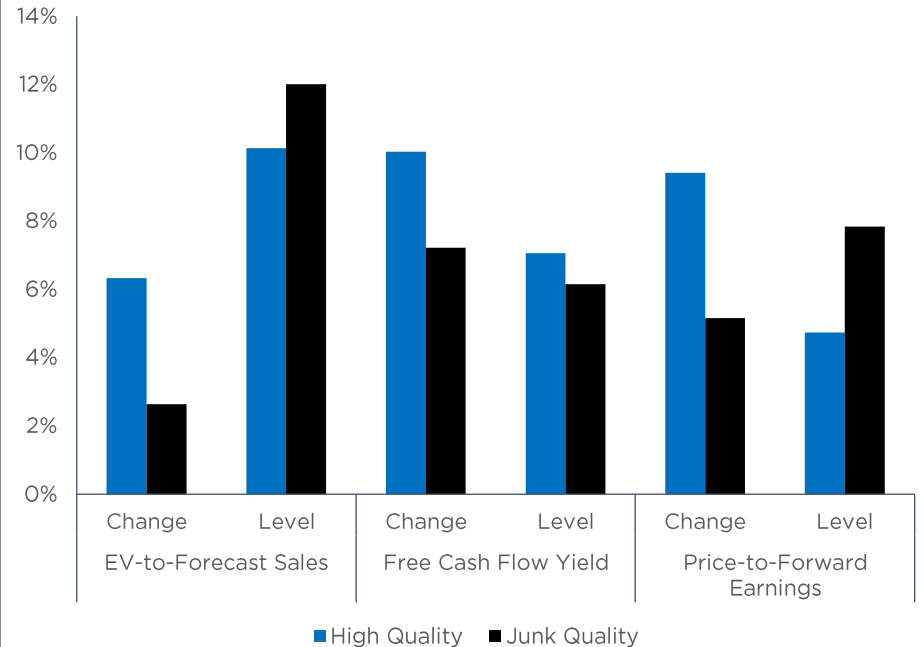
We also analyzed factor efficacy, both level and change, for high-quality and junk stocks separately, with the Sharpe Ratios (left) and annualized return spreads (right) shown. On a volatility-adjusted basis, change in free cash flow yield was the most effective valuation-based signal for stock selection among high-quality stocks. Among junk stocks, valuation was in general less helpful than among high-quality stocks. Level of EV-to-forecasted sales had the highest Q1-Q5 return spread among the six level / change metrics.

Sharpe Ratio of Level & Change by Valuation Metric  
Top 2000 US Equities, Quality and Junk Universe  
Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
Through End-January, 2025



Source: Trivariate Research

Mean Annual Return of Level & Change by Valuation Metric  
Top 2000 US Equities, Quality and Junk Universe  
Q1 vs. Q5 Spread Portfolio, Rebalanced Monthly  
Through End-January, 2025



Source: Trivariate Research

# VALUATION HAS WORKED RECENTLY - THE MOST IN TWENTY YEARS

We show the efficacy of Price-to-Forward Earnings level in three-year increments. Valuation metrics were broadly effective from 2001-2006, then failed or were even perverse (with expensive beating cheap) from 2007-2021. Since 2022 however, the Sharpe Ratios and return spreads have worked, meaning traditional valuation has mattered more for stock selection than anytime in twenty years.

Performance Statistics of Price-to-Forward Earnings Q1 vs. Q5 Spread  
By Cap. and Year Range, Ex-Financials & Real Estate  
2001 to 2024

Year Range	Annualized Mean			Sharpe Ratio		
	Mega / Large	Mid	Small / Micro	Mega / Large	Mid	Small / Micro
2001 to 2003	26%	37%	27%	0.83	1.17	0.70
2004 to 2006	15%	12%	14%	1.30	1.25	1.10
2007 to 2009	5%	(5%)	(1%)	0.40	(0.40)	(0.07)
2010 to 2012	2%	1%	10%	0.18	0.07	0.90
2013 to 2015	4%	5%	(2%)	0.36	0.48	(0.11)
2016 to 2018	(2%)	(10%)	(3%)	(0.17)	(0.75)	(0.19)
2019 to 2021	(9%)	(10%)	7%	(0.45)	(0.41)	0.30
2022 to 2024	10%	14%	22%	0.46	0.68	0.82

## EXPENSIVE STOCKS WITH BIG CHANGES IN MULTIPLES ARE BAD

We studied the Top 1000 US Equities and analyzed quintiles of change and level of Price-to-Forward Earnings (left) and the median number of stocks in each cell (right). Cheap stocks with moves in that multiple that were not extreme performed best. Expensive stocks with multiple expansion performed the worst. Stocks that are in the most expensive 40% on price-to-forward earnings performed best if their multiples were more stable (2<sup>nd</sup> through 4<sup>th</sup> quintile on change), while expensive stocks with the most multiple expansion or contraction subsequently performed worst.

Sharpe Ratio by Quintile of Change (1-Month) and Level Of Price-to-Forward Earnings  
Top 1000 US Equities, Ex-Financials & Real Estate  
End-June, 1999 to End-January, 2025

Quintile	Multiple Contraction	Q2	Q3	Q4	Multiple Expansion
Cheap	0.59	0.75	1.06	0.87	0.77
Q2	0.70	0.75	0.86	0.67	0.65
Q3	0.54	0.84	0.81	0.76	0.44
Q4	0.14	0.65	0.64	0.58	0.24
Expensive	0.08	0.24	0.29	0.11	0.42

Source: Trivariate Research

Median Number of Stocks by Quintile of Change (1-Month) and Level Of Price-to-Forward Earnings  
Top 1000 US Equities, Ex-Financials & Real Estate  
End-June, 1999 to End-January, 2025

Quintile	Multiple Contraction	Q2	Q3	Q4	Multiple Expansion
Cheap	50	20	15	18	41
Q2	30	30	27	27	30
Q3	21	31	32	33	25
Q4	17	31	36	35	23
Expensive	21	29	33	28	22

Source: Trivariate Research

## AMONG CHEAP STOCKS, PRIOR MULTIPLE CONTRACTION IS BEST

For stocks in the highest 60% of Free Cash Flow Yield, multiple contraction the previous month seems to result in better subsequent performance than multiple expansion the previous month. Among low Free Cash Flow Yield companies, the previous month change in FCF yield does not distinguish winners from losers the next month (left). We have a relatively small median sample size each month (right).

Sharpe Ratio by Quintile of Change (1-Month) and Level Of Free Cash Flow Yield  
Top 1000 US Equities, Ex-Financials & Real Estate  
End-June, 1999 to End-January, 2025

Quintile	Multiple Contraction	Q2	Q3	Q4	Multiple Expansion
Cheap	0.87	0.76	0.67	0.72	0.52
Q2	0.79	0.95	0.86	0.70	0.62
Q3	0.74	0.74	0.68	0.49	0.44
Q4	0.43	0.30	0.56	0.47	0.52
Expensive	0.31	0.27	0.33	0.17	0.34

Source: Trivariate Research

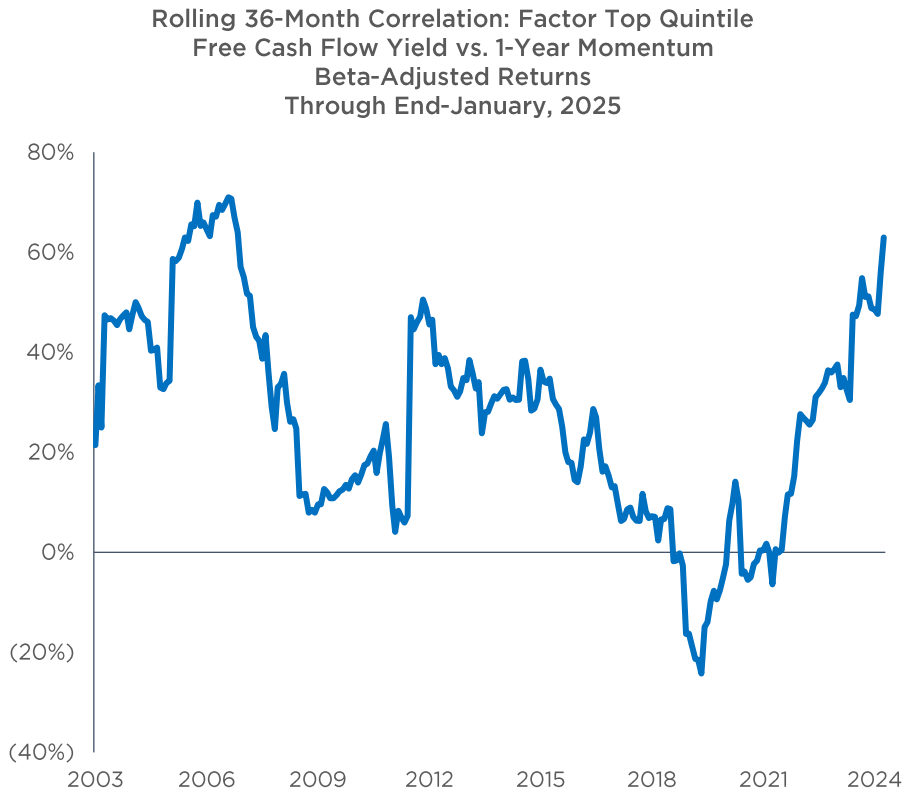
Median Number of Stocks by Quintile of Change (1-Month) and Level Of Free Cash Flow Yield  
Top 1000 US Equities, Ex-Financials & Real Estate  
End-June, 1999 to End-January, 2025

Quintile	Multiple Contraction	Q2	Q3	Q4	Multiple Expansion
Cheap	52	22	12	21	41
Q2	32	34	24	34	30
Q3	20	35	36	40	22
Q4	14	32	49	36	18
Expensive	31	25	25	19	37

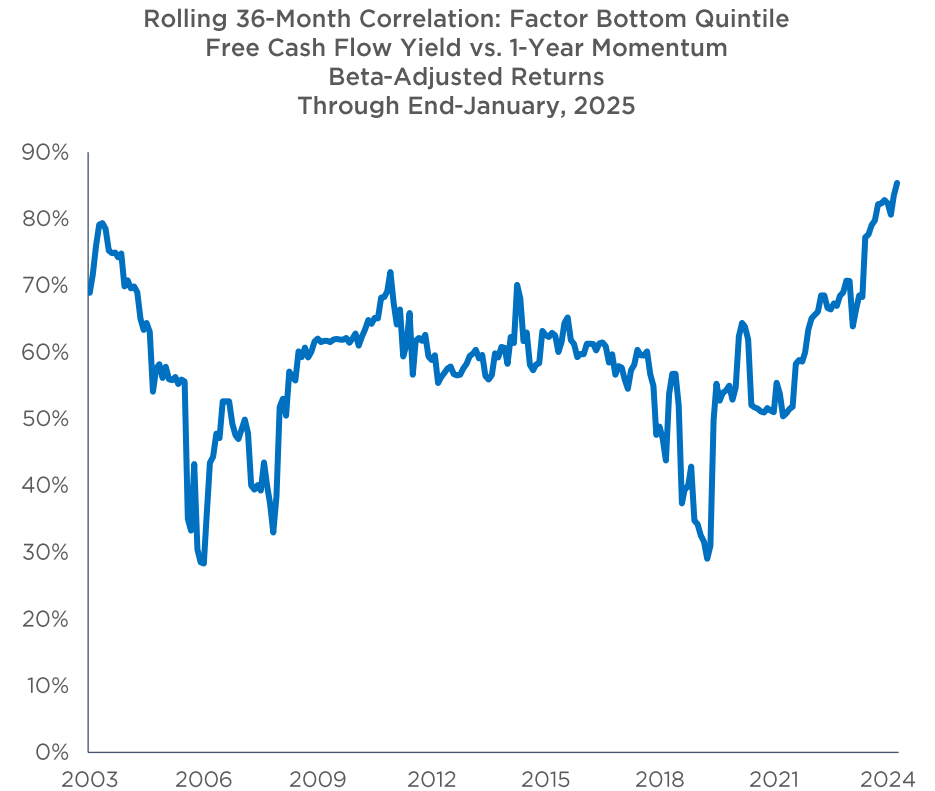
Source: Trivariate Research

# FCF YIELD AND MOMENTUM HAVE THEIR HIGHEST CORR. IN 20 YEARS

Traditional quantitative models have both valuation and momentum factors. The correlation between the two is near a 20-year high. The 36-month rolling correlation between the top quintile on Free Cash Flow Yield and the top quintile in 12-month price momentum (left) is at its highest level since before the Financial Crisis. The correlation is even stronger among bottom quintile stocks. **Valuation and momentum were strongly aligned in 2024.**



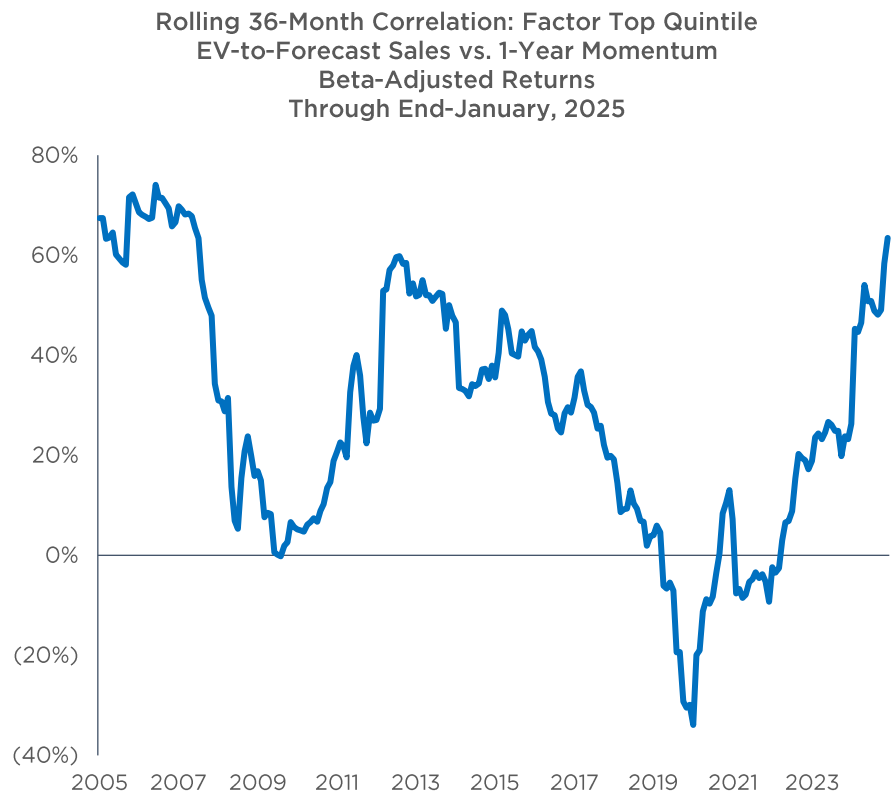
Source: Trivariate Research



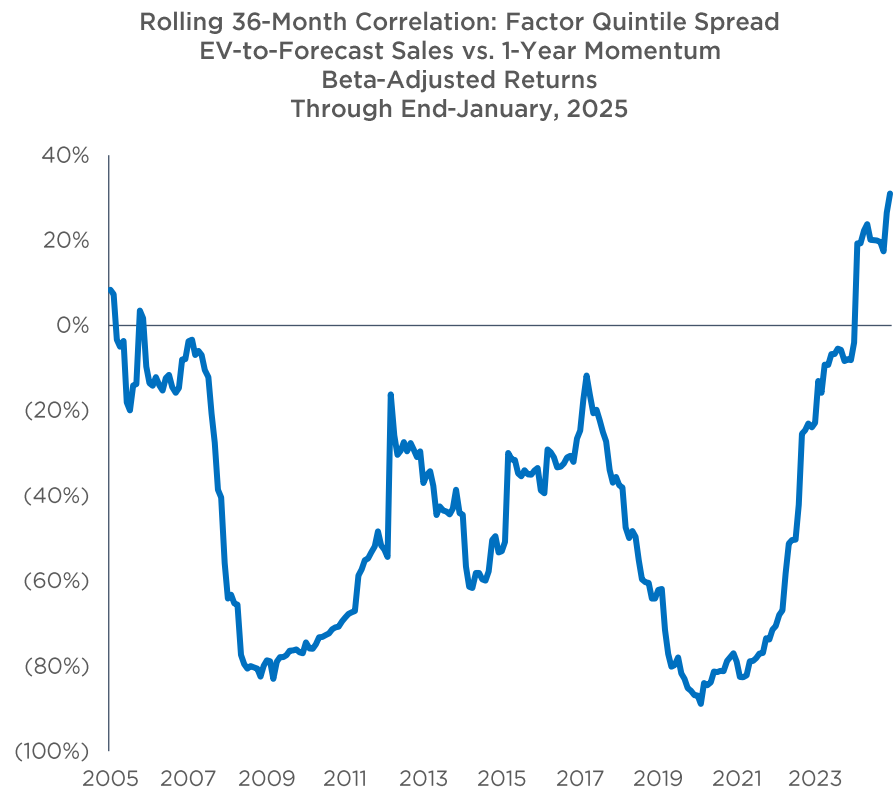
Source: Trivariate Research

# SO DO EV-TO-FORECASTED SALES AND PRICE MOMENTUM

The correlation between EV-to-Forecasted Sales and 12-month momentum is also at 20-year highs for both top (left) and bottom quintile (right) stocks on these metrics. The overall correlation values are slightly lower than for the FCF Yield and Momentum correlations, but still noteworthy.



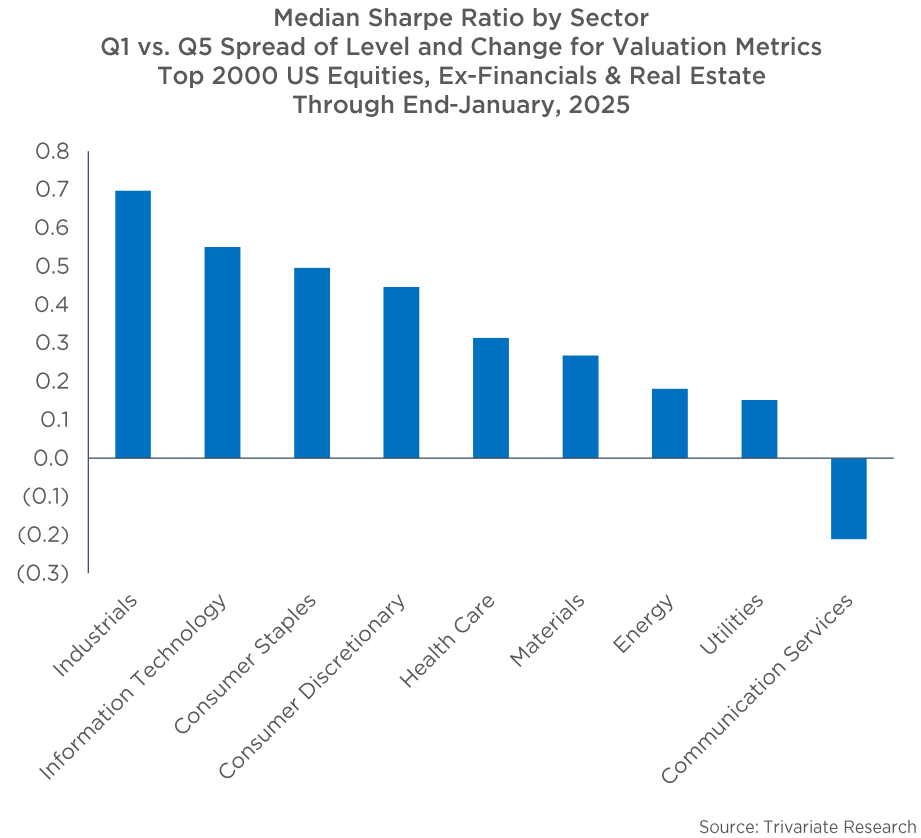
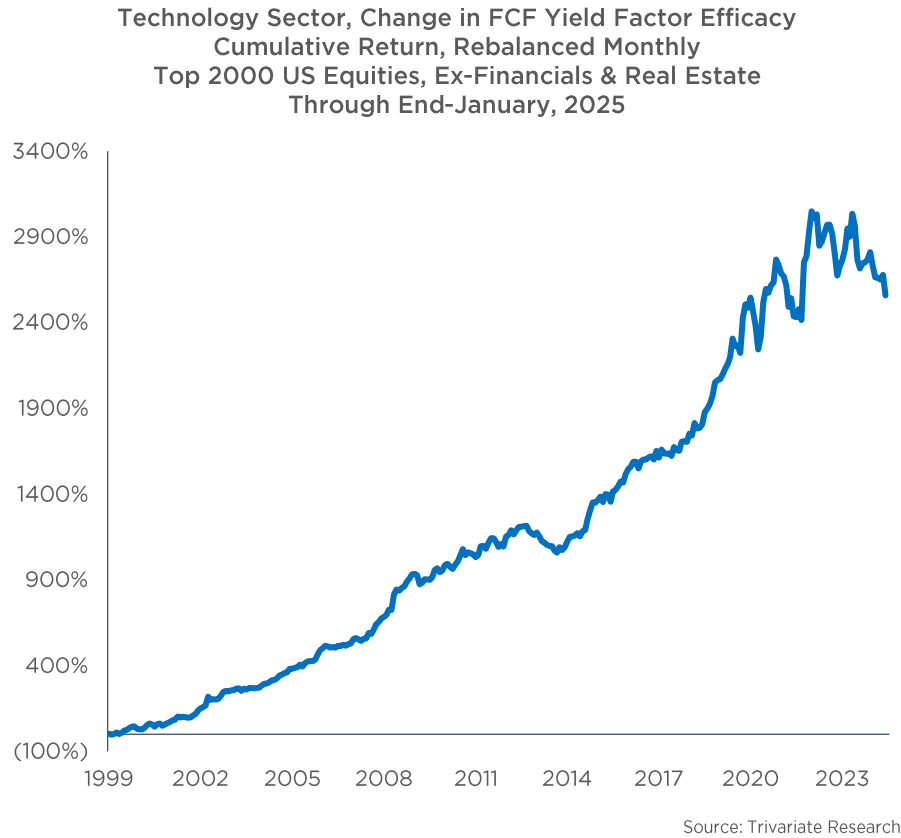
Source: Trivariate Research



Source: Trivariate Research

# INDUSTRIALS IS THE SECTOR WHERE VALUATION WORKS BEST

We looked at nine sectors, and six valuation signals for each, for a total of 54 sector level signal assessments. The highest Sharpe Ratio signal of those 54 metrics was change in Free Cash Flow Yield among Technology stocks (left), though that signal has not worked well in the last year. We took the median Sharpe Ratio of the six different valuation metrics over the last 25 years, by sector, and found that valuation works best among Industrials stocks, and is perverse on average in Communication Services (right).



## QUANTITATIVELY DERIVED VALUATION-BASED BUY IDEAS

Stocks that are high-quality growth in the top quintile of FCF yield or are Industrials in the top quintile of change in Free Cash Flow Yield or change in EV-to-Forecasted sales and not junk are shown below as quantitatively derived long ideas.

### Long High-Quality Growth and Industrials with High Increases in Free Cash Flow Yield As of February 25<sup>th</sup>, 2025

Ticker	Company	Sector	Market Cap (\$B)	1-Month Change in FCF	
				Yield	FCF Yield
GOOGL	Alphabet Inc.	Communication Services	2,149.1	2.3%	7.1%
ANET	Arista Networks Inc	Information Technology	117.1	1.2%	3.1%
GRAB	Grab Holdings Limited	Industrials	18.5	1.5%	4.3%
EME	EMCOR Group, Inc.	Industrials	18.3	1.8%	7.0%
MOH	Molina Healthcare, Inc.	Health Care	17.0	2.7%	3.2%
ZBRA	Zebra Technologies Corporation	Information Technology	15.9	2.4%	6.0%
ALGN	Align Technology, Inc.	Health Care	13.9	2.5%	4.6%
FIX	Comfort Systems USA, Inc.	Industrials	13.0	2.0%	5.7%
WIX	Wix.com Ltd.	Information Technology	11.2	1.0%	4.3%
GMED	Globus Medical, Inc.	Health Care	10.9	1.6%	4.4%
MANH	Manhattan Associates, Inc.	Information Technology	10.9	1.1%	2.6%
MTZ	MasTec, Inc.	Industrials	10.0	2.0%	10.0%
QGEN	Qiagen N.V.	Health Care	8.6	1.3%	5.9%
DLB	Dolby Laboratories, Inc.	Information Technology	7.9	1.7%	7.9%
ONTO	Onto Innovation Inc.	Information Technology	7.5	0.9%	3.0%
CACI	CACI International Inc	Industrials	7.4	1.1%	6.2%
PEGA	Pegasystems Inc.	Information Technology	6.7	1.5%	5.0%
PSN	Parsons Corporation	Industrials	6.4	1.2%	7.4%

Source: Trivariate Research



## QUANTITATIVELY DERIVED VALUATION-BASED SHORT IDEAS

Junk stocks in the bottom decile of Enterprise Value-to-Forecasted Sales or Technology stocks with the largest decile decrease in FCF yield among growth stocks are shown below as quantitatively-derived short ideas.

Short Expensive Junk Stocks and Tech. or Growth Stocks with Large Decrease in Free Cash Flow Yield  
As of February 25<sup>th</sup>, 2025

Ticker	Company	Sector	Market Cap (\$B)	1-Month Change in FCF	
				Yield	FCF Yield
IBM	International Business Machines	Information Technology	238.3	(0.9%)	5.2%
BA	The Boeing Company	Industrials	133.7	(5.2%)	(10.7%)
LRCX	Lam Research Corporation	Information Technology	103.1	(0.8%)	3.9%
MRVL	Marvell Technology, Inc.	Information Technology	80.5	0.4%	1.8%
MSTR	MicroStrategy Incorporated	Information Technology	64.5	(0.1%)	(0.1%)
NXPI	NXP Semiconductors N.V.	Information Technology	58.0	(1.5%)	3.5%
EA	Electronic Arts Inc.	Communication Services	34.3	(1.0%)	5.5%
MCHP	Microchip Technology Incorporated	Information Technology	32.4	(2.0%)	3.0%
FTAI	FTAI Aviation Ltd.	Industrials	13.6	3.0%	(6.5%)
PFGC	Performance Food Group Company	Consumer Staples	12.8	(0.8%)	4.2%
PPC	Pilgrim's Pride Corporation	Consumer Staples	12.8	(2.0%)	11.8%
TKO	TKO Group Holdings, Inc.	Communication Services	12.7	(0.1%)	5.2%
RBRK	Rubrik, Inc.	Information Technology	11.8	(0.1%)	(0.7%)
SAIA	Saia, Inc.	Industrials	10.9	(1.2%)	(4.2%)
RKLB	Rocket Lab USA, Inc.	Industrials	10.1	(0.5%)	(1.4%)
DOX	Amdocs Limited	Information Technology	10.0	(0.8%)	5.6%
TEM	Tempus AI, Inc.	Health Care	9.6	0.4%	(2.3%)

Source: Trivariate Research

# DISCLOSURES

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