TRIVARIATE RESEARCH

DO YOU KNOW THESE 4 POINTS ABOUT GROWTH STOCKS?

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OUTLINE

Background: We highlight and update four of the most crucial areas of our research for growth investors. This includes our work on quality, beta, and forecasted growth, how even when you are successful it can be challenging, the current major growth themes and how to think about risk management of them, and some extreme valuations and what history tells us about these stocks.

Point 1: High quality and low-beta growth stocks outperform, and low quality and high beta growth stocks strongly underperform.

Point 2: We have identified six areas of growth: AI Semiconductors, AI Software, Power / Utilities, Electrification Industrials, Healthcare Services, and Housing / Building Products. Our custom baskets are all forecasted to grow faster than the overall market. We think it is crucial growth portfolio managers track the correlation of these baskets.

Point 3: Extreme valuations: Costco's ascent to 50x price-to-forward earnings caused us to analyze similar stocks, and on average this threshold becomes a problem six-to-nine months after a stock's initial ascent to that valuation level. There is no precedent for any company to grow at the rate implied by Palantir's current enterprise-value-to-forecasted sales multiple.

Point 4: The Pain of 10 Baggers: Even when you own stocks that go up 10x over a five-year period, you will likely experience a significant drawdown.
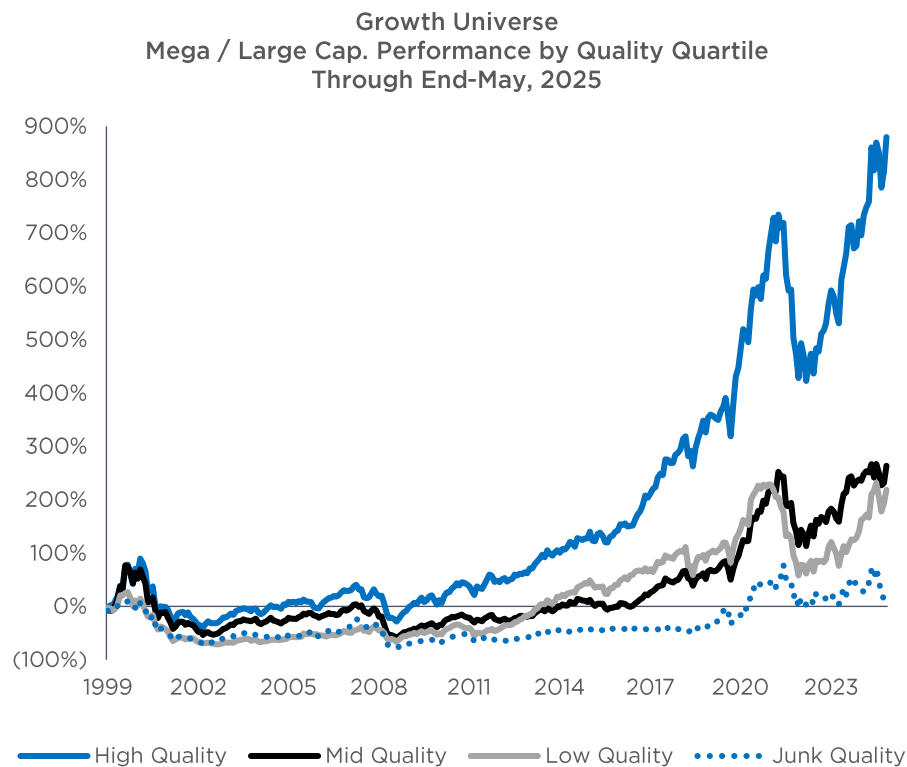
POINT 1: OWN HIGH-QUALITY GROWTH

High-quality and low growth-beta stocks outperform: Over the long term, the highest quality quartile, especially among low growth-beta growth stocks, has delivered the strongest returns, while lower quality and high beta stocks have significantly underperformed.

Quality and margin expansion matter more recently: Since 2020, gross margin growth has become a key differentiator of stock performance, especially for SMID-cap stocks in the lower half of quality and large caps with high margins.
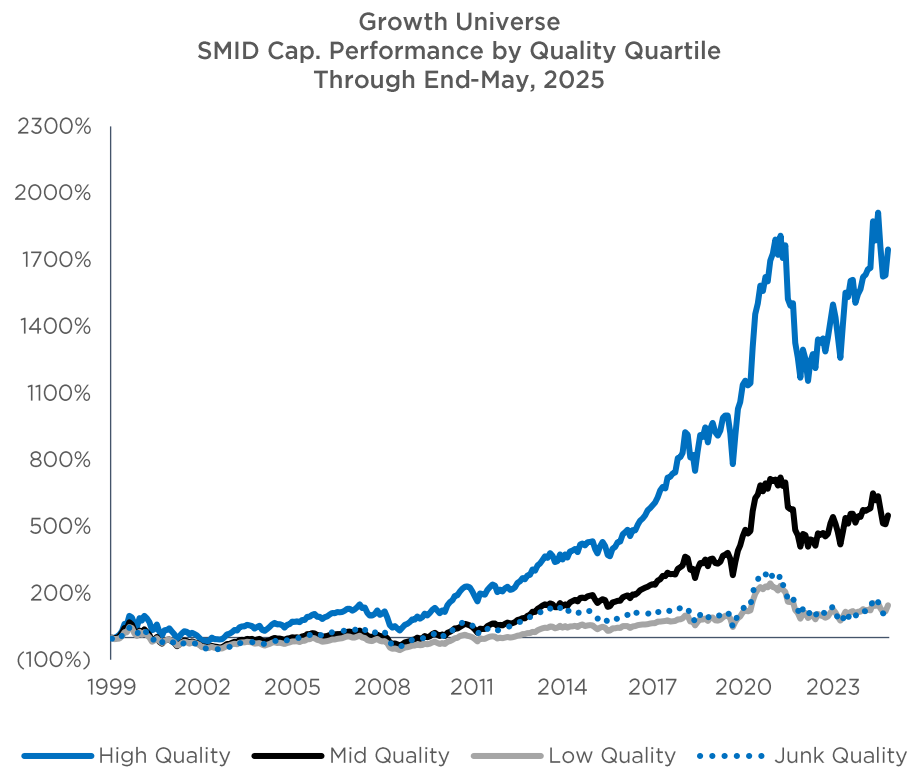
Correction strategy favors conservative growth: During market downturns, investors should favor lower-growth, lower-beta, high-margin stocks with strong balance sheets and higher free cash flow yields for better downside protection.

AMONG GROWTH STOCKS, HIGH-QUALITY IS BEST

While there was a significant drawdown in mega / large-cap quality growth stocks from 2021 through 2022, the highest quality quartile has performed the best over the long-term. Clearly, avoiding the lowest quality quartile has been prudent among mega / large-cap quality stocks (left). The same is true for SMID-cap quality growth, although the performance of the 2nd highest quality quartile (mid) has been in line with the highest quality quartile over the last five years (right).

Growth Universe
Mega / Large Cap. Performance by Quality Quartile
Through End-May, 2025

Legend: High Quality, Mid Quality, Low Quality, Junk Quality

Source: Trivariate Research

Growth Universe
SMID Cap. Performance by Quality Quartile
Through End-May, 2025

Legend: High Quality, Mid Quality, Low Quality, Junk Quality

Source: Trivariate Research

HIGH-QUALITY / LOW-BETA GROWTH STOCKS OUTPERFORM

We defined "growth beta" as beta vs. the Nasdaq – NOT the S&P500 to make it more relevant for Growth investors. High growth-beta Growth stocks in the bottom half of quality are down in absolute terms over the last 24 years! By far the best performing bucket are low growth-beta Growth stocks that are high quality – up over 4500% during that timeframe. If Growth managers are going to own high growth-beta Growth stocks, skewing to the highest quality quartile is crucial (black bar 2nd from left below, <u>as the other high beta buckets perform very poorly.</u>

Performance of Growth Stocks by Growth Beta and Substance
1999 Through End-May, 2025

Source: Trivariate Research
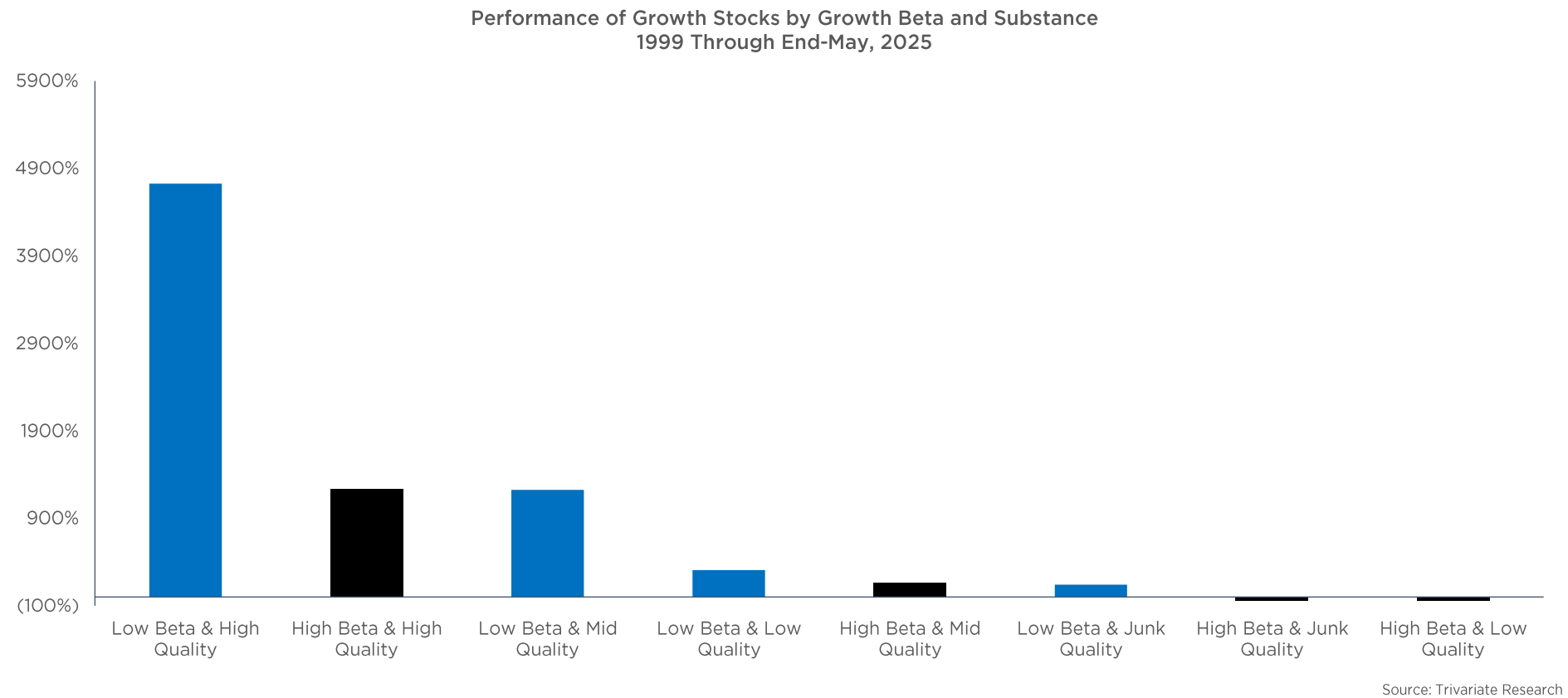
YOU DON'T WANT TO OWN VERY HIGH GROWTH STOCKS ON AVG.

Below we show the quintiles of growth beta (Q1 is low beta and Q5 is high beta) and the "style score" that we used to categorize stocks into growth and value (Q1 is least growth and Q5 is most growth). We see that within the growth universe, less growth and low growth beta stocks are best, and more growth and high growth beta stocks perform the worst. <u>Longing relatively less growth and lower beta and shorting more growth and higher beta seems a tried and tested growth stock pair trade.</u>
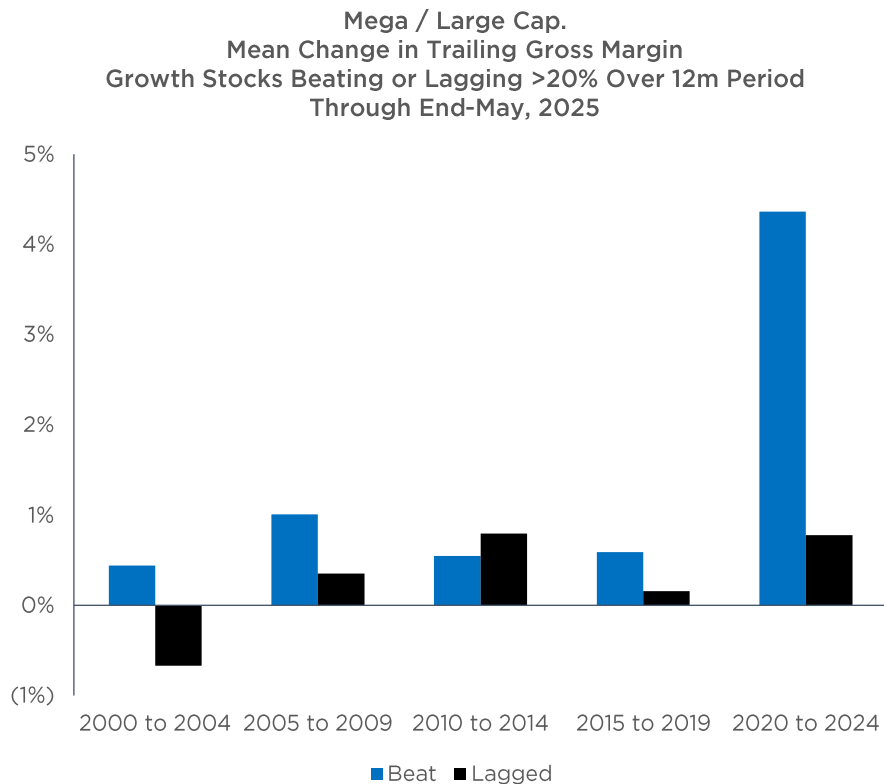
Equal-Weighted Growth Stock Performance
Quintile in Growth Beta (Columns) and Quintile in Style Score (Rows)
From 1999 to End-May, 2025

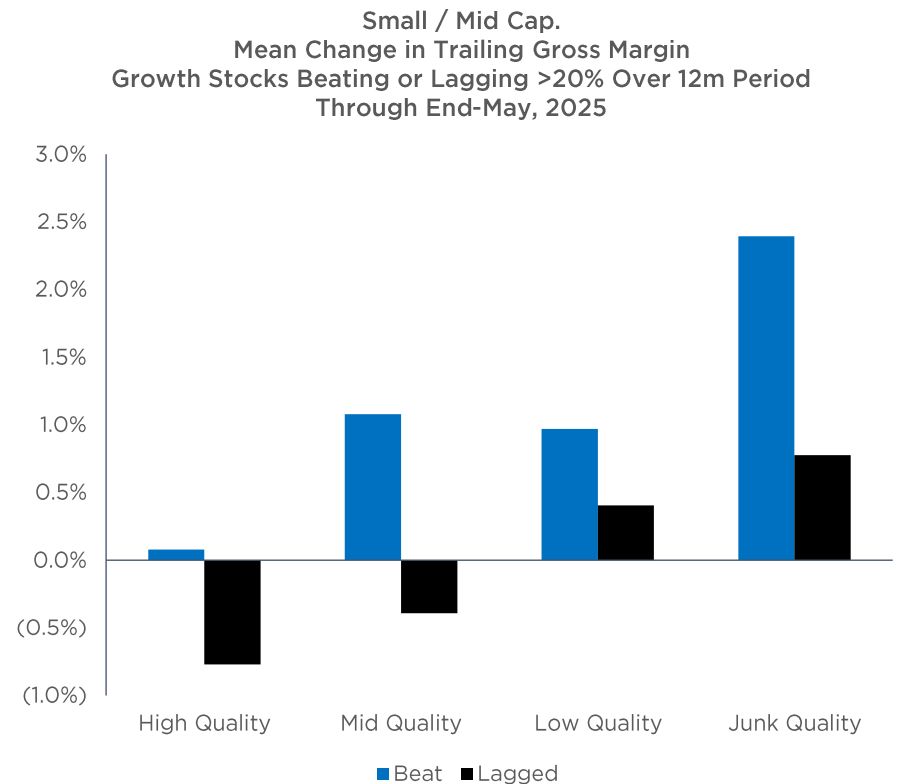| Style Score \ Growth Beta	Q5 (High Beta)	Q4	Q3	Q2	Q1 (Low Beta)
Q1	(38%)	220%	226%	623%	661%
Q2	(23%)	406%	180%	628%	843%
Q3	83%	418%	544%	563%	1837%
Q4	139%	491%	720%	1746%	1633%
Q5	82%	219%	637%	1092%	1991%

Source: Trivariate Research

TRIVARIATE RESEARCH

MARGINS HISTORICALLY DID NOT MATTER MUCH BUT THEY DO NOW

There were historical periods where changes in gross margins were not particularly relevant to identifying big winners / losers. In fact, from 2010-2014, big losers had more gross margin growth than big winners among mega / large caps. **However, since 2020, big winners have shown an average of over 4% year-over-year gross margin growth** (left). Among SMID cap, gross margin expansion has mattered for stocks in the bottom-half of quality more than the top half of quality (right). Given tariffs, pricing, inventory, and other issues, gross margins likely matter in the 2H of 2025.

Mega / Large Cap.
Mean Change in Trailing Gross Margin
Growth Stocks Beating or Lagging >20% Over 12m Period
Through End-May, 2025

Source: Trivariate Research

Small / Mid Cap.
Mean Change in Trailing Gross Margin
Growth Stocks Beating or Lagging >20% Over 12m Period
Through End-May, 2025

Source: Trivariate Research

AVOID HIGH FORECASTED GROWTH, HIGH BETA GROWTH STOCKS

We evaluated which variables are typically important for growth investors to focus on for security selection during market corrections. Our conclusions are to avoid fast growing stocks, as high forecasted one- and two-year revenue growth companies materially lag those growth stocks forecasted to have lower growth. High beta also lags. This is consistent with our prior work on growth investing. High margin companies outperform. Valuation tends to matter in a correction, with free cash flow yield more effective for stock selection than price-to-forward earnings or EV-to-gross profit. Few growth stocks have high debt, but stocks with better balance sheets go down less in downturns.

Best Performing Signals in Growth Universe
Mean Return During S&P500 Drawdowns >10% That Last At Least 1 Month (n=11)
1999 to End-May, 2025

Conclusion	Signal	Average Long Quintile Return	Average Short Quintile Return	Difference
Avoid Fast Growth	2-Year Forecast Revenue Growth	(27%)	(42%)	14%
	Forecast Revenue Growth	(28%)	(41%)	13%
Avoid High Beta	Beta	(20%)	(39%)	19%
Avoid Bad Balance Sheets	Distance-to-Default	(23%)	(37%)	14%
Focus on Profits	Operating Margin	(25%)	(37%)	12%
	Net Margin	(26%)	(37%)	12%
	EBITDA Margin	(26%)	(37%)	11%
Avoid Expensive	Free Cash Flow Yield	(22%)	(38%)	16%
	Price-to-Forward Earnings	(28%)	(40%)	11%
	EV-to-Gross Profit	(26%)	(36%)	10%

Source: Trivariate Research

POINT 2: FOCUS ON THESE SIX IMPORTANT GROWTH THEMES

We have identified 6 growth themes, with custom baskets, forecasted revenue growth vs. the market, and performance in absolute terms, and relative to each other.

Earlier this year, it certainly felt like AI Semiconductors were highly correlated to both AI Software and Electrification Industrials. NVDA and ETN seemed like they were both up every day. In fact, the baskets have a daily return correlated of a whopping 0.83. There is essentially zero diversification among the favorite stocks in different growth-theme baskets. The correlation of returns between AI Software and Utilities / Power has been highly volatile over the past two years. The baskets had a whopping 0.86 correlation at the end of April, but over the last month the correlation of returns between the two baskets has now fallen to 0.5. Similarly, AI Semiconductors were very strongly correlated to Utilities / Power earlier this summer (0.84 in mid April) as most of our old Semiconductor buddies have become self-anointed Power experts. Interestingly though, the recent correlation has also broken down. Utilities / Power now seem to be more diversifying from AI Software and AI Semiconductors, than the AI Semis are from AI Software, though that can surely change quickly.

If investors can find names on our Healthcare Services list they like, these are likely to be the most diversifying of the growth themes today.

THE AI SEMICONDUCTOR BASKET

Below are the constituents in our AI Semiconductor basket as of end-May 2025. We identified ten Semiconductor stocks whose recent earnings conference calls had the most mentions of "AI" related keywords. These words include phrases like LLM, GPU, and other phrases that indicate the company is focused on AI.
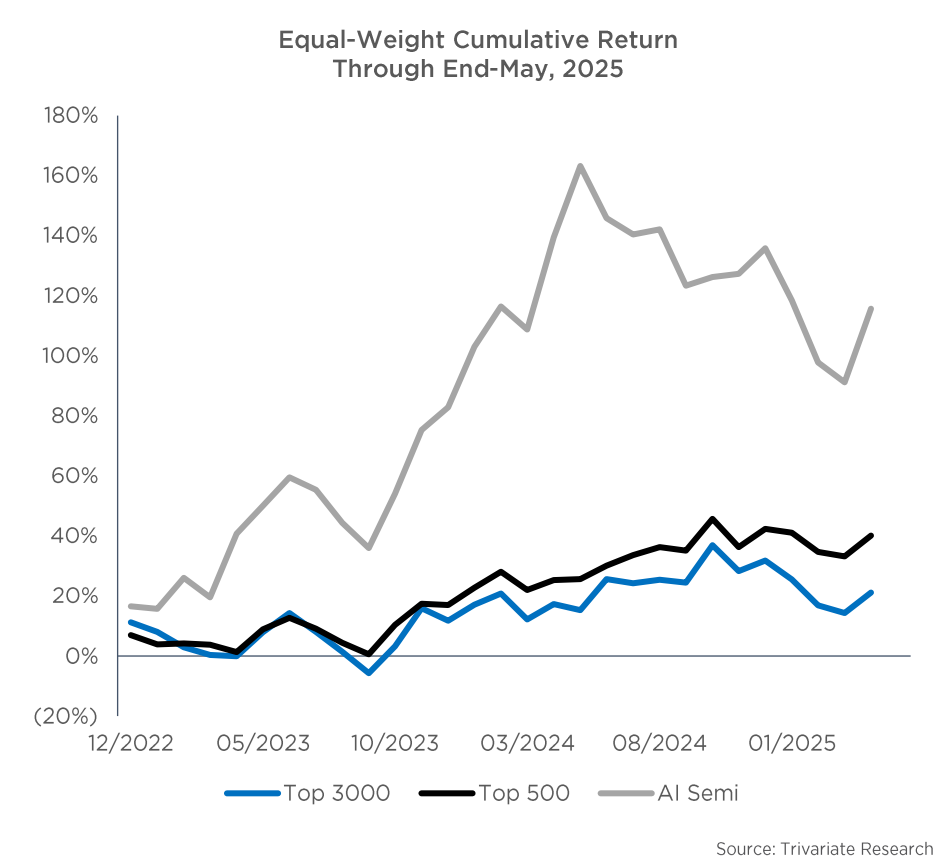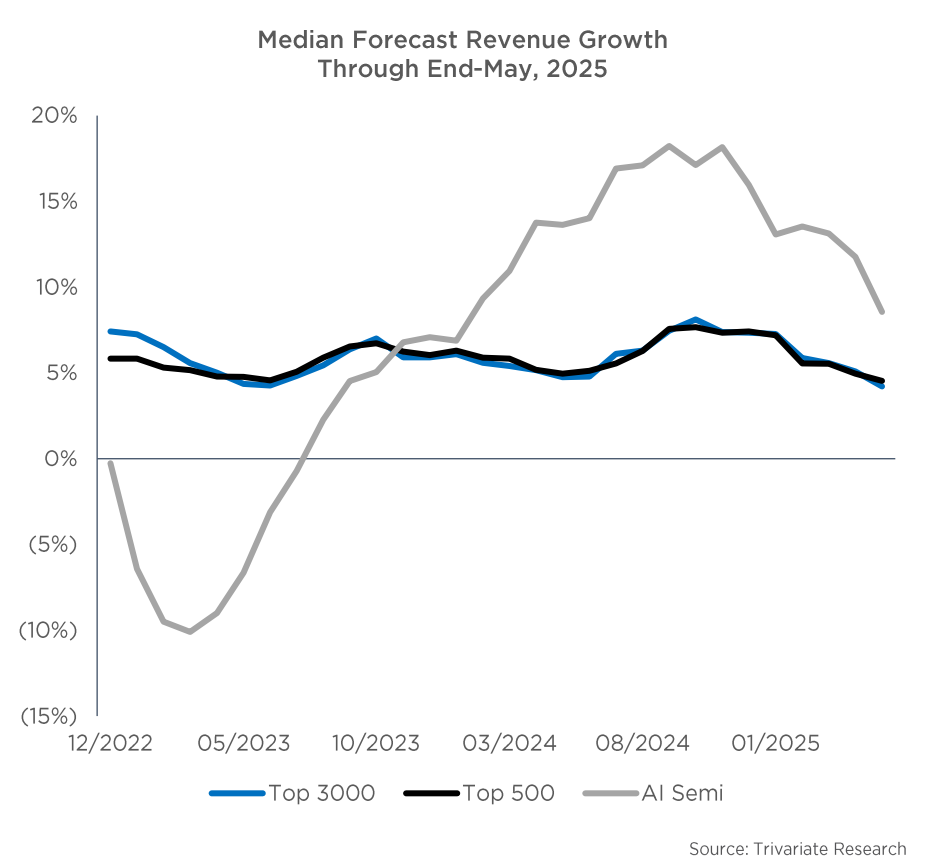
AI Semiconductor Basket Stocks
As of End-May, 2025

Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
NVDA	NVIDIA Corporation	Semiconductors	3,297.17	33.2%	840.8%
AVGO	Broadcom Inc.	Semiconductors	1,138.20	18.4%	362.5%
AMD	Advanced Micro Devices, Inc.	Semiconductors	179.54	14.3%	77.0%
QCOM	QUALCOMM Incorporated	Semiconductors	158.33	4.0%	40.4%
AMAT	Applied Materials, Inc.	Semiconductor Materials & Equipment	125.79	4.0%	65.1%
MU	Micron Technology, Inc.	Semiconductors	105.57	35.6%	98.9%
LRCX	Lam Research Corporation	Semiconductor Materials & Equipment	103.34	9.3%	101.2%
KLAC	KLA Corporation	Semiconductor Materials & Equipment	100.09	7.8%	107.4%
TER	Teradyne, Inc.	Semiconductor Materials & Equipment	12.61	(0.5%)	(8.0%)
AOSL	Alpha and Omega Semiconductor Limited	Semiconductors	0.63	2.5%	(25.3%)

Source: Trivariate Research

EXPECTATIONS ARE FOR STRUCTURALLY HIGHER SEMIS GROWTH

Nvidia's (Ticker: NVDA) big upward sales revision in May of 2023 started a trend where the median AI Semiconductor company is now growing faster than the broader market, after coming out of a sharp post-COVID inventory correction in 2022. Current expectations for the median stock in the AI Semiconductor basket (left) are for 8.5% revenue growth over the next 12 months – way down from 17% a year ago. Despite that, performance has been quite strong recently, recovering from the harsh sell-off in the second half of last year (right). The major bull case for US equities is that we will see effective AI proof cases in 2026.

Median Forecast Revenue Growth Through End-May, 2025

Legend: Top 3000, Top 500, AI Semi

Source: Trivariate Research

Equal-Weight Cumulative Return Through End-May, 2025

Legend: Top 3000, Top 500, AI Semi

Source: Trivariate Research

THE AI SOFTWARE BASKET

Below are the constituents in our AI Software basket as of end-May 2025. We identified 20 Software stocks whose recent earnings conference calls had the most mentions of "AI" related keywords.
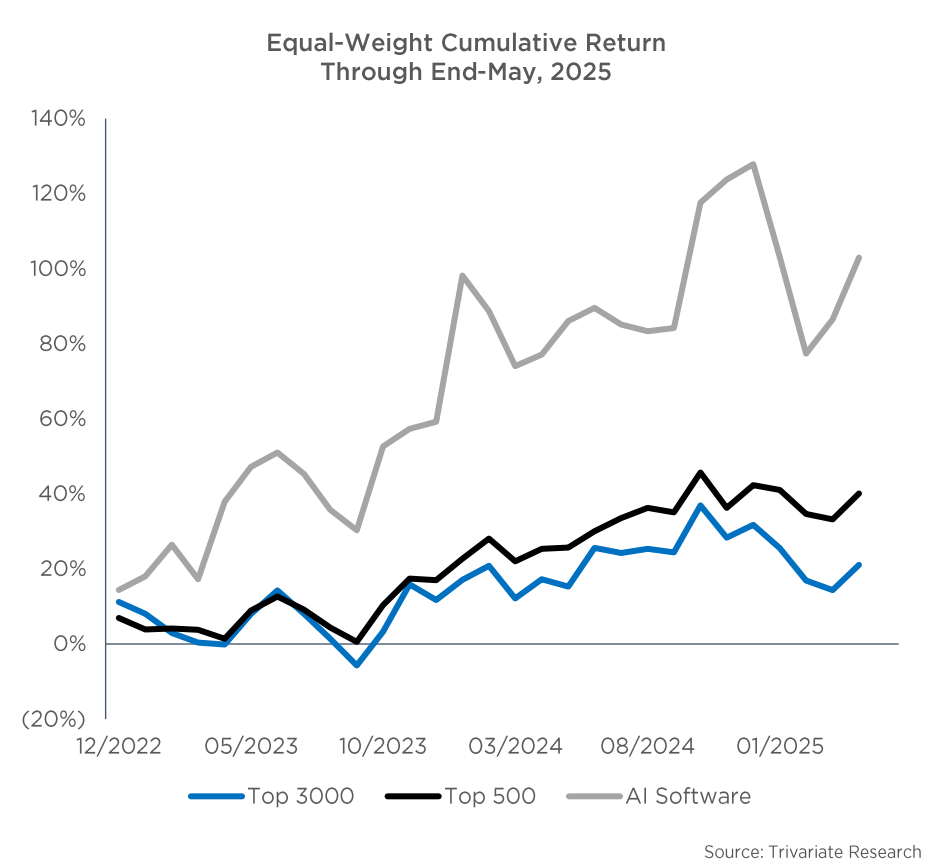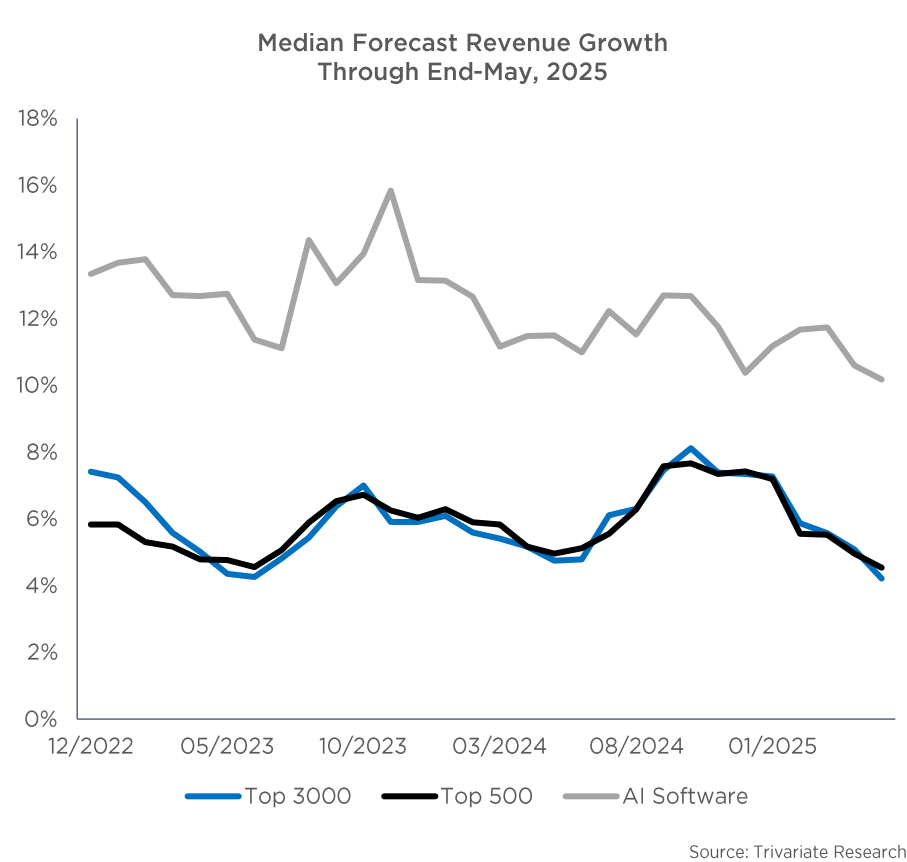
AI Software Basket Stocks
As of End-May, 2025

Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
MSFT	Microsoft Corporation	Systems Software	3421.65	17.2%	96.5%
ORCL	Oracle Corporation	Systems Software	464.18	17.0%	110.7%
INTU	Intuit Inc.	Application Software	210.18	15.4%	99.8%
NOW	ServiceNow, Inc.	Systems Software	209.75	13.5%	160.7%
ADBE	Adobe Inc.	Application Software	176.91	6.5%	19.9%
CDNS	Cadence Design Systems, Inc.	Application Software	78.38	6.5%	82.1%
SNPS	Synopsys, Inc.	Application Software	71.99	12.0%	46.0%
ZM	Zoom Communications Inc.	Application Software	24.58	2.3%	20.0%
ESTC	Elastic N.V.	Application Software	8.53	12.2%	58.6%
PEGA	Pegasystems Inc.	Application Software	8.40	(1.7%)	184.5%
GTLB	GitLab Inc.	Systems Software	7.51	23.7%	0.2%
INFA	Informatica Inc.	Application Software	7.29	2.4%	47.9%
BOX	Box, Inc.	Application Software	5.48	6.0%	22.4%
ASAN	Asana, Inc.	Application Software	4.22	8.4%	33.5%
SOUN	SoundHound AI, Inc.	Application Software	4.06	60.8%	463.3%
AI	C3.ai, Inc.	Application Software	3.53	19.8%	123.1%
ZETA	Zeta Global Holdings Corp.	Application Software	3.10	15.5%	58.3%
CXM	Sprinklr, Inc.	Application Software	2.18	3.3%	0.5%
FIVN	Five9, Inc.	Application Software	2.02	6.3%	(61.3%)
VRNT	Verint Systems Inc.	Application Software	1.06	5.4%	(52.5%)

Source: Trivariate Research

TRIVARIATE RESEARCH

AI SOFTWARE GROWTH EXPECTATIONS ARE HIGHER THAN AI SEMIS

AI Software stocks are forecasted to grow a median of 10% over the next 12 months, higher than the AI Semiconductor basket (left), and the broader market. The stocks have performed extremely well in the recent market rally (right).

Median Forecast Revenue Growth
Through End-May, 2025

Legend: Top 3000 · Top 500 · AI Software

Source: Trivariate Research

Equal-Weight Cumulative Return
Through End-May, 2025

Legend: Top 3000 · Top 500 · AI Software

Source: Trivariate Research

POWER AND UTILITIES BASKET

Below are the constituents in our Power and Utilities basket as of end-May 2025. We identified 15 Utilities stocks that have mentioned at least one "AI-related" keyword in their recent earnings conference calls.
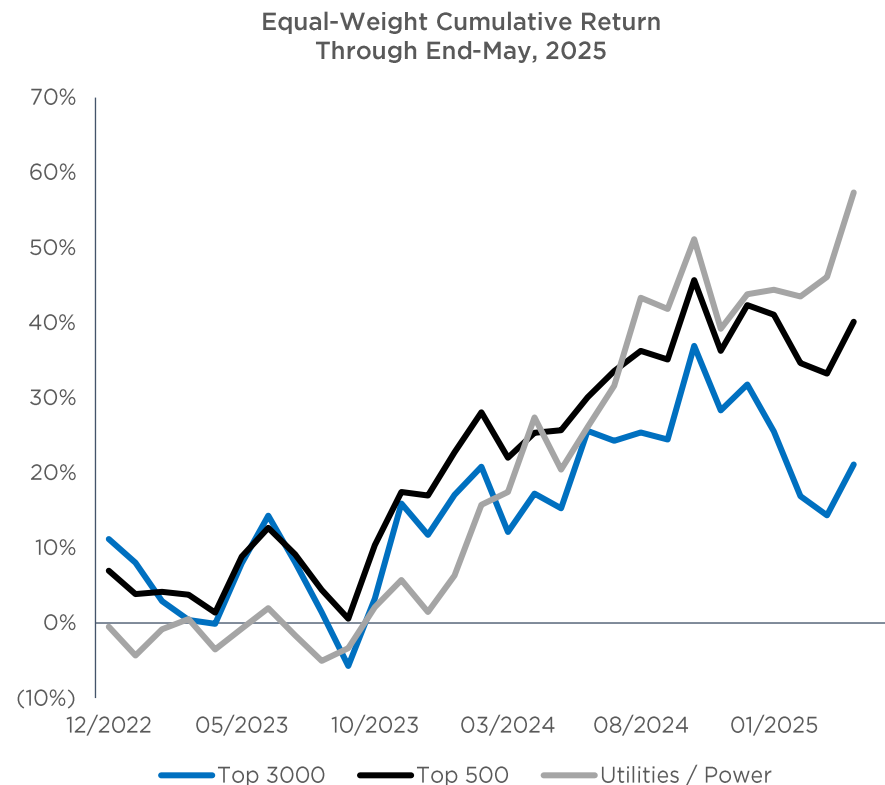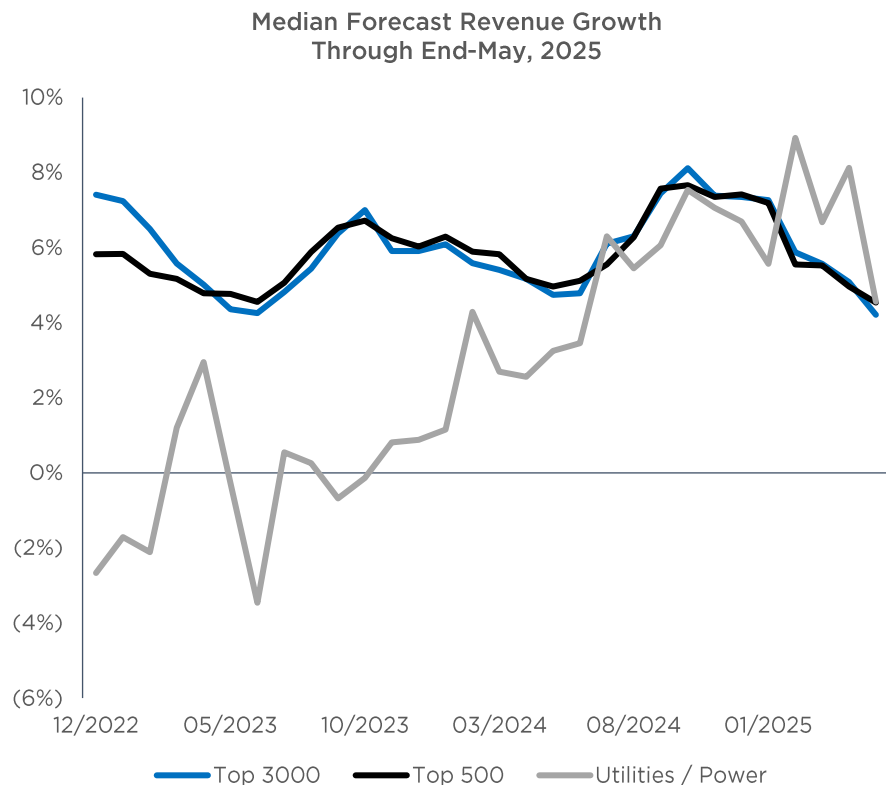
Power And Utilities Basket Stocks
As of End-May, 2025

Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
CEG	Constellation Energy Corporation	Electric Utilities	95.95	(5.1%)	271.7%
VST	Vistra Corp.	Independent Power Producers & Energy Traders	54.49	11.5%	650.5%
SRE	Sempra	Multi-Utilities	51.25	9.4%	8.7%
PWR	Quanta Services, Inc.	Construction & Engineering	50.77	8.4%	143.3%
EXC	Exelon Corporation	Electric Utilities	44.24	2.4%	11.3%
PEG	Public Service Enterprise Group Incorporated	Multi-Utilities	40.43	3.5%	44.4%
XEL	Xcel Energy Inc.	Electric Utilities	40.43	9.7%	7.6%
PCG	PG&E Corporation	Electric Utilities	37.10	2.9%	2.9%
WEC	WEC Energy Group, Inc.	Multi-Utilities	34.29	4.6%	25.3%
NRG	NRG Energy, Inc.	Electric Utilities	30.48	3.0%	435.4%
PPL	PPL Corporation	Electric Utilities	25.69	1.8%	28.6%
NFG	National Fuel Gas Company	Gas Utilities	7.46	27.4%	42.4%
AES	The AES Corporation	Independent Power Producers & Energy Traders	7.18	(0.6%)	(60.6%)
IDA	IDACORP, Inc.	Electric Utilities	6.43	6.3%	17.7%
POR	Portland General Electric Company	Electric Utilities	4.64	4.7%	(4.1%)

Source: Trivariate Research

UTILITIES / POWER NOW GROW AT THE OVERALL MARKET RATE

After growing much slower than the market in 2023, the Utilities / Power complex is now forecasted to grow meaningfully faster – roughly in-line with the broader market – over the next 12-months (left). Despite the recent reduction in the outlook for the median stock's growth, this cohort has strongly rallied of late (right).

Median Forecast Revenue Growth
Through End-May, 2025

Equal-Weight Cumulative Return
Through End-May, 2025

Legend: Top 3000, Top 500, Utilities / Power

Source: Trivariate Research

Source: Trivariate Research

HEALTHCARE SERVICES BASKET

We isolated 20 Healthcare Providers & Services stocks, that are neither micro-cap nor value and are in the top tercile of forecasted revenue growth.

Healthcare Services Basket Stocks
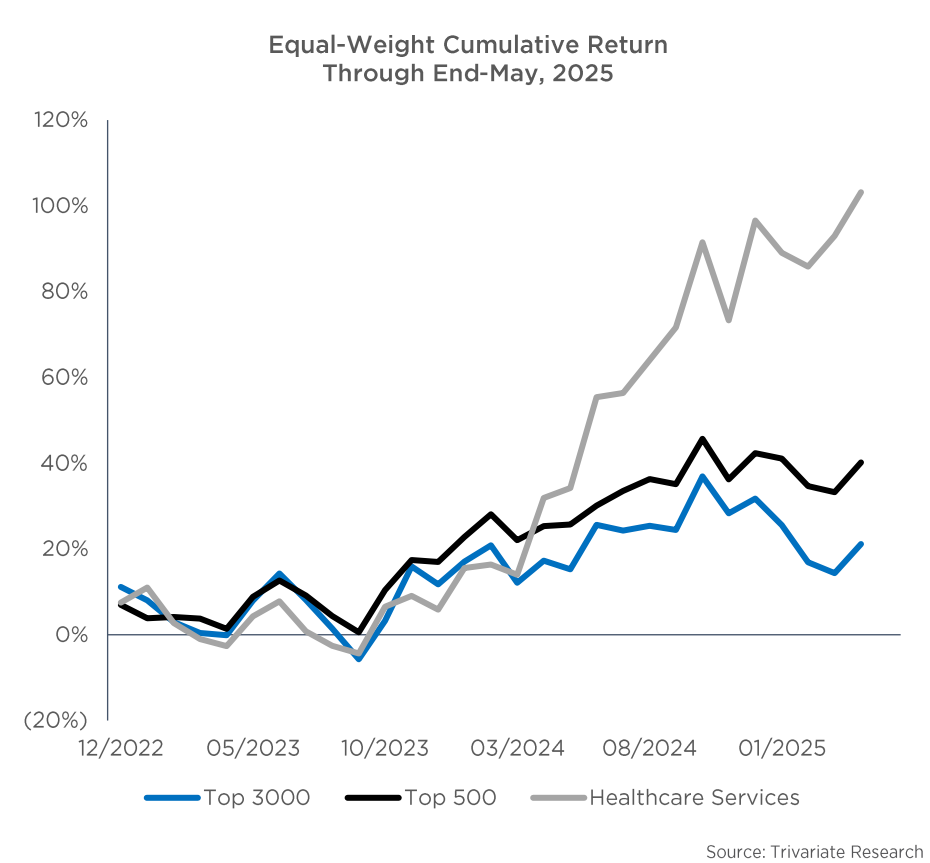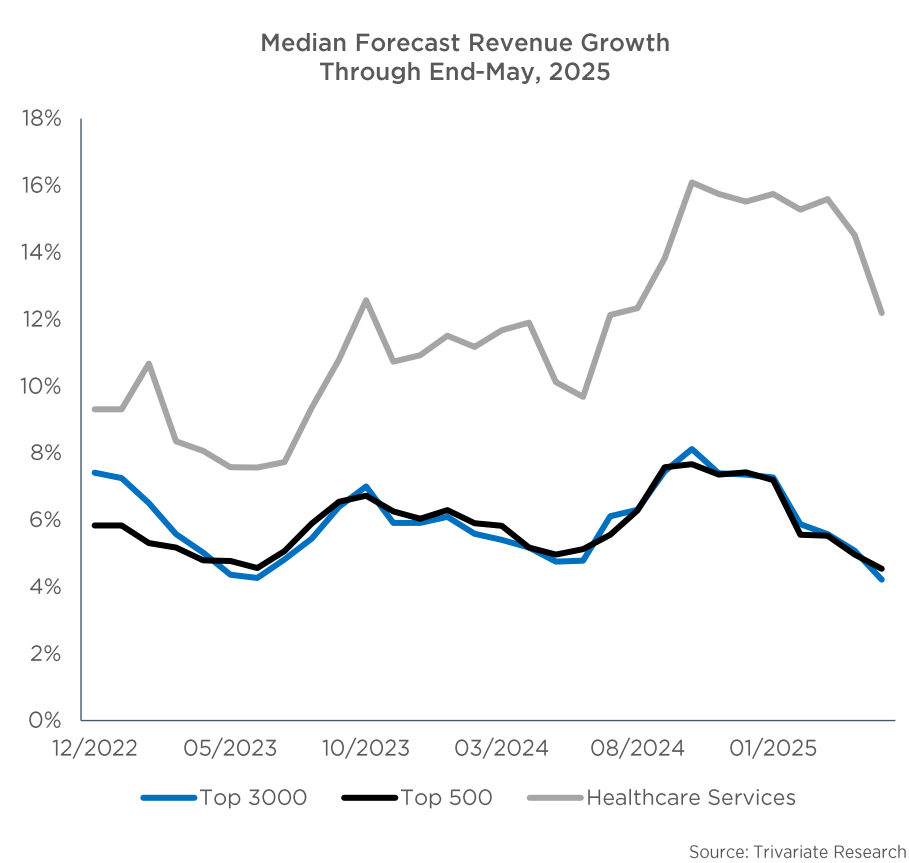### As of End-May, 2025

Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
UNH	UnitedHealth Group Incorporated	Managed Health Care	273.87	9.8%	(40.5%)
MCK	McKesson Corporation	Health Care Distributors	90.02	13.1%	94.8%
CAH	Cardinal Health, Inc.	Health Care Distributors	36.86	10.1%	111.2%
CNC	Centene Corporation	Managed Health Care	28.08	17.4%	(33.0%)
MOH	Molina Healthcare, Inc.	Managed Health Care	16.53	9.8%	(10.0%)
HIMS	Hims & Hers Health, Inc.	Health Care Services	12.66	31.5%	785.6%
HQY	HealthEquity, Inc.	Managed Health Care	8.72	8.5%	66.8%
ENSG	The Ensign Group, Inc.	Health Care Facilities	8.40	11.1%	57.2%
GH	Guardant Health, Inc.	Health Care Services	5.03	14.5%	33.2%
ALHC	Alignment Healthcare, Inc.	Managed Health Care	3.04	26.5%	31.9%
CON	Concentra Group Holdings Parent, Inc.	Health Care Facilities	2.77	10.1%	(7.3%)
LFST	LifeStance Health Group, Inc.	Health Care Services	2.31	10.2%	19.0%
WGS	GeneDx Holdings Corp.	Health Care Services	2.03	11.5%	387.9%
ADUS	Addus HomeCare Corporation	Health Care Services	2.01	15.2%	11.8%
CLOV	Clover Health Investments, Corp.	Managed Health Care	1.60	25.3%	241.0%
ASTH	Astrana Health, Inc.	Health Care Services	1.24	15.5%	(45.6%)
USPH	U.S. Physical Therapy, Inc.	Health Care Facilities	1.14	8.9%	(3.9%)
PNTG	The Pennant Group, Inc.	Health Care Services	0.99	12.9%	162.6%
NEO	NeoGenomics, Inc.	Health Care Services	0.94	11.1%	(22.4%)
NUTX	Nutex Health Inc.	Health Care Services	0.93	20.1%	(56.2%)

Source: Trivariate Research

REV. EXPECTATIONS ARE 12% FOR HEALTHCARE SERVICES BASKET

Our Healthcare Services basket is now forecasted to grow its 12-month forward revenue at 12%, the highest rate since the beginning of 2023 (left). The basket performed well in 2023 and has outperformed the market strongly over the last two years, belying the headlines of UNH, and the general view of the sector.

Median Forecast Revenue Growth
Through End-May, 2025

Equal-Weight Cumulative Return
Through End-May, 2025

Source: Trivariate Research

Source: Trivariate Research

HOUSING BASKET

We found 8 stocks in the Homebuilding & Building Products sub-industry that are neither micro-cap nor value stocks and are in the top tercile of forecasted revenue growth.
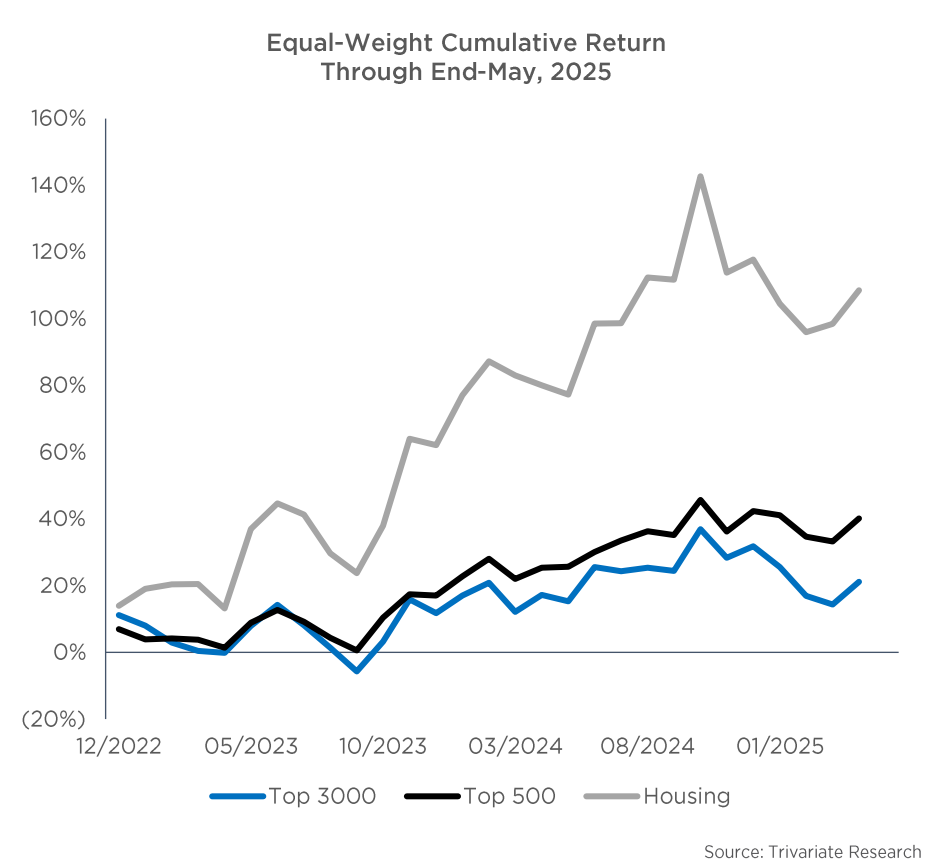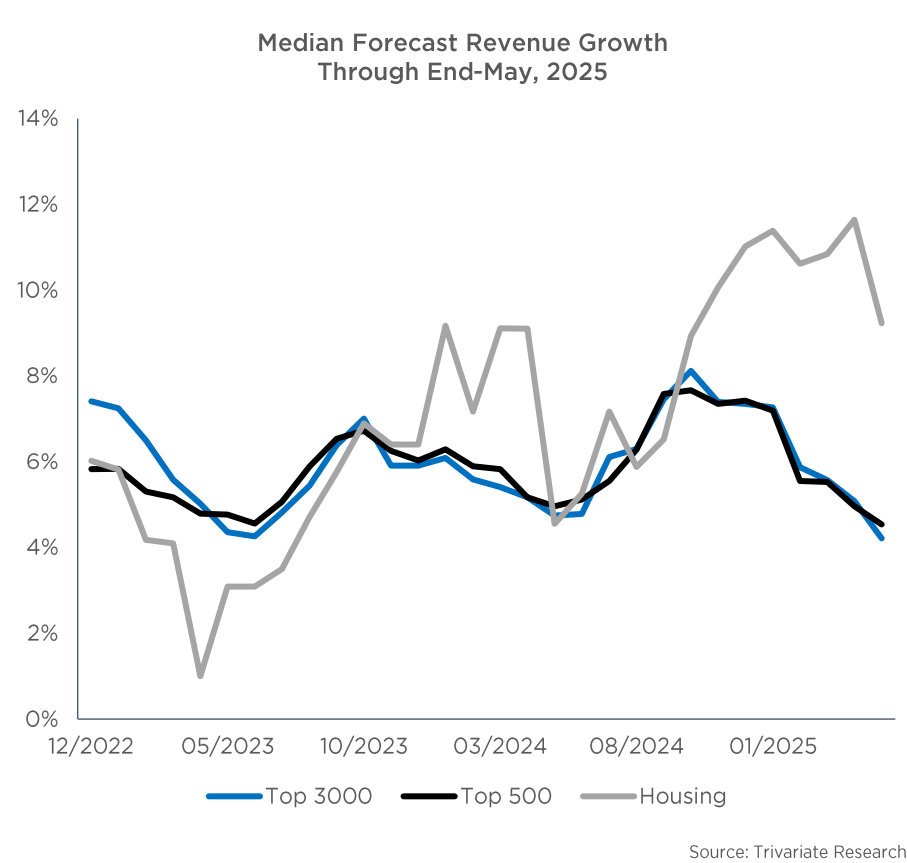
Housing Basket Stocks
As of End-May, 2025

Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
CARR	Carrier Global Corporation	Building Products	61.04	40.3%	75.9%
AAON	AAON, Inc.	Building Products	7.83	13.4%	89.2%
AWI	Armstrong World Industries, Inc.	Building Products	6.76	6.4%	130.8%
TREX	Trex Company, Inc.	Building Products	5.99	9.3%	26.6%
CSWI	CSW Industrials, Inc.	Building Products	5.14	21.8%	162.3%
TGLS	Tecnoglass Inc.	Building Products	4.02	8.8%	180.6%
CVCO	Cavco Industries, Inc.	Homebuilding	3.48	7.0%	87.2%
ROCK	Gibraltar Industries, Inc.	Building Products	1.73	9.2%	24.7%

Source: Trivariate Research

HOUSING REV. EXPECTATIONS ARE 9%: ARE THE STOCKS BOTTOMING?

The consensus bottom-up revenue expectations for the median stock in our Housing basket are now also at highs since the beginning of 2023 at 9% (left). Housing-related stocks performed very poorly earlier this year but have started to bottom of late(right).

Median Forecast Revenue Growth
Through End-May, 2025

Top 3000 Top 500 Housing

Source: Trivariate Research

Equal-Weight Cumulative Return
Through End-May, 2025

Top 3000 Top 500 Housing

Source: Trivariate Research

ELECTRIFICATION INDUSTRIALS BASKET

Our Electrification Industrials basket contains stocks that mentioned "electrification" related keywords the most in their earnings calls that are neither micro-cap nor value stocks value and are in the top tercile of forecasted revenue growth.
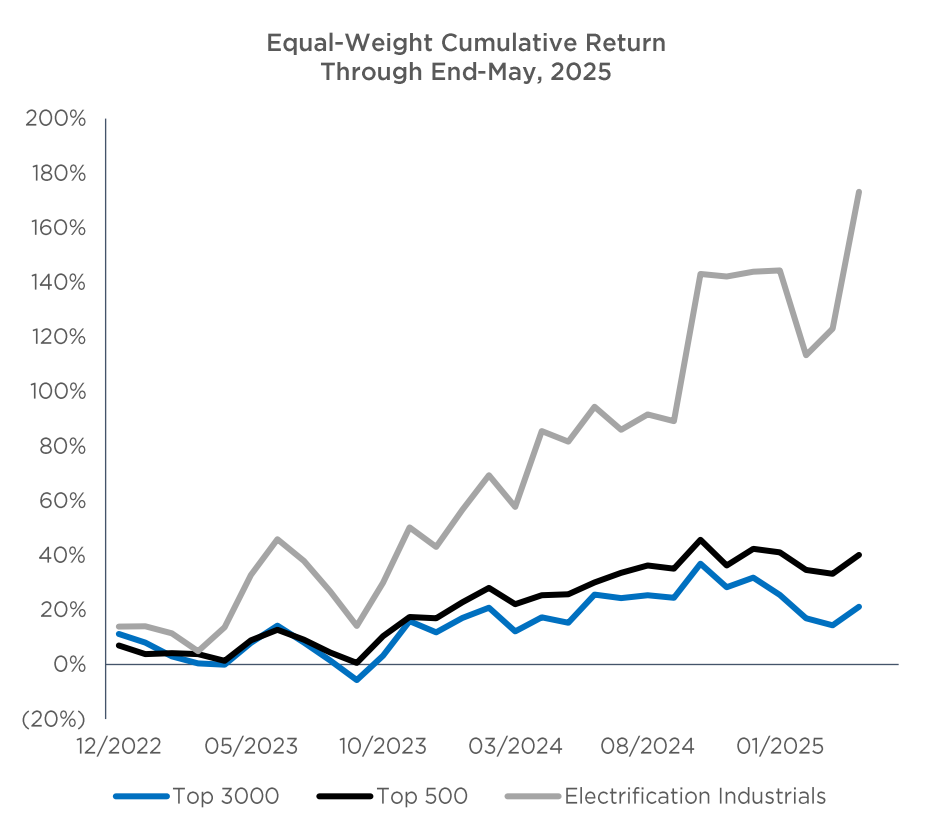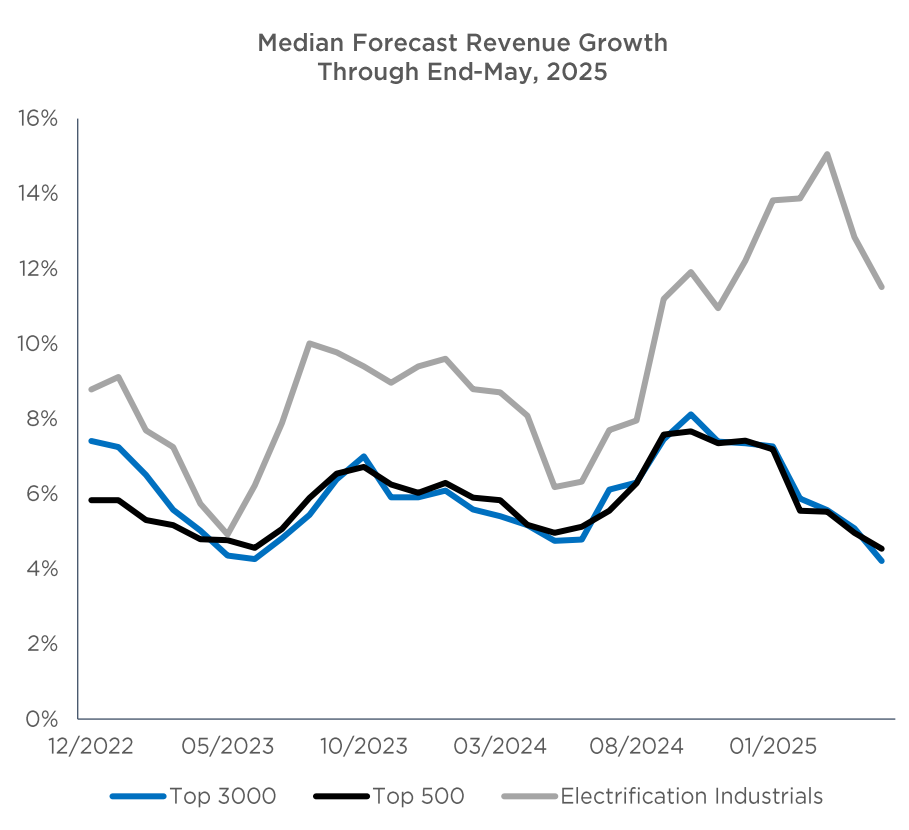
Electrification Industrials Basket Stocks
As of End-May, 2025

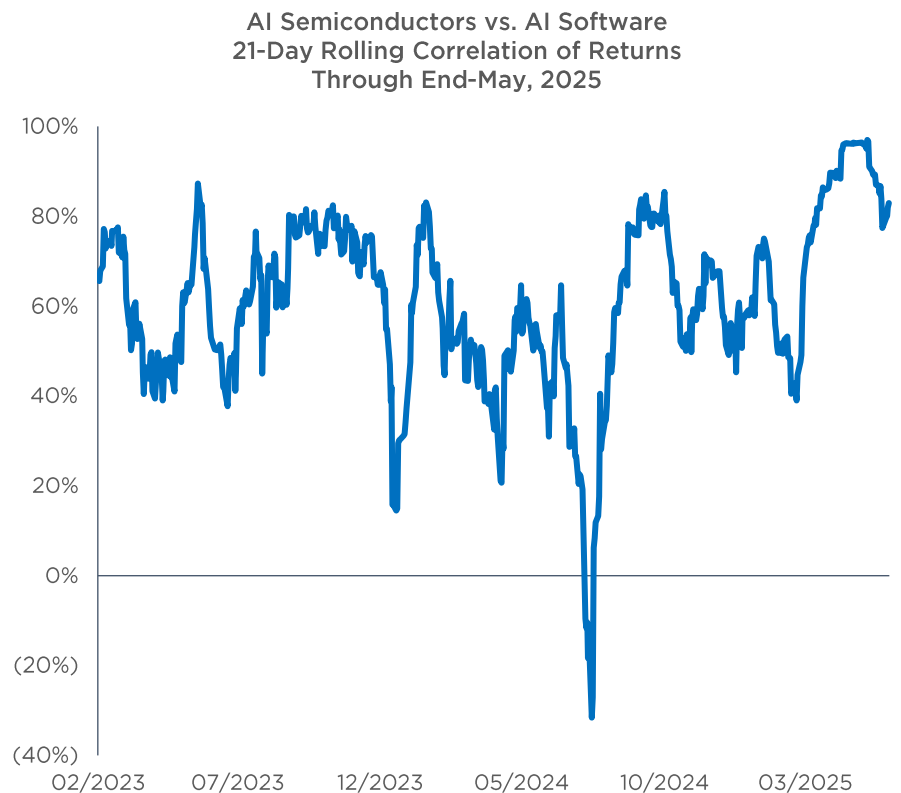| Ticker	Company	Sub-Industry	Market Cap. (US $Bil.)	Forecast Revenue Growth	Return Since 2023
ETN	Eaton Corporation plc	Electrical Components & Equipment	125.29	8.0%	110.9%
WM	Waste Management, Inc.	Environmental & Facilities Services	96.95	11.6%	59.9%
ROK	Rockwell Automation, Inc.	Electrical Components & Equipment	35.57	5.3%	28.8%
EME	EMCOR Group, Inc.	Construction & Engineering	21.12	9.7%	219.5%
NVT	nVent Electric plc	Electrical Components & Equipment	10.83	52.9%	73.6%
AYI	Acuity Inc.	Electrical Components & Equipment	7.95	17.9%	55.6%
SPXC	SPX Technologies, Inc.	Industrial Machinery & Supplies & Components	7.10	10.5%	136.2%
DY	Dycom Industries, Inc.	Construction & Engineering	6.65	11.3%	144.3%
JOBY	Joby Aviation, Inc.	Passenger Airlines	6.58	397.2%	123.9%
FSS	Federal Signal Corporation	Construction Machinery & Heavy Transportation Equip.	5.71	8.2%	105.4%
BE	Bloom Energy Corporation	Heavy Electrical Equipment	4.29	11.5%	(4.4%)
TGI	Triumph Group, Inc.	Aerospace & Defense	2.00	8.7%	145.0%
VICR	Vicor Corporation	Electrical Components & Equipment	1.97	9.7%	(19.8%)
TPC	Tutor Perini Corporation	Construction & Engineering	1.94	13.5%	401.1%
SXI	Standex International Corporation	Industrial Machinery & Supplies & Components	1.82	17.4%	47.7%
BLBD	Blue Bird Corporation	Construction Machinery & Heavy Transportation Equip.	1.22	11.7%	254.4%
MVST	Microvast Holdings, Inc.	Construction Machinery & Heavy Transportation Equip.	1.16	13.4%	20.3%
AMSC	American Superconductor Corporation	Electrical Components & Equipment	1.12	18.6%	185.9%

Source: Trivariate Research

ELECTRIFICATION INDUSTRIALS HAVE PERFORMED WELL

Like the other five growth baskets we have identified, forecasted revenue growth for the next 12 months is off of the highs since earlier this year (left), and yet performance of late has generally been strong, with the basket up 173% (equally-weighted returns of the 16 stocks) over the last 21 months (right).
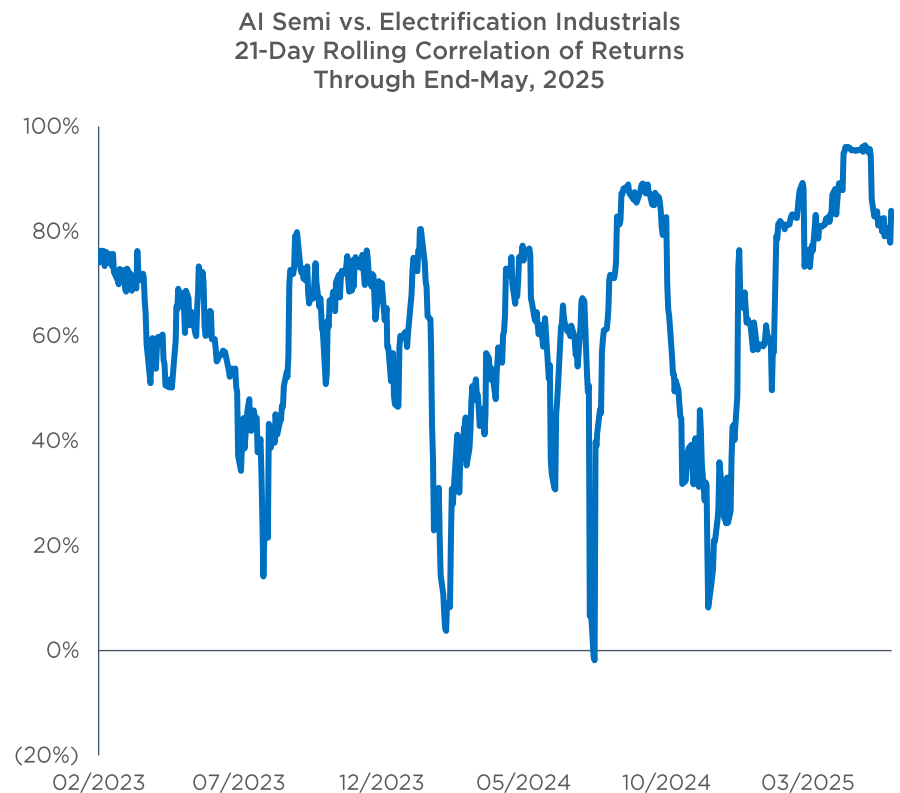
**Median Forecast Revenue Growth
Through End-May, 2025**

**Equal-Weight Cumulative Return
Through End-May, 2025**

Top 3000 — Top 500 — Electrification Industrials

Source: Trivariate Research

Source: Trivariate Research

AI SEMIS, SOFTWARE, AND INDUSTRIALS ARE HIGHLY CORRELATED

Given many portfolio managers will target investments in these crucial growth areas, we think it is prudent risk management to assess how correlated the stocks are in these baskets. Earlier this year, it certainly felt like AI Semiconductors were highly correlated to both AI Software (left) and Electrification Industrials (right). NVDA and ETN seemed like they were both up every day. In fact, the baskets have a daily return correlated of a whopping 0.83. There is essentially zero diversification.
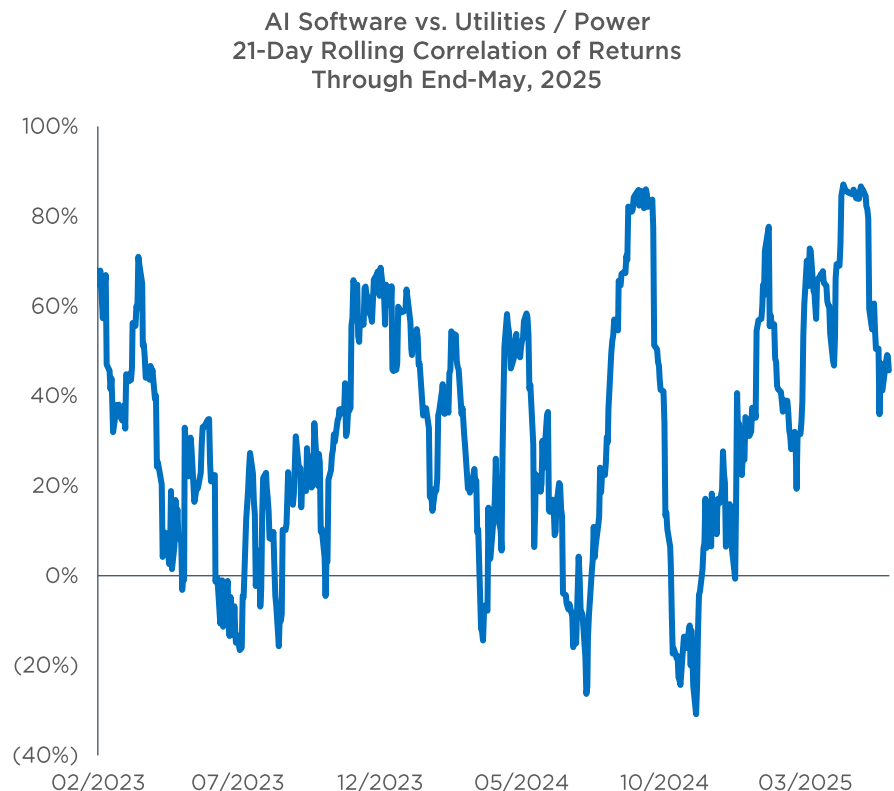
AI Semiconductors vs. AI Software
21-Day Rolling Correlation of Returns
Through End-May, 2025

AI Semi vs. Electrification Industrials
21-Day Rolling Correlation of Returns
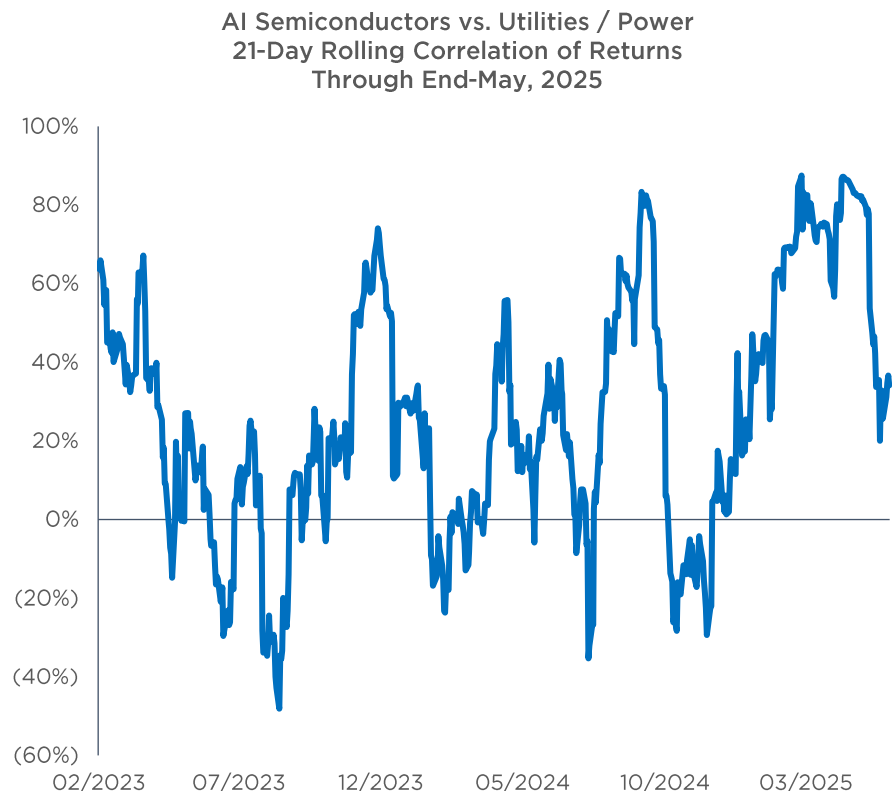**Through End-May, 2025**

Source: Trivariate Research

Source: Trivariate Research

UTILITIES / POWER RETURN CORR. ARE VOLATILE AGAINST AI STOCKS

The correlation of returns between AI Software and Utilities / Power has been highly volatile over the past two years (left). The baskets had a whopping 0.86 correlation at the end of April, but over the last month the correlation of returns between the two baskets has now fallen to 0.5. Similarly, AI Semiconductors were very strongly correlated to Utilities / Power earlier this summer (0.84 in mid April) as most of our old Semiconductor buddies have become self-anointed Power experts. Interestingly though, the recent correlation has also broken down (right). <u>Utilities / Power now seem to be more diversifying from AI Software and AI Semiconductors, than the AI Semis are from AI Software, though that can surely change quickly.</u>
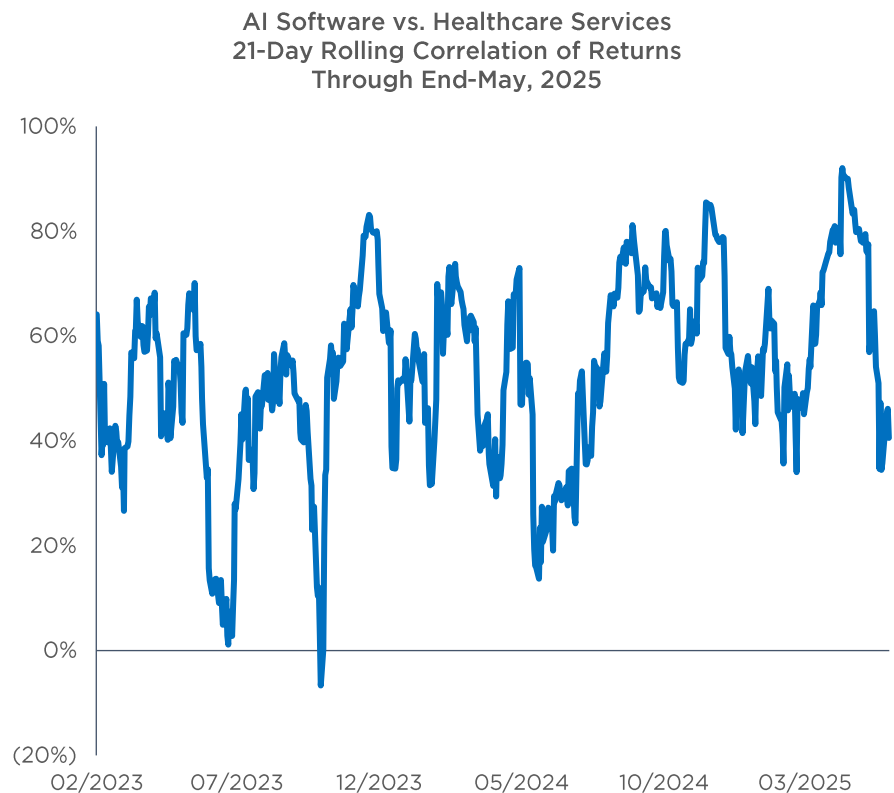
AI Software vs. Utilities / Power
21-Day Rolling Correlation of Returns
Through End-May, 2025

Source: Trivariate Research

AI Semiconductors vs. Utilities / Power
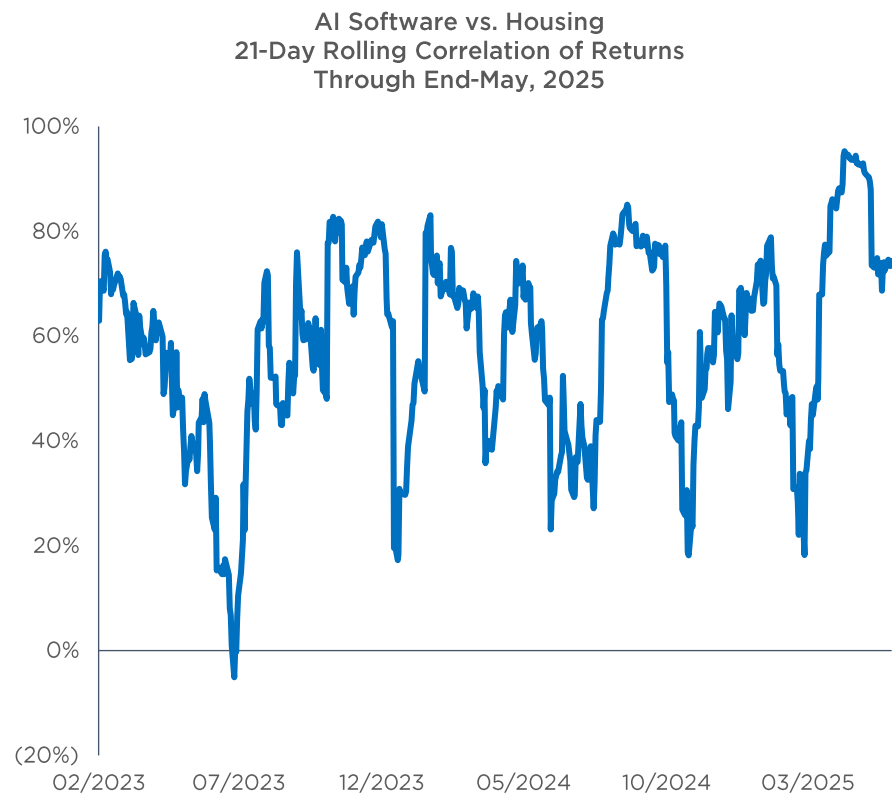**21-Day Rolling Correlation of Returns**
Through End-May, 2025

Source: Trivariate Research

AI SOFTWARE STOCKS ARE LESS CORRELATED TO HEALTHCARE

The correlation of returns between the AI Software and Healthcare Services basket is now lower than 0.5, for the last two months (left), meaning for now they have been more diversifying. The relationship between AI Software and Housing has recently been high, after being uncorrelated earlier this year (right).

AI Software vs. Healthcare Services
21-Day Rolling Correlation of Returns
Through End-May, 2025

Source: Trivariate Research

AI Software vs. Housing
21-Day Rolling Correlation of Returns
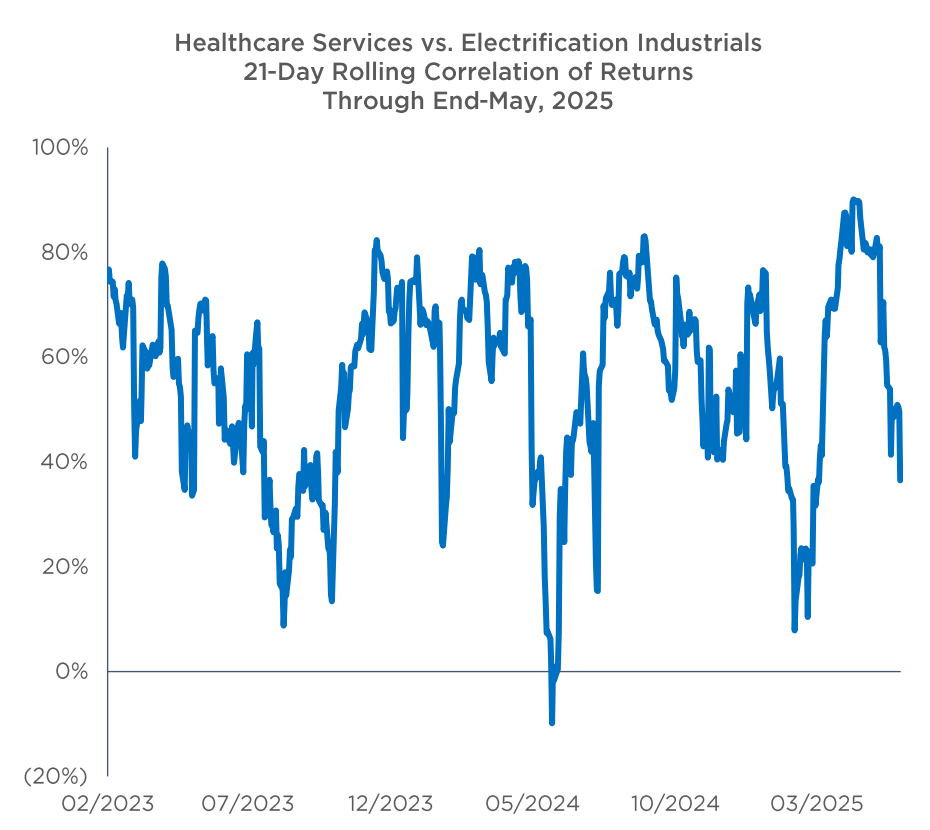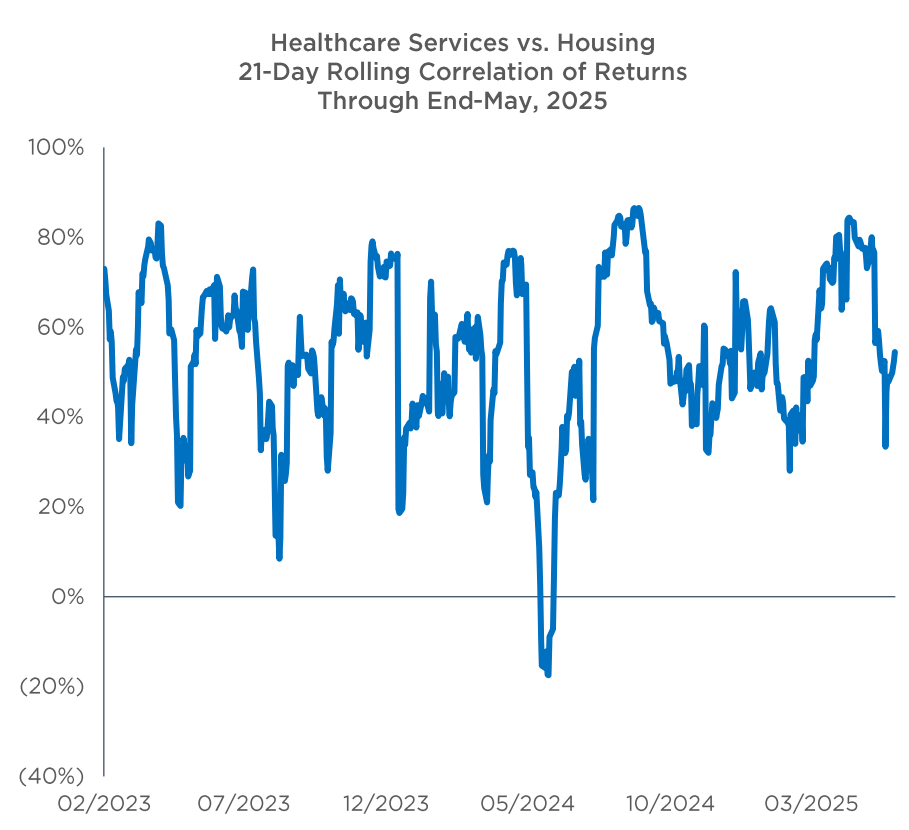**Through End-May, 2025**
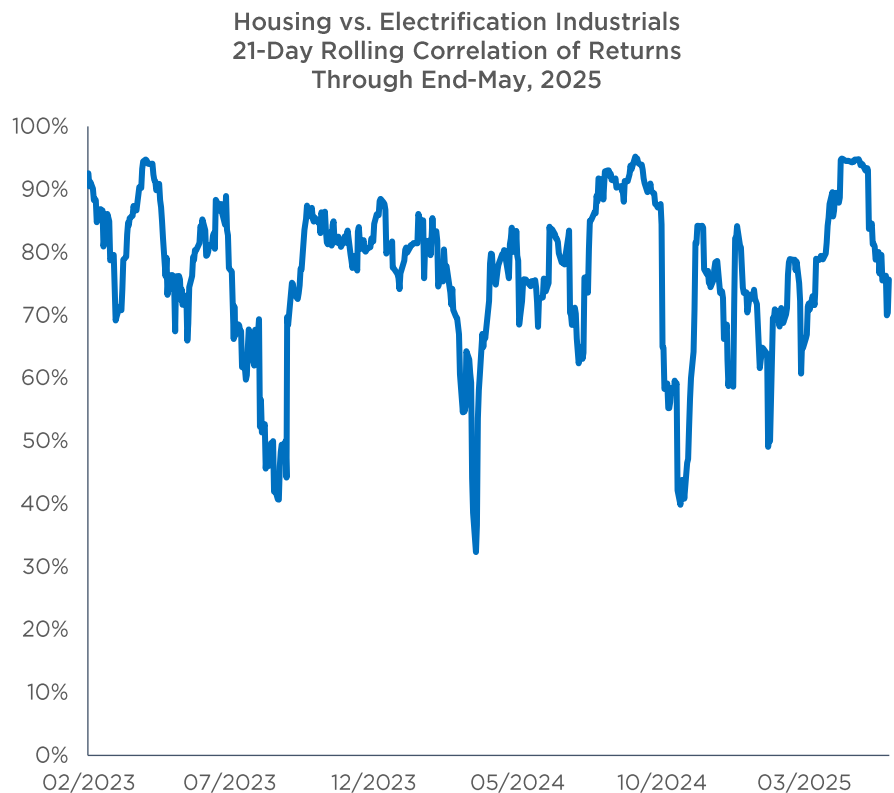
Source: Trivariate Research

HEALTHCARE SERVICES HAVE BEEN CORRELATED TO HOUSING

Healthcare Services and Housing have generally been less correlated (left), as have Healthcare Services and Electrification Industrials (right). If investors can find names on our Healthcare Services list they like, these are likely to be the most diversifying of the growth themes today.

Healthcare Services vs. Housing
21-Day Rolling Correlation of Returns
Through End-May, 2025

Source: Trivariate Research

Healthcare Services vs. Electrification Industrials
21-Day Rolling Correlation of Returns
Through End-May, 2025

Source: Trivariate Research

HOUSING HAS TRADED LIKE ELECTRIFICATION INDUSTRIALS

Throughout 2023 until the last two months, Housing and Electrification Industrials have been highly correlated (left). The 126-day correlation of returns between each of the six thematic growth baskets is shown on the right. Right now, AI Semiconductors and Electrification Industrials have the highest correlation (0.85), and AI Semis and Healthcare Services have the lowest. <u>We would highly recommend growth portfolio and risk managers monitor the rolling correlation of returns between these growth-themed baskets.</u>

Housing vs. Electrification Industrials
21-Day Rolling Correlation of Returns
Through End-May, 2025

Source: Trivariate Research

Six Growth Theme Baskets: 126-Day Correlation of Returns
As of End-May, 2025

	AI Semi	AI Software	Utilities / Power	Healthcare Services	Housing	Electrification Industrials
AI Semi	100.0%	83.5%	66.7%	56.2%	78.7%	85.0%
AI Software	83.5%	100.0%	62.7%	62.6%	77.2%	81.0%
Utilities / Power	66.7%	62.7%	100.0%	59.4%	69.4%	74.1%
Healthcare Services	56.2%	62.6%	59.4%	100.0%	61.9%	60.0%
Housing	78.7%	77.2%	69.4%	61.9%	100.0%	81.3%
Electrification Industrials	85.0%	81.0%	74.1%	60.0%	81.3%	100.0%

Source: Trivariate Research

Extreme valuation multiples rarely persist: Companies that reach 50x forward P/E or 30x+ EV-to-sales typically see significant multiple contraction within 12 months, with only a small minority maintaining those levels over time.

High valuations often lead to underperformance: Stocks that hit extreme valuation levels tend to lag the market—by a median of 650 basis points (beta-adjusted) over three years for 50x P/E stocks, and by over 22% for ultra-expensive EV-to-sales names.

Valuation alone signals caution, not panic: While an initial spike to extreme multiples isn't an immediate sell signal, historical data suggests underperformance tends to begin 6–9 months after the peak valuation is reached.

# COSTCO: RECORD HIGH MARGINS – BUT ALSO RECORD VALUATION

Below we show the price-to-forward earnings of Costco (Ticker: COST) over the last 25 years. The multiple has recently expanded to all-time highs of 50x forward earnings (left). This multiple expansion is assuredly due in part to the expectation of better monetization of the annual fees (the so-called "Netflix Moment') and the specter of higher margins going forward, with net margins recently also reaching all-time highs (right). Margins expanding from 2.4% to 2.8% are certainly meritorious of a higher multiple, but the question is how likely is it for a company to maintain a 50x forward multiple, and what's the subsequent return distribution for businesses that just reached that level?

COST Price-to-Forward Earnings
Through End-May, 2025
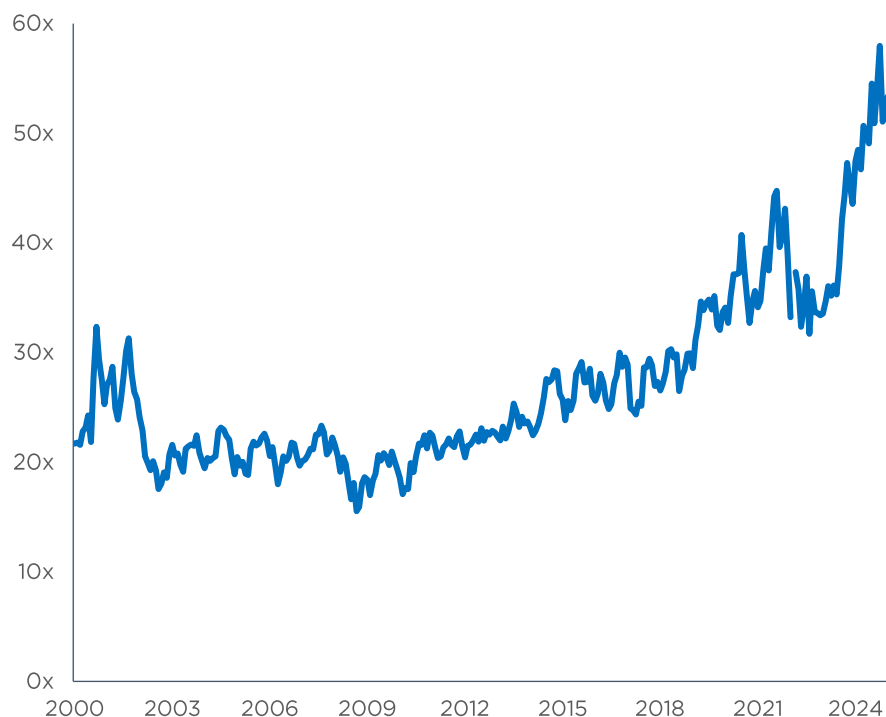
COST Net Margin
**Through End-May, 2025**

Source: Trivariate Research
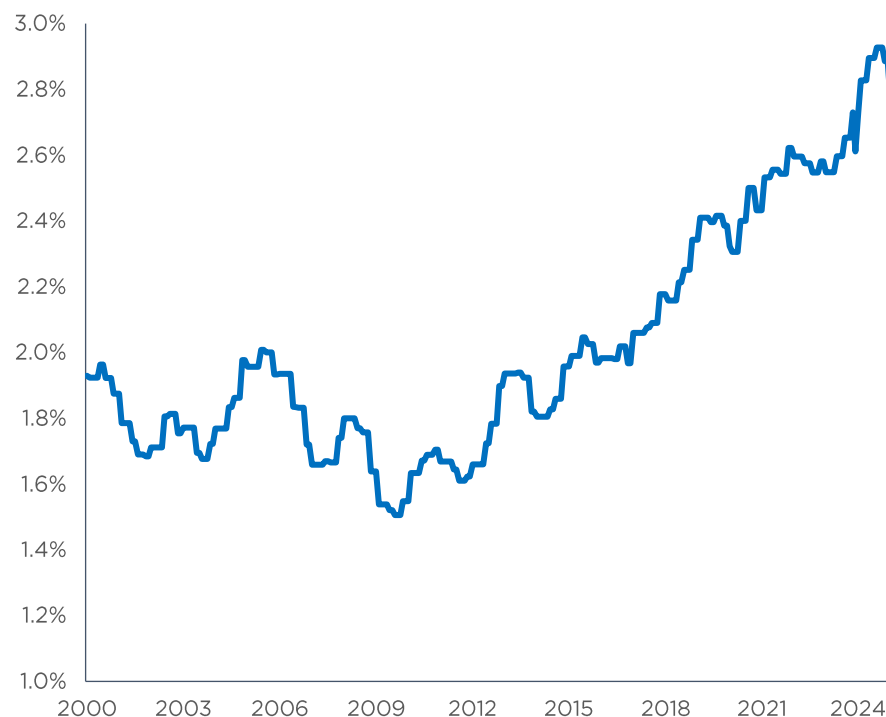
Source: Trivariate Research

5 STOCKS ARE AT 50X PEF THIS YEAR FOR THE 1ST TIME IN 3YRS

We analyzed our mega/large/mid-cap universes (the top 900 US equities by market capitalization at each point in time) to see how many stocks traded above 50x price-to-forward earnings for the first time in at least three years. The recovery periods of 2009 and 2020 saw multiple expansion of this magnitude for many stocks, but on average this impacted 20 stocks out of the 900 per year, and 5 so far in 2025.
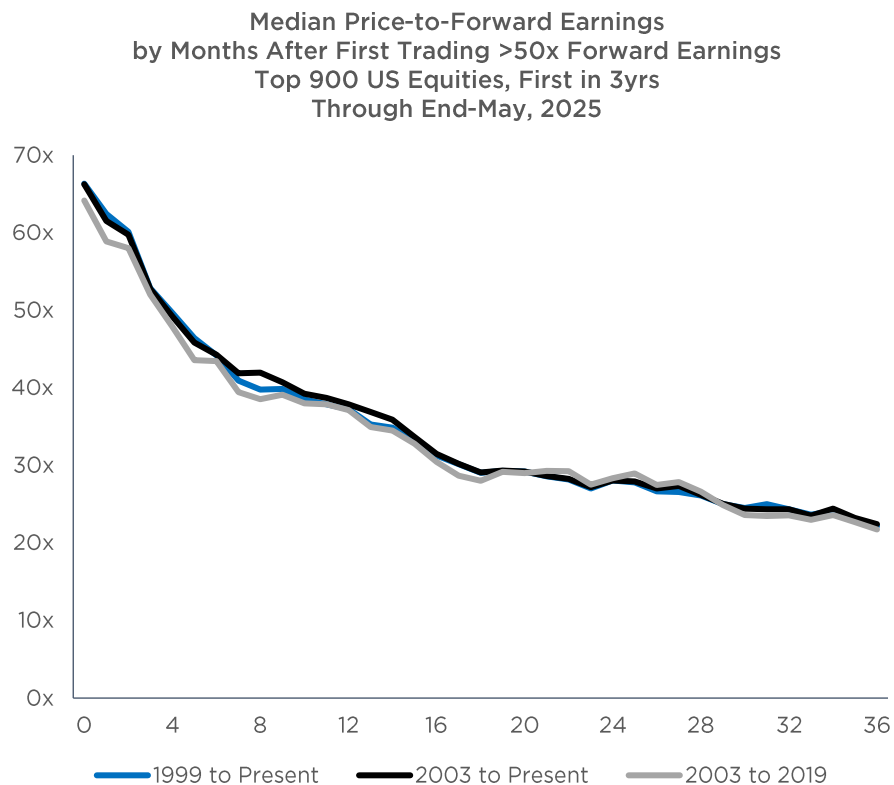
Number of Top 900 US Equities
That Trade >50x Forward Earnings for First Time in 3-Years, At Least 2 Years of Data
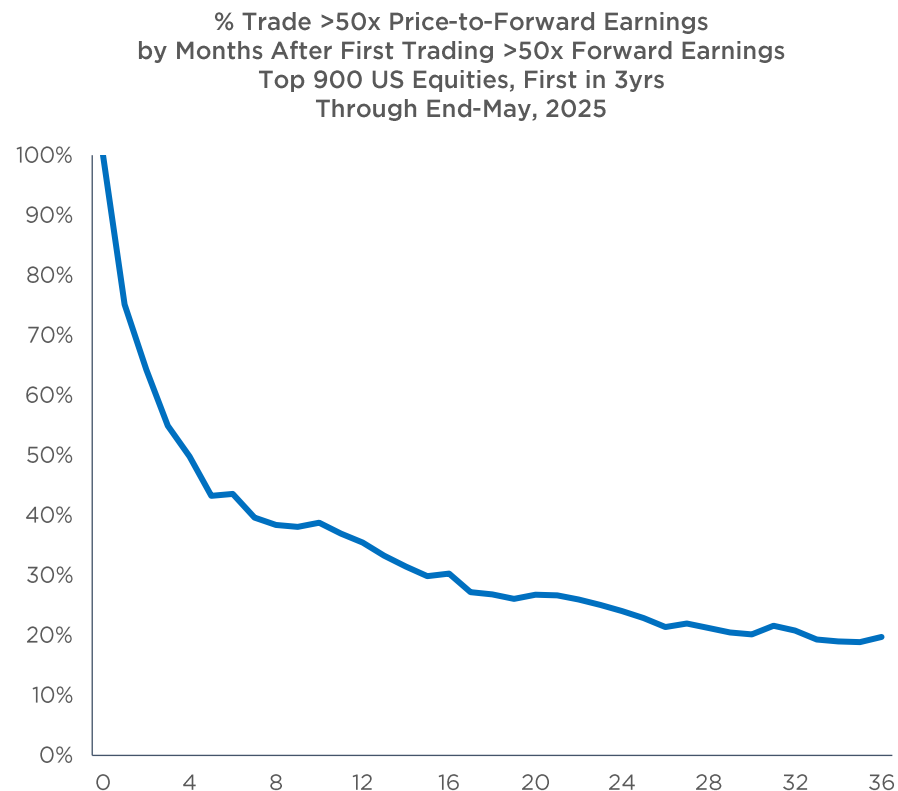**Through End-May, 2025**

Source: Trivariate Research
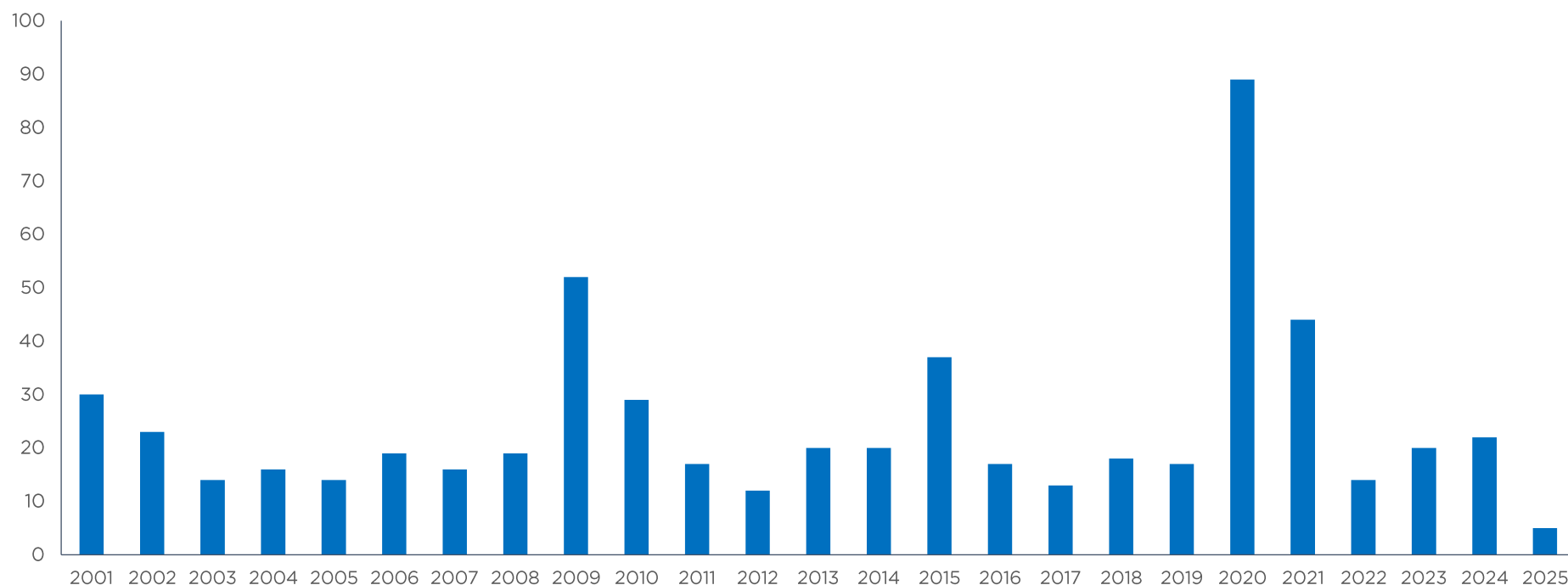
TRIVARIATE RESEARCH

ONCE HITTING 50X, 38X IS THE AVERAGE A YEAR LATER

It is quite consistent that among the companies that reach 50x price-to-forward earnings, their multiples begin to contract, on average back to 38x price-to-forward earnings 12 months after the initial "eclipse". This appears to be the case both before and after COVID, including eliminating the unwind of the Technology Bubble (left). In fact, only 36% of the companies in this category trade at 50x price-to-forward earnings or higher a year after this first occurred (right), and only 24% maintain this valuation two-years later.

Median Price-to-Forward Earnings
by Months After First Trading >50x Forward Earnings
Top 900 US Equities, First in 3yrs
Through End-May, 2025

— 1999 to Present   — 2003 to Present   — 2003 to 2019

Source: Trivariate Research

% Trade >50x Price-to-Forward Earnings
by Months After First Trading >50x Forward Earnings
Top 900 US Equities, First in 3yrs
Through End-May, 2025
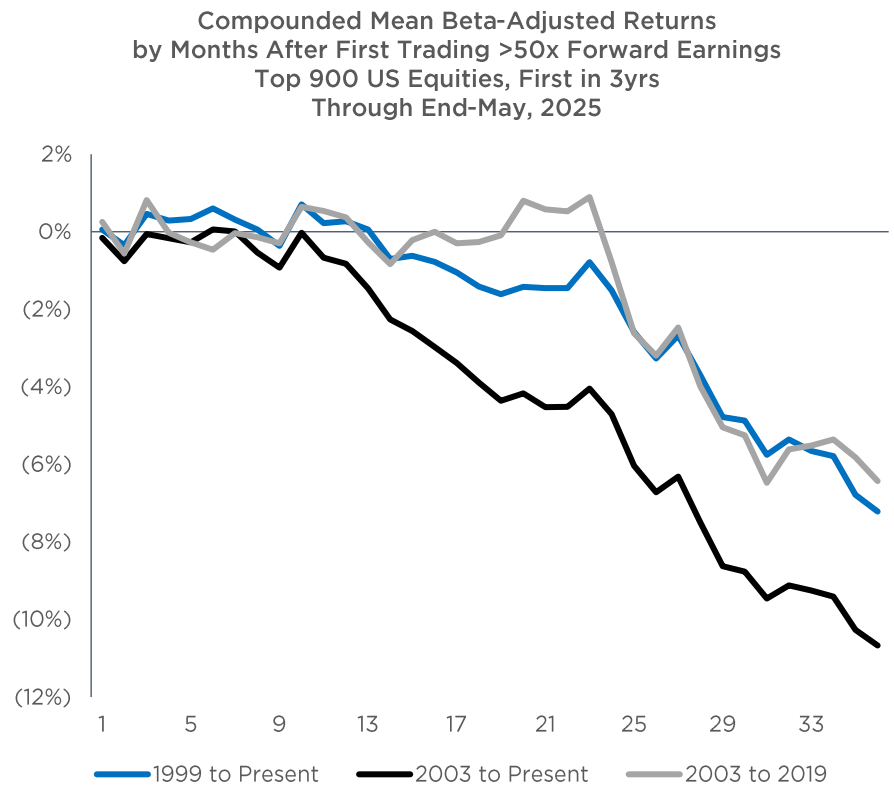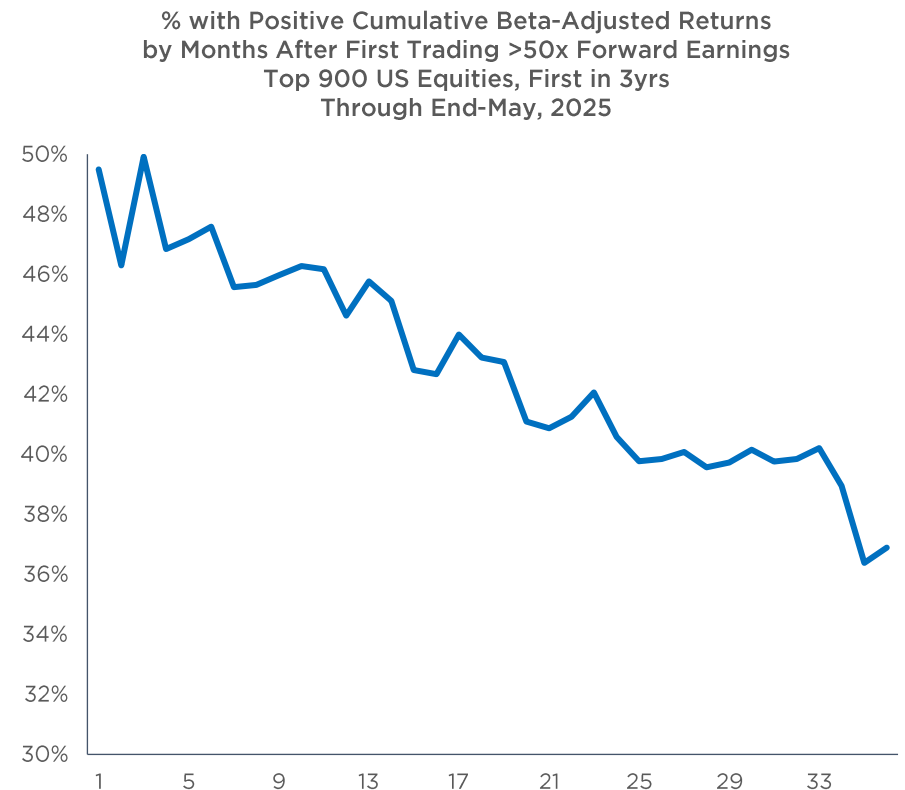

Source: Trivariate Research

THE AVG 50X STOCK LAGS BY 1100BPS OVER THE NEXT THREE YEARS

As the multiples contract, unsurprisingly the stocks begin to underperform. The median performance of those eclipsing 50x forward earnings is roughly in-line with the market for the first ten months and then begins to lag. Since 2003 (so eliminating the Technology Bubble unwind) the median stock lags the market on a beta-adjusted basis by 1100 basis points over the subsequent three years (left). Only 37% of the stocks beat the market on a beta-adjusted basis over the next three years (right). <u>In summary, the data suggest there is no need to panic sell when we first reach a price-to-forward earnings of 50x, but it does appear that beginning 6- to 9-months later, the odds of outperformance begin to deteriorate.</u>

Compounded Mean Beta-Adjusted Returns
by Months After First Trading >50x Forward Earnings
Top 900 US Equities, First in 3yrs
Through End-May, 2025

% with Positive Cumulative Beta-Adjusted Returns
by Months After First Trading >50x Forward Earnings
Top 900 US Equities, First in 3yrs
Through End-May, 2025

Legend (left chart): 1999 to Present, 2003 to Present, 2003 to 2019

Source: Trivariate Research

Source: Trivariate Research

COSTCO AND OTHER RECENT EXAMPLES OF THE 50X "CLUB"

Below are the most recent examples of companies that hit 50x forward earnings for at least the first time in three years. If history proves correct, selling these stocks six-to-nine months after the initial date of crossing 50x earnings would seem prudent. In the case of Costco, that implies by the end of Q2 2025, though of course applying this to any individual name can be challenging.

Recent Stocks First Trading >50x Forward Earnings in 3 Years
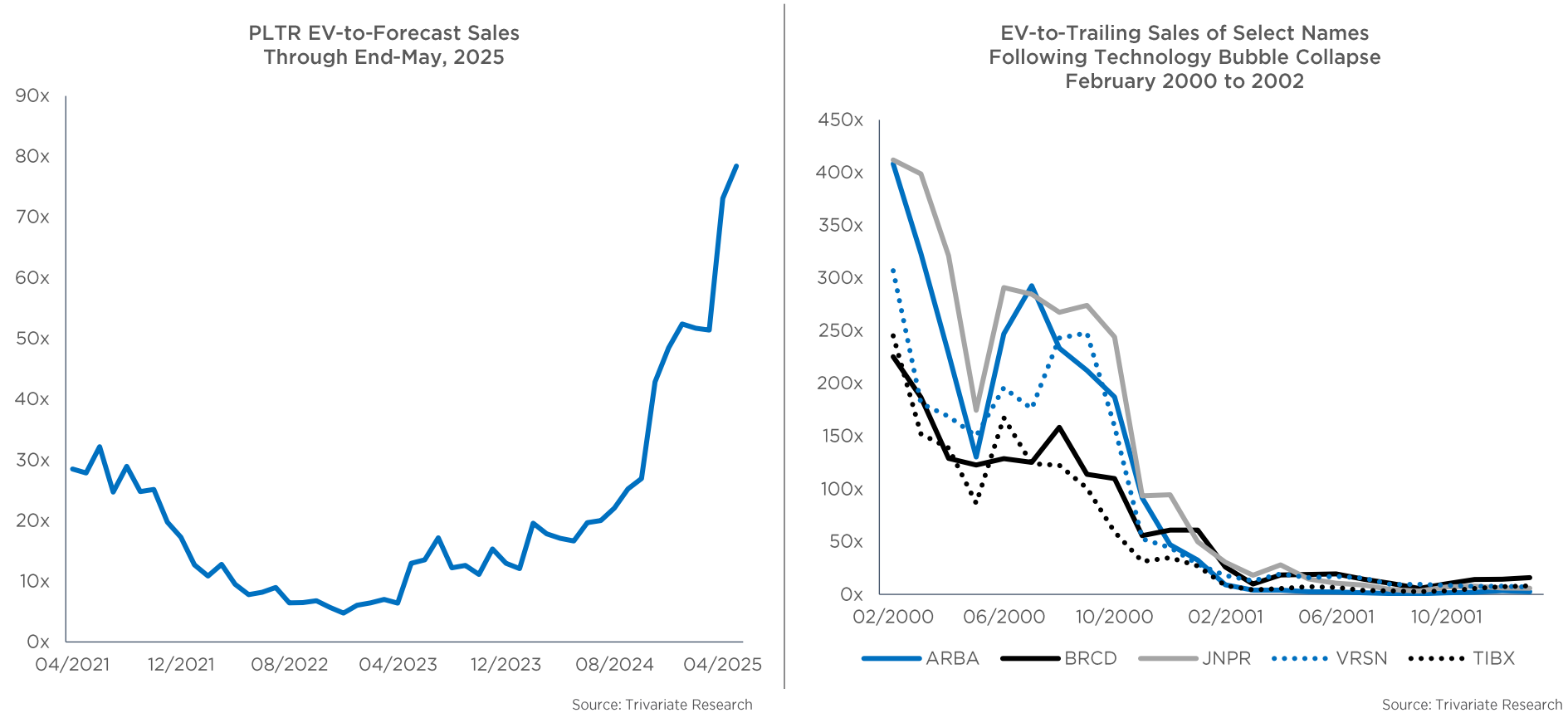**Top 900 US Equities, At Least 2 Years of Data**
As of End-May, 2025

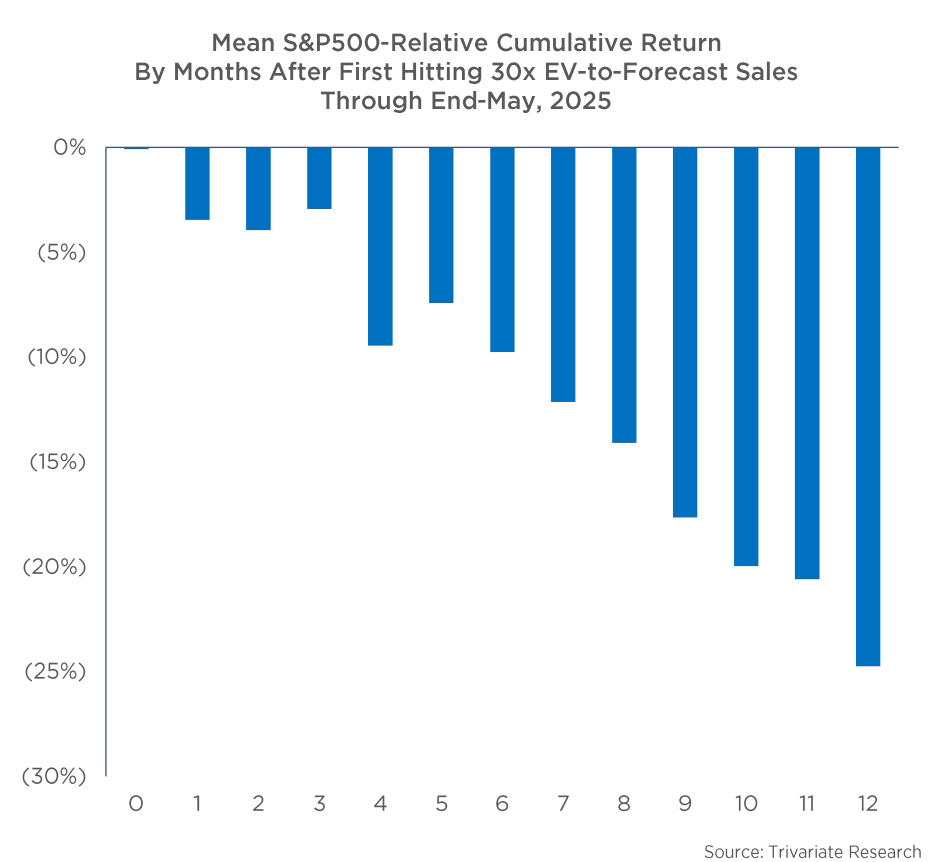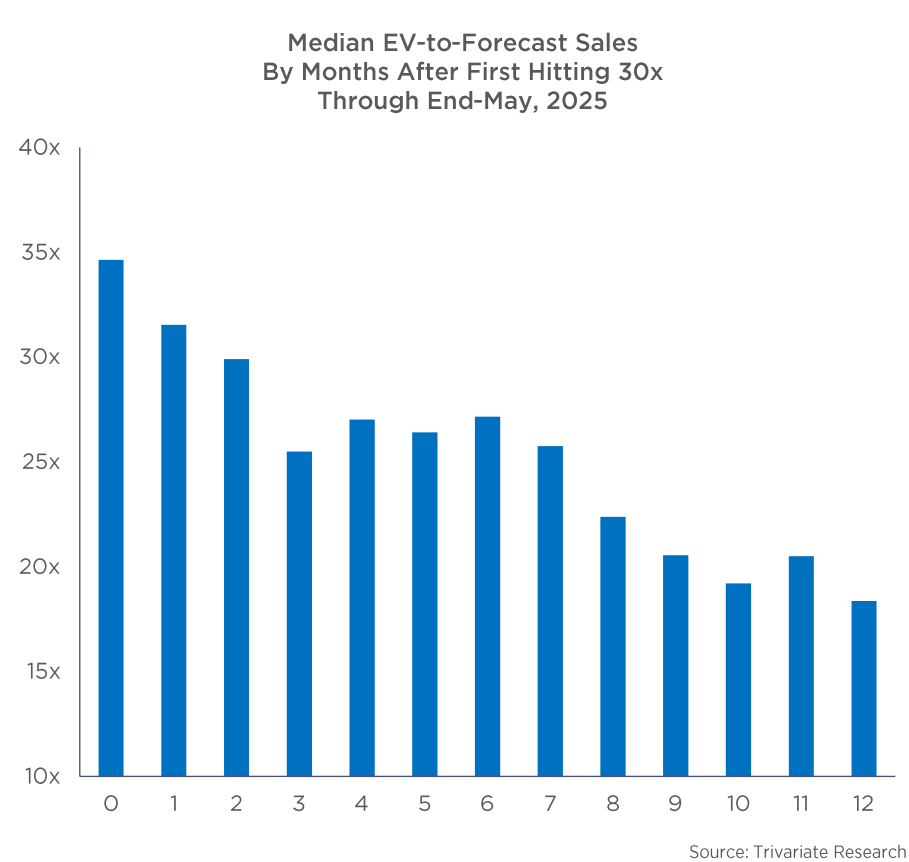| Month Stock First Got to 50x	Ticker	Company	Sector	Market Cap. (US Bil.) At Time When First >50x Forward Earnings	Price-to-Forward Earnings	Beta-Adjusted Return Since Date
4/30/2025	DOW	Dow Inc.	Materials	21.62	79x	(16%)
3/31/2025	CORT	Corcept Therapeutics Incorporated	Health Care	12.05	62x	(42%)
1/31/2025	GEV	GE Vernova Inc.	Industrials	102.79	62x	42%
1/31/2025	APP	AppLovin Corporation	Information Technology	124.03	50x	24%
11/29/2024	CTAS	Cintas Corporation	Industrials	91.06	53x	1%
8/30/2024	ALB	Albemarle Corporation	Materials	10.61	55x	(47%)
8/30/2024	COST	Costco Wholesale Corporation	Consumer Staples	395.62	51x	13%
7/31/2024	IRM	Iron Mountain Incorporated	Real Estate	30.06	53x	(9%)
7/31/2024	WY	Weyerhaeuser Company	Real Estate	23.10	52x	(23%)
6/28/2024	FTAI	FTAI Aviation Ltd.	Industrials	10.35	53x	(4%)
6/28/2024	KVYO	Klaviyo, Inc.	Information Technology	6.58	54x	14%
5/31/2024	CHK	Expand Energy Corporation	Energy	11.92	80x	21%
5/31/2024	TTWO	Take-Two Interactive Software, Inc.	Communication Services	27.48	65x	26%

Source: Trivariate Research

Recently, we wrote about Palantir (Ticker: PLTR). The elevation of PLTR to above 70x EV-to-forecasted sales has been sharp, with most of the multiple expansion in the last nine months (left). To study what happened to other companies, we looked at the five most expensive companies on EV-to-sales (we used trailing since forward sales wasn't widely populated until 10/2000). These stocks were Ariba (Ticker: ARB), Brocade (Ticker; BRCD), Juniper (Ticker: JNPR), Versign (Ticker: VRSN), and Tibco Software (Ticker: TIBX). These stocks all saw massive multiple contraction over the subsequent two years (right).

PLTR EV-to-Forecast Sales
Through End-May, 2025

EV-to-Trailing Sales of Select Names
Following Technology Bubble Collapse
February 2000 to 2002

Source: Trivariate Research
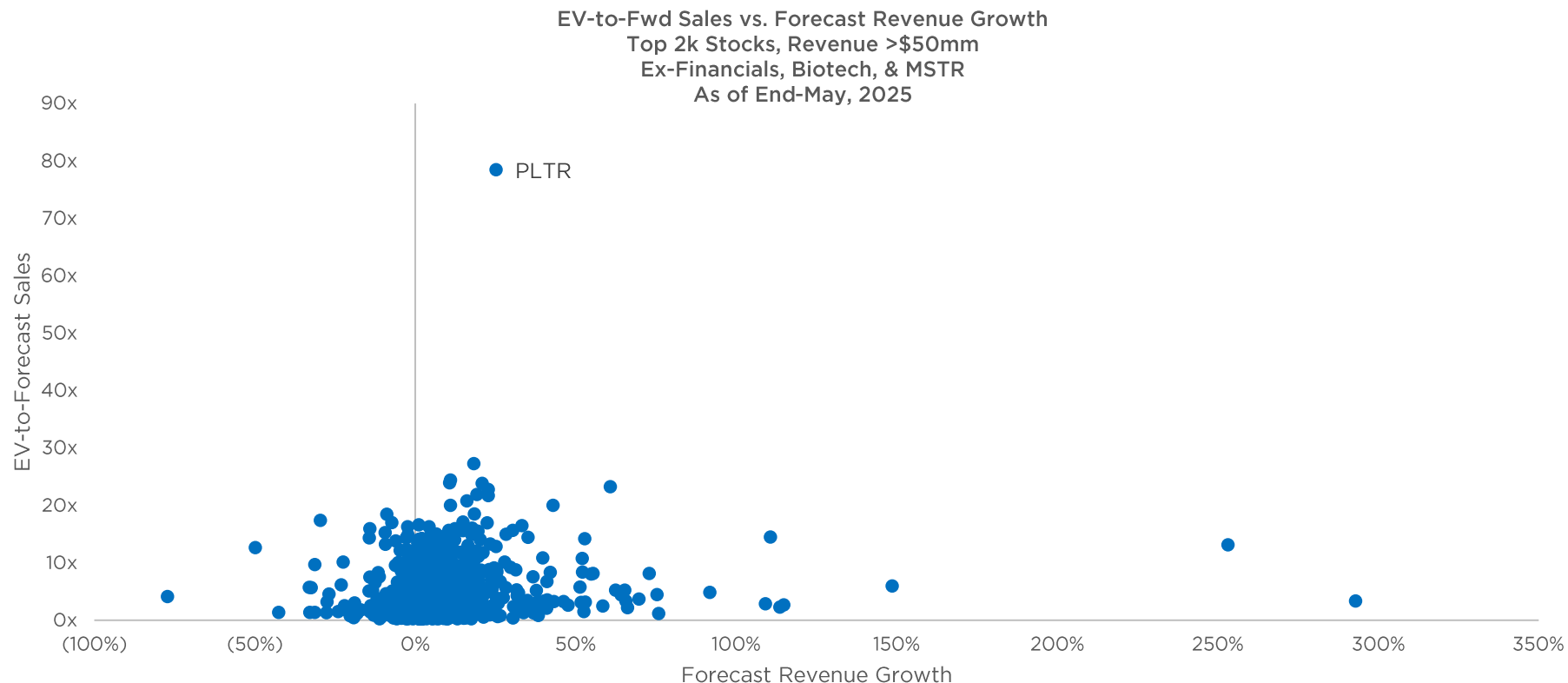
Source: Trivariate Research

MULTIPLE CONTRACTION AND UNDERPERFORMANCE ARE LIKELY

The median company that first hits a multiple above 30x EV-to-forecasted sales trades at only 18x a year later (left), and averages 24.7% relative-to-S&P500 underperformance a year later (right). Remember, PLTR is above 70x!

Median EV-to-Forecast Sales
By Months After First Hitting 30x
Through End-May, 2025

Mean S&P500-Relative Cumulative Return
By Months After First Hitting 30x EV-to-Forecast Sales
Through End-May, 2025

Source: Trivariate Research

Source: Trivariate Research

TRIVARIATE RESEARCH

79 stocks are forecasted to grow faster than PLTR over the next 12 months, yet it is 3x as expensive on EV-to-forecasted sales as the next most expensive company (excluding MSTR). PLTR might be fundamentally awesome, we don't know. But we do know that no company has grown fast enough to justify this valuation and that MANY companies are forecasted to grow faster according to the consensus expectations. For large cap portfolio managers who are going to do new work on this before it hits their index, it is hard to imagine this looks attractive.

EV-to-Fwd Sales vs. Forecast Revenue Growth
Top 2k Stocks, Revenue >$50mm
Ex-Financials, Biotech, & MSTR
As of End-May, 2025

Source: Trivariate Research

POINT 4: EVEN 10-BAGGERS HAVE BIG DRAWDOWNS

We analyzed all companies that are greater than $2 billion market cap and trade $30 million or more in average daily trading volume to look for stocks that appreciated 10x or more in a rolling five-year period. We found 89 such stocks in the last 25 years, though several of these 89 went up 10x or more in multiple periods. We show the starting years for when these stocks began their 10x move below. It is more frequent for these massive moves to start following a big market sell-off, as we see 2002 and 2009 were common years.

We then analyzed these 89 ten-baggers for their drawdown periods to see how much pain those who held these stocks through the massive appreciation experienced along their path of decline. The answer is "a lot." The average stock that appreciated 900% or more over a five-year period had a 48% drawdown, and the average duration of these drawdowns was 113 trading days. <u>Yes, on your path to a 10-bagger you will have 6 months where the stock goes in half! Prudent risk-management and thoughtful position sizing and having conviction in the return path are important for growth investors pursuing big upside.</u> Only 25% of the ten-baggers had less than a 34.3% correction, and the very best was down 23.8%. No pain, no gain.

89 COMPANIES HAVE BEEN FIVE-YEAR TEN BAGGERS SINCE 1999

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Number of Stocks That 10x in Next 5 Years
Through End-May, 2025
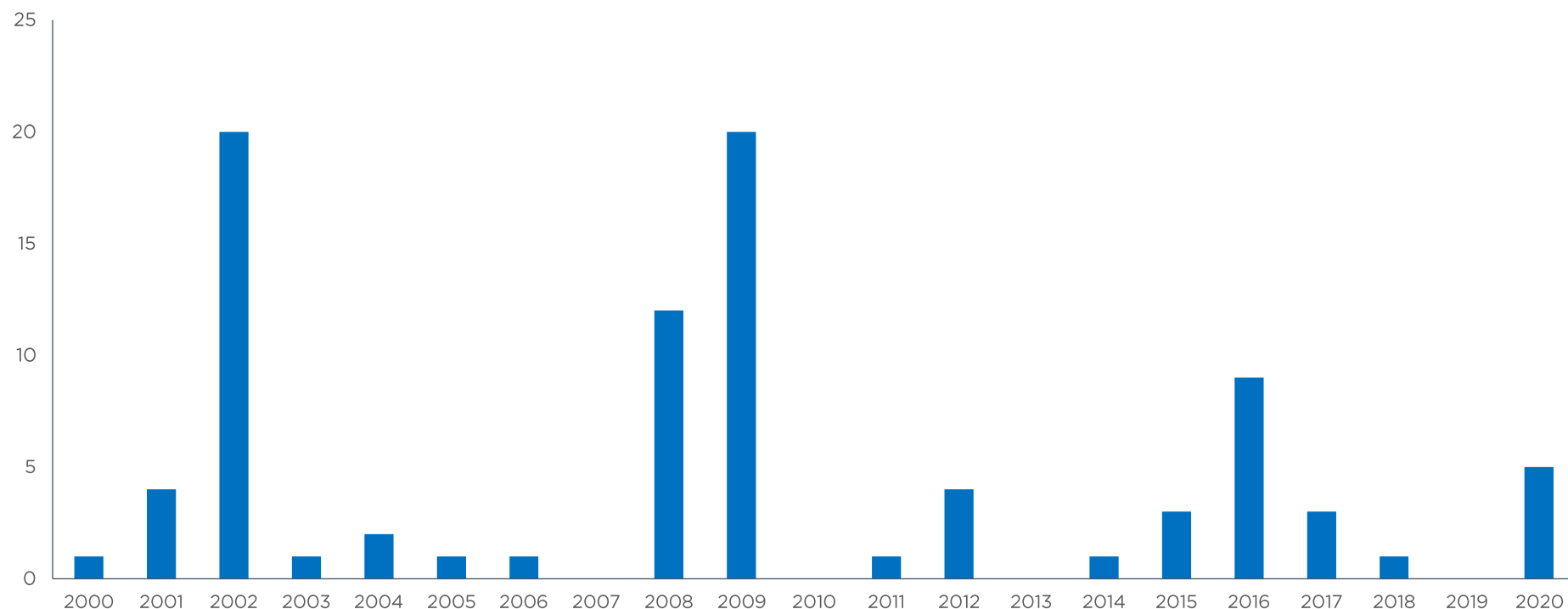
Source: Trivariate Research

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Maximum Drawdown Distribution of 5-Year 10x Stocks
1999 to End-May, 2025

Statistic	Maximum Drawdown	Length of Maximum Drawdown
Count	89	89
Mean	(47.6%)	112.9
Standard Deviation	15.4%	142.7
Minimum	(89.3%)	3.0
25th Percentile	(57.3%)	33.0
Median	(44.4%)	67.0
75th Percentile	(34.3%)	134.0
Maximum	(23.8%)	991.0

Source: Trivariate Research

THE LOWEST DRAWDOWN OF THE LAST 22 10-BAGGERS WAS 27%

The last 22 stocks to appreciate 900% or more include NVDA (2019-2023), DXCM, TTD, TSLA , and FTNT (shown below).

Recent 5-Year 10x Stocks
1999 to End-May, 2025

Ticker	Company	Sector	Market Cap. (US $Bn.) At Start of 5yr Period	Start of 5yr Period	End of 5yr Period	5yr Total Return	Maximum Drawdown	Length of Max. Drawdown (Market Days)	Start of Max. Drawdown	End of Max. Drawdown
ARNC	Howmet Aerospace Inc.	Industrials	7.00	03/31/2020	03/31/2025	949%	(27%)	3	06/08/2020	06/10/2020
TRGP	Targa Resources Corp.	Energy	1.61	03/31/2020	03/31/2025	3108%	(48%)	81	06/08/2020	09/30/2020
BLDR	Builders FirstSource	Industrials	1.42	03/31/2020	03/31/2025	922%	(42%)	244	03/21/2024	03/12/2025
DKS	DICK'S Sporting Goods	Consumer Disc.	1.85	03/31/2020	03/31/2025	1001%	(49%)	126	11/22/2021	05/23/2022
SFM	Sprouts Farmers Market	Consumer Staples	1.85	01/31/2020	01/31/2025	913%	(34%)	27	04/08/2022	05/17/2022
NVDA	NVIDIA Corp.	Information Tech.	99.69	11/30/2018	11/30/2023	1054%	(66%)	221	11/29/2021	10/13/2022
DXCM	DexCom	Health Care	3.89	10/31/2017	10/31/2022	974%	(58%)	145	11/17/2021	06/15/2022
TTD	The Trade Desk	Information Tech.	2.16	08/31/2017	08/31/2022	1084%	(63%)	164	11/16/2021	07/13/2022
TSLA	Tesla	Consumer Disc.	56.01	05/31/2017	05/31/2022	1012%	(61%)	20	02/19/2020	03/17/2020
FTNT	Fortinet	Information Tech.	5.54	10/31/2016	10/29/2021	949%	(38%)	26	02/06/2020	03/13/2020
EPAM	EPAM Systems	Information Tech.	3.28	10/31/2016	10/29/2021	946%	(33%)	18	02/19/2020	03/13/2020
TEAM	Atlassian Corp.	Information Tech.	6.37	08/31/2016	08/31/2021	1145%	(30%)	18	09/28/2018	10/23/2018
SHOP	Shopify Inc.	Information Tech.	3.60	08/31/2016	08/31/2021	3587%	(41%)	18	02/19/2020	03/13/2020
ZBRA	Zebra Technologies Corp.	Information Tech.	2.62	06/30/2016	06/30/2021	957%	(38%)	48	01/02/2020	03/11/2020
SQ	Block	Information Tech.	3.20	05/31/2016	05/28/2021	2235%	(62%)	370	09/28/2018	03/19/2020
IAC	Match Group	Information Tech.	3.55	02/29/2016	02/26/2021	978%	(53%)	44	01/16/2020	03/19/2020
RH	RH	Consumer Disc.	1.54	02/29/2016	02/26/2021	1191%	(68%)	24	02/18/2020	03/20/2020
GME	GameStop Corp.	Consumer Disc.	2.74	01/29/2016	01/29/2021	1507%	(89%)	991	04/27/2016	04/02/2020
PAYC	Paycom Software	Information Tech.	2.22	12/31/2015	12/31/2020	1102%	(51%)	42	02/04/2020	04/02/2020
VEEV	Veeva Systems Inc.	Health Care	3.41	08/31/2015	08/31/2020	990%	(31%)	171	07/11/2019	03/13/2020
MELI	MercadoLibre	Information Tech.	4.86	08/31/2015	08/31/2020	971%	(40%)	30	02/19/2020	03/31/2020
AMD	Advanced Micro Devices	Information Tech.	2.17	10/31/2014	10/31/2019	1112%	(51%)	118	02/05/2015	07/24/2015

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