TRIVARIATE RESEARCH

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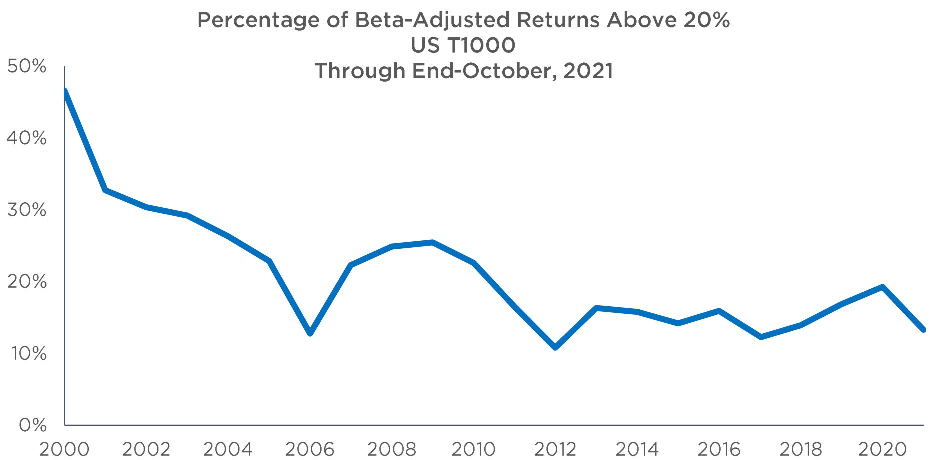
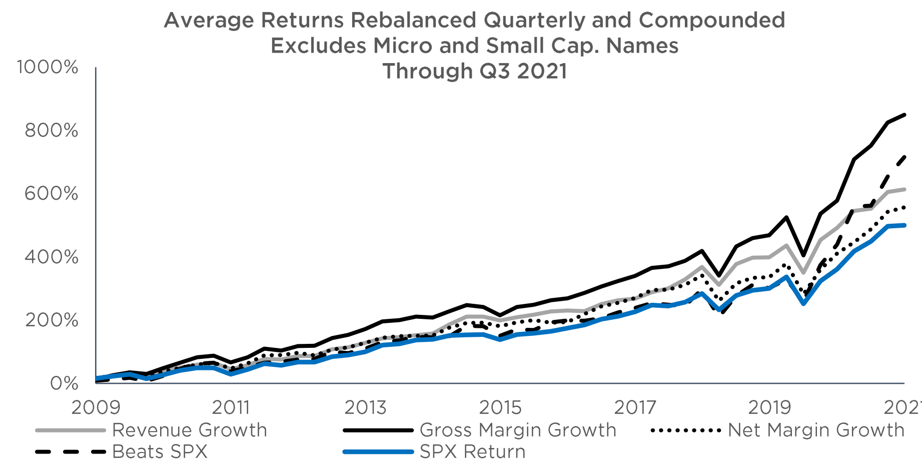
For further information on our Quantitative Framework, or our notes on FAANGM, BATJ (Baidu, Alibaba, Tencent, JD.com) or ESG ETFs please contact us or log into our website www.trivariateresearch.com for access.

FOUR CHARTS YOU SHOULD NOT MISS

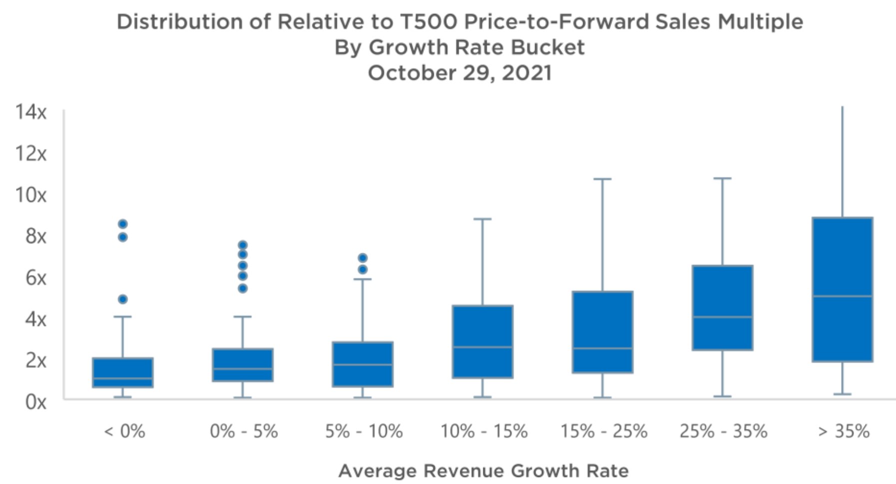
Alpha generation has been challenged in part by the fewest "big" long ideas in years (upper left). The key focus today should be gross margin expansion, as this leads to the highest likelihood of compounding (upper right). Our sector bets include energy / materials over industrials, discretionary over staples, healthcare over tech, and utilities over REITS (bottom left). We search for the Double Whammy of growth ideas (bottom right) with higher revenue growth and disproportionately higher multiples





Trivariate Sector Recommendations

Sector	Trivariate Recommendation	Comments
Materials	Max Overweight	Prefer copper long-term, steel near-to-medium term
Energy	Max Overweight	Oil is rising, and M&A is likely
Health Care	Overweight	Healthcare services are rate-sensitive, and demand trends are above GDP
Consumer Discretionary	Overweight	Retailing, reopening, and services better than durables
Utilities	Equal-Weight	Some idiosyncratic bets probably sensible
Communication Services	Equal-Weight	Makes sense to keep market-weight FAANGM
Financials	Equal-Weight	Large cap banks better than regionals
Real Estate	Under-Weight	Commercial real-estate is challenged
Information Technology	Under-Weight	Semis are over-earning, focus on margin expansion / cash flow generation
Consumer Staples	Under-Weight	Plenty of short ideas in idiosyncratic staples
Industrials	Max Underweight	Industrial activity is rolling over, but earnings expectation are very high



INVESTMENT CONCLUSIONS

- **We remain bullish on the US stock market.** We see earnings growth and a solid US economy, accompanied by accommodative monetary policy and a sustained fiscal stimulus. While the market is expensive relative to its own history the constitution of the market has changed. Nearly 20% of the top 3000 US stocks market cap is FAANGM. Roughly 20% of the market is pharma & biotech. or software companies, where current profitability is not as important as sustained growth. Signs of management hubris are missing, as capital spending-induced impediments to margin expansion in most industries do not appear likely and inventory risk is small. The key is whether inflation and supply chain disruption will cause broad based margin contraction, hampering 2022 earnings. Low real yields keep equity market multiples elevated
- **We think a growth – value barbell is appropriate.** Following the last ten large drawdowns in growth stocks, margin expanders with positive free cash flow subsequently outperformed. There is a non-linear relationship between revenue growth and valuation, revealing several opportunities. The key to identifying compounders is gross margin growth, and our judgment is investors should be spending a disproportionate amount of time on margin expectations at this point in the cycle
- **Alpha generation has been challenging.** High-conviction out of consensus ideas have recently failed, volatility in factor efficacy, a dearth of long ideas beating the market by 20% or more and the growth universe being less idiosyncratic than value are among the issue

INVESTMENT CONCLUSIONS

- **Sector recommendations.** We like energy / materials over industrials, discretionary over staples, healthcare over technology, and utilities over REITs. We like large banks over small. Within semis, focus on margin expansion, within software, avoid low margins and focus on revenue growth among the high margin companies
- **Gross exposure advice:** We ingest over 100 macro variables and conclude that investors consumer discretionary, and lower quality stocks that are not fast growing (i.e., gross up high yield junk and other junk) and de-gross durables and lower quality stocks that do not pay a dividend. This month the flattening of our economic activity gauged caused us to recommend de-grossing TMT from our high gross recommendation the previous several months. For banks, financial conditions had been tight, and are now neutral, meaning we can gross up banks closer to average, from our low gross recommendation prior.
- **If risks did not change, anyone could do risk management.** The importance of measuring "work from home" vs. "reopening" exposure crossed with quality and junk, inflation exposure, and the unprecedented correlation of signals in certain segments like REITS and industrials are all huge risks that grew after COVID-19 roiled markets in Q1 2020. When considering risk, investors should consider correlation convexity and negative asymmetric beta. Canvassing multiple metrics, industrials and REITs have outsized risks today
- Growth managers should avoid expensive stocks with new CEOs, as 65% of these stocks underperform over the next 4 to 8 months

WE ARE OPTIMISTIC ABOUT US EQUITIES

- **Our conclusion: We remain bullish on US equities.** When investors look back several years from now what will they observe? A solid economy with sustained profit growth, accommodative monetary policy and big fiscal stimulus. Earnings will be higher in 2022 than 2021 and as long as people believe that can continue, US equities should perform well
- **Does it matter that the market is expensive?** While there is no question that the US stock market is expensive on forward earnings vs. its own history at 20.7x forward earnings, we do not think history is a fully relevant determinative of subsequent return as market constitution, profit margins, and low interest rates are so different than much of history
- We generally do not see signs of management hubris, with capital spending unlikely to impede margin progress and inventory levels for a decreasingly relevant set of companies relatively tame. **Hence, we remain optimistic about the sustainability of earnings growth and the maintenance of elevated multiples**
- The key to security selection is gross margin expansion, and hence the main "macro" investment controversy is whether rising input costs (labor, materials, transportation) can be passed on to end-customers, or whether margins will contract next year
- **IN SUMMARY: We have a healthy US economy, growing earnings, impediments to margin expansion that include labor, raw goods and transportation logistics, offset by fiscal stimulus and an accommodative monetary policy. The biggest risks in our mind is input costs rising faster than revenue for select companies, the Fed materially tightening, though a material reset due to policy related to the COVID Delta variant, or increased China tension could also unnerve the market at these levels**

EARNINGS EXPECTATIONS PEAKED IN Q2 AND DECELERATE UNTIL Q1

The bottom-up analyst earnings growth expectations are for 32.4% YoY earnings growth for Q3, down from the 92.4% growth in Q2 (a function of the COVID trough) but up from where expectations were at the end of Q2. Earnings will decelerate but remain in the mid-twenties through Q4, trough in Q2 2022, and then accelerate again from there. The energy sector lost money in 2020, so the rebound is to be expected. Industrials companies have very high YoY earnings growth expectations every quarter through 2022, which may be a risk as input costs rise

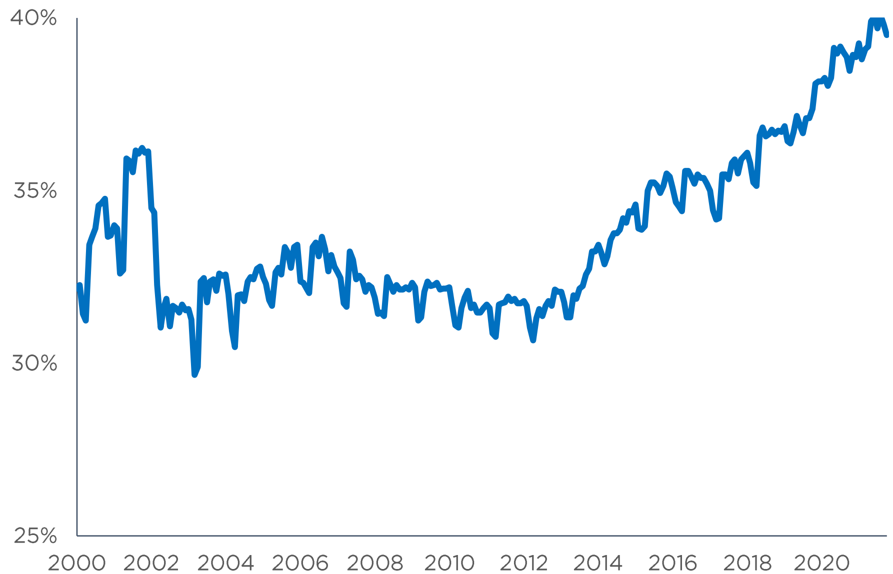
Bottom-Up Analyst Earnings Growth Expectations
October 29, 2021

Sector	1Q21	2Q21	3Q21E	4Q21E	1Q22E	2Q22E	3Q22E	4Q22E
S&P 500	46.7%	92.4%	32.4%	22.2%	6.3%	4.3%	9.1%	12.7%
S&P ex-Financials	33.2%	73.1%	32.8%	27.5%	13.7%	10.0%	12.4%	14.1%
Consumer Discretionary	224.2%	258.2%	5.8%	13.7%	7.1%	27.2%	43.7%	38.7%
Consumer Staples	8.3%	16.4%	(2.6%)	(0.1%)	4.4%	4.7%	13.1%	9.8%
Energy	16.0%	N/A	N/A	N/A	160.0%	50.4%	13.9%	(6.2%)
Financials	130.9%	251.8%	30.3%	0.6%	(20.0%)	(19.1%)	(6.3%)	5.5%
Health Care	21.7%	20.1%	16.6%	18.2%	6.1%	4.9%	5.2%	6.2%
Industrials	(4.6%)	384.1%	64.2%	110.1%	52.9%	30.2%	37.0%	35.3%
Info Tech	37.7%	41.9%	32.2%	13.7%	6.0%	5.1%	7.6%	15.0%
Materials	53.7%	128.3%	87.4%	61.5%	35.0%	1.5%	(8.1%)	(12.8%)
Communication Services	49.7%	68.2%	35.3%	11.0%	0.8%	1.1%	6.3%	16.1%
Utilities	(1.0%)	13.7%	(0.9%)	0.8%	6.9%	(9.7%)	4.3%	17.1%
REITS	3.4%	27.5%	18.1%	13.1%	6.1%	1.1%	7.7%	10.5%

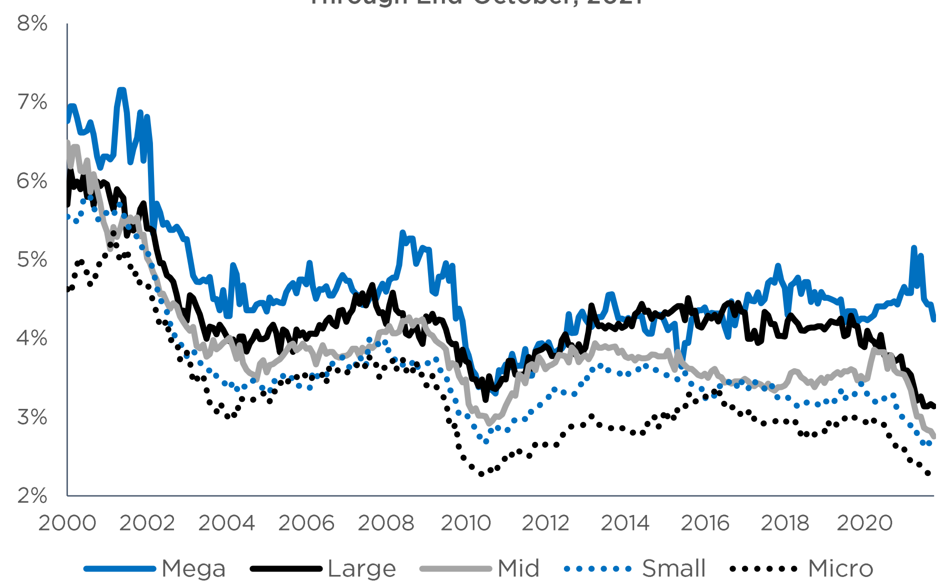
INVENTORY AND CAPITAL SPENDING ARE NOT BURDENS TO PROFITS

Overall inventory is less of a risk than it was in the past, because now approximately 40% of the top 3000 US equities do not even have inventory as part of their business model. That is roughly 300 more stocks than 20 years ago. Moreover, we are still more likely to hear about shortages (semiconductor supply chain) than excesses in many area of manufacturing today. Therefore, an inventory burn off or backlog cancellation seems highly unlikely to impede margin expectations for the coming couple of quarters. Restocking could drive higher factory utilization and margins for manufacturers. Excessive capital spending can also be bad. However, we generally have not seen any increases in capital intensity (right chart), with large cap capital intensity at 20-year lows, so there is limited fear of over-producing consumption in the near-to-medium term. In the end, management hubris that caused cycle tops previously seems less likely when inventory and capital spending are under control

% of Top 3000 US Companies That Have Zero Inventory Dollars Through End-October, 2021



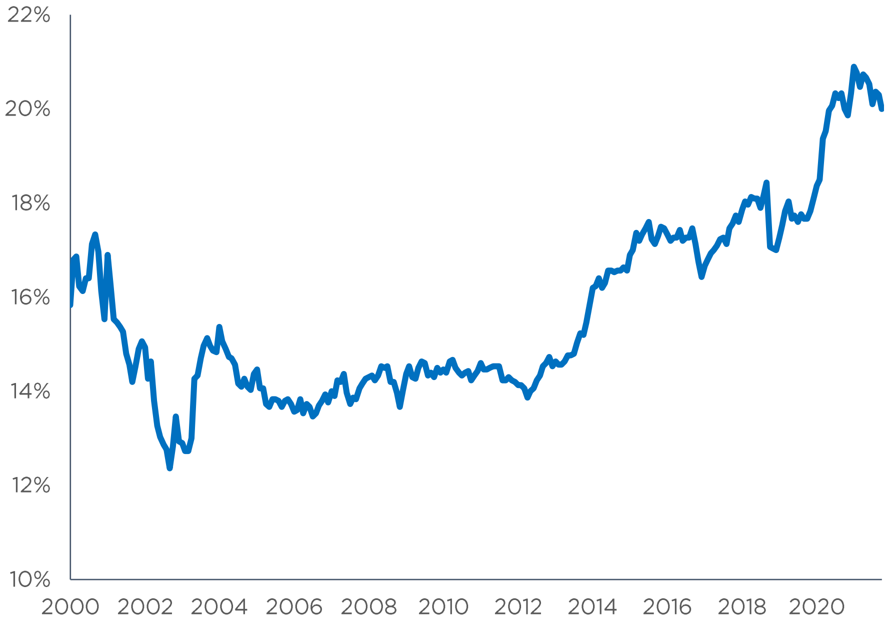
Capital Spending to Sales By Market Cap Group Through End-October, 2021



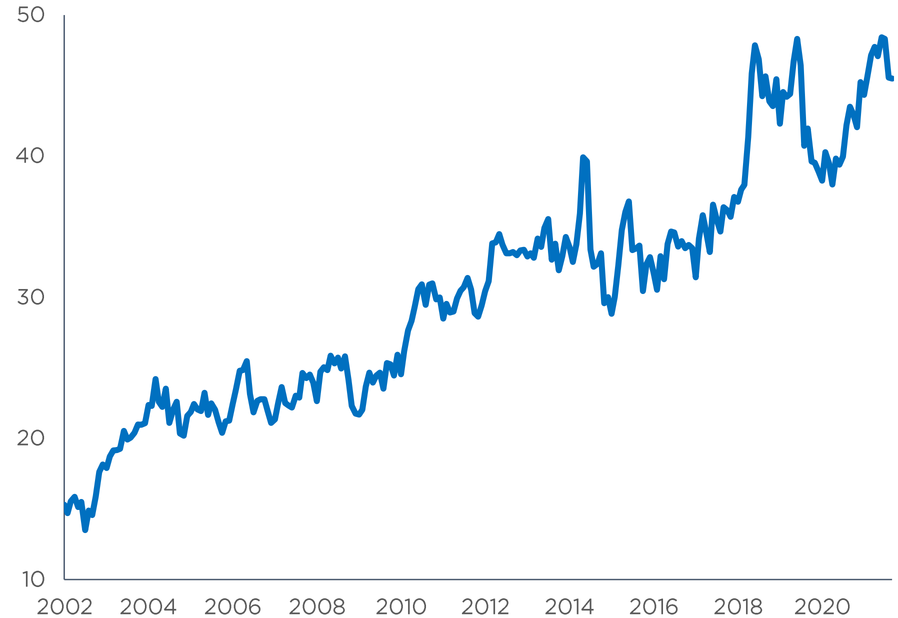
IS VALUATION DEFENSIBLE? CONSTITUENTS HAVE SHIFTED

Roughly twenty percent, or 600 of the biggest 3000 public US equities are currently in the Software & Services or Pharmaceuticals, Biotechnology, and Life Sciences industries. That is nearly twice the number we had 20 years ago! Investors are buying long-dated potential growth, not current profitability (left chart). We think that the elevated market valuation is in part sensible because these faster-growing businesses are maintaining their growth status for close to the longest amount of time ever (right chart) with the average number of consecutive months a growth stock in the SP500 has been able to grow near a record level of 48 months straight, up from just under two years in 2007

Software Plus Biotechnology
Percentage of Companies in the Top 3000
Through End-October, 2021



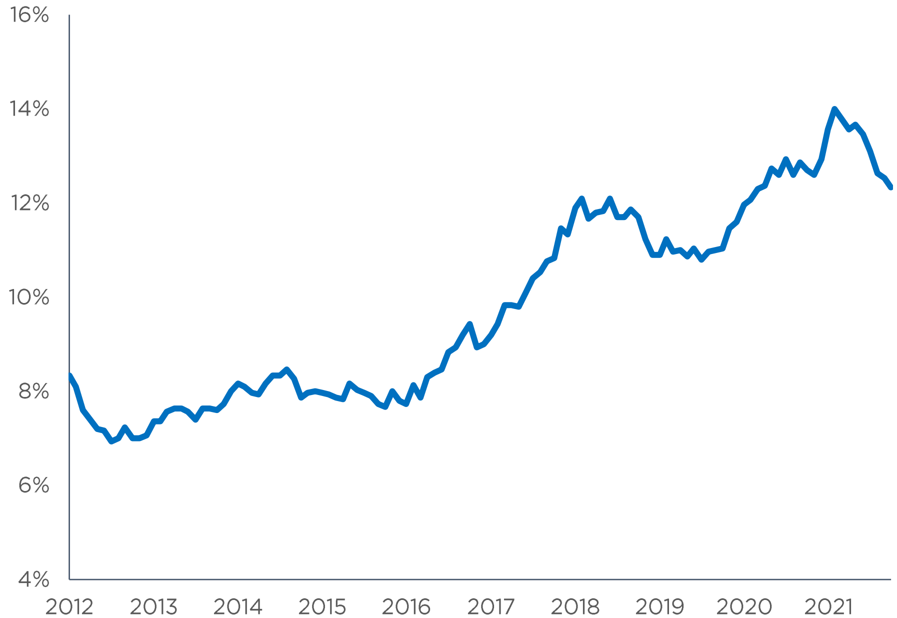
Average Number of Consecutive Months
An SP500 Growth Stock Has Been in Growth Universe
Through End-October, 2021



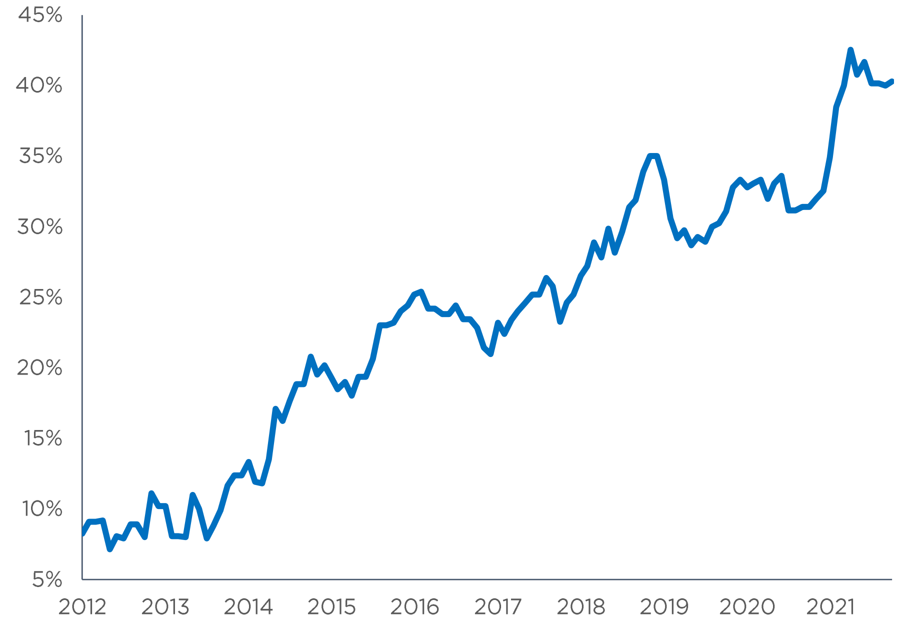
CURRENT PROFITS DO NOT MATTER FOR GROWTH INDUSTRIES

Investors in hyper growth stocks do not seem to care that much about current profitability, because more than 12% of the largest 3000 companies by market capitalization have lost money on an annual basis every quarter for the past two years (left chart). In industries like software, over 40% of the companies that have more than $500 million in annual trailing revenue still lose money (right chart). Investors clearly are not concerned focused on current profitability and will pay in an increasingly anticipatory fashion for growth if they believe it will be sustained or recurring for longer in the future

Percentage of Top 3000 Companies That Have Lost Money Annually For 24 Consecutive Months Through End-October, 2021

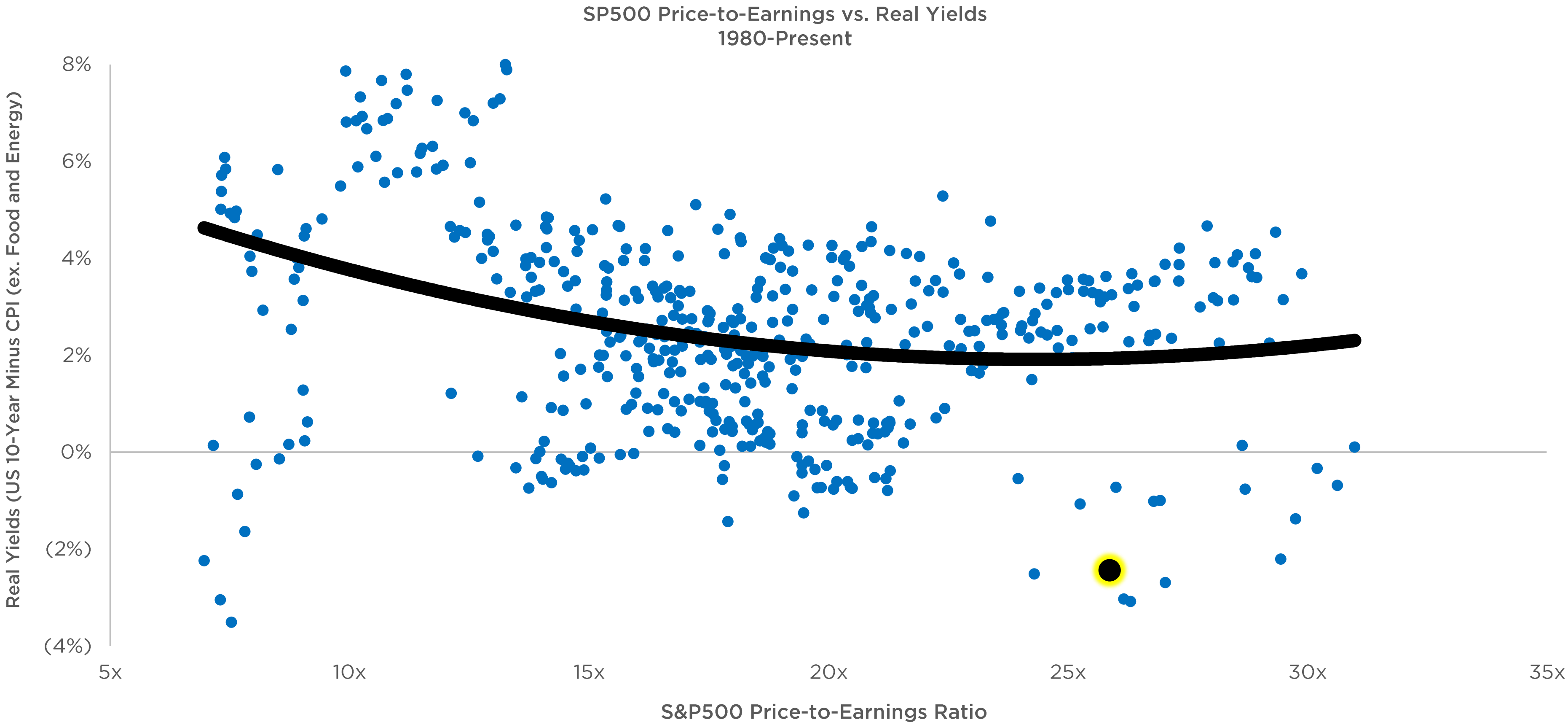


Percentage of Software Companies with Greater than $500m in Revenue that Lose Money Through End-October, 2021



THE PRIMARY REASON FOR HIGHER MULTIPLES IS LOW REAL YIELDS

The interest rate environment is an important metric for assessing an appropriate price-to-earnings ratio. Historically extreme real yields were accompanied by lower multiples because they were considered risk regimes. Today (highlighted below), the nominal level of yields seems to matter –i.e. our long-term assumptions of 3% total yield (dividend plus repurchase) and 'call option' on earnings growth make the market look much more attractive than the yield of government bonds



TRIVARIATE RESEARCH

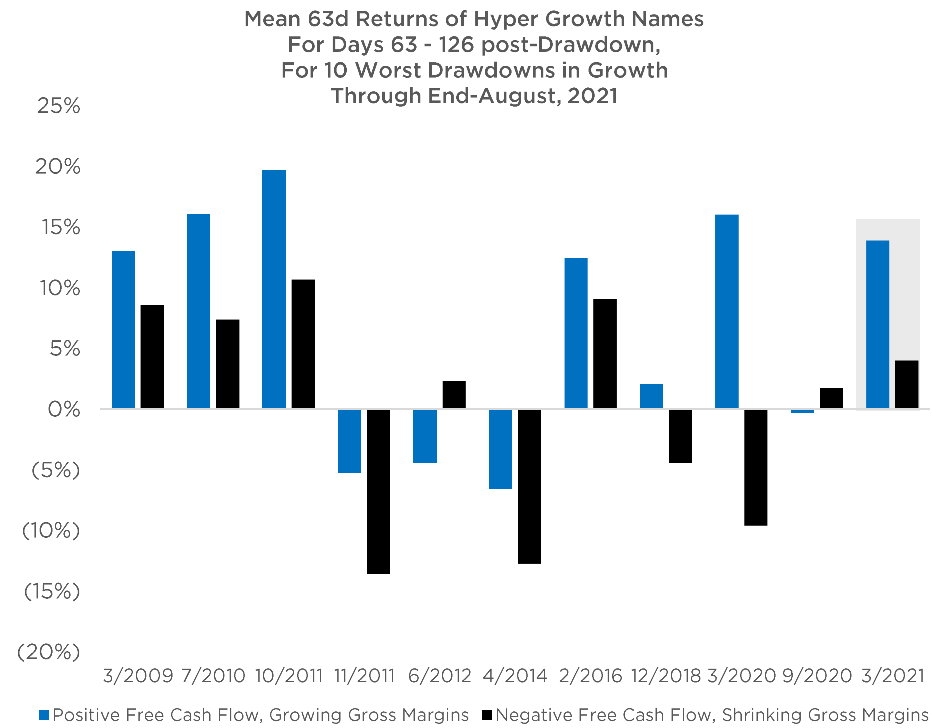
SUMMARY OF VIEWS ON GROWTH STOCKS

- We evaluated 11 prior growth-stock sell-offs since 2008 and identified that the key signals to focus on following every sell-off are largely similar – positive free cash flow and gross margin expansion. These typically work better than very fast growing, high margin, and low free cash flow stocks, which were more the type of growth stock that worked in 2020
- There is a non-linear relationship between revenue growth and relative price-to-sales multiples – the “Double Whammy” is identifying stocks that will not only grow faster(slower) but also begin to command a higher (lower) multiple – please contact us for stock ideas
- We looked at industry-level revenue growth and relative to SP500 price-to-forward sales and compared the forecasted growth and multiples to historical averages. Every industry is forecasted to grow faster than its long-term average next year. Energy is expected to grow nearly 25% faster than its average over the next year, but its sales multiple is nearly half its long-term average, as oil prices recover. Software is expected to grow 4% faster than average but is nearly 32% more relatively expensive than average
- We analyzed attributes associated with compounding and found that sustained gross margin growth produces the highest level of subsequent stock performance, more than sustained revenue growth, net margin growth, earning per share growth, and stock performance. Stock ideas are shown on page 17
- Attributes associated with identifying “melting ice cubes” are different – what matters is accruals and prior weak stock performance relative to peers. Stocks to avoid on page 20

AFTER THE GROWTH SELL OFF USE MARGINS AND POSITIVE FCF

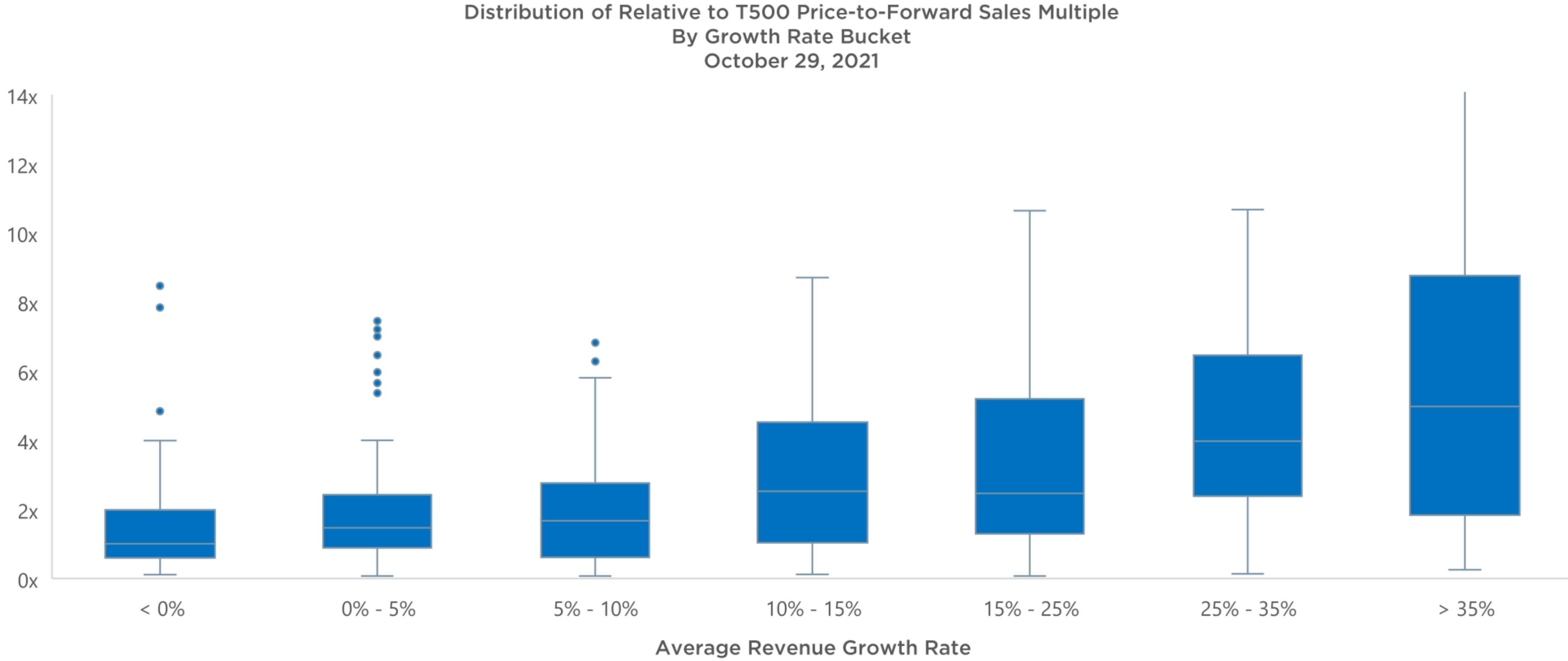
The sharp growth stock sell-off starting in mid-February may be over, but clearly is still the source of apprehension, particularly given the starting valuation levels prior to the sell-off were the most extreme since the financial crisis. On an absolute basis it was only the 11th worst drawdown (left chart), but relative to the SP500 the drawdown lasted until May 13th and was the WORST index-relative growth-stock drawdown since the financial crisis. So far this year those stocks with positive free cash flow and growing margins have beat the opposite by nearly 10%, showing the historical trend continued (right chart)

Date			Drawdown			
Starting	Ending	Days of Drawdown	Absolute	Relative	Prior 12-Month Momentum	Growth : Market Price-to-Sales Multiple
2/20/2020	3/23/2020	23	(30.4%)	3.4%	(8.1%)	1.7x
10/14/2008	3/9/2009	100	(30.2%)	1.5%	(30.2%)	1.7x
10/2/2018	12/24/2018	58	(24.2%)	(5.0%)	(0.5%)	1.8x
7/25/2011	10/3/2011	50	(21.4%)	(3.5%)	2.5%	2.1x
7/21/2015	2/8/2016	140	(17.9%)	(6.0%)	(2.7%)	1.7x
4/26/2010	7/2/2010	49	(17.3%)	(1.7%)	20.7%	1.7x
4/4/2012	6/1/2012	41	(12.4%)	(3.2%)	(3.8%)	1.9x
9/3/2020	9/23/2020	14	(11.5%)	(1.9%)	39.1%	2.3x
3/6/2014	4/11/2014	27	(11.0%)	(8.1%)	21.7%	1.8x
11/9/2011	11/25/2011	12	(10.6%)	(1.5%)	(5.2%)	2.1x
2/16/2021	3/8/2021	15	(10.4%)	(2.8%)	35.5%	2.1x



FASTER GROWTH MEANS DISPROPORTIONATELY HIGHER MULTIPLES

We analyzed the growth rates and relative to SP500 price-to-sales multiples for US stocks (excluding small / micro caps and value stocks). Growth / neither stocks with revenue growth below 0% have a relative price-to-sales multiple close to the market level, but as annual revenue growth exceeds 10%, the relative multiple begins to incrementally expand. Companies that grow 25-35% annual trade at nearly 4x the market multiple on sales on average, vs. 2x on average at 5-10% annual growth. **Higher growth means disproportionately higher multiples!**



LONG / SHORT GROWTH STOCK IDEAS

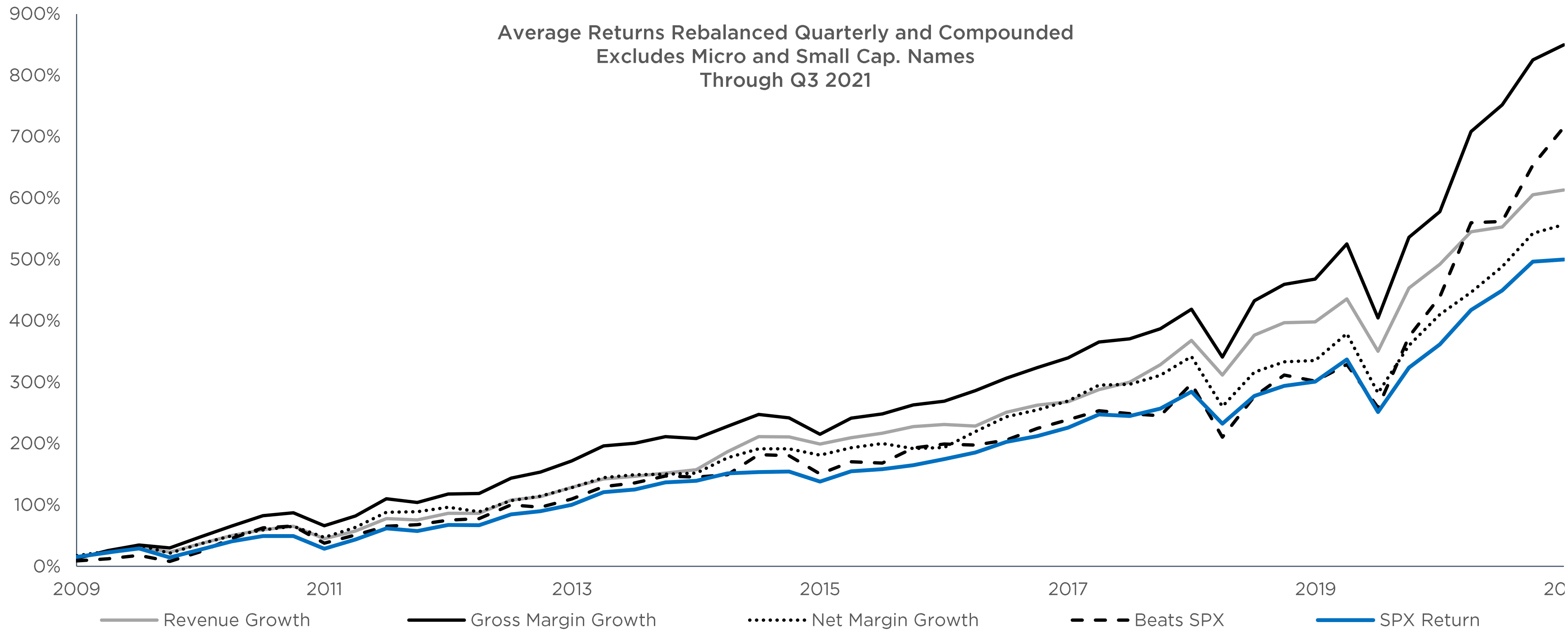
Long (short) ideas are poised to grow faster (slower) and get higher (lower) multiples

Buy Cheap Relative to Bucket or Moving to Higher Revenue Bucket, Short Expensive Relative to Bucket or Moving to Lower Revenue Bucket
End-October, 2021

Long				Short			
Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)	Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
COST	Costco Wholesale Corporation	Food & Staples Retailing	217.17	AAPL	Apple Inc.	Tech Hardware & Equipment	2457.68
ANTM	Anthem, Inc.	Health Care Equip. & Serv.	105.61	NVDA	NVIDIA Corporation	Semis & Semis Equipment	638.15
DELL	Dell Technologies Inc.	Tech Hardware & Equipment	84.16	MA	Mastercard Incorporated	Software & Services	329.67
HUM	Humana Inc.	Health Care Equip. & Serv.	59.52	ABT	Abbott Laboratories	Health Care Equip. & Serv.	228.50
MAR	Marriott International, Inc.	Consumer Services	52.11	ISRG	Intuitive Surgical, Inc.	Health Care Equip. & Serv.	129.01
MCK	McKesson Corporation	Health Care Equip. & Serv.	32.15	PSA	Public Storage	Real Estate	58.21
Z	Zillow Group, Inc.	Media & Entertainment	26.42	ZS	Zscaler, Inc.	Software & Services	44.24
W	Wayfair Inc.	Retailing	25.88	NEM	Newmont Corporation	Materials	43.06
CVNA	Carvana Co.	Retailing	25.62	MTCH	Match Group, Inc.	Media & Entertainment	42.57
DAL	Delta Air Lines, Inc.	Transportation	24.96	AVB	AvalonBay Communities, Inc.	Real Estate	32.99
CCL	Carnival Corporation & plc	Consumer Services	24.81	PAYC	Paycom Software, Inc.	Software & Services	31.73
CTRA	Coterra Energy Inc.	Energy	17.35	VRSN	VeriSign, Inc.	Software & Services	24.73
MOH	Molina Healthcare, Inc.	Health Care Equip. & Serv.	17.27	CLX	The Clorox Company	Household & Personal Prod.	20.02
UAL	United Airlines Holdings, Inc.	Transportation	14.94	CDAY	Ceridian HCM Holding Inc.	Software & Services	18.77
CAH	Cardinal Health, Inc.	Health Care Equip. & Serv.	13.57	HOLX	Hologic, Inc.	Health Care Equip. & Serv.	18.58
TRGP	Targa Resources Corp.	Energy	12.50	WAB	Westinghouse Air Brake Technologies Corporation	Capital Goods	16.95
AAL	American Airlines Group Inc.	Transportation	12.43	CPT	Camden Property Trust	Real Estate	16.40

BUY CONSISTENT GROSS MARGIN EXPANDERS

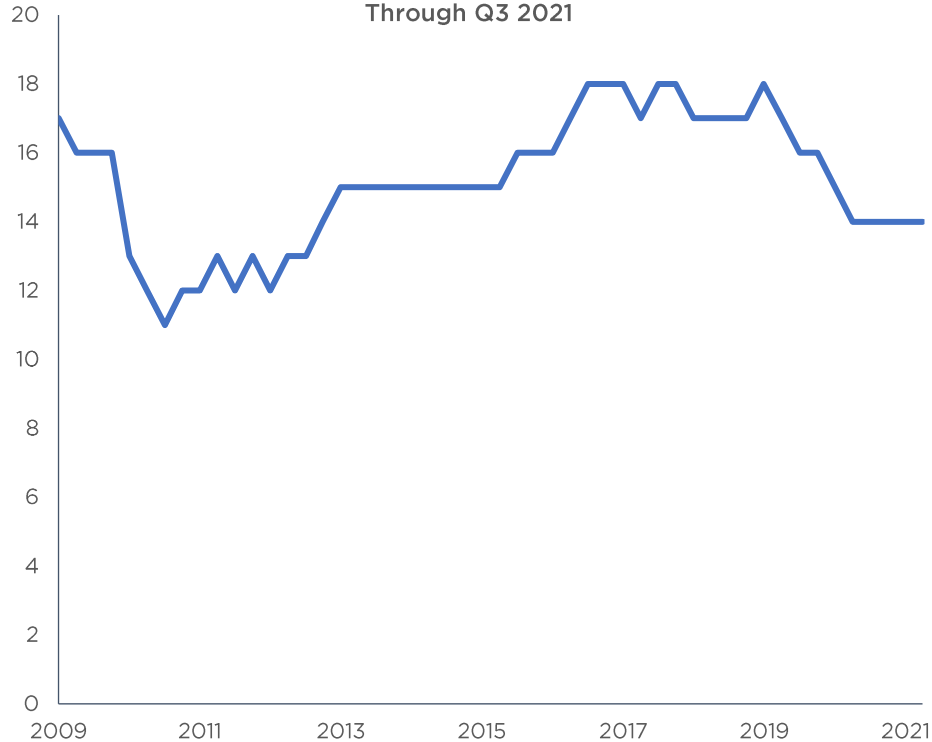
Of the four signals we studied (prior relative stock performance, revenue growth, gross margin expansion, and net margin expansion) buying stocks in the top 10% of consistent previous gross margin expansion resulted in the best subsequent stock performance.   While all four approaches beat the SP500, the consistency and total performance of the gross margin approach far bested the others. Net margin growth was clearly the weakest. Prior stock performance was strong, but much of this was generated since COVID



GROSS MARGIN GROWTH COMPOUNDERS ARE BEST

Of the ~400 companies with at least 2 consecutive quarters of gross margin growth this last quarter, 35 companies (top decile) had quarterly year-over-year gross margin expansion for at least 14 straight quarters (left chart). This universe of stocks has typically resulted in strong, above market performance. The stocks among this list with forecasted further gross margin expansion include NFLX, AVGO, and AMD (right chart) among others

Gross Margin Growth Compounders
Min. Number of Consecutive Quarters of Growth
Through Q3 2021



**Gross Margin Growth Compounders
And Forecasted Gross Margin Growth
Q3 2021**

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
NFLX	Netflix, Inc.	Entertainment	270.13
AVGO	Broadcom Inc.	Semis & Semi. Equip.	199.61
AMD	Advanced Micro Devices, Inc.	Semis & Semi. Equip.	124.81
MO	Altria Group, Inc.	Tobacco	83.94
ADSK	Autodesk, Inc.	Software	62.69
ATVI	Activision Blizzard, Inc.	Entertainment	60.19
MSCI	MSCI Inc.	Capital Markets	50.15
FTNT	Fortinet, Inc.	Software	47.70
CVNA	Carvana Co.	Specialty Retail	25.48
STE	STERIS plc	Health Care Equip. & Supplies	20.38
QRVO	Qorvo, Inc.	Semis & Semi. Equip.	18.58
GPC	Genuine Parts Company	Distributors	17.36
RH	RH	Specialty Retail	14.03
NTRA	Natera, Inc.	Biotechnology	10.45
HRC	Hill-Rom Holdings, Inc.	Health Care Equip. & Supplies	9.87
RL	Ralph Lauren Corporation	Textiles, Apparel & Luxury Goods	8.16
NTNX	Nutanix, Inc.	Software	8.08
BRKS	Brooks Automation, Inc.	Semis & Semi. Equip.	7.49

WHAT IS A MELTING ICE CUBE?

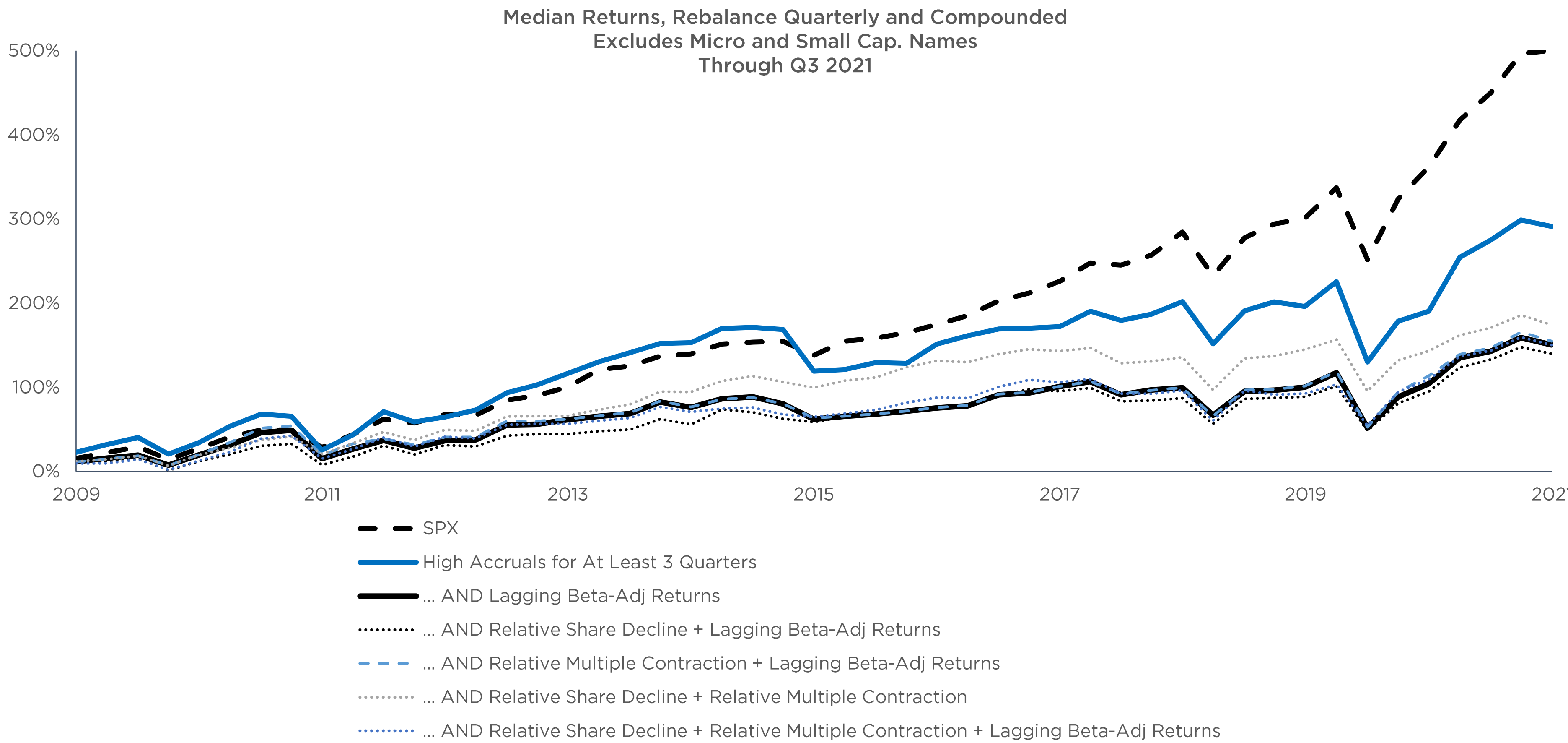
Accruals and price momentum are best: Our analysis clearly shows that these two variables identify relative underperformers far better than the others. This works confirms some work we had done years ago on short-selling, and while the result is not surprising to us, we found many in the past who were philosophically resistant to the conclusion. Analysts should focus on disconnects between earnings and free cash flow and should not try to short stocks at highs

Other metrics do not incrementally help: No other major fundamental attribute comes close to achieving the level of success at predicting subsequent underperformers as either accruals or momentum. We are not saying that resource allocators should not hire shorting experts, we are only saying that if you focus on bigger companies that repeatedly exhibit negative attributes, i.e., steady melting ice-cubes, then accruals and momentum are far better signals than the common fundamental ones most bottom-up stock pickers focus on. Moreover, if you do not have a dedicated short seller, but industry experts, they should start with stocks with high relative accruals that have lagged and size those stocks larger than those with other negative attributes. Downward analyst earnings revisions, often an investor focus, is not fruitful, as these stocks go on to beat the market on average over the next quarter

Conclusion and short ideas: Stocks repeatedly in the top quintile of the market on accruals are an inferior asset class. These "high accrual" stocks that have also underperformed their peer group (market cap and industry medians) form a cohort that substantially lags the S&P500 over time. Finding revenue share losers, prior multiple contractors, or gross margin contractors, does not lead to subsequent incremental underperformance. Our list of short ideas (i.e., the melting ice cubes) are shown on page 9

HIGH ACCRUALS WITH BAD MOMENTUM ARE GOOD SHORTS

The combination of high accruals and relative prior underperformance is compelling. By selecting only those names with high accruals for the previous three quarters that also have returns lagging their industry group and similarly-sized peers, performance can be cut nearly in half (solid blue line to solid black line compared to the SP500 returns that are the dotted black line). Further sub-setting, using changes in valuation or share, for example, have proven detrimental (in the case of forecasted share decline and prior relative contraction) or not accretive



TODAY'S MELTING ICE CUBES OR CANDIDATE SHORT IDEAS

Below are companies with high accruals for the past three quarters that have had relatively poor stock performance in the last quarter. Companies on the left side report in the next ten days, on the right after that

Select Names with High Accruals
At Least 3 Consecutive Quarters & Lagged Peers this past Quarter
Earnings after 11/6

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
PLD	Prologis, Inc.	Real Estate	106.45
MU	Micron Technology, Inc.	Semis & Semi Equipment	75.52
A	Agilent Technologies, Inc.	Pharma, Biotech & Life Sciences	47.82
WBA	Walgreens Boots Alliance, Inc.	Food & Staples Retailing	42.42
CPRT	Copart, Inc.	Commercial & Prof. Services	36.10
DHI	D.R. Horton, Inc.	Consumer Durables & Apparel	31.73
COO	The Cooper Companies, Inc.	Health Care Equip. & Services	20.56
LII	Lennox International Inc.	Capital Goods	11.60
TREX	Trex Company, Inc.	Capital Goods	10.93
FIVE	Five Below, Inc.	Retailing	10.80
REXR	Rexford Industrial Realty, Inc.	Real Estate	9.90
FR	First Industrial Realty Trust, Inc.	Real Estate	7.53
CASY	Casey's General Stores, Inc.	Food & Staples Retailing	7.12
FRPT	Freshpet, Inc.	Food, Beverage & Tobacco	6.64
THO	Thor Industries, Inc.	Automobiles & Components	5.76

NOT ALL NEW CEOS ARE GOOD

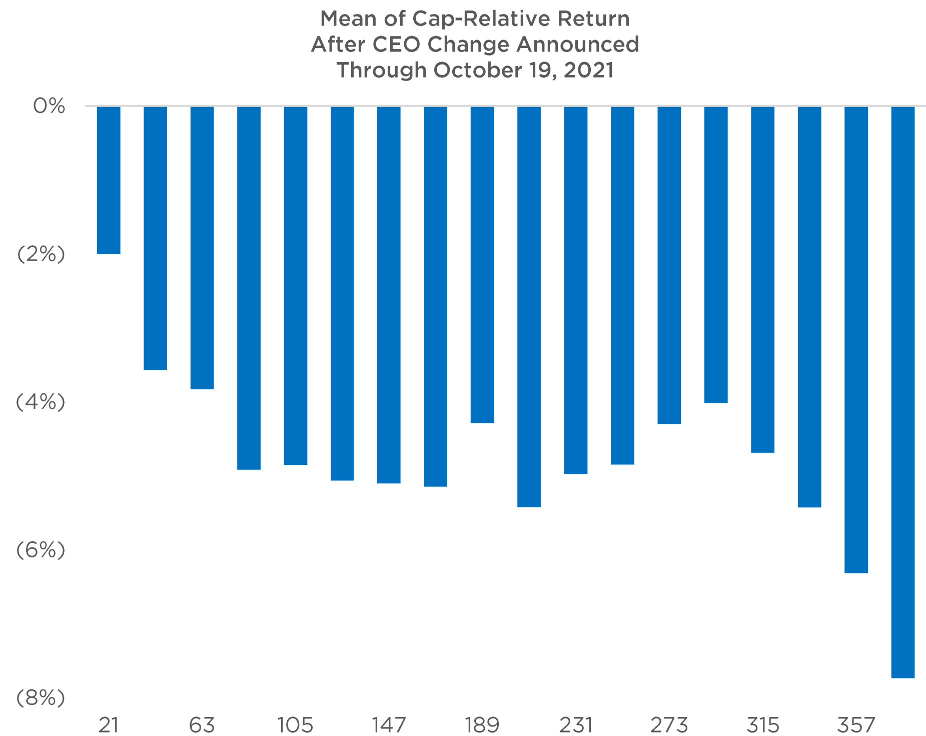
We analyzed stock behavior following the announcements of new CEOs. Stocks making new CEO announcements underperform on a volatility-adjusted basis, meaning short of some deep understanding of the new CEO's strategy, exiting / shorting stocks with a new CEO is on average prudent. The cumulative performance takes nearly 18 months to catch up to the average stock.

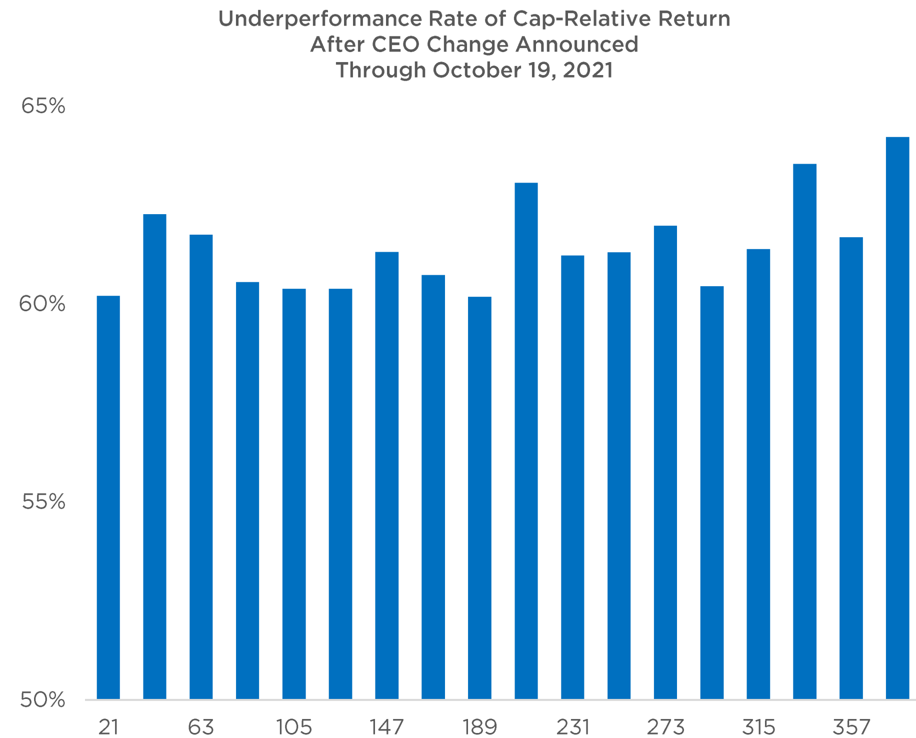
Size, style, and valuation matter: The average underperformance is longest for mega / large cap stocks, eight months on average, where management changes likely take longer to be effective. Micro/small and mid-cap underperformance is three-to-four months on average. Underperformance is most pronounced for growth stocks, in particular technology and healthcare, where the consensus perception of growth and management's confidence in its achievability is paramount and the need for a new CEO questions that outlook. Expensive stocks making CEO changes underperform, likely a correlated concept to growth stock underperformance.

Conclusion: We evaluated expensive growth stocks that made an announcement of a CEO change, 64% of which underperform their market-cap group over the subsequent eight months. We view selling long positions or initiating new shorts in expensive growth stocks making CEO changes as prudent. Value stocks, stocks with a meaningful dividend, or higher quality stocks do not statistically significantly lag following CEO announcements. For shorter-term strategies, the underperformance lasts sustainably even after the announcement date, so it is not too late to short the day after the announcement. Stocks with new CEOs are shown on page 10. 23 of the last 30 expensive growth stocks have lagged their peer group YTD, with 15 of them down double digits in absolute terms since the news.

EXPENSIVE GROWTH STOCKS LAG WHEN THE CEO CHANGES

Because growth stocks and stocks that were expensive on price-to-forward earnings are most vulnerable to CEO changes, we analyzed the performance of the expensive growth universe. Expensive growth stocks underperform the most dramatically of any sub-group and should on average be sold / shorted following the announcement for three-to for months (left chart). This strategy has a hit rate well over 60% for the first year (right chart)





EXPENSIVE GROWTH STOCKS WITH NEW CEOS THIS YEAR

Below we show expensive growth stocks with CEO changes. Since the announcement, absolute performance, and performance of each stock relative to the average stock in their market cap cohort, shows this trend has continued this year. HUBS, PUMP, and CNK are notable exceptions, but 23 of 30 have lagged their peer group since the announcement, with 15 stocks down double-digits

Performance After CEO Change Announced
Expensive Growth Stocks
Through End-October, 2021

Ticker	Company Name	Industry	Date Announced	Return	Cap-Relative Return	Market Cap ($ US. Bil)
AMZN	Amazon.com, Inc.	Internet & Direct Marketing Retail	2/3/2021	4.1%	(13.2%)	1608.71
SNPS	Synopsys, Inc.	Software	9/14/2021	(7.6%)	(9.5%)	50.67
MAR	Marriott International, Inc.	Hotels, Restaurants & Leisure	2/23/2021	6.5%	(6.2%)	37.72
LUV	Southwest Airlines Co.	Airlines	6/25/2021	(8.8%)	(11.9%)	36.35
HUBS	HubSpot, Inc.	Software	3/1/2021	52.5%	43.4%	23.86
GH	Guardant Health, Inc.	Health Care Providers & Services	8/6/2021	(12.8%)	(15.5%)	11.10
ANGI	Angi Inc.	Interactive Media & Services	2/25/2021	(17.4%)	(28.3%)	6.99
LMND	Lemonade, Inc.	Insurance	7/26/2021	(23.8%)	(27.0%)	6.72
NEO	NeoGenomics, Inc.	Life Sciences Tools & Services	3/2/2021	(15.4%)	(25.6%)	5.96
SFIX	Stitch Fix, Inc.	Internet & Direct Marketing Retail	4/14/2021	(29.0%)	(31.9%)	5.27
SEAS	SeaWorld Entertainment, Inc.	Hotels, Restaurants & Leisure	5/6/2021	12.4%	9.6%	4.33
NEWR	New Relic, Inc.	Software	5/14/2021	23.5%	19.9%	4.06
JJSF	J & J Snack Foods Corp.	Food Products	5/14/2021	(13.1%)	(16.7%)	3.13
CNK	Cinemark Holdings, Inc.	Entertainment	7/29/2021	30.9%	29.3%	2.57
IRTC	iRhythm Technologies, Inc.	Health Care Equipment & Supplies	6/2/2021	11.8%	11.8%	2.21
WKHS	Workhorse Group Inc.	Automobiles	7/29/2021	(45.7%)	(47.3%)	2.04
VLDR	Velodyne Lidar, Inc.	Electronic Equipment, Instruments & Components	7/19/2021	(29.3%)	(36.4%)	2.02
KIDS	OrthoPediatrics Corp.	Health Care Equipment & Supplies	5/6/2021	(0.6%)	(1.4%)	1.15
BJRI	BJ's Restaurants, Inc.	Hotels, Restaurants & Leisure	7/7/2021	(19.8%)	(19.3%)	1.14
RIDE	Lordstown Motors Corp.	Automobiles	8/26/2021	(24.3%)	(26.7%)	1.10
LIND	Lindblad Expeditions Holdings, Inc.	Hotels, Restaurants & Leisure	3/30/2021	(22.6%)	(25.4%)	1.04
OTRK	Ontrak, Inc.	Health Care Providers & Services	3/16/2021	(75.4%)	(71.7%)	1.03
INGN	Inogen, Inc.	Health Care Equipment & Supplies	1/27/2021	(15.9%)	(30.3%)	0.99
SIBN	SI-BONE, Inc.	Health Care Equipment & Supplies	1/7/2021	(25.2%)	(39.7%)	0.97
PUMP	ProPetro Holding Corp.	Energy Equipment & Services	7/29/2021	30.8%	30.0%	0.94
OSPN	OneSpan Inc.	Software	9/2/2021	7.4%	9.3%	0.77
LLNW	Limelight Networks, Inc.	IT Services	1/21/2021	(40.3%)	(58.2%)	0.49

WHY ALPHA HAS BEEN TOUGH FOR MANY THIS YEAR

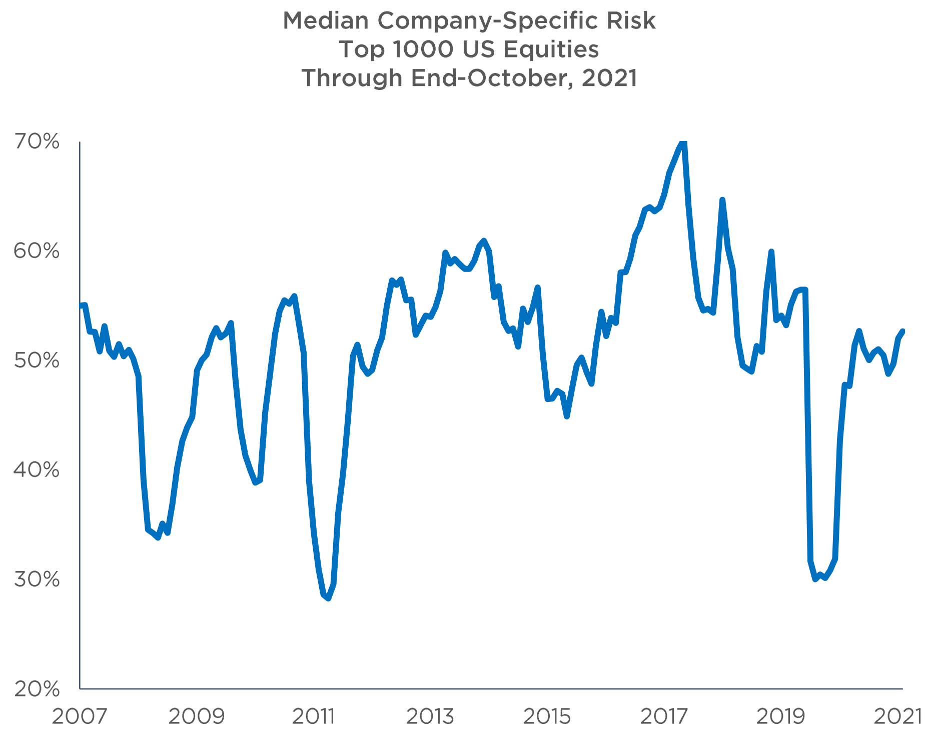
Correlations, dispersion, and company-specific risk have historically been good gauges of the alpha generating environment.   However, this year has been challenging because:

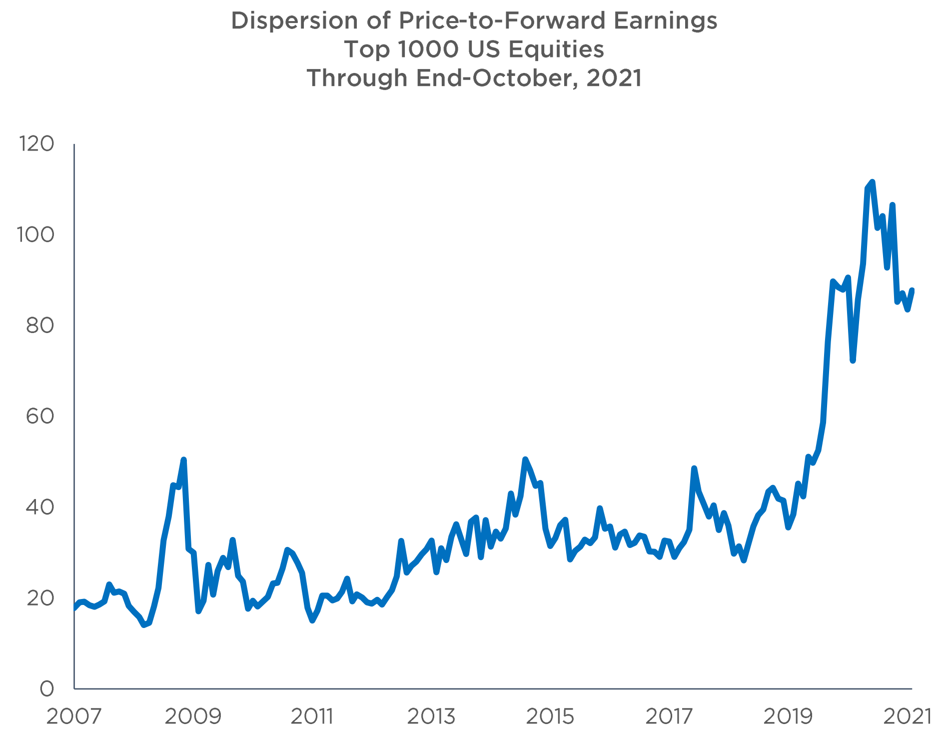
1. The industry level dynamics are different than the aggregate
2. The number of stocks outperforming by 20% or more is relatively low
3. The non-consensus, high conviction hedge fund ideas have lagged
4. The growth stocks have lower company-specific risk than the value stocks for the first time in awhile, and the dispersion of valuation among the highly company-specific risks stocks has materially declined
5. The signals that work to pick stocks one month, strongly reverse and fail the next, particularly in May to June, but also some in August to September

The alpha environment will likely improve, as that has historically happened following poor periods. We think searching for long-short ideas in the value universe might be helpful for generalists who have over-indexed toward growth in the last few years. Lastly, we recommend analytically rigorous risk management, running with more diversified than normal portfolios, more trading than normal, and avoiding “Texas hedge” factor bets

COMPANY-SPECIFIC RISK IS NEAR AVERAGE, DISPERSION STILL WIDE

Two of the gauges we use to comment on the market environment are company-specific risk (left) and dispersion on valuation (right). Company-specific risk rose in September and October and is now about average vs history. Dispersion on price-to-forward earnings remains quite high, signaling some overall opportunity

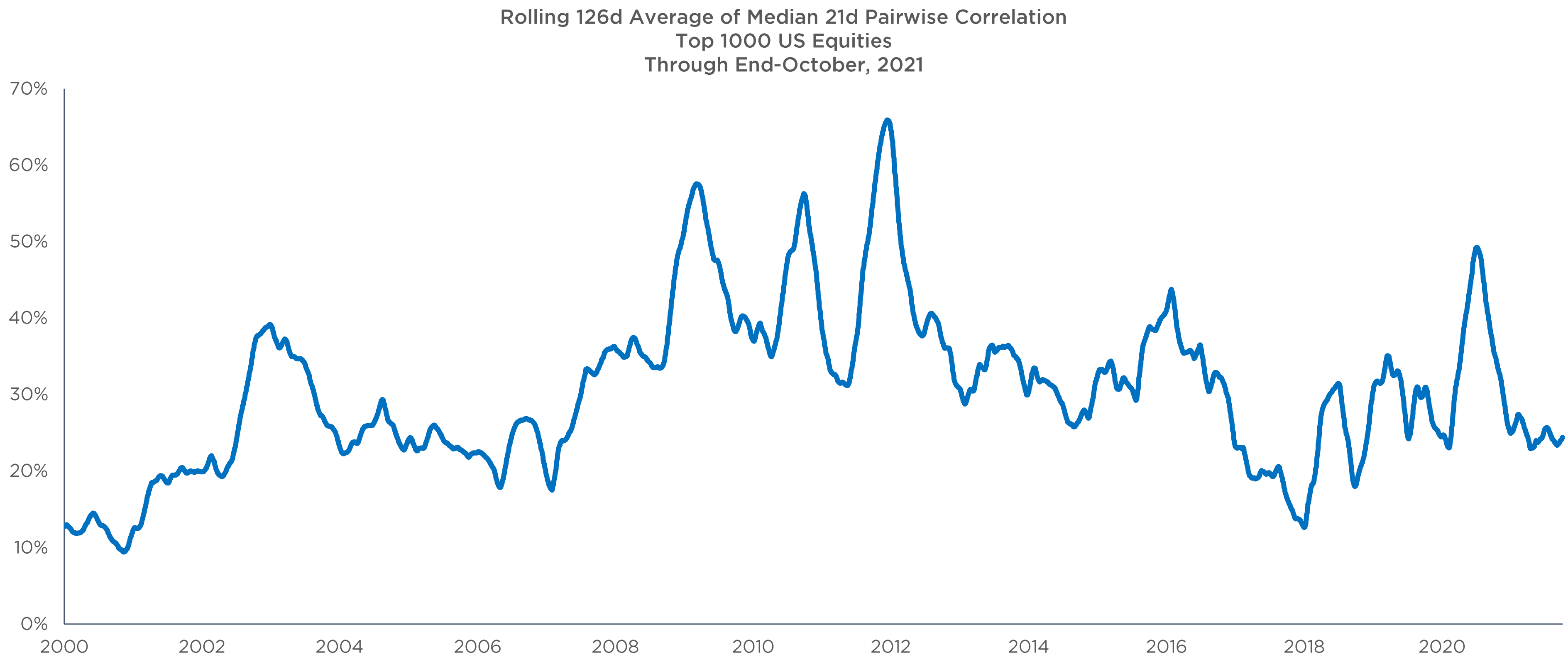




Note: The median's stock return can be explained by our proprietary seven factor model – equity market beta, two size factors (mega/large vs mid and mid vs. small/micro), style (growth vs. value), substance (quality vs. junk), liquidity, and momentum. At the peak of the COVID market hysteria, nearly 70% of the average stocks' return could be explained by these macro signals. Today, it is less than 50%.

PAIRWISE CORRELATION IS BELOW AVERAGE

Another potential tailwind for stock selection is that the average pairwise correlation of stocks is below average. Building a risk-adjusted and alpha-generative portfolio is typically easier when correlations are low, and today the average is roughly in-line with the 5-year average, but well below where we correlations were post the financial crisis



POINT 1: CONFLICTING SIGNALS AT THE INDUSTRY LEVEL

Only 6 of the 24 industries are above average on each of the three signals, pairwise correlation (low is good), company-specific risk (high is good) and price-to-forward earnings dispersion (high is good)

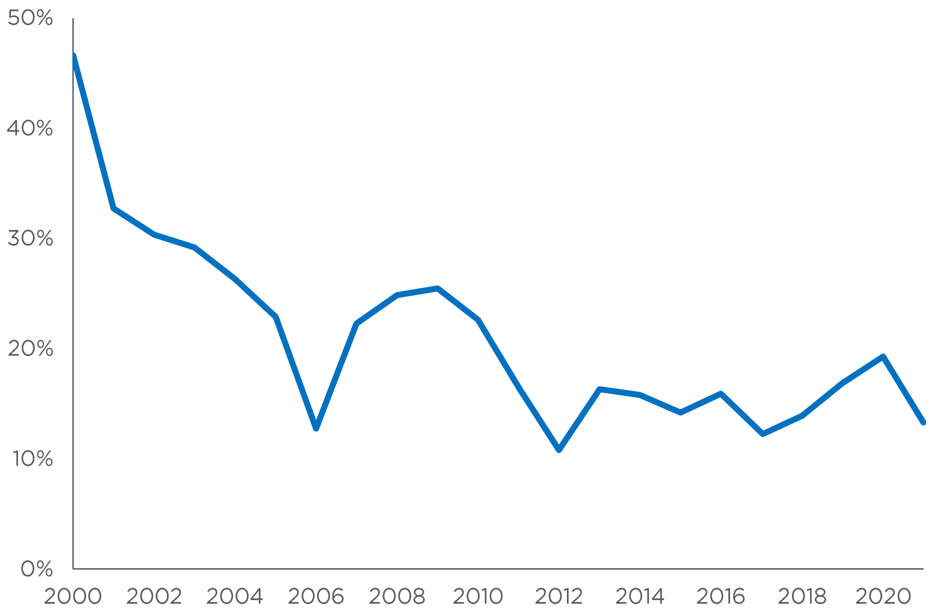
Percentile Rank vs. History of the Industry Group (US Top 1000)
Through End-October, 2021

Industry Group	Median Pairwise Correlation	Company-Specific Risk	Price-to-Forward Earnings Dispersion
Automobiles & Components	47.9%	59.2%	93.7%
Banks	94.1%	7.1%	63.5%
Capital Goods	64.0%	39.1%	94.2%
Commercial & Professional Services	52.1%	33.1%	93.7%
Consumer Durables & Apparel	77.6%	31.4%	56.6%
Consumer Services	85.5%	26.0%	98.4%
Diversified Financials	46.1%	33.7%	95.2%
Energy	94.5%	14.8%	7.4%
Food & Staples Retailing	55.7%	69.2%	74.1%
Food, Beverage & Tobacco	57.1%	36.7%	93.7%
Health Care Equipment & Services	28.5%	37.3%	91.5%
Household & Personal Products	13.1%	62.1%	94.7%
Insurance	83.1%	23.7%	64.6%
Materials	62.4%	50.9%	31.7%
Media	25.7%	50.3%	95.2%
Pharmaceuticals, Biotechnology & Life Sciences	6.5%	81.7%	94.2%
Real Estate	42.4%	65.1%	85.2%
Retailing	26.7%	43.2%	94.7%
Semiconductors & Semiconductor Equipment	70.4%	64.5%	93.1%
Software & Services	21.6%	56.8%	97.9%
Technology Hardware & Equipment	67.3%	42.6%	43.9%
Telecommunication Services	54.6%	24.9%	7.9%
Transportation	19.6%	66.3%	96.3%
Utilities	69.7%	66.9%	72.5%

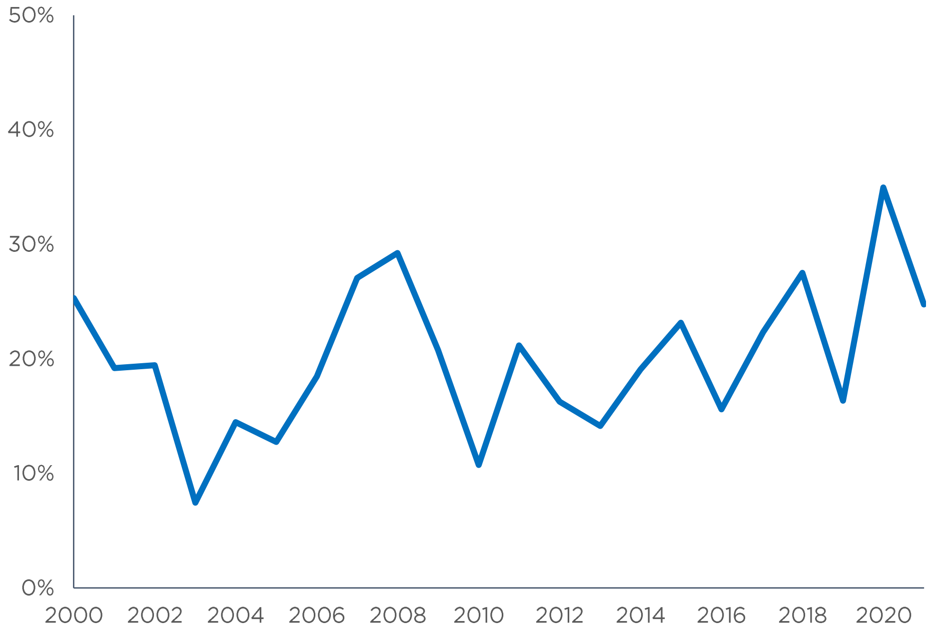
POINT 2: THERE ARE FEW GOOD LONG IDEAS

The number of stocks generating 20%+ alpha on the long side is relatively low (left exhibit). Only ~14% of the top 1000 US equities by market cap. have beta-adjusted returns above 20% YTD. Only 6 of the 24 industry groups have average beta adjusted returns that are positive (Diversified Financials, Food & Staples Retailing, Real Estate, Energy, Banks, Retailing). On the other hand, the number of names lagging by 20% or more YTD is slightly average (right exhibit). With hedge funds running relatively net long, this has not been a good YTD combination

Percentage of Beta-Adjusted Returns Above 20%
US T1000
Through End-October, 2021

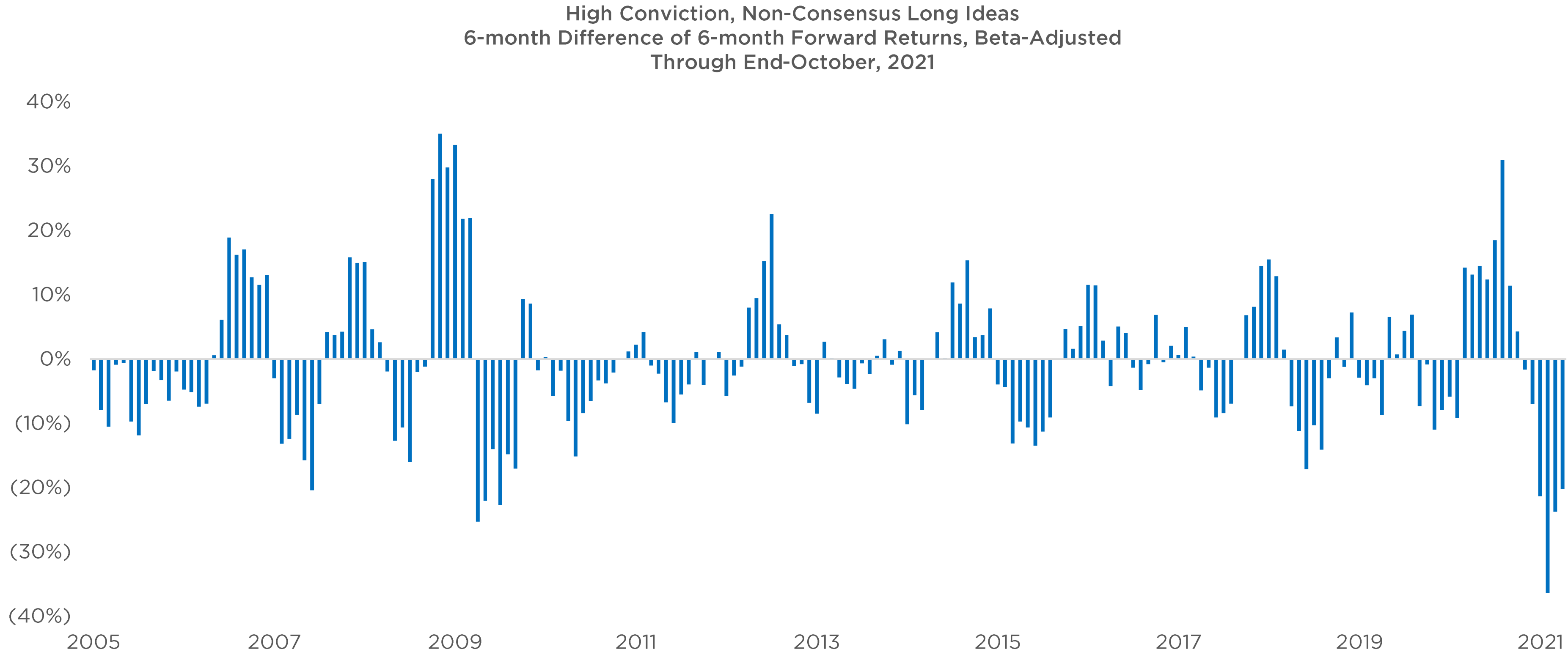


Percentage of Beta-Adjusted Returns Below (20%)
US T1000
Through End-October, 2021



POINT 3: THE BIG AND NON-CONSENSUS LONGS HAVE FAILED

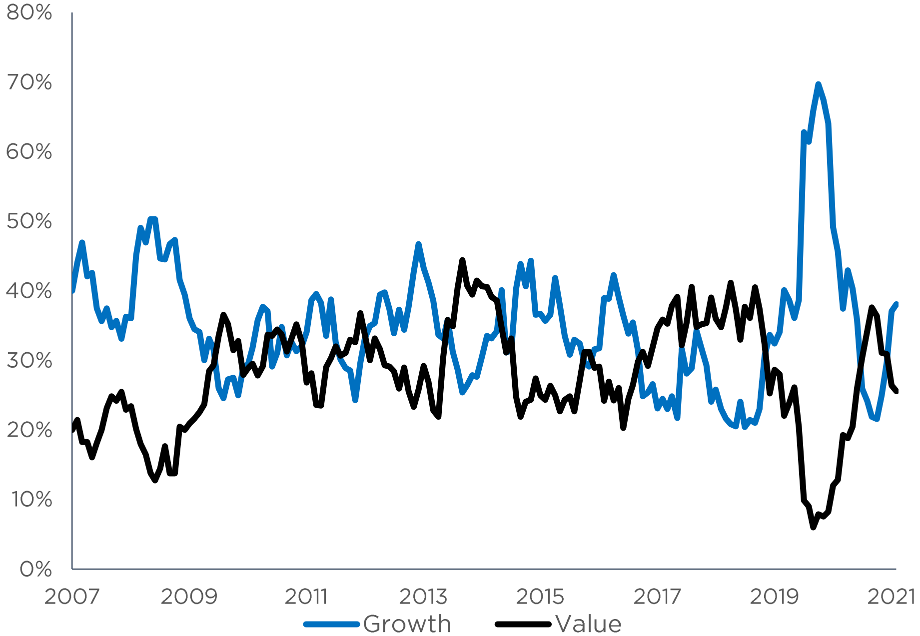
We analyze the high conviction (3% or more of their long AUM) holdings of 60 fundamental hedge fund managers who run between $1 and $15b that are not disproportionately owned by the rest of the asset managers. Since the fall of 2020, these hedge fund manager's high-conviction, non-consensus long ideas began degrading and have lagged the market since December. The difference between the most recent six-month beta-adjusted return – based on April 2021's ideas – and that of the return six months before that – based on October 2020's ideas – are the eighth-lowest of all six-month differences



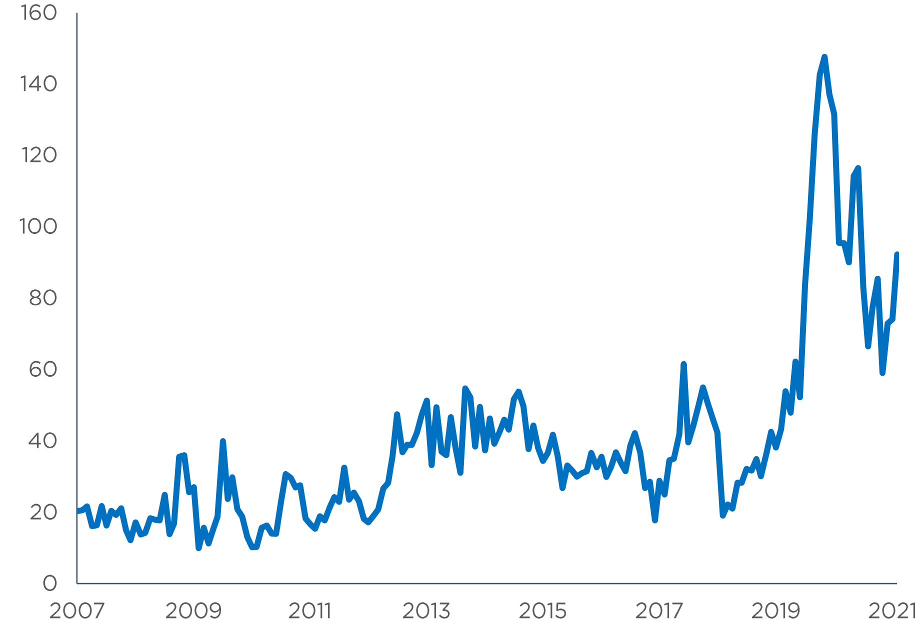
POINT 4: GROWTH AND VALUE ARE EQUALLY MACRO

The most idiosyncratic names are now equally represented from the value and growth universe, a reversal from the peak levels we saw for growth last year (left chart). Many bottom-up stock pickers have gravitated toward growth given its strong outperformance over the last decade, but the most idiosyncratic stocks became more macro this year. The most idiosyncratic names have seen a sharp reversal in the dispersion on price-to-forward earnings, back down to pre-COVID levels and only modestly elevated today, suggesting there is less potential dislocation in the most idiosyncratic names (right chart)

Composition of Top Quintile of Company-Specific Risk
US Top 1000 Stocks
Through End-October, 2021

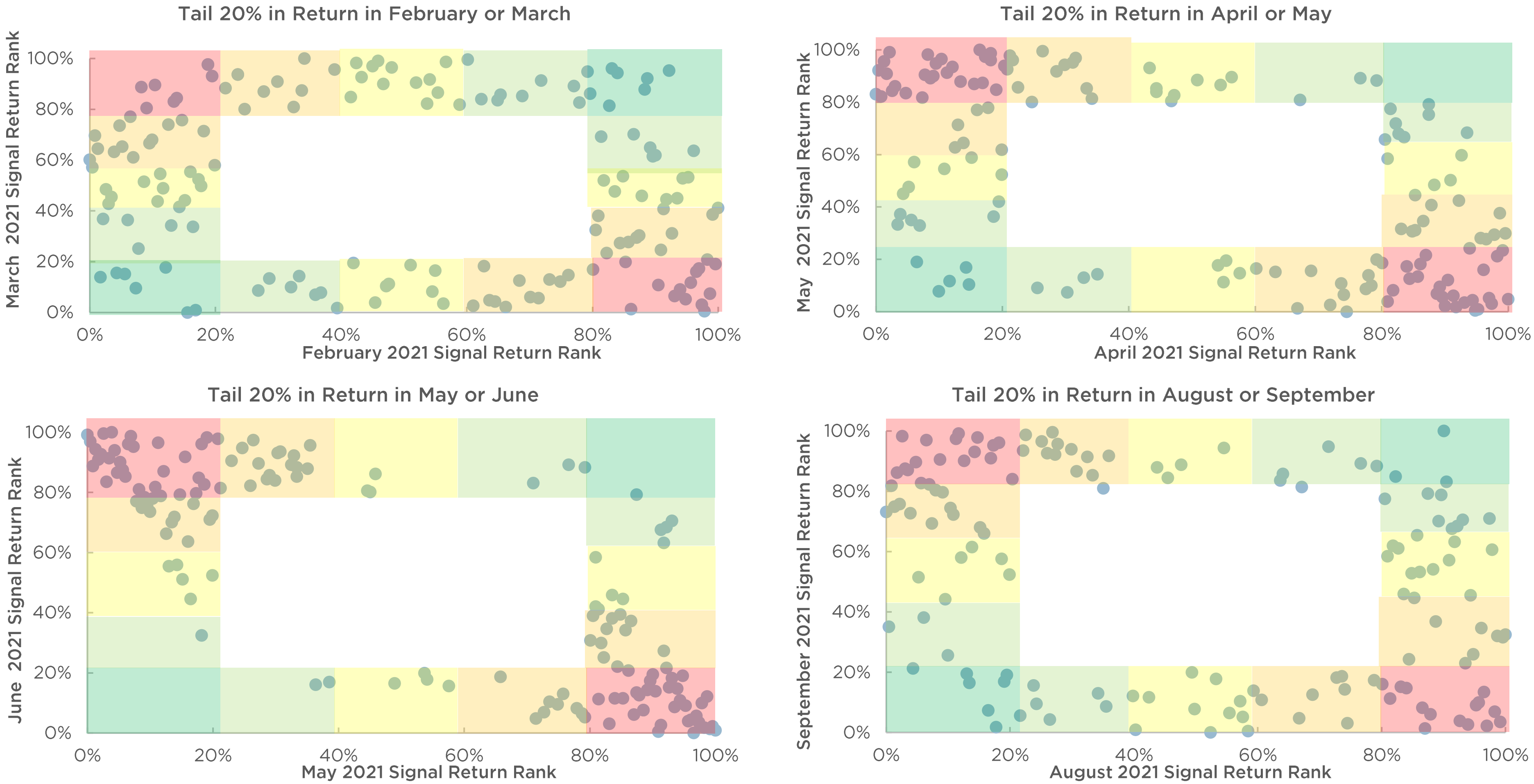


Dispersion of Price-to-Forward Earnings
Top Quintile of Company-Specific Risk
Through End-October, 2021



POINT 5: THE BEST SIGNALS ONE MONTH ARE THE WORST THE NEXT

In each of the below four months (Feb to March, April to May, May to June, August to September), those signals ranked in the top 10% of efficacy in one month are rarely seen in the top 10% of efficacy in the next month and can often be found in the *bottom* 20% of efficacy in the next month. Put visually, we see a disproportionate number of signals in the upper left or bottom right boxes, meaning they completely reversed in their efficacy from one month to the next



HOW DO WE ASSESS WHERE ARE WE ARE TODAY?

We created twelve proprietary indices using over 100 variables that systematically process "macro" data. The macro data have various frequencies, ranging from daily through monthly and are downloaded from Bloomberg, except for corporate profitability and company-specific risk data, which we compute.   We smooth and transform the data to create twelve indices or gauges of where we are in the investing world today.   Our proprietary gauges include:

1. Economic activity
2. Consumer activity
3. Corporate profitability
4. Financial conditions
5. Currency
6. The slope and level of the US Treasury yield curve
7. Industrial activity
8. China activity
9. European activity
10. Oil
11. Commodities
12. Company-specific risk

ALL GOOD EXCEPT FINANCIAL CONDITIONS, CHINA, AND CURRENCY?

Many of our signals have multiple inputs (right side of below chart) and are designed to capture larger and longer-term trends, not shorter-term / smaller counter-trend movements. When we look at our 12 gauges (listed alphabetically below) most are generally increasing / improving. Economic activity has plateaued this month after rising the previous year. As we suggested in late September, industrial activity has now moderated. The 6-month curve is bull flattening while the 12-month one is bear steepening. Financial conditions were tightening in September but are neutral now. China has rolled over. The dollar is strengthening

Current Regime for Each Macro Signal

Macro Signal	Current Regime	Examples of Components
China	None	Fiscal Expenditures, New Auto Registrations, Electricity Consumption, Exports, Consumer Confidence, Financial Conditions, Residential Property Sales, 10-Year Yield
Commodities	Increasing	Aluminum, Corn, Cotton, Copper, Lumber, Natural Gas, Soybeans, Sugar, Silver
Consumer Activity	Increasing	Credit Card Delinquency, Retail Sales, Consumer Confidence, Wage Growth, Unemployment
Corporate Profitability	Increasing	Operating Margin, 1-Year FWD Earnings Expectations, 2-Year FWD Earnings Expectations
Company-Specific Risk	Increasing (More Idiosyncratic, Less Macro)	The amount unexplained by our 7-factor model
Currency	Dollar Strengthening	AUD, CAD, CHF, DXY, EUR, GBP, INR, JPY, SEK
Economic Activity	None	CEO Confidence, Inflation, Philly Fed Business Outlook, Small Business Optimism, Leading Indicators
Europe	Increasing	Financial Conditions, 5y5y Forward Break-evens, Unemployment, Consumer Confidence, CDS Spreads
Financial Conditions	None	Credit Spreads, US Treasury Implied Volatility, 30-Year Fixed Mortgage Rates
Industrial Activity	None	Dry Van Rate per Mile, Baker Hughes Total Rig Count, AAR N. America Total Carloads, US Capacity Utilization, Private Non-Residential Construction, US C&I Loans
Oil	Increasing	WTI, Brent
Yield Curve 63d	None	US 2-Year Yield, US 10-Year Yield
Yield Curve 126d	Bull Flattening	US 2-Year Yield, US 10-Year Yield
Yield Curve 252d	Bear Steepening	US 2-Year Yield, US 10-Year Yield

WHAT SHOULD WE DO ABOUT IT?

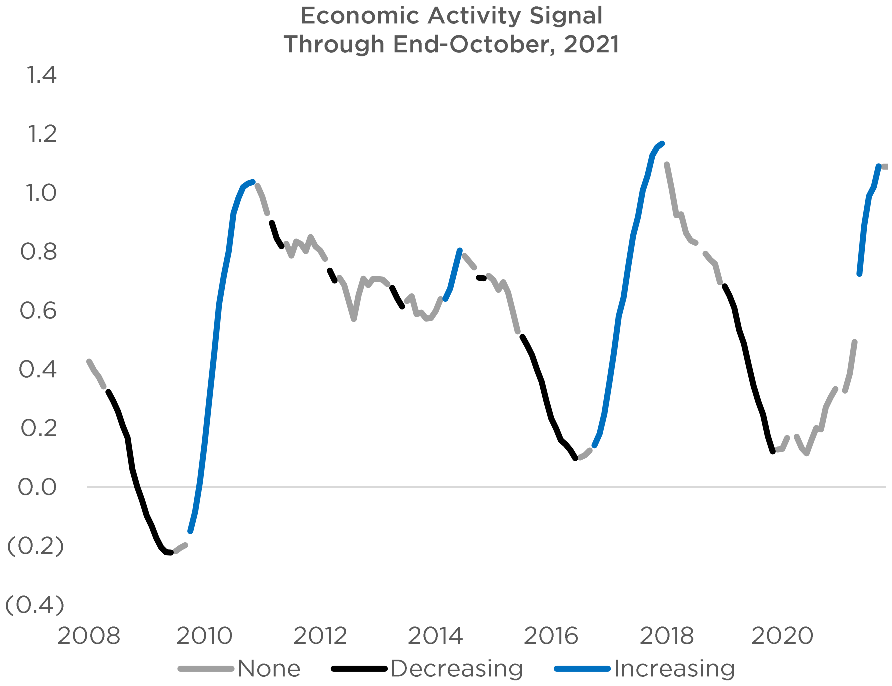
1. We recommend that investors **gross down their durables exposure.** We struggle to separate winners from losers in durables like homebuilders, air conditioners, and select durable apparel when economic activity is positive and increasing
2. We recommend that investors **gross up their consumer discretionary exposure.** Our consumer discretionary model also performs better when our consumer activity gauge is positive and increasing
3. Other recommendations include: **gross down exposure to staples and gross up exposure to healthcare, energy and materials, industrials, and non-growth "junk" stocks**

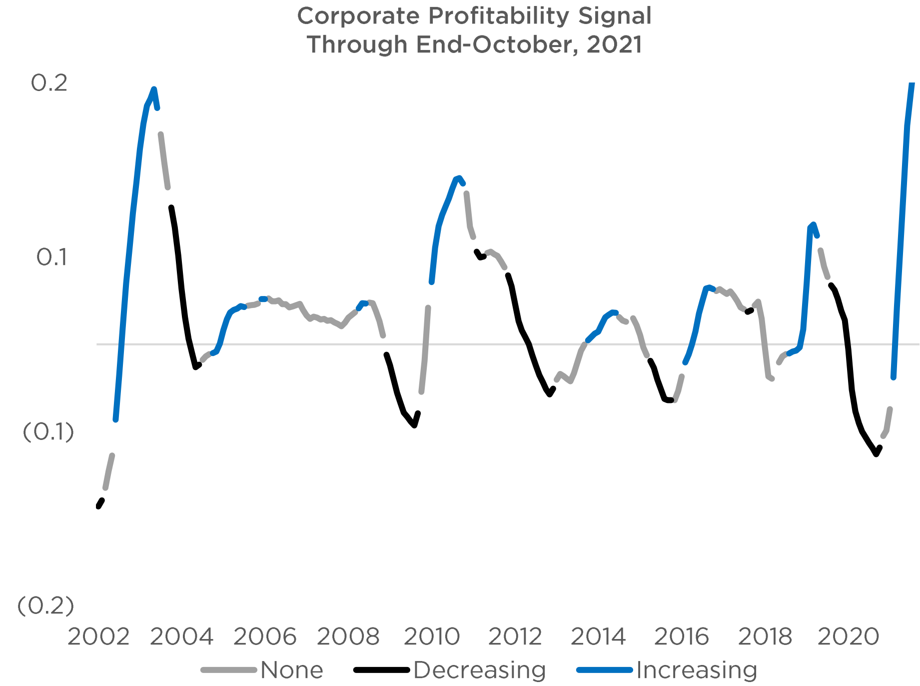
CHANGES FROM LAST MONTH

1. Economic activity has stopped increasing and begun to plateau. This means we no longer recommend investors gross up their TMT exposure
2. Financial conditions had been tightening in September and are now neutral.
3. Industrial activity has also plateaued after increasing over the previous several months

ECONOMIC ACTIVITY FLATTENED, CORPORATE GAUGE STILL STRONG

We show the economic and consumer activity gauges below. We evaluate where we are in the economic activity cycle by looking at variables like CEO Confidence, Philly Fed Business Outlook, Small Business Optimism, US Economic Surprise, US LEI, US 5y5y Forward Breakeven, etc.   This month the gauge moderated (left chart). Our corporate profitability gauge consists of current operating margins and forward earnings expectations (relative to current) for the fiscal years 1 and 2 years into the future. Currently, 1-year forward earning expectations are at an all-time high, 2-year earnings expectations are in the 85th percentile vs. history, and current operating margins are in the 78th percentile, rebounding off COVID bottoms





OTHER GROSS EXPOSURE RECOMMENDATIONS

Our durables model performance poorly when corporate profitability is increasing, fueling our judgment that picking winners from losers is challenging in areas like home builders, air conditioning, and select apparel today. The top quintile of our durables model UNDERPERFORMS the bottom quintile by 1.5% on average when corporate profitability is increasing but outperforms the bottom quintile by 8.6% when it is not increasing (left chart). We show the additional gross exposure recommendations activated by our 12 proprietary gauges, including grossing up consumer discretionary, banks, energy and materials, industrials, healthcare, and high yielding junk, and grossing down staples (right chart)

Durables Model Performance Through End-July, 2021

Stat (Beta-Adjusted)	Corporate Profitability Increasing	Corporate Profitability Not Increasing	Difference
Weighted Mean	(1.5%)	8.6%	(10.2%)
Weighted Median	(2.6%)	10.6%	(13.1%)
Weighted Information Ratio	(0.15)	0.74	(0.89)
Hit Rate	42.2%	63.8%	(21.6%)

Other Current Gross Exposure Recommendations

Model	Grossing Action	Justification
Consumer Discretionary	UP	Consumer Activity and Company-Specific Risk are increasing.
Energy & Materials	UP	Dollar strengthening
Healthcare	UP	Europe activity
High Yielding Junk	UP	Economic and Consumer Activity and Commodities are increasing
Industrials	UP	Oil increasing
Regular Yielding Junk	UP	Yield Curve over past 252d is in bear steepening
Staples	DOWN	Corporate Profitability increasing

IF RISKS DID NOT CHANGE, ANYONE COULD DO RISK MANAGEMENT

Five key risks worth monitoring:

1. **High signal correlation:** Variables both fundamental managers and quants use to pick winners from losers are highly correlated in both REITS and industrials
2. **COVID:** Quality "reopening" stocks have still massively underperformed "junk" "work from home" stocks – monitor exposure of "substance" and "work from home" / "reopening"
3. **Correlations during downturns:** Many stocks become more correlated to other names during market sell-offs than during "normal" times, and an assessment of drawdowns can help locate better hedges
4. **Asymmetric betas:** Measure beta during downturns as there appears to be a consistent group of stocks that have much higher betas during market corrections than "normal" times –many of these are REITS
5. **Inflation:** We recommend looking at the correlation of every stock in your portfolio to an inflation basket (contact us if you want access to our inflation basket) to monitor exposure

RISK ONE: HIGHLY CORRELATED SIGNALS – REITS AND INDUSTRIALS

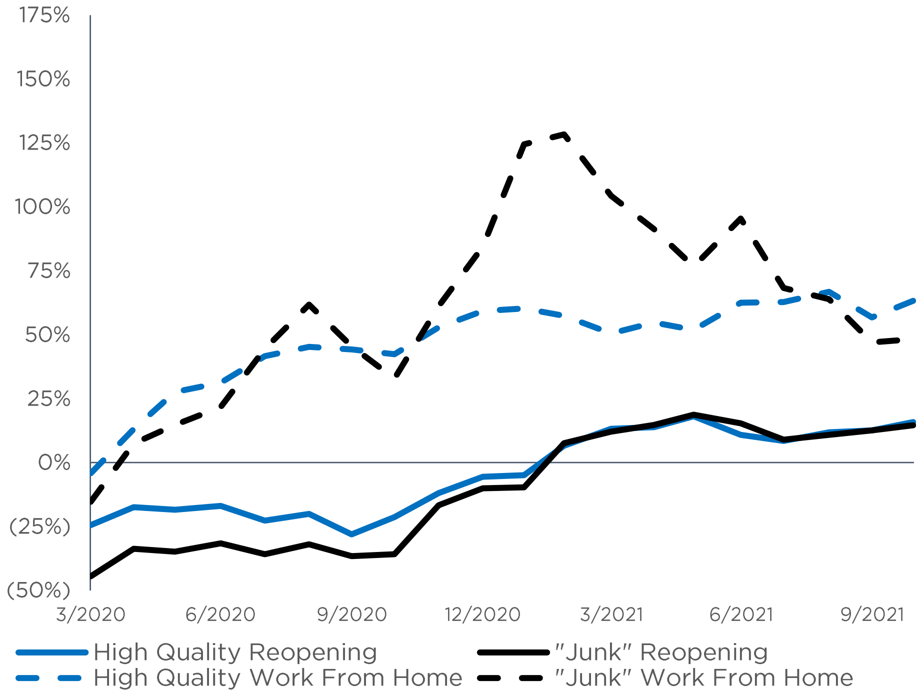
We analyzed all 21 of our quantitative models to see if signals have become increasingly correlated recently. The two biggest risks we see are the increased correlation in REITS and industrials. For both, we have a model comprised of eight signals to predict subsequent 18-month returns for stocks in that industry. There were sustained periods during our model development (2012-2017) where the average pairwise correlation of these signals was near zero (even briefly negative). However, right after the Pfizer vaccine announcement on November 9th of 2020, the average pairwise correlation of our REITs-model signals jumped to near 70% as REITs names rose indiscriminately. This has begun to moderate recently for REITS. However, high signal correlation in the industrials model have continued to persist

REITS and Industrials Cohort Model
Average 21-Day Pairwise Correlation
Through End-October, 2021

RISK TWO: JUNK WORK FROM HOME VS. QUALITY REOPENING

We created "work from home" and "reopening" baskets and looked at the correlation of every stock in our universe to both baskets – clearly this was a major new risk to monitor that formed last year. Given the simultaneous move in "junk" and "reopening", we looked at performance of work from home quality and junk and reopening quality and junk since March of 2020 (left exhibit). In our minds, high quality reopening names seem poised for incremental catch up, and junk "work from home" ideas could continue to lag (right exhibit for ideas)

Compounded Median Return
Reopening vs. Work-from-Home, High Quality vs. Junk
Through End-October, 2021



Buy High Quality Reopening, Sell "Junk" Work-from-Home
Names in Top/Bottom Model Quartile with Market Cap. of at least $1 Bil.
End-October, 2021

Long

Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
HIG	The Hartford Financial Services Group, Inc.	Insurance	24.82
UGI	UGI Corporation	Gas Utilities	9.08
IBOC	International Bancshares Corporation	Banks	2.69

Short

Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
AFRM	Affirm Holdings, Inc.	IT Services	45.13
PTON	Peloton Interactive, Inc.	Leisure Products	27.69
BYND	Beyond Meat, Inc.	Food Products	6.26
SAM	The Boston Beer Company, Inc.	Beverages	6.00
FCEL	FuelCell Energy, Inc.	Electrical Equipment	2.93
CDE	Coeur Mining, Inc.	Metals & Mining	1.63
TTCF	Tattooed Chef, Inc.	Food Products	1.47
VLDR	Velodyne Lidar, Inc.	Electronic Equipment, Instruments & Components	1.19

RISK THREE: BEAR CASE CORRELATIONS THAT RISE

We analyzed stock performance during market drawdowns of 10% or more and noticed that some stocks become increasingly correlated during market pullbacks. We like to monitor "bear case" correlations so we are not misled about the portfolio being hedged or defensive when there is a measurable phenomena during downturns

Names with Higher 126d Correlations to Peers During SPX Drawdowns of at Least 10%
End-October, 2021

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
WMT	Walmart Inc.	Food & Staples Retailing	416.66
ORCL	Oracle Corporation	Software	262.27
PFE	Pfizer Inc.	Pharmaceuticals	245.24
VZ	Verizon Communications Inc.	Diversified Telecommunication Services	219.39
COST	Costco Wholesale Corporation	Food & Staples Retailing	217.17
TGT	Target Corporation	Multiline Retail	126.70
EW	Edwards Lifesciences Corporation	Health Care Equipment & Supplies	74.69
PSA	Public Storage	Equity Real Estate Investment Trusts (REITs)	58.21
DLR	Digital Realty Trust, Inc.	Equity Real Estate Investment Trusts (REITs)	44.79
ORLY	O'Reilly Automotive, Inc.	Specialty Retail	41.93
CTSH	Cognizant Technology Solutions Corporation	IT Services	41.02
WBA	Walgreens Boots Alliance, Inc.	Food & Staples Retailing	40.70
AZO	AutoZone, Inc.	Specialty Retail	37.42
EFX	Equifax Inc.	Professional Services	33.85
AVB	AvalonBay Communities, Inc.	Equity Real Estate Investment Trusts (REITs)	32.99
EQR	Equity Residential	Equity Real Estate Investment Trusts (REITs)	32.40
PCG	PG&E Corporation	Electric Utilities	23.03
K	Kellogg Company	Food Products	20.90
CLX	The Clorox Company	Household Products	20.02
CTRA	Coterra Energy Inc.	Oil, Gas & Consumable Fuels	17.35
FDS	FactSet Research Systems Inc.	Capital Markets	16.71
CPT	Camden Property Trust	Equity Real Estate Investment Trusts (REITs)	16.40

RISK FOUR: NEGATIVE ASYMMETRIC BETA

We analyzed the beta of stocks during periods where the market is down 10% or more. 41% of stocks with the highest negative asymmetric betas are REITS (left side). Non-REITs are shown on the right. This list represents names where we expect high underperformance in a market drawdown

Names with Higher 252d Betas During SPX Drawdowns of at Least 10%
End-October, 2021

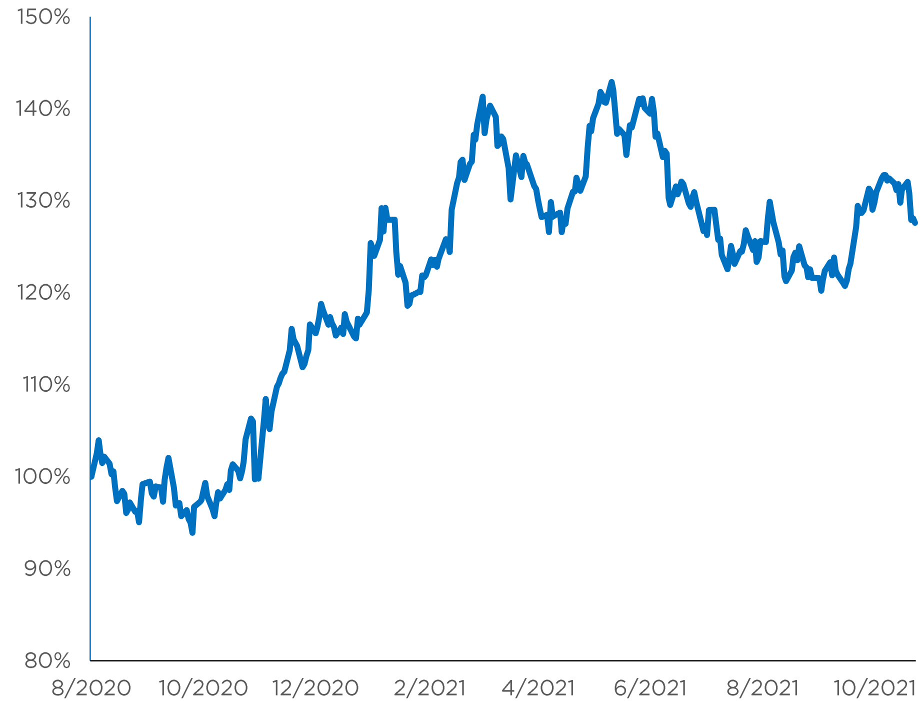
REITs				Non-REITs			
Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)	Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
PSA	Public Storage	REITs	58.21	SQ	Square, Inc.	IT Services	117.53
SPG	Simon Property Group, Inc.	REITs	48.17	CME	CME Group Inc.	Capital Markets	79.21
DLR	Digital Realty Trust, Inc.	REITs	44.79	ICE	Intercontinental Exchange, Inc.	Capital Markets	78.01
SBAC	SBA Communications Corporation	REITs	37.83	TWLO	Twilio Inc.	IT Services	51.96
AVB	AvalonBay Communities, Inc.	REITs	32.99	NDAQ	Nasdaq, Inc.	Capital Markets	35.09
EQR	Equity Residential	REITs	32.4	LEN	Lennar Corporation	Household Durables	30.25
O	Realty Income Corporation	REITs	27.81	YUMC	Yum China Holdings, Inc.	Hotels, Restaurants & Leisure	24.2
EXR	Extra Space Storage Inc.	REITs	26.41	TDOC	Teladoc Health, Inc.	Health Care Technology	23.94
MAA	Mid-America Apartment Communities, Inc.	REITs	23.51	LYV	Live Nation Entertainment, Inc.	Entertainment	22.24
ESS	Essex Property Trust, Inc.	REITs	22.13	MKTX	MarketAxess Holdings Inc.	Capital Markets	15.54
BXP	Boston Properties, Inc.	REITs	17.75	DECK	Deckers Outdoor Corporation	Textiles, Apparel & Luxury Goods	10.94
UDR	UDR, Inc.	REITs	17.12	GPK	Graphic Packaging Holding Company	Containers & Packaging	6.12
CPT	Camden Property Trust	REITs	16.4	ALKS	Alkermes plc	Biotechnology	4.9
ELS	Equity LifeStyle Properties, Inc.	REITs	15.54	SNDR	Schneider National, Inc.	Road & Rail	4.43
KIM	Kimco Realty Corporation	REITs	13.85	RDN	Radian Group Inc.	Thrifts & Mortgage Finance	4.43
LSI	Life Storage, Inc.	REITs	10.84	MTH	Meritage Homes Corporation	Household Durables	4.09
NNN	National Retail Properties, Inc.	REITs	7.97	EXLS	ExlService Holdings, Inc.	IT Services	4.07
CUZ	Cousins Properties Incorporated	REITs	5.89	NNI	Nelnet, Inc.	Consumer Finance	3.16

RISK FIVE: INFLATION EXPOSURE MATTERS

The consensus view on inflation has totally changed over the last few months. When we initiated our product in May, the overwhelming consensus was that the 10-year yield would rise. After it “surprisingly” fell the consensus completely reversed, right around the time the 10-year yield bottomed. Our general sense is that most investors think the 10-year yield will back up in the next six months, but that it will be constrained on the upside after that – we think monitoring inflation exposure is important

Beta-Adjusted Performance of Trivariate's Inflation Basket
Indexed to July 1, 2009

Beta-Adjusted Performance of Trivariate's Inflation Basket
Indexed to August 4, 2020



TRIVARIATE SECTOR OVERVIEW: SUMMARY RECOMMENDATIONS

Our sector recommendations are shown here- obviously there are nuances to the recommendations, but high level we like energy / materials over industrials, discretionary over staples, utilities over real estate, and healthcare over technology

Trivariate Sector Recommendations

Sector	Total S&P 500 Market Cap. (US$ Bil.)	Current S&P 500 Weight	Trivariate-Recommended Weight	Trivariate-Relative Weight	Trivariate Recommendation	Comments
Materials	956.01	2.2%	6.0%	3.8%	Maximum Overweight	Buy the cheap stocks with upward revisions
Energy	1,154.52	2.6%	6.0%	3.4%	Maximum Overweight	Oil is rising, and M&A is likely
Health Care	5,393.51	12.2%	15.0%	2.8%	Overweight	Healthcare services are rate-sensitive, and demand trends are above GDP
Consumer Discretionary	5,879.29	13.3%	15.0%	2.7%	Overweight	Retailing, reopening, and services better than durables
Utilities	900.64	2.0%	3.0%	1.0%	Equal-Weight	Some idiosyncratic bets probably sensible
Communication Services	5,018.97	11.3%	12.0%	0.7%	Equal-Weight	Makes sense to keep market-weight FAANGM
Financials	4,933.38	11.2%	10.0%	(1.2%)	Equal-Weight	Large cap banks better than regionals
Real Estate	1,031.49	2.3%	1.0%	(1.3%)	Under-Weight	Commercial real-estate is challenged
Information Technology	13,083.24	29.6%	27.0%	(2.6%)	Under-Weight	Semis are over-earning, focus on margin expansion / cash flow generation
Consumer Staples	2,552.97	5.8%	2.0%	(3.8%)	Under-Weight	Plenty of short ideas in idiosyncratic staples
Industrials	3,317.08	7.5%	3.0%	(4.5%)	Maximum Underweight	Industrial activity is rolling over, but earnings expectation are very high

CAN YOU STILL OWN ENERGY & MATERIALS?

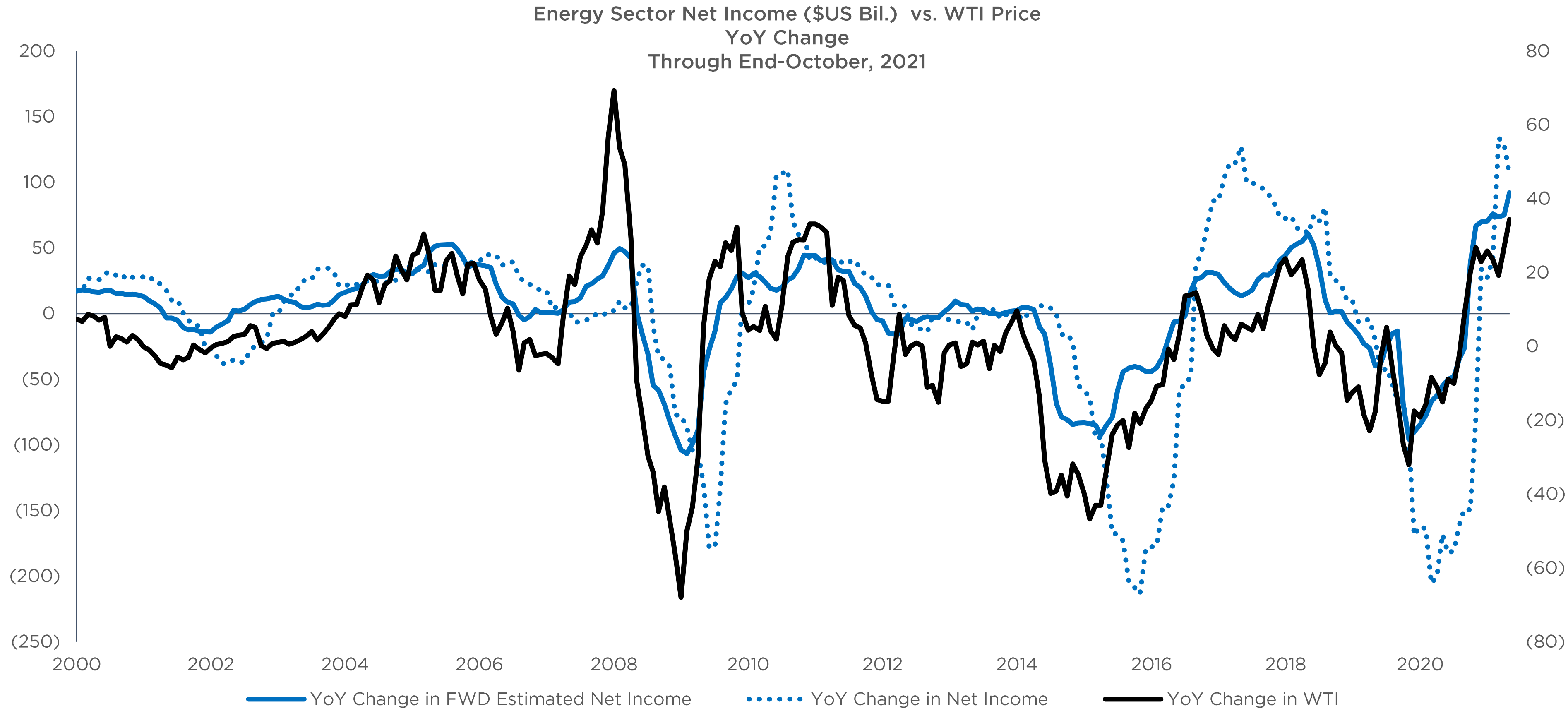
Oil prices were up 7.5% in October after rising an identical 7.5% in September

For energy, rising oil means higher earnings revisions and higher net income for the group. Earnings revisions are highly effective at picking winners from losers within the cohort for the 6-months following periods when oil is rising, likely meaning energy stocks beating estimates will still perform strongly. Moreover, when the dollar is strengthening, our ability to pick winners from losers in energy and materials is enhanced. In addition, despite the strong rally, the sector is quite cheap versus history on price-to-book, which historically was the most efficacious valuation metric for picking energy stocks. It is VERY infrequent in the last decade where a sector has positive revisions, positive momentum, and cheap valuation versus history. Despite what seems obvious to be sustained demand growth exceeding supply growth for the sustainable future, there is a lot of negative sentiment, and firms have dropped coverage or don't have analysts. We think energy is a contrarian investment idea

For materials, the huge year-over-year move in commodities nearly guarantees the sector is poised to see record profitability next year, **yet valuation is at 18-year lows vs. the market excluding materials**. Revisions and valuation also work here so we offer long ideas in energy and materials, and we recommend investors own this group as the underlying commodities likely still rise in the coming year

THERE IS A LAG BETWEEN OIL PRICES, ESTIMATES, AND REPORTS

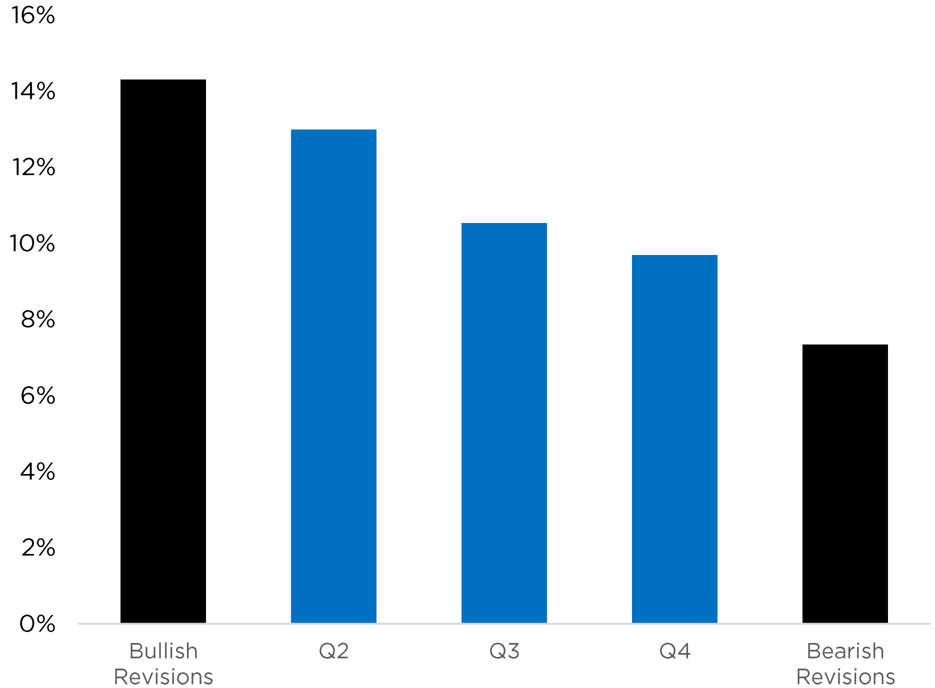
For energy, oil prices are a leading indicator for net income of the energy sector. The black line below shows the change in WTI , which is typically a 3-to-6-month leading indicator for the dashed blue line, which is reported net income. The analysts typically wait until after oil lags (solid blue line), but right before the companies report earnings, so their forecasts are not particularly anticipatory



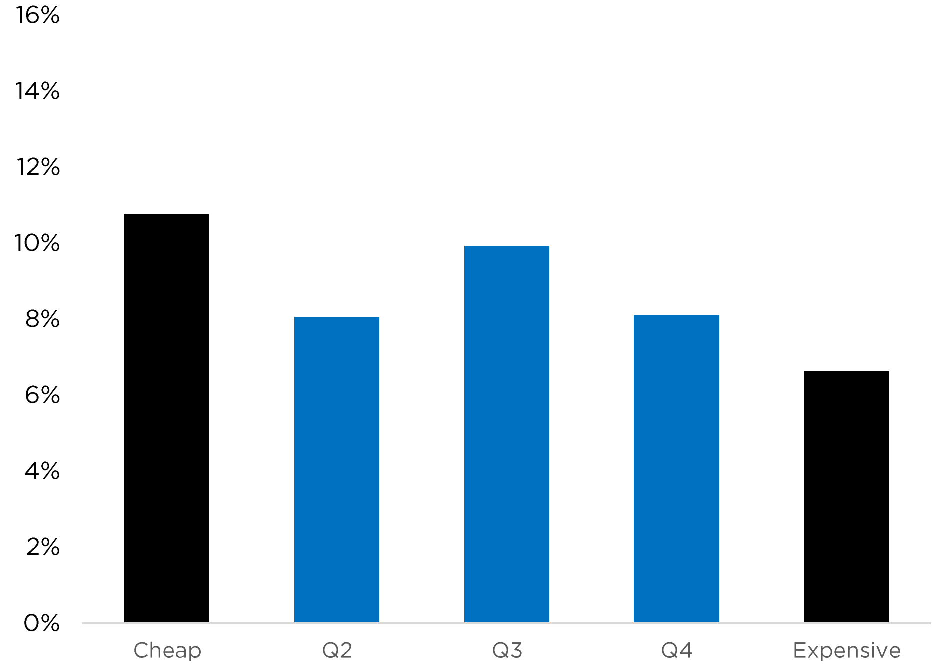
USE ENERGY EARNINGS REVISIONS & VALUATION WHEN OIL IS RISING

We analyzed whether earnings revisions were efficacious at predicting subsequent energy sector returns when oil is rising. Given that stock prices are typically anticipatory, we have received several questions about how much more energy stocks could rally. During a rising oil regime, analyst earnings revisions have historically been a highly effective signal, with the top quintile on revisions beating the bottom by ~7% during the average subsequent 6-month period. While for the broader market we do not necessarily anticipate valuation metrics to work particularly well, valuation has also worked, with the cheapest Q on price-to-book outperforms the most expensive by ~5%

Energy Sector: Earnings Revisions Efficacy
When Oil is Trending Upward over the Previous 6 Months
Through End-June, 2021



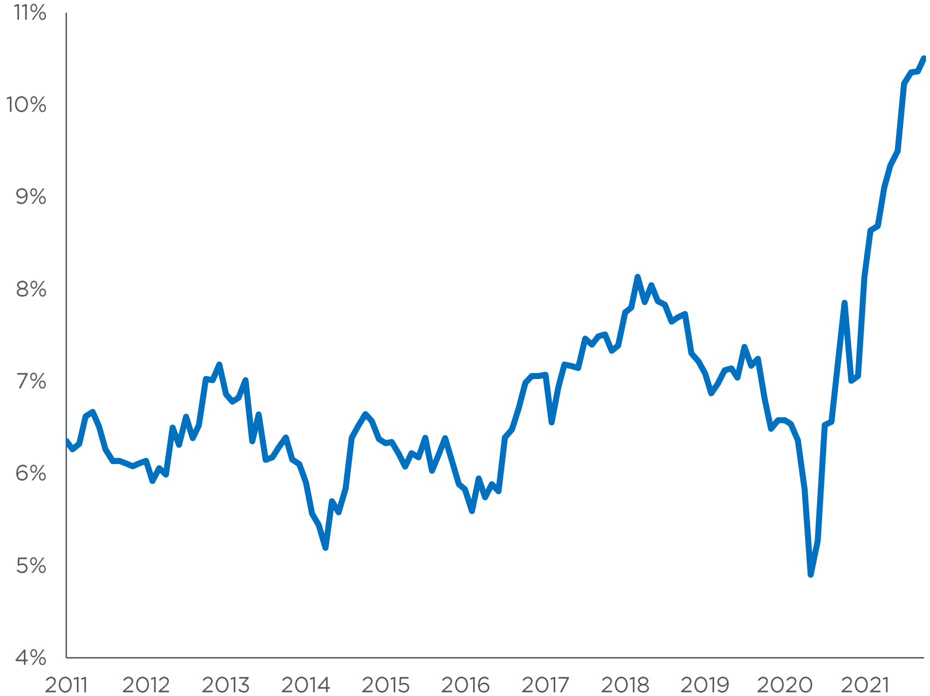
Energy Sector: Price-to-Book Efficacy
When Oil is Trending Upward over the Previous 6 Months
Through End-June, 2021



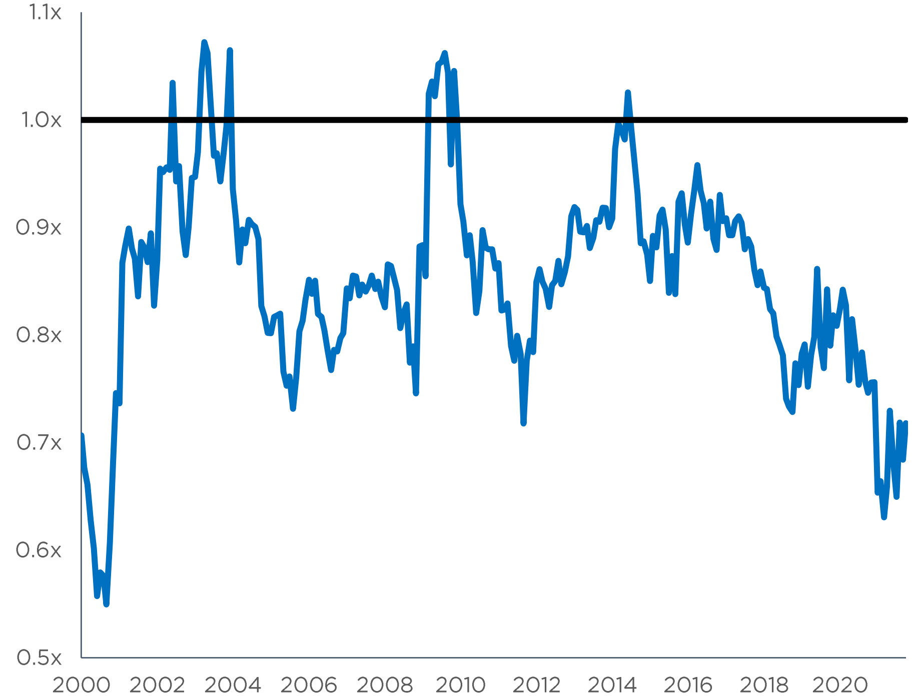
THE MARKET IS SKEPTICAL OF RECORD MATERIALS PROFIT ESTIMATES

The consensus expectations are that net margins for the materials sector will achieve record highs, yet the valuation on a relative to the market basis has recovered to levels near 18-year lows. Our belief is that many of the companies can structurally improve cycle to cycle with the anticipated profit expansion, helping future investments and balance sheet repair. We like the risk-reward of a sector with high but likely achievable near-term estimates and attractive relative valuation

Materials Sector
Forecasted Net Margins
Through End-October, 2021



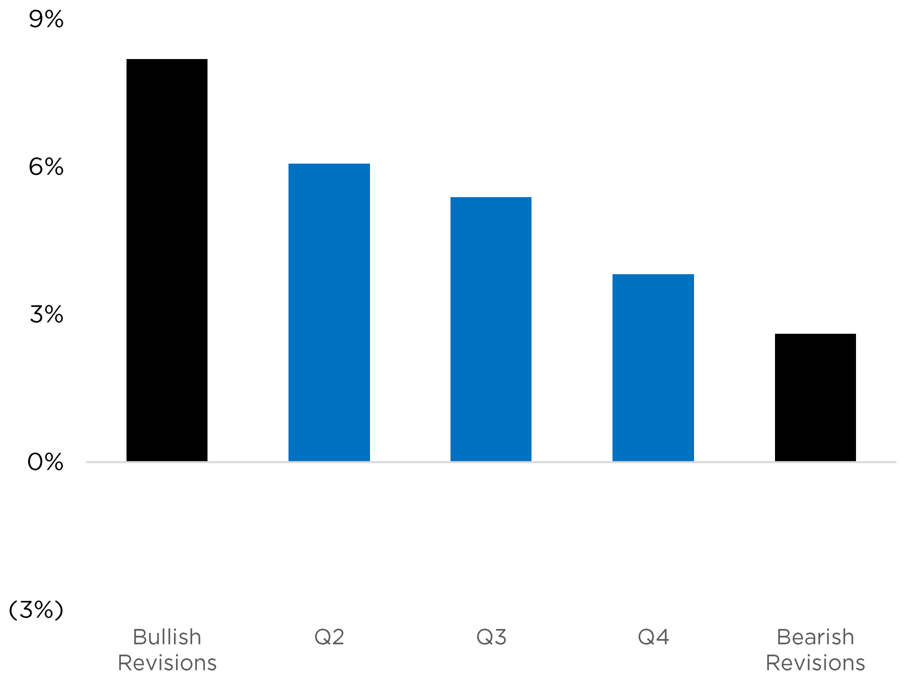
Materials Relative to T3000 ex-Materials
Median Price to Forward Earnings
Through End-October, 2021



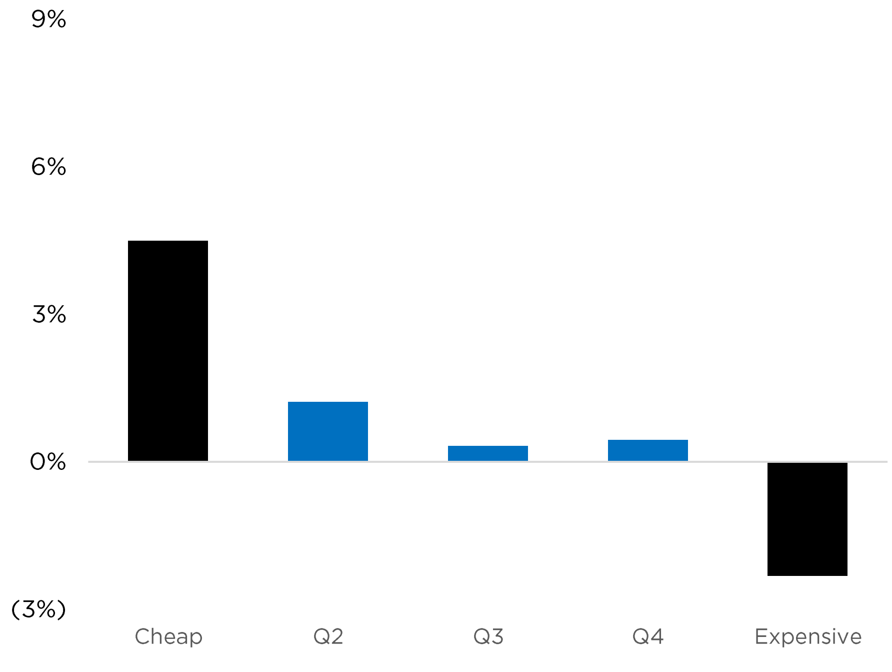
EARNINGS REVISIONS & VALUATION WORK FOR MATERIALS

As was the case in energy, materials stocks with upward analyst earnings revisions and cheaper valuation outperform those with less upward or downward revisions as oil and commodity prices rise. The top vs. bottom quintile spreads on earnings revisions average 6% on average over the subsequent six months following rising revisions, and the cheapest quintile on EV-to-EBITDA outperforms the most expensive by 7% on average

Materials Sector: Earnings Revisions Efficacy When Oil is Trending Upward over the Previous 6 Months Through End-June, 2021



Materials Sector: EV-to-EBITDA Efficacy When Oil is Trending Upward over the Previous 6 Months Through End-June, 2021



ENERGY AND MATERIALS STOCK SCREEN

Tying it together, we are bullish on energy and materials given the combination of estimate achievability and valuation. The below screen shows stocks that are in the energy and materials sector and are in the top 25% of both valuation and earnings revisions today

Energy and Materials Sector
Top Quartile in Estimate Revisions and Valuation
End-October, 2021

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
FCX	Freeport-McMoRan Inc.	Metals & Mining	55.38
DOW	Dow Inc.	Chemicals	41.40
NUE	Nucor Corporation	Metals & Mining	31.91
LYB	LyondellBasell Industries N.V.	Chemicals	30.89
STLD	Steel Dynamics, Inc.	Metals & Mining	13.49
WLK	Westlake Chemical Corporation	Chemicals	12.47
CLF	Cleveland-Cliffs Inc.	Metals & Mining	12.06
RS	Reliance Steel & Aluminum Co.	Metals & Mining	9.28
OLN	Olin Corporation	Chemicals	9.08
AA	Alcoa Corporation	Metals & Mining	8.60
EQT	EQT Corporation	Oil, Gas & Consumable Fuels	7.52
X	United States Steel Corporation	Metals & Mining	7.13
LPX	Louisiana-Pacific Corporation	Paper & Forest Products	5.61
NOV	NOV Inc.	Energy Equipment & Services	5.48
HFC	HollyFrontier Corporation	Oil, Gas & Consumable Fuels	5.43
MUR	Murphy Oil Corporation	Oil, Gas & Consumable Fuels	4.30
CMC	Commercial Metals Company	Metals & Mining	3.88
TROX	Tronox Holdings plc	Chemicals	3.59
CNX	CNX Resources Corporation	Oil, Gas & Consumable Fuels	3.09
CBT	Cabot Corporation	Chemicals	3.03
UFS	Domtar Corporation	Paper & Forest Products	2.75
TSE	Trinseo PLC	Chemicals	2.18

THE US CONSUMER – GROSS UP AND NET UP

Our consumer activity gauge leads us to believe the US consumer remains in solid shape. However, investors have been concerned about a modest softening in retail sales and jobs data over the last two months

1. **Investment Strategy #1:** Long quality reopening, short junk work from home. Since the beginning of the pandemic:
   - Quality reopening stocks have not outperformed junk reopening stocks
   - Junk work from home stocks have still strongly outperformed quality reopening stocks

As the recovery continues, we see a high probability that quality outperforms junk, and reopening outperforms work from home. Hence, our recommendation is to:

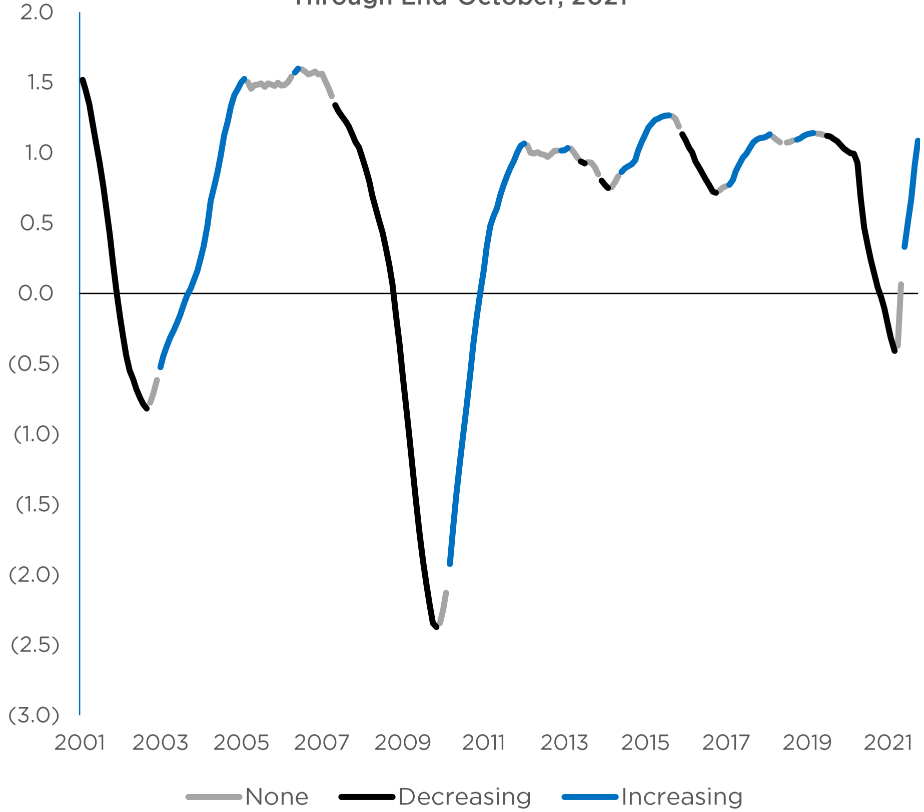
- **Long:** Quality stocks with high correlation to our "reopening" basket
- **Short:** "Junk" stocks with high correlation to our "work from home" basket

2. **Investment strategy #2:** We like a consumer barbell:
   - **Long:** Consumer services with suppressed profitability that likely recover as reopening continues and demand for services grow
   - **Long:** Select retailers given we want to run with higher-than-normal net exposure
   - **Short:** Highly idiosyncratic staples. We can see the logic of being long a staples ETF (to capture long-term above average performance) and short some high company-specific risk staples names given the fact pattern
   - **Short:** Durables that appear to trade like growth stocks with record momentum, and are likely over-earning (stocks ideas included)

OUR CONSUMER ACTIVITY GAUGE IS INCREASING BUT SOFTENING

Our consumer activity gauge contains metrics like 90-day credit card delinquencies, retail sales, consumer confidence, wage growth, unemployment data, and several other metrics. While consumer activity was decreasing for much of 2020, it has rebounded sharply off the bottom. Today, our signals show a positive and increasing consumer overall, though US Consumer Confidence took a hit on a YoY basis, going from the 96th percentile to 62nd

Trivariate's Consumer Activity Signal
Through End-October, 2021

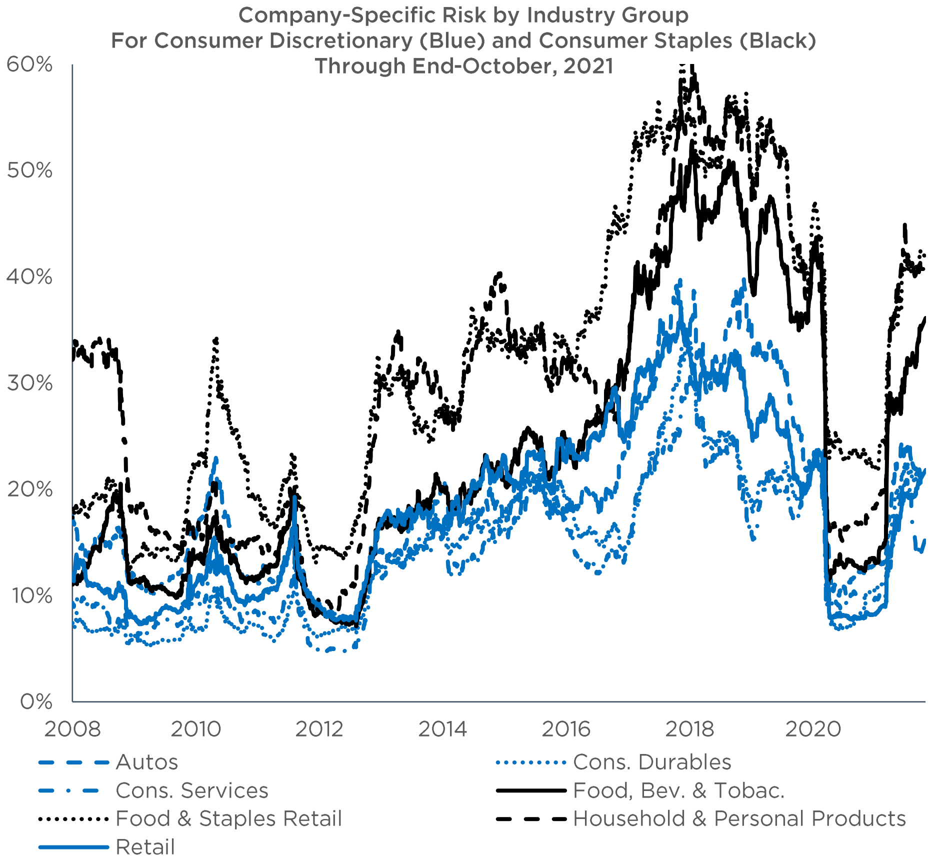


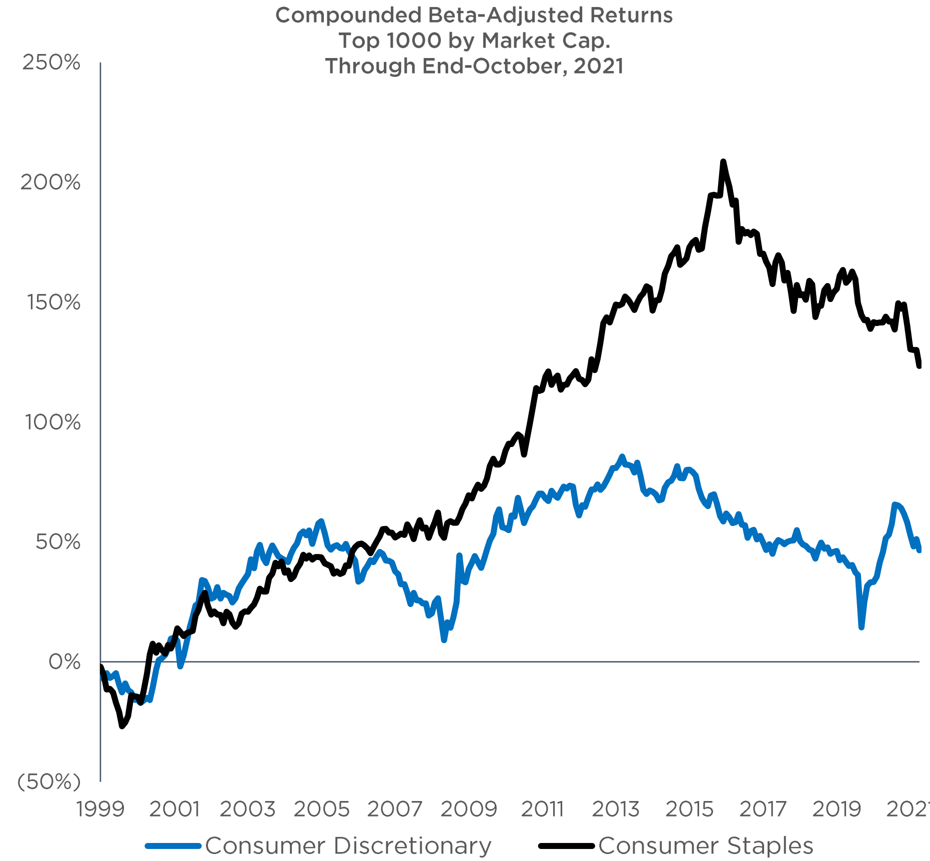
Consumer Activity Signals
As of End-October, 2021

Consumer Activity Component	October 2021 Value	Percentile vs. Long-Term History
ADP Payrolls (YoY%)	4.2%	97.7%
US Hourly Earnings Growth (6-Month MA)	4.6%	94.8%
US Consumer Confidence (YoY%)	7.9%	61.8%
US Credit Cards 90+ Days Delinquency Rate	0.36	0.0%
Non-Farm Payrolls (YoY%)	4.0%	98.8%
US Personal Income (YoY% Change)	4.2%	28.8%
US Retail Sales	13.9%	98.3%
Atlanta Fed Wage Growth Tracker	4.2%	76.1%

STAPLES ARE MORE IDIOSYNCRATIC AND HAVE HAD HIGHER ALPHA…

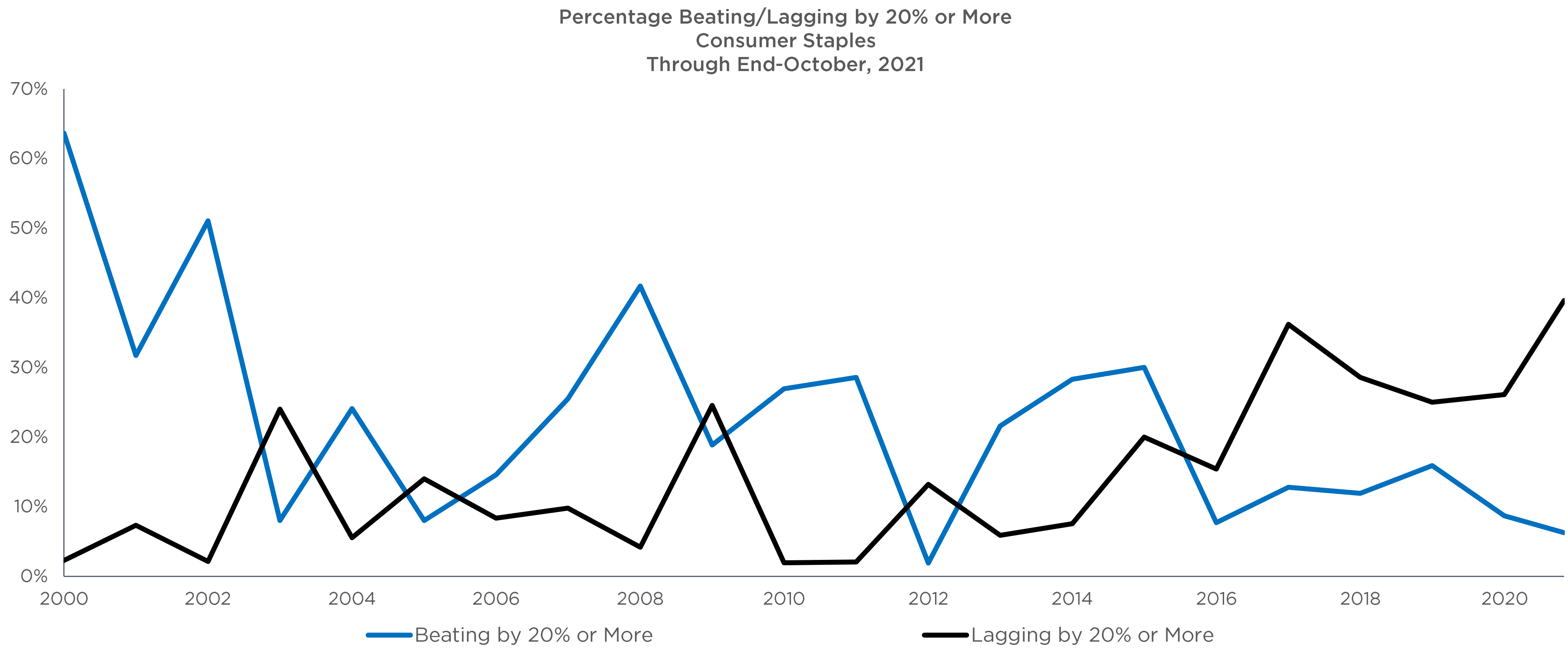
Conventional wisdom is that staples are more macro and discretionary stocks are more idiosyncratic among consumer analysts. However, (left chart) food, beverage & tobacco, and household and personal products tend to have more company-specific risk than retail, durables and consumer services. Since the TMT bubble, staples have also strongly beaten discretionary on a beta-adjusted basis (right chart)





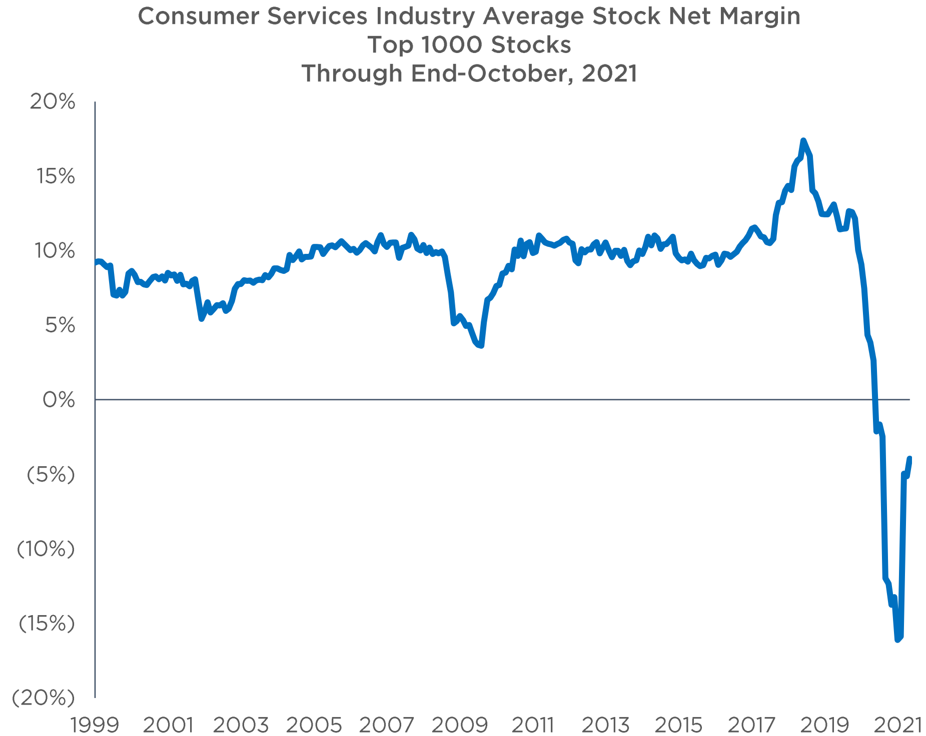
…BUT THERE ARE MORE LARGE LAGGARDS IN STAPLES

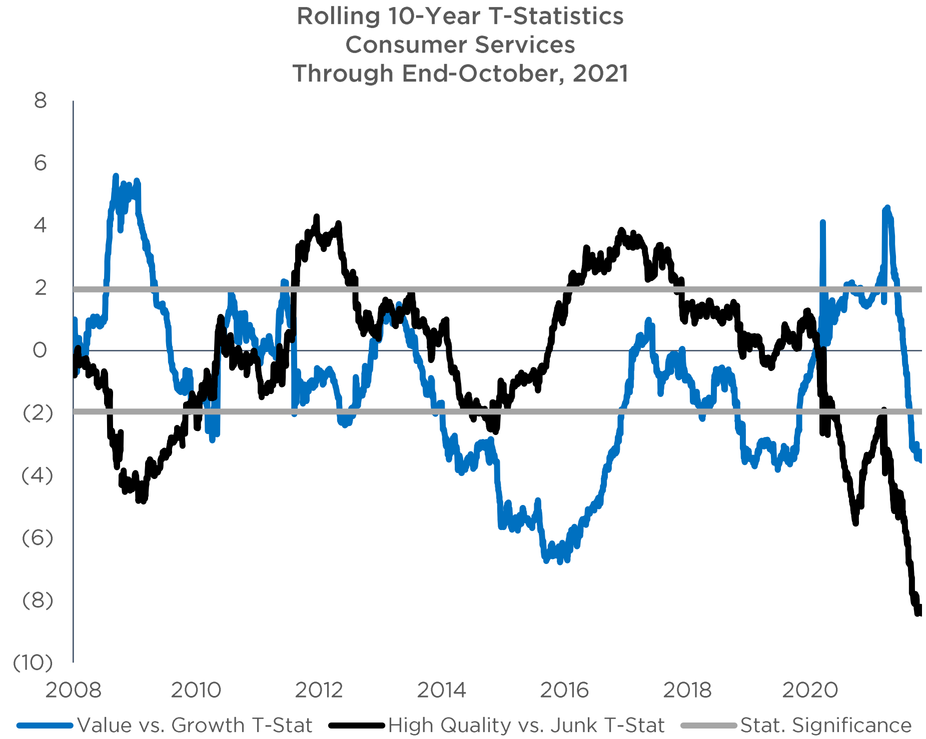
Identifying strong long ideas in staples is particularly challenging today. The fewest number of staples in nine years are beating the market by 20% or more but the largest number of staples stocks in 21 years are lagging the market by 20% or more. Given there is higher company-specific risk in staples than many might surmise, hunting for idiosyncratic shorts in staples is prudent. We could also see the logic to stay long a staples ETF and short some high company-specific risk staples to lower the net exposure



THE CONSUMER SERVICES INDUSTRY IS UNDER-EARNING THE MOST

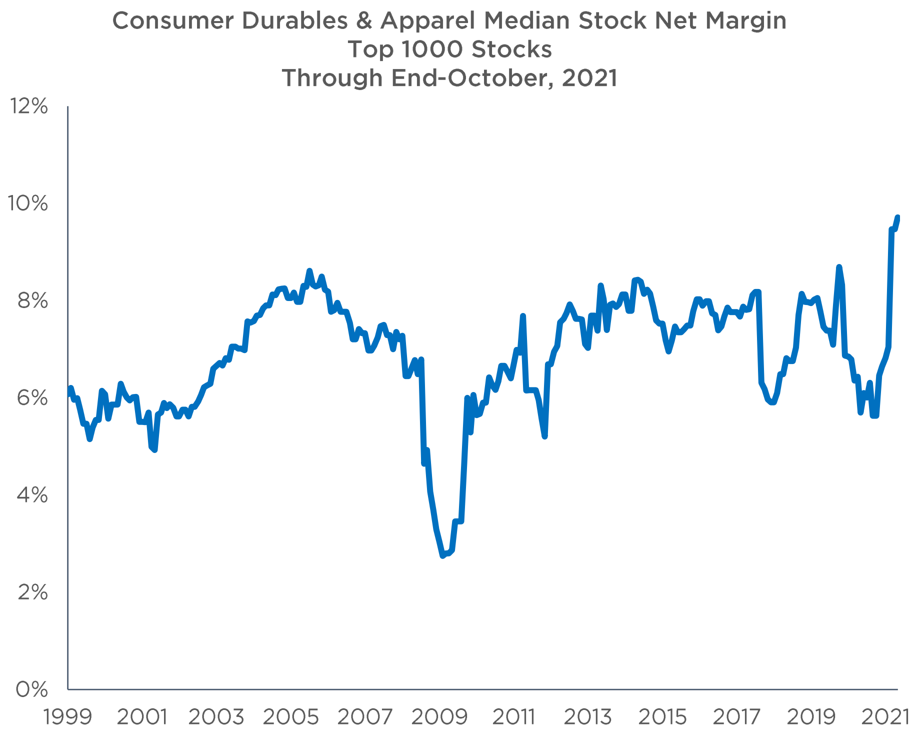
The consumer service industry has been rocked by COVID-19, with the average companies' net margin bouncing just above record lows right now (left chart). As the economy and demand for services grow, it stands to reason that the services industry will regain profitability back toward the lower volatility high single-digit band it was in for the previous two decades. The result of the sustained losses in consumer services is the industry now has the strongest statistically significant relationship to junk and value this cycle (right chart)

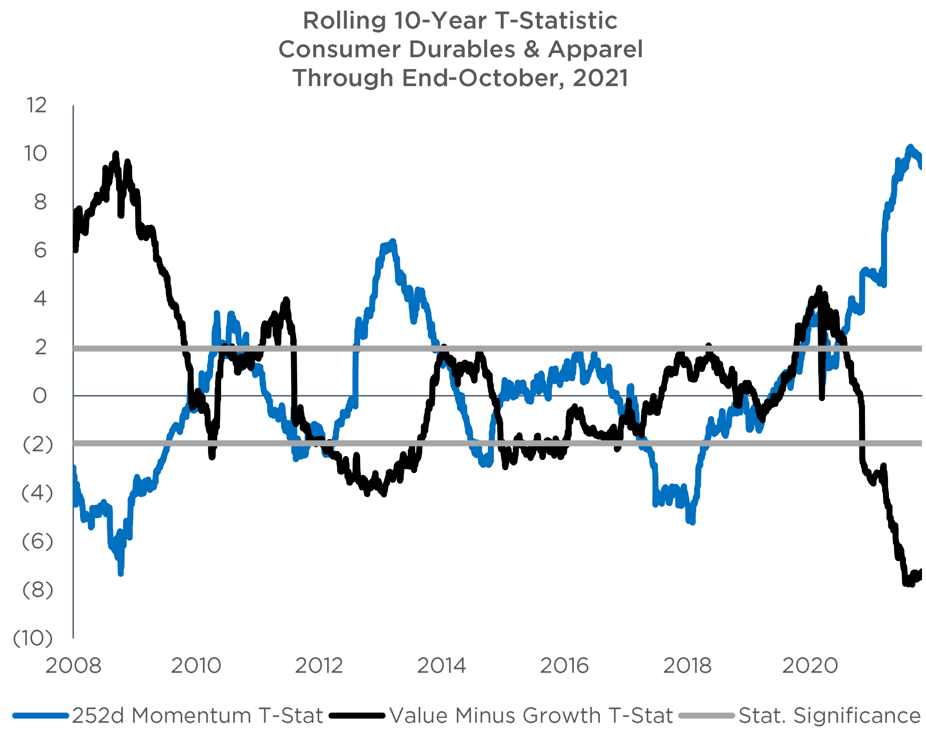




WHEREAS DURABLES MARGINS ARE AT ALL-TIME HIGHS

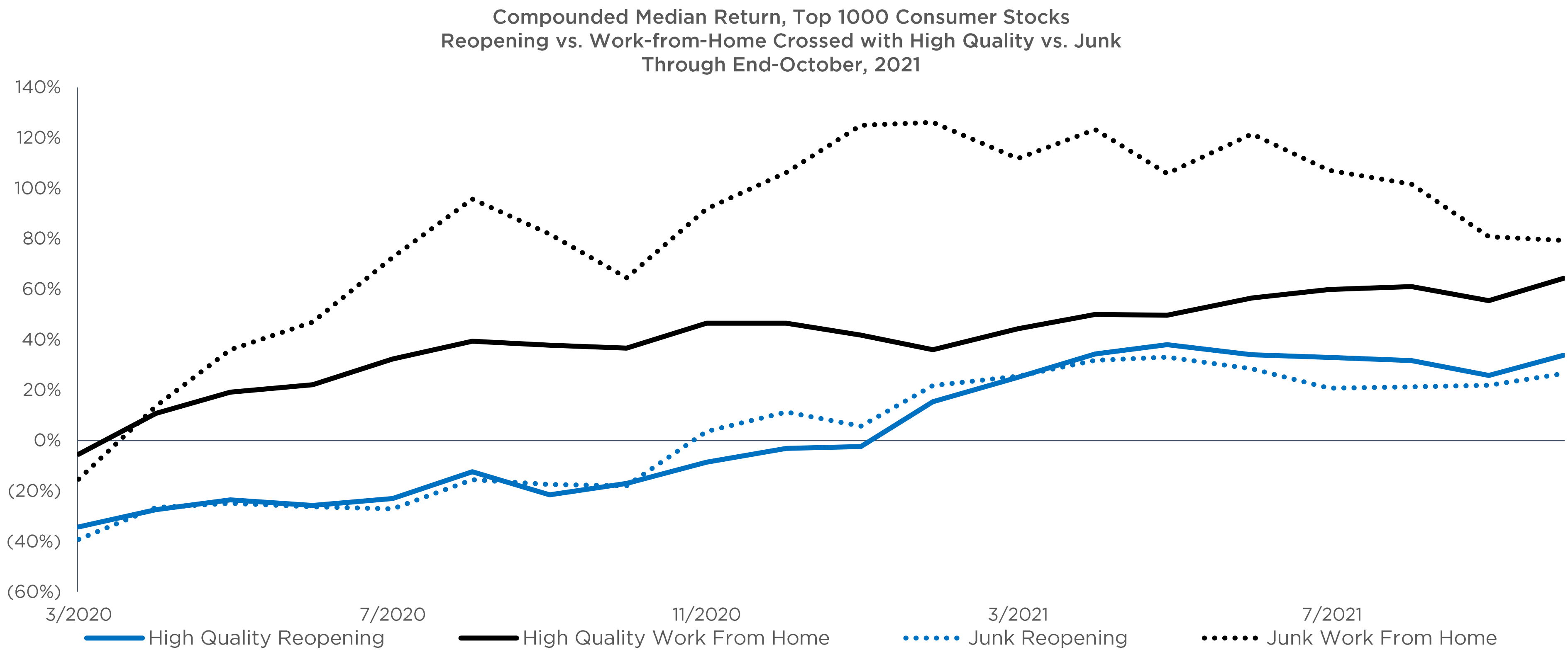
Durables appear to be over-earning the most, with record profitability due in large part to housing demand and the homebuilders (left chart), a trend that is likely to rollover in the coming quarters. The result of strong profitability is the industry now trades the most like the growth universe ever, with the highest momentum ever (right chart). While durables can have prolonged cycles, we doubt there will be a structural shift to growth and momentum for the industry, viewing this as a place to sell winners over the coming months and the relationship is now the exact opposite it was in the 2008 cycle recovery





JUNK WORK FROM HOME WILL EVENTUALLY LAG QUALITY REOPENING

We analyzed the returns of quality vs. junk within "work from home" and "reopening" consumer stocks, given the on-again-off-again nature of consumer demand and experience in a Delta-variant world. We have two observations. Firstly, we think quality reopening will ultimately outperforming junk reopening by a more substantial margin over the coming quarters. Secondly, we think quality reopening will perform better than junk work from home as the world continues to adapt and adjust. Our advice is to look for quality reopening long ideas, and junk work from home short ideas



STRATEGY 1: QUALITY CROSSED WITH WORK FROM HOME / REOPENING

Consistent with this theme, we offer long and short consumer ideas in the quality reopening and junk work from home buckets, respectively

Long Quality Reopening, Short Junk Work From Home, As of End-October, 2021

Longs				Shorts			
Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)	Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
ROST	Ross Stores, Inc.	Retailing	40.23	AMZN	Amazon.com, Inc.	Retailing	1710.32
HLT	Hilton Worldwide Holdings Inc.	Consumer Services	40.12	MELI	MercadoLibre, Inc.	Retailing	73.62
EXPE	Expedia Group, Inc.	Consumer Services	24.80	CHWY	Chewy, Inc.	Retailing	31.67
ULTA	Ulta Beauty, Inc.	Retailing	19.97	PTON	Peloton Interactive, Inc.	Consumer Durables & Apparel	27.69
GPC	Genuine Parts Company	Retailing	18.67	DKNG	DraftKings Inc.	Consumer Services	18.92
LKQ	LKQ Corporation	Retailing	16.10	FTCH	Farfetch Limited	Retailing	14.55
CHH	Choice Hotels International, Inc.	Consumer Services	7.79	CELH	Celsius Holdings, Inc.	Food, Beverage & Tobacco	7.19
VAC	Marriott Vacations Worldwide Corporation	Consumer Services	6.71	FRPT	Freshpet, Inc.	Food, Beverage & Tobacco	6.76
				BYND	Beyond Meat, Inc.	Food, Beverage & Tobacco	6.26
				SAM	The Boston Beer Company, Inc.	Food, Beverage & Tobacco	6.00
				LAZR	Luminar Technologies, Inc.	Automobiles & Components	5.89

STRATEGY 2: A BARBELL

Another consumer theme we like is a barbell approach - long retail as discretionary tends to work when consumer activity is strong and services on a rebound of suppressed profitability - short idiosyncratic staples and durables which are potentially over-earning

Long Retailers and Services that Favored by Our Model, Short Highly Idiosyncratic Staples and Durables Our Model Disfavors, As of End-October, 2021

Longs				Shorts			
Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)	Ticker	Company Name	Industry Group	Market Cap ($ US. Bil)
HD	The Home Depot, Inc.	Retailing	392.32	PTON	Peloton Interactive, Inc.	Consumer Durables & Apparel	27.69
MCD	McDonald's Corporation	Consumer Services	183.38	GRMN	Garmin Ltd.	Consumer Durables & Apparel	27.62
LOW	Lowe's Companies, Inc.	Retailing	161.90	CLX	The Clorox Company	Household & Personal Products	20.02
TGT	Target Corporation	Retailing	126.70	CAG	Conagra Brands, Inc.	Food, Beverage & Tobacco	15.45
TJX	The TJX Companies, Inc.	Retailing	78.75	HAS	Hasbro, Inc.	Consumer Durables & Apparel	13.21
MAR	Marriott International, Inc.	Consumer Services	52.11	YETI	YETI Holdings, Inc.	Consumer Durables & Apparel	8.6
ORLY	O'Reilly Automotive, Inc.	Retailing	41.93	MAT	Mattel, Inc.	Consumer Durables & Apparel	7.61
ROST	Ross Stores, Inc.	Retailing	40.23	TOL	Toll Brothers, Inc.	Consumer Durables & Apparel	7.32
AZO	AutoZone, Inc.	Retailing	37.42	CASY	Casey's General Stores, Inc.	Food & Staples Retailing	7.11
BBY	Best Buy Co., Inc.	Retailing	30.07	PPC	Pilgrim's Pride Corporation	Food, Beverage & Tobacco	6.86
TSCO	Tractor Supply Company	Retailing	24.83	FLO	Flowers Foods, Inc.	Food, Beverage & Tobacco	5.24
CZR	Caesars Entertainment, Inc.	Consumer Services	23.36	LANC	Lancaster Colony Corporation	Food, Beverage & Tobacco	4.68
ULTA	Ulta Beauty, Inc.	Retailing	19.97	IBP	Installed Building Products, Inc.	Consumer Durables & Apparel	3.75
DRI	Darden Restaurants, Inc.	Consumer Services	18.71	ENR	Energizer Holdings, Inc.	Household & Personal Products	2.49
QSR	Restaurant Brands International Inc.	Consumer Services	17.85	TWNK	Hostess Brands, Inc.	Food, Beverage & Tobacco	2.46
LKQ	LKQ Corporation	Retailing	16.10	UNFI	United Natural Foods, Inc.	Food & Staples Retailing	2.45
RH	RH	Retailing	13.87	IRBT	iRobot Corporation	Consumer Durables & Apparel	2.34
WSM	Williams-Sonoma, Inc.	Retailing	13.81	TR	Tootsie Roll Industries, Inc.	Food, Beverage & Tobacco	2.13

CONTROVERSIES AND VARIABLES TO MONITOR FOR BANKS

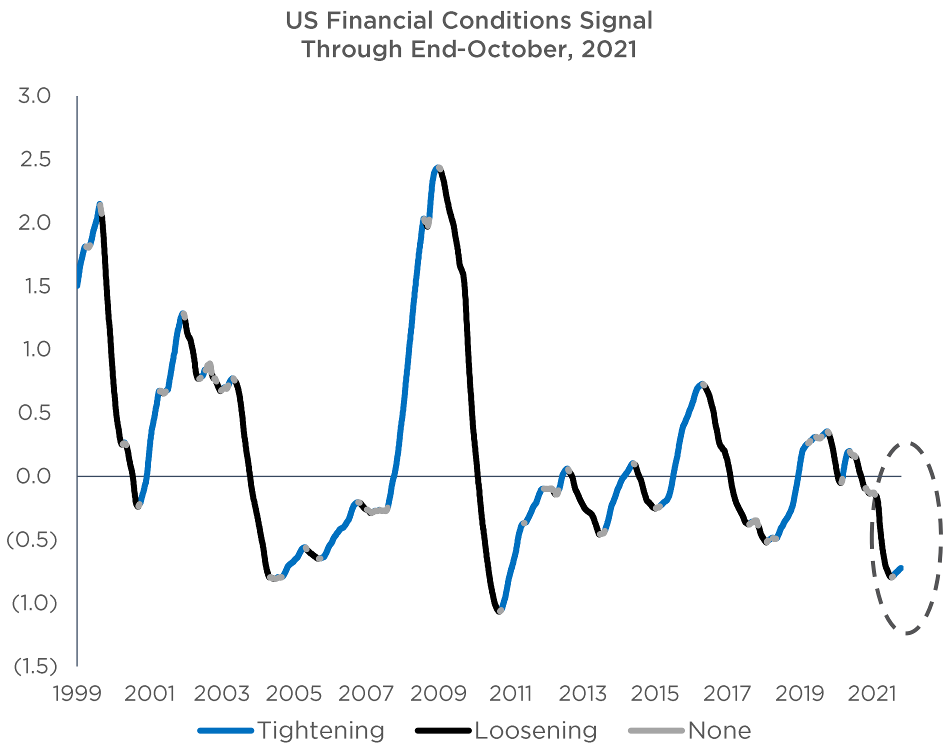
We took a detailed look at the banks sector and research key investment controversies facing bank stock investors and three data points to monitor. We think these concepts apply broadly to investors in other industries as well. The controversies are:

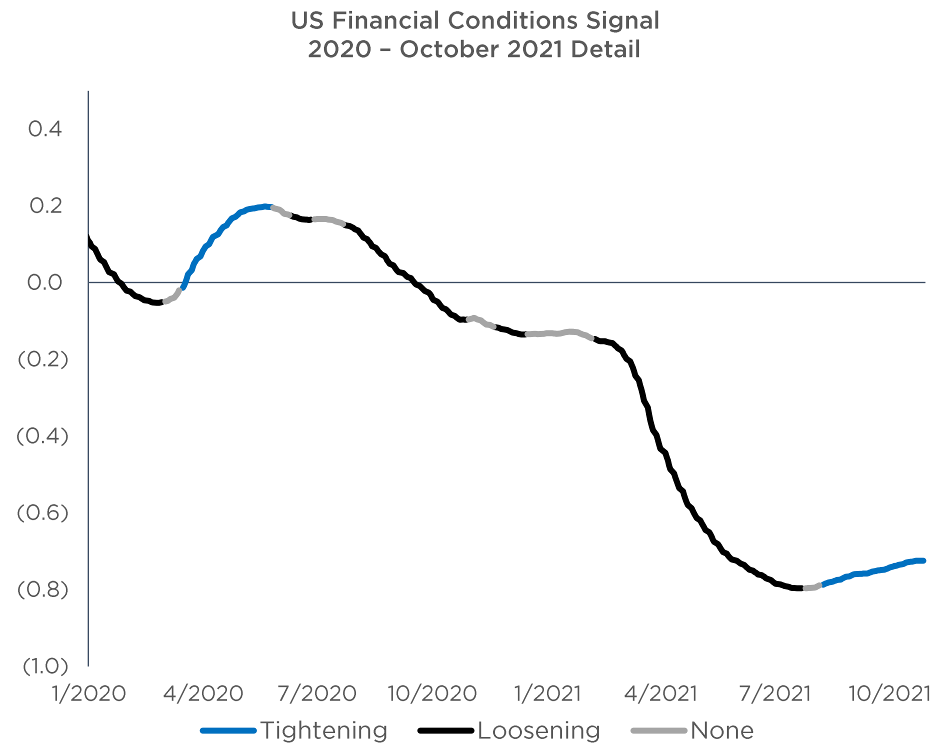
1. **Gross Exposure:** Our quantitative models work better at discriminating banks stocks when financial conditions are loosening, something we capitalized on earlier in the year by recommending high gross exposure in banks. However, financial conditions have tightened over the past couple of months, average pairwise bank stock correlations are near all-time highs, company-specific risk for the banks is low and valuation dispersion has not seen a sustained increase in banks like it has in the broader market.
2. **Long-term vs. short-term valuation:** While banks remain relatively cheap vs. their own history on price-to-tangible book, multiples have expanded substantially more than actual book value has grown since the 10-year yield bottomed in August of 2020, meaning investors have been excessively anticipatory of fundamentals
3. **Large banks look more attractive than small**, with balance sheets that have improved more without a commensurate improvement in relative valuation. Micro cap. quality banks are cheaper than micro cap. junk banks, which seems illogical.

We would continue to monitor financial conditions, the savings rate, and loan growth as three key variables to see whether growth can improve for the group

FINANCIAL CONDITIONS ARE NOW NEUTRAL

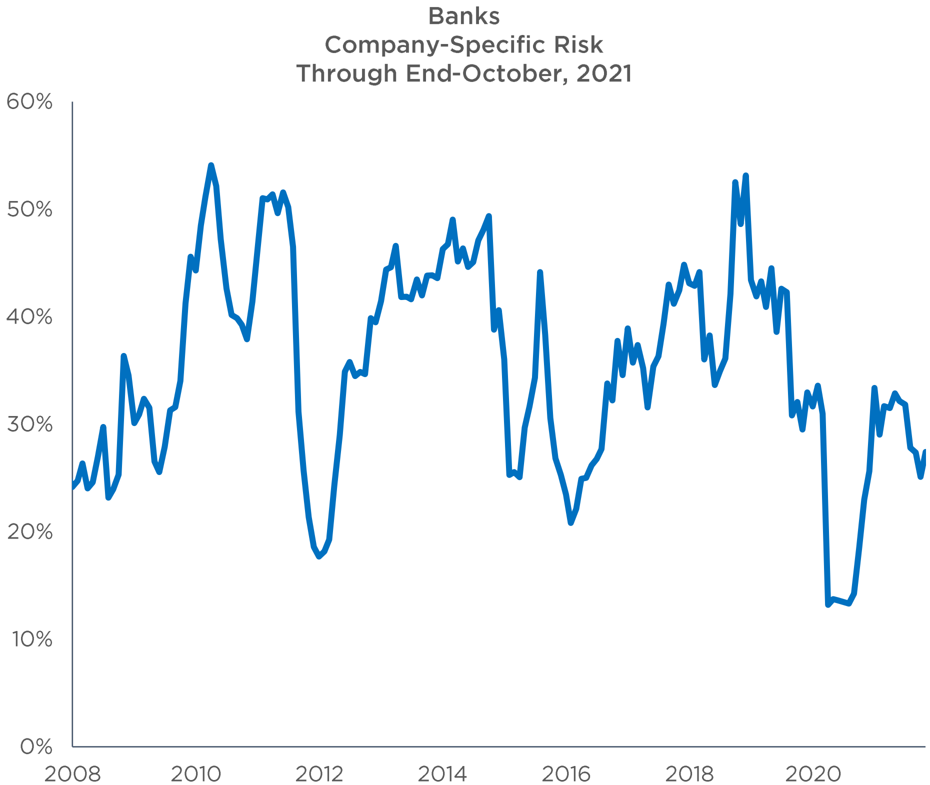
We evaluate financial conditions by combining credit spreads, mortgage rates, US Treasury volatility, the Bloomberg Financial Conditions Index, and other signals. We intentionally try to create a slower moving signal so that we are not over-reacting to shorter term moves in financial conditions. Our framework officially flagged loosening financial conditions in March of this year. This loosening stopped on July 26th according to our framework and tightening began on August 9th.   Today, conditions are more neutral again

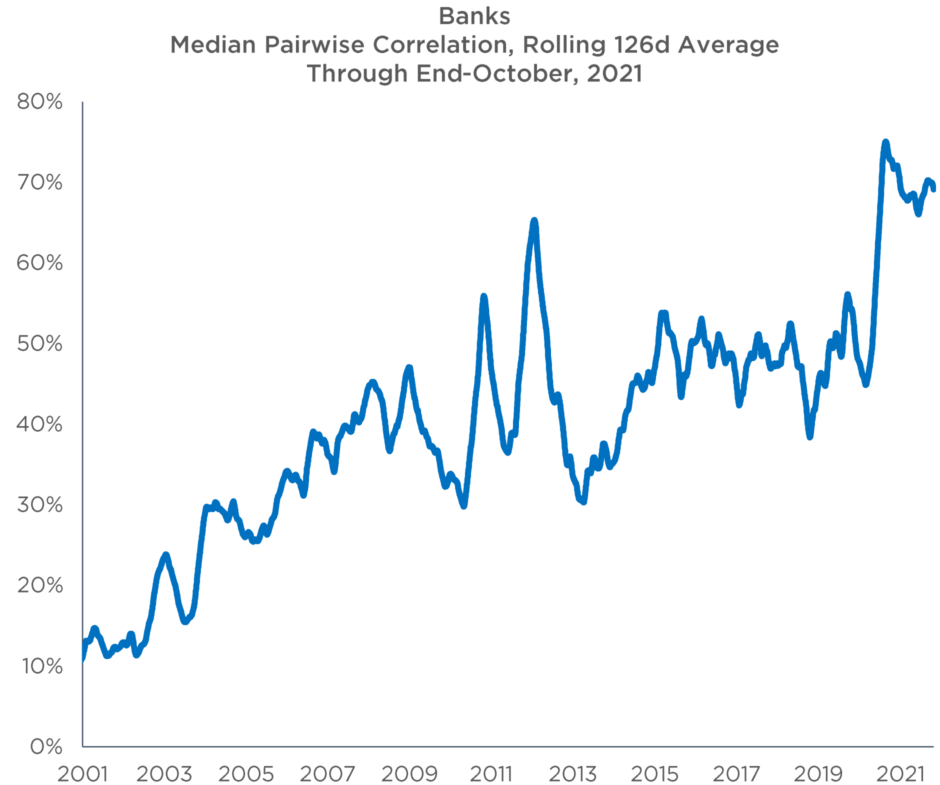




OTHER DATA SUGGEST STOCK SELECTION IN BANKS IS TOUGH TODAY

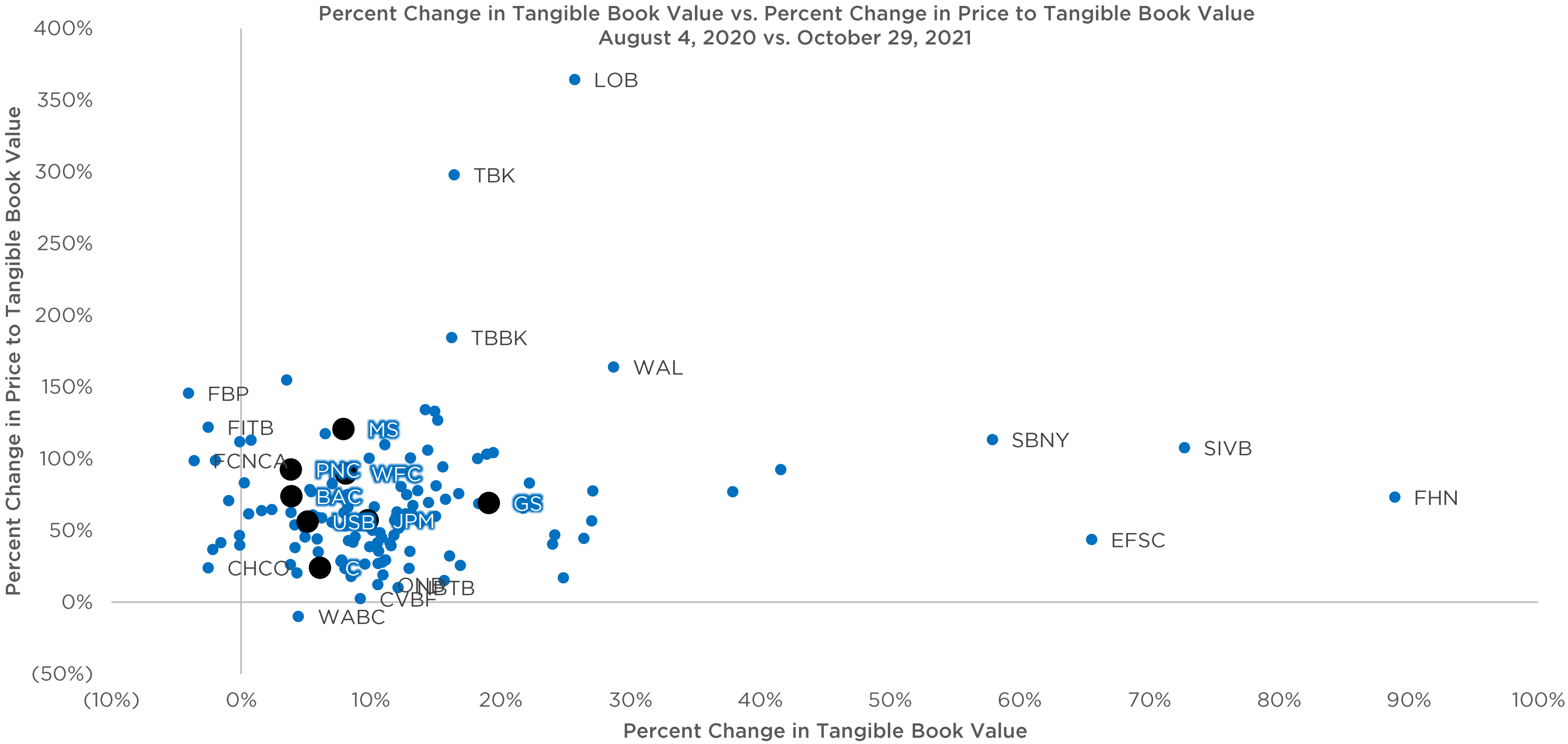
Company-specific risk for banks has remained relatively low, and below long-term averages for banks (left chart). The average pairwise return correlation of banks is currently 0.7 on a twenty-year trend of higher correlation that was only 0.2 following the TMT crisis (right chart)





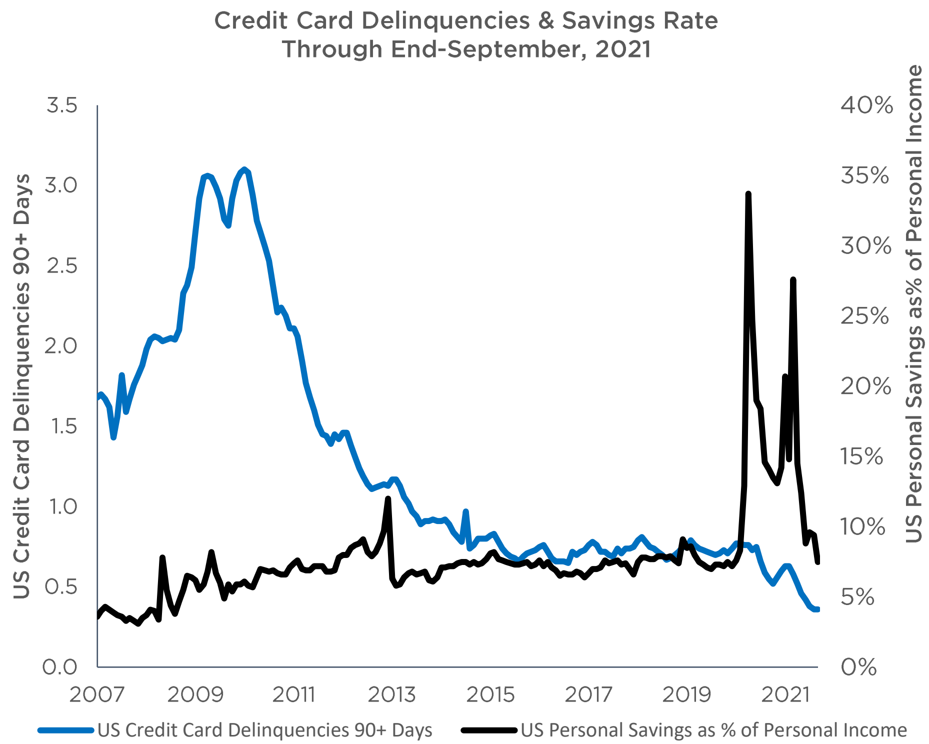
MULTIPLE EXPANSION VS. TANGIBLE BOOK GROWTH

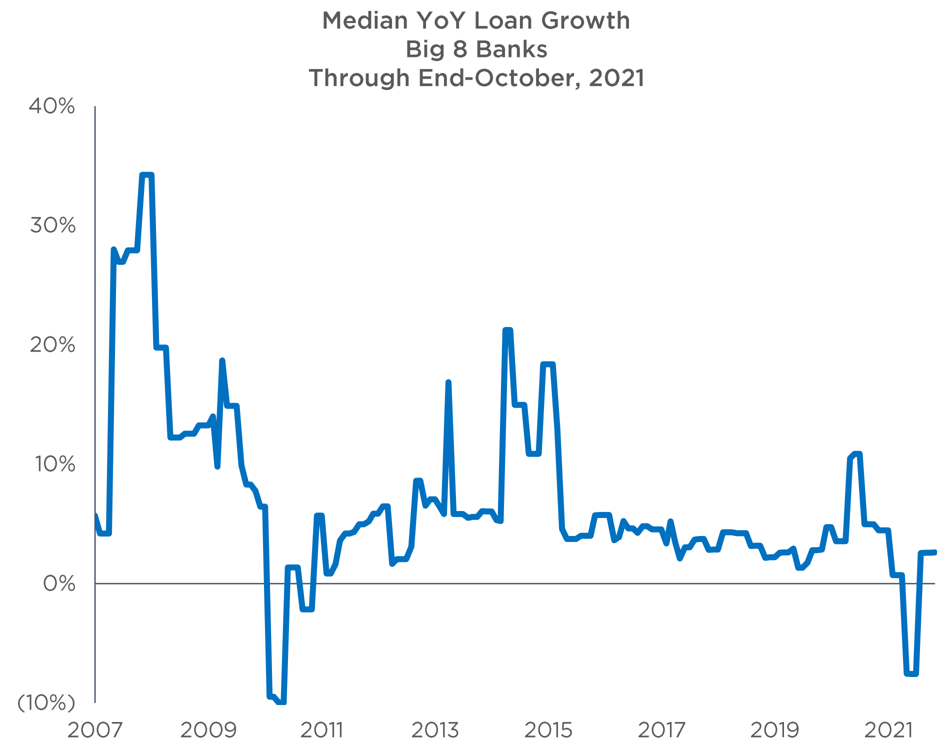
Since August 4th, 2020 when the 10-year yield bottomed around 0.5%, many banks have had a lot of price-to-tangible book expansion, without much tangible book growth. Our view is that investors have been excessively anticipatory of tangible book expansion, and this fuels some of our caution on banks. We highlight the large banks, which generally have not seen outsized multiple expansion. Among the largest cap stocks, the highest tangible book growth has come from GS, whereas the most multiple expansion has come from MS



WATCH THE SAVINGS RATE AND LOAN GROWTH TO GAUGE REVISIONS

As generalists, our observation is that bank-stock investors excessively focusing on net interest margins, trying to gauge a few bps up or down. The bigger issue in our judgment is loan growth, and what could drive that as the cycle expands. The consumer is in great shape, with 90-day credit card delinquencies at a cycle low and the savings rate quite elevated (left chart). Loan growth has started to pickup for the biggest banks (right chart) but likely requires more dis-savings and a more demanding consumer before growing to levels seen in 2014-2015

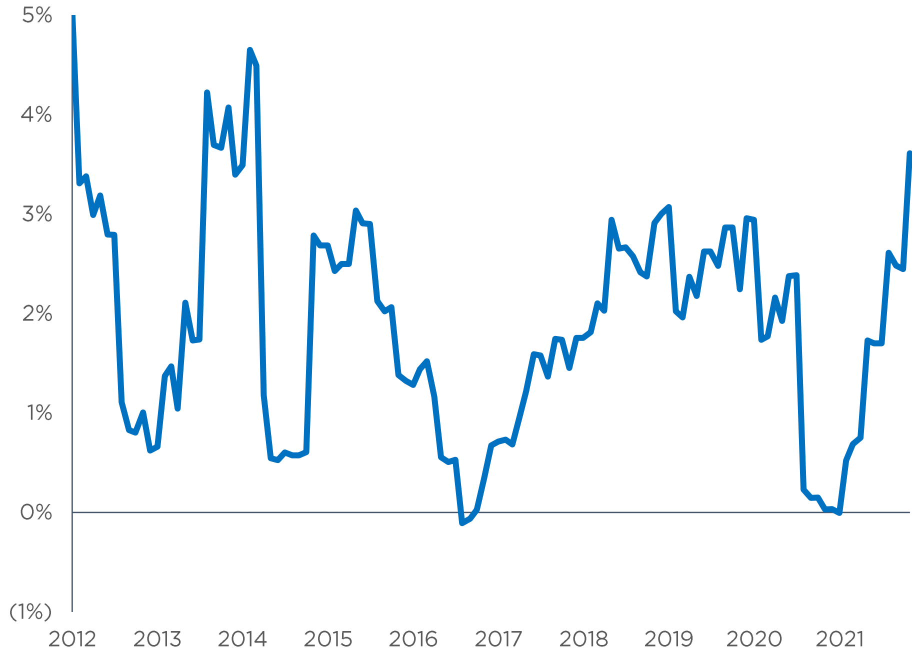




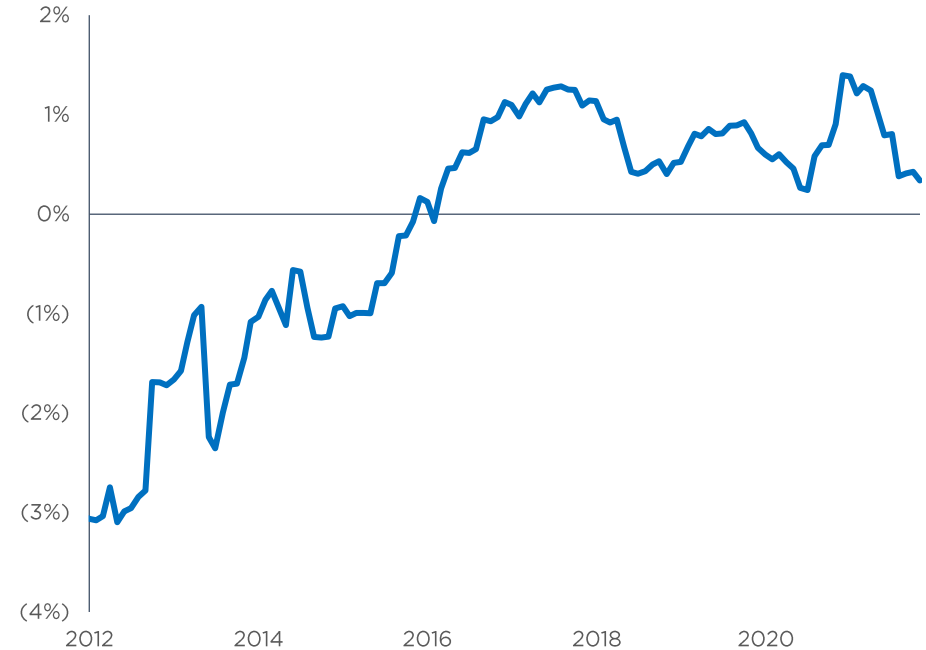
THE BIG 8: INCOME STATEMENT AND BALANCE SHEET IMPROVEMENT

The largest 8 banks (JPM, WFC, C, BAC, USB, PNC, GS, and MS) have markedly improved both their profitability and balance sheets over the last several years, on average better than the broader bank universe on both metrics. Return on tangible equity (left chart) now shows the large banks are at cycle highs on return on tangible book relative to the rest of banks (median ROTE of the Big 8 is now 18.4% vs 14.8% for the larger universe). This is the highest level of excess ROTE since 2014. The Big 8 have also improved their balance sheets over time, with what appears to be a sustainably higher Tier 1 Ratio than the broader group of banks (right chart)

Relative Return on Tangible Equity
Big 8 Banks Minus Top 3000 Median
Through End-October, 2021

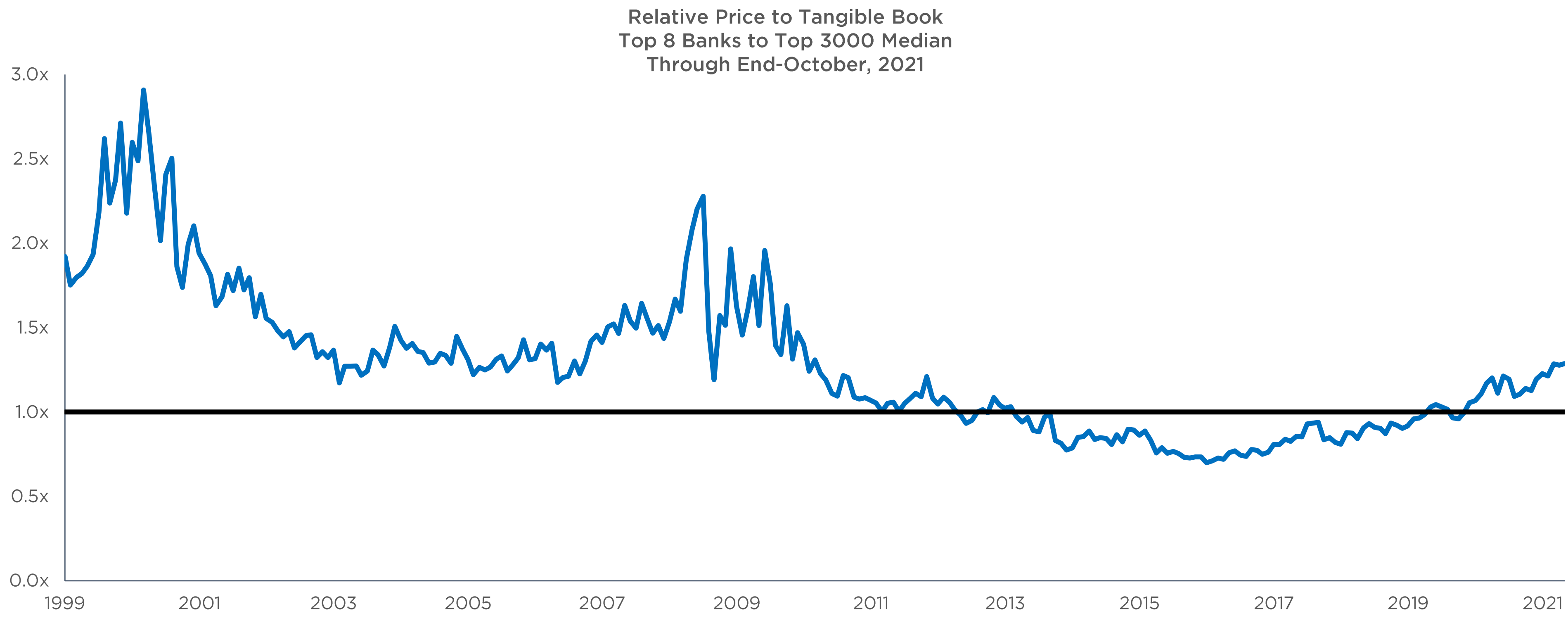


Relative Tier One Ratio
Big 8 Banks Minus Top 3000 Average
Through End-October, 2021



DESPITE THIS RELATIVE STRENGTH – VALUATION PREMIA ARE MODEST

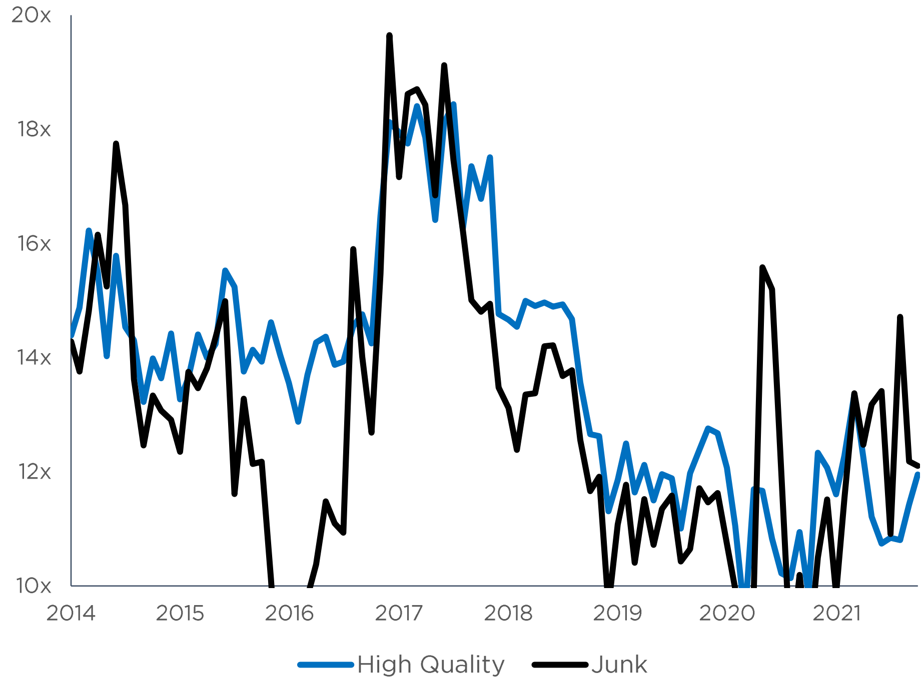
Despite the relatively higher profitability and improved balance sheets, the large cap. banks barely trade at a premium to the broader group of banks. If longer-term history is a guide, the large cap. banks relative valuation could still substantially expand, even as the broader universe in-part have premia related to M&A potential. Our judgment is to prefer the Big 8 banks to the broader universe of banks, as their improved income statements and balance sheets should cost more relative to regionals



THERE IS A QUALITY / VALUATION DISCONNECT AMONG MICRO CAPS.

For those investors who can invest in micro cap. banks, we noticed an unusual valuation-based opportunity today. Historically, high quality micro cap. banks traded at a modest premium on price-to-forward earnings to the lowest quality or "junk" quartile. However, junk stocks are at a premium today (left chart). Our judgment is that this is likely to normalize over time, as it began to in September, and hence, we offer long ideas that are quality micro cap. banks that are cheap on price-to-forward earnings, and short ideas that are junk stocks that are expensive on price-to-forward earnings (right). Frankly, we think quality should trade at a premium

Median Price-to-Forward Earnings
Micro Cap Banks, High Quality vs. Junks
Through End-October, 2021



Buy High Quality Cheap Micro Cap. Banks, Sell "Junk" Expensive Micro Cap. Banks
End-October, 2021

Long

Ticker	Company Name	Price to FWD Earnings	Market Cap ($ US. Bil)
PFBC	Preferred Bank	10.39x	1.01
NCBS	Nicolet Bankshares, Inc.	11.44x	0.86
CATC	Cambridge Bancorp	11.95x	0.64
MCBS	MetroCity Bankshares, Inc.	8.31x	0.60
FMNB	Farmers National Banc Corp.	10.22x	0.50
RBB	RBB Bancorp	8.83x	0.50
HBT	HBT Financial, Inc.	11.85x	0.49
CSTR	Capstar Financial Holdings, Inc.	11.53x	0.49
BSRR	Sierra Bancorp	9.48x	0.38
CIVB	Civista Bancshares, Inc.	10.89x	0.36
CBNK	Capital Bancorp, Inc.	10.67x	0.35

Short

Ticker	Company Name	Price to FWD Earnings	Market Cap ($ US. Bil)
TSC	TriState Capital Holdings, Inc.	14.58x	1.00
HBMD	Howard Bancorp, Inc.	17.51x	0.39

STOCK IDEAS BASED ON VALUATION AND GROWTH

Among the large banks (left), WFC, USB, and C are cheap relative to their own history. Stocks with substantial multiple expansion relative to book growth are show on the right.

Big 8 Banks
Price to Tangible Book Percentile vs. History
Through End-October, 2021

Ticker	Company Name	Market Cap ($ US. Bil)	Price to Tangible Book	Percentile vs. History
JPM	JPMorgan Chase & Co.	502.08	2.46x	78.7%
MS	Morgan Stanley	184.90	2.51x	78.7%
BAC	Bank of America Corporation	391.04	2.17x	58.6%
GS	The Goldman Sachs Group, Inc.	145.63	1.51x	53.8%
PNC	The PNC Financial Services Group, Inc.	89.27	1.97x	48.1%
C	Citigroup Inc.	137.23	0.87x	23.5%
USB	U.S. Bancorp	89.51	2.41x	14.6%
WFC	Wells Fargo & Company	204.48	1.45x	10.4%

Banks Stocks with Relatively Weak Tangible Book Growth
That Have Also Seen Material Price-to-Tangible Book Multiple Expansion
August 4th, 2020 Through October 29, 2021

Ticker	Company Name	Market Cap ($ US. Bil)	Book Value Growth	Price to Tangible Book Growth
FITB	Fifth Third Bancorp	30.03	(2.5%)	121.9%
RF	Regions Financial Corporation	22.60	9.9%	100.3%
WAL	Western Alliance Bancorporation	11.99	28.7%	164.0%
CMA	Comerica Incorporated	11.15	(0.1%)	111.9%
FCNCA	First Citizens BancShares, Inc.	7.91	(3.6%)	98.7%
PNFP	Pinnacle Financial Partners, Inc.	7.31	19.5%	104.3%
SNV	Synovus Financial Corp.	6.78	6.5%	117.6%
BPOP	Popular, Inc.	6.57	0.8%	113.0%
PACW	PacWest Bancorp	5.57	15.2%	127.0%
STL	Sterling Bancorp	4.95	13.1%	100.6%
CIT	CIT Group Inc.	4.91	14.9%	133.1%
HWC	Hancock Whitney Corporation	4.30	14.2%	134.2%
LOB	Live Oak Bancshares, Inc.	3.87	25.7%	364.4%
CBU	Community Bank System, Inc.	3.86	(2.2%)	36.7%
TBK	Triumph Bancorp, Inc.	2.91	16.4%	298.0%
FBP	First BanCorp.	2.80	(4.0%)	145.7%
VBTX	Veritex Holdings, Inc.	2.02	18.2%	100.1%
GWB	Great Western Bancorp, Inc.	1.88	3.5%	154.9%
TBBK	The Bancorp, Inc.	1.75	16.2%	184.6%
NTB	The Bank of N.T. Butterfield & Son Limited	1.75	(1.6%)	41.4%
FBNC	First Bancorp	1.38	11.1%	109.7%
CNOB	ConnectOne Bancorp, Inc.	1.33	18.9%	103.2%
BANC	Banc of California, Inc.	1.27	14.4%	106.0%

RESEARCH SUMMARY FOR SEMICONDUCTORS AND SOFTWARE

Most of our recent research has led us to believe that gross margin expansion above consensus expectations is crucial for success at this point in the cycle and has been important for identifying compounders over the last decade. Back on October 1, 2002, we initiated as the US Semiconductor analyst at Sanford C. Bernstein & Co, with a note title “Share Gainers and Margin Expanders Are Multiple Expanders”. Nineteen years later we wanted to research the relevance of share gain and margin expansion in software and semis to identify dislocated stocks that may signal an investment opportunity.

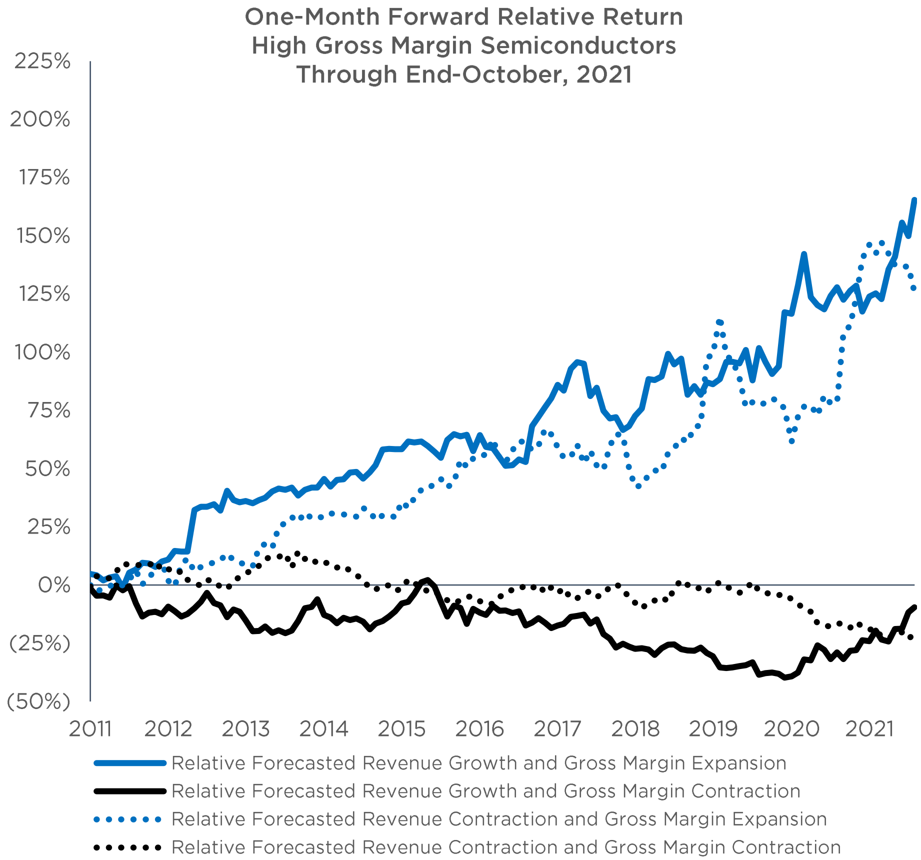
There is clearly some tension in the market on these key areas of technology, with high options activity and recent volatility reflecting supply chain concerns, etc. Going “back to the basics” of revenue growth vs. peers and margin expansion seems timely today. As such, we split each sector into high and low gross margin peer groups to account for substantial business model differences and searched for investment opportunities

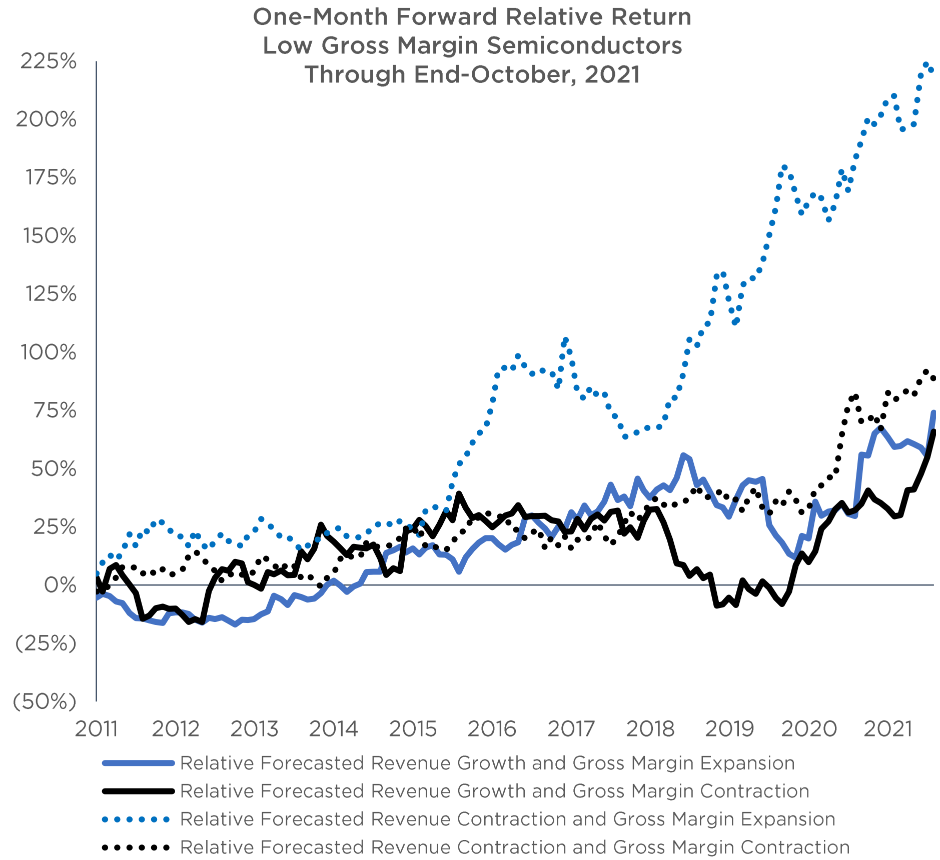
Semiconductors: Gross margin expansion is more important than share gain for both high and low gross margin chip makers. Multiple expansion / contraction and price momentum help us further refine the stock ideas. **Long and short ideas are shown on page 7.**

Software: Revenue growth matters more than gross margin expansion among high gross margin companies. The only thing that matters for low gross margin software companies is improving gross margins. **Long and short ideas are shown on page 12.**

MARGIN EXPANSION MORE IMPORTANT THAN SHARE GAIN FOR CHIPS

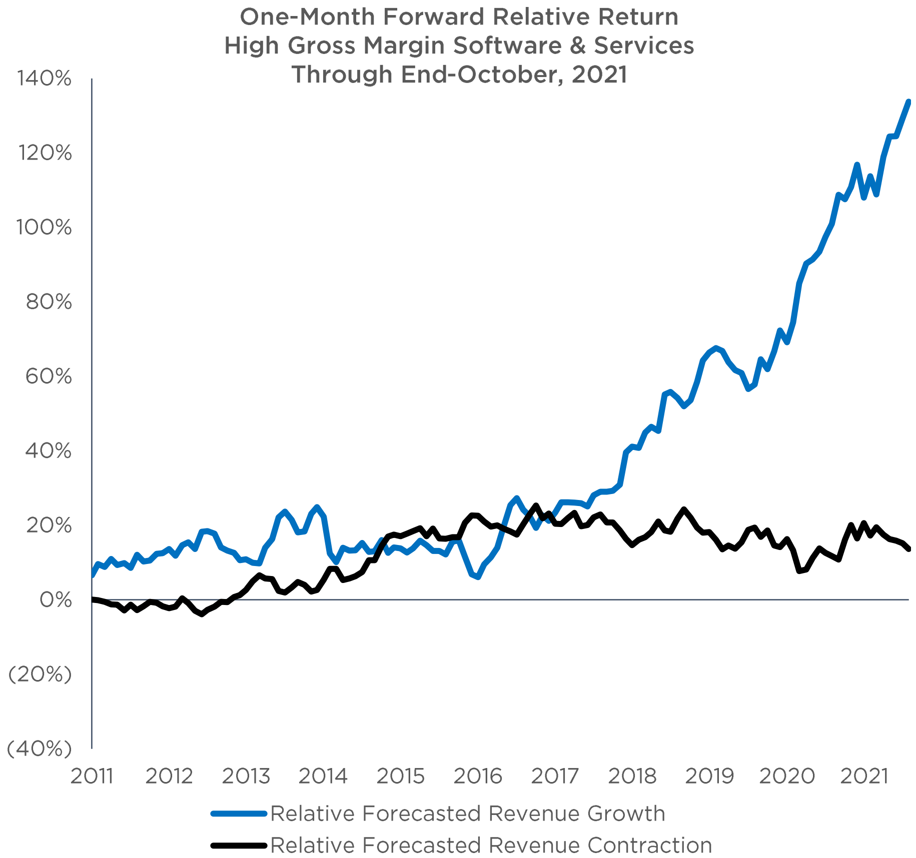
Combining share gain / loss and margin expansion / contraction, we notice that among high margin semis (left chart) margin contraction is punished, independent of the forecasted revenue outlook, and margin expansion is rewarded. For low margin chip makers (right chart), forecasted share loss and gross margin expansion yields by far the best return – meaning the market wants low margin companies to chase higher margin revenue and improve their mix

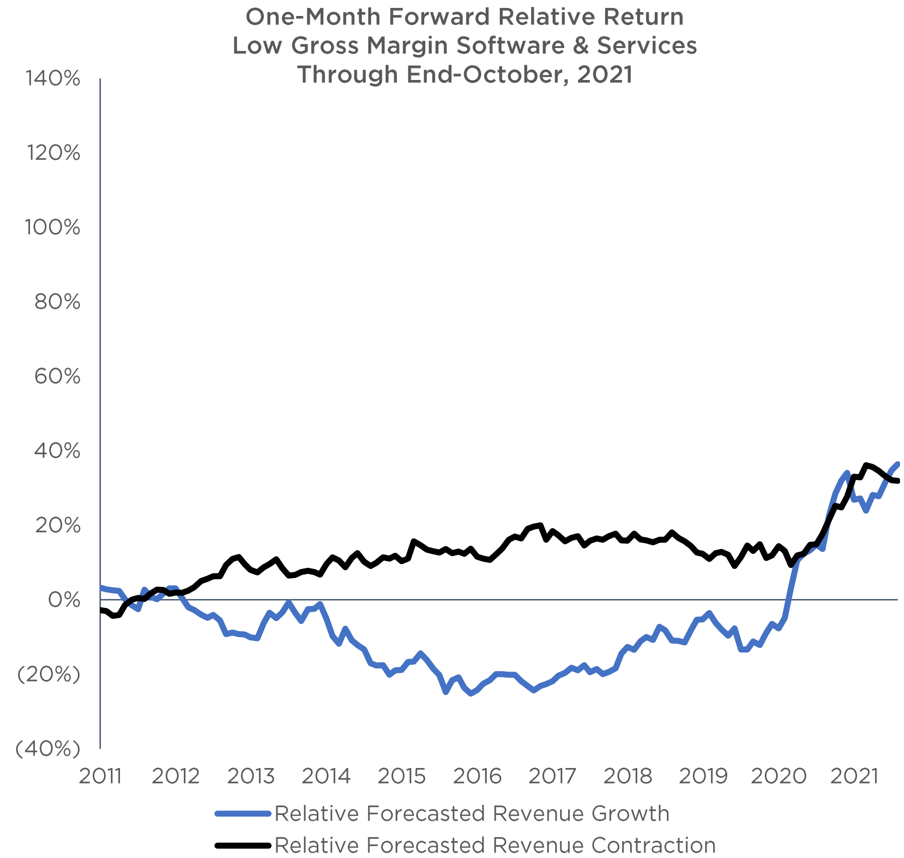




SHARE GAIN IS IMPORTANT FOR HIGH MARGIN SOFTWARE

For high gross margin software companies, it is extremely important for forecasted revenue growth to be faster than average (left chart), with strong outperformance for share gainers among the high margin software companies relative to those high margin software companies forecasted to be share losers. Low gross margin software companies are generally weak stocks, whether forecasted revenue is high or low (right chart)





SEMIS AND SOFTWARE: THE REVENUE AND MARGIN PLAYBOOK

Semiconductors Playbook

High Current Goss Margins

Relative Forecast Gross Margin	Relative Forecast Revenue	Relative 3-Month Price-to-Forecast-Sales	Relative 3-Month Price Momentum
Expansion	Share Gain	Expansion	Positive
Expansion	Share Gain	Expansion	Negative
Expansion	Share Gain	Contraction	Positive
Expansion	Share Gain	Contraction	Negative
Expansion	Share Loss	Expansion	Positive
Expansion	Share Loss	Expansion	Negative
Expansion	Share Loss	Contraction	Positive
Expansion	Share Loss	Contraction	Negative
Contraction	Share Gain	Expansion	Positive
Contraction	Share Gain	Expansion	Negative
Contraction	Share Gain	Contraction	Positive
Contraction	Share Gain	Contraction	Negative
Contraction	Share Loss	Expansion	Positive
Contraction	Share Loss	Expansion	Negative
Contraction	Share Loss	Contraction	Positive
Contraction	Share Loss	Contraction	Negative

Low Current Goss Margins

Relative Forecast Gross Margin	Relative Forecast Revenue	Relative 3-Month Price-to-Forecast-Sales	Relative 3-Month Price Momentum
Expansion	Share Gain	Expansion	Positive
Expansion	Share Gain	Expansion	Negative
Expansion	Share Gain	Contraction	Positive
Expansion	Share Gain	Contraction	Negative
Expansion	Share Loss	Expansion	Positive
Expansion	Share Loss	Expansion	Negative
Expansion	Share Loss	Contraction	Positive
Expansion	Share Loss	Contraction	Negative
Contraction	Share Gain	Expansion	Positive
Contraction	Share Gain	Expansion	Negative
Contraction	Share Gain	Contraction	Positive
Contraction	Share Gain	Contraction	Negative
Contraction	Share Loss	Expansion	Positive
Contraction	Share Loss	Expansion	Negative
Contraction	Share Loss	Contraction	Positive
Contraction	Share Loss	Contraction	Negative

Software Playbook

High Current Goss Margins

Relative Forecast Gross Margin	Relative Forecast Revenue	Relative 3-Month Price-to-Forecast-Sales	Relative 3-Month Price Momentum
Expansion	Share Gain	Expansion	Positive
Expansion	Share Gain	Expansion	Negative
Expansion	Share Gain	Contraction	Positive
Expansion	Share Gain	Contraction	Negative
Expansion	Share Loss	Expansion	Positive
Expansion	Share Loss	Expansion	Negative
Expansion	Share Loss	Contraction	Positive
Expansion	Share Loss	Contraction	Negative
Contraction	Share Gain	Expansion	Positive
Contraction	Share Gain	Expansion	Negative
Contraction	Share Gain	Contraction	Positive
Contraction	Share Gain	Contraction	Negative
Contraction	Share Loss	Expansion	Positive
Contraction	Share Loss	Expansion	Negative
Contraction	Share Loss	Contraction	Positive
Contraction	Share Loss	Contraction	Negative

Low Current Goss Margins

Relative Forecast Gross Margin	Relative Forecast Revenue	Relative 3-Month Price-to-Forecast-Sales	Relative 3-Month Price Momentum
Expansion	Share Gain	Expansion	Positive
Expansion	Share Gain	Expansion	Negative
Expansion	Share Gain	Contraction	Positive
Expansion	Share Gain	Contraction	Negative
Expansion	Share Loss	Expansion	Positive
Expansion	Share Loss	Expansion	Negative
Expansion	Share Loss	Contraction	Positive
Expansion	Share Loss	Contraction	Negative
Contraction	Share Gain	Expansion	Positive
Contraction	Share Gain	Expansion	Negative
Contraction	Share Gain	Contraction	Positive
Contraction	Share Gain	Contraction	Negative
Contraction	Share Loss	Expansion	Positive
Contraction	Share Loss	Expansion	Negative
Contraction	Share Loss	Contraction	Positive
Contraction	Share Loss	Contraction	Negative

SEMICONDUCTOR STOCK IDEAS

High margin semis that are forecasted to have continued margin expansion and have recently lagged and seen multiple contraction subsequently perform best (stocks buy, top of left table). High margin semi short ideas with poor momentum continue to be weak (bottom left table). For low gross margin semis, buying stocks with good recent price momentum and forecasted margin expansion is best (top of right table). Low margin semis with poor momentum continue to lag (bottom right)

High Gross Margin Semiconductors

Buy Relative Gross Margin Growers, Multiple Contraction, and Low Momentum
Sell Relative Gross Margin Shrinkers, and Low Momentum
End-October, 2021

Ticker	Company Name	Market Cap ($ US. Bil)
Long		
NXPI	NXP Semiconductors N.V.	53.25
SWKS	Skyworks Solutions, Inc.	27.59
QRVO	Qorvo, Inc.	18.70
ONTO	Onto Innovation Inc.	3.90
Short		
INTC	Intel Corporation	199.28
TXN	Texas Instruments Incorporated	173.14
QCOM	QUALCOMM Incorporated	150.07
TER	Teradyne, Inc.	22.81
OLED	Universal Display Corporation	8.63
CRUS	Cirrus Logic, Inc.	4.65
RMBS	Rambus Inc.	2.53
CAMI	Camtek Ltd.	1.70
CEVA	CEVA, Inc.	1.05

Low Gross Margin Semiconductors

Buy Relative Gross Margin Growers with Lower Revenue Growth Expectations, Multiple Expansion, and High Momentum
Sell Relative Gross Margin Shrinkers with Higher Revenue Growth Expectations, and Low Momentum
End-October, 2021

Ticker	Company Name	Market Cap ($ US. Bil)
Long		
ON	ON Semiconductor Corporation	20.70
SYNA	Synaptics Incorporated	7.61
TSEM	Tower Semiconductor Ltd.	3.45
FORM	FormFactor, Inc.	3.09
AOSL	Alpha and Omega Semiconductor Limited	0.91
Short		
AMAT	Applied Materials, Inc.	123.39
KLIC	Kulicke and Soffa Industries, Inc.	3.53
AXTI	AXT, Inc.	0.34

SOFTWARE STOCK IDEAS

For high gross margin software, stocks that have strong price momentum, but multiple contraction are buys (top left). Shorts are high margin software with strong momentum that are also seeing multiple expansion, as the sales growth is not offsetting the change in valuation (bottom left). Among low gross margin software, buys have good momentum and multiple expansion, the opposite of high margin (top right), and sells have high momentum

High Gross Margin Software

Buy Relative Share Gainers, Multiple Contraction, and High Momentum
Sell Relative Share Losers, Multiple Expansion, and High Momentum
End-October, 2021

Ticker	Company Name	Market Cap ($ US. Bil)
Long		
CRWD	CrowdStrike Holdings, Inc.	64.30
AVLR	Avalara, Inc.	15.51
PLAN	Anaplan, Inc.	9.53
VRNS	Varonis Systems, Inc.	6.92
VERI	Veritone, Inc.	1.03
Short		
ORCL	Oracle Corporation	262.27
INTU	Intuit Inc.	170.95
SNPS	Synopsys, Inc.	50.81
CDNS	Cadence Design Systems, Inc.	47.98
CYBR	CyberArk Software Ltd.	7.16
ALTR	Altair Engineering Inc.	6.10

Low Gross Margin Software

Buy Relative Gross Margin Growers, Multiple Expansion, and High Momentum
Sell Relative Gross Margin Shrinkers, High Momentum
End-October, 2021

Ticker	Company Name	Market Cap ($ US. Bil)
Long		
TYL	Tyler Technologies, Inc.	22.19
PCTY	Paylocity Holding Corporation	16.79
GLOB	Globant S.A.	13.21
GWRE	Guidewire Software, Inc.	10.45
NCNO	nCino, Inc.	6.99
FSLY	Fastly, Inc.	5.90
ENV	Envestnet, Inc.	4.55
PRFT	Perficient, Inc.	4.07
RAMP	LiveRamp Holdings, Inc.	3.64
Short		
MSFT	Microsoft Corporation	2489.80
EPAM	EPAM Systems, Inc.	38.13
CDAY	Ceridian HCM Holding Inc.	18.77
TDC	Teradata Corporation	6.17

SUMMARY AND CONCLUSIONS FOR INDUSTRIALS

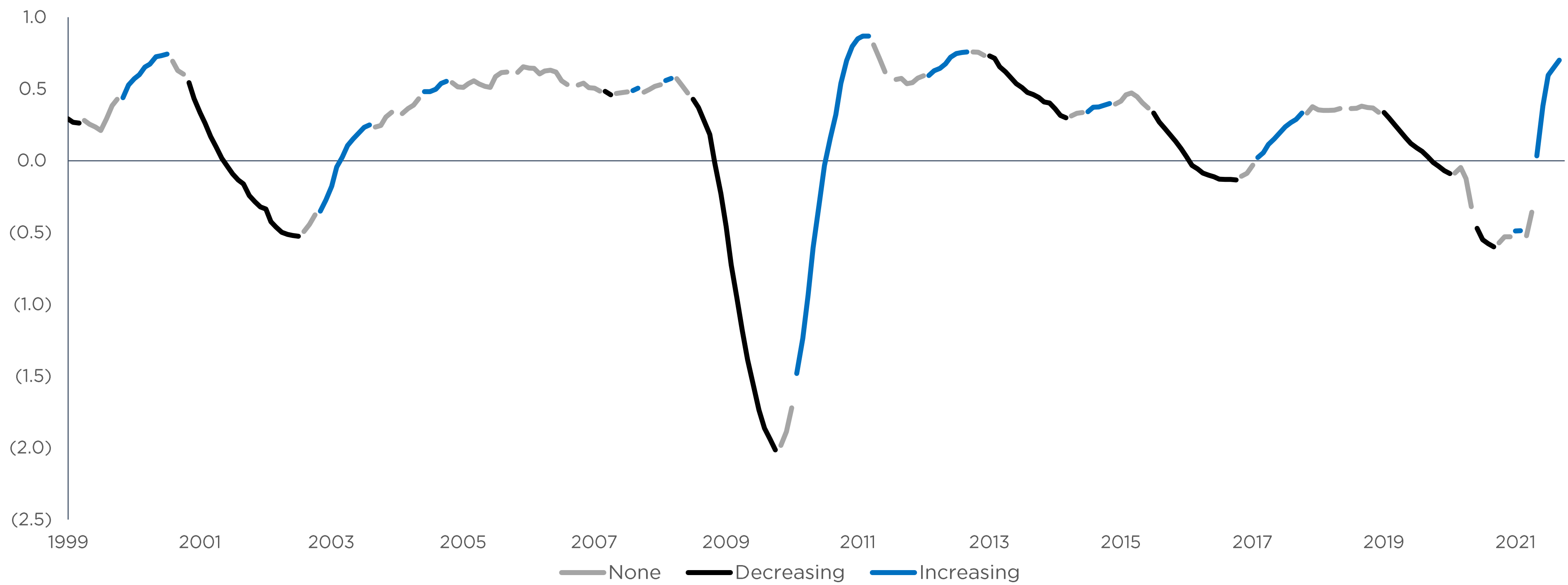
We are negative on the industrials sector relative to the market and would initiate new shorts, or sell down large long positions now

1. **Macro softening:** Our proprietary gauge of macro indicators of industrial activity shows a softening of late after a huge recovery since March of 2020. In particular, C&I loans, manufacturing capacity utilization, durable goods orders, industrial production, PMI, and North American carloads have all rolled over. Moreover, rising oil has historically improved our stock selection in industrials, driving our confidence in our underweight call
2. **Earnings expectations are high:** Despite the softening of macro data, bottom-up analyst earnings estimates for the GICS industrial sector appear to embed sustained economic strength, with above 20% YoY earnings growth forecasted each quarter through 2022, among the highest of any sector
3. **Inventory not lean:** While there have been ample supply-chain shortages and logistics problems for many manufacturers, our judgment is that inventory levels for the industrials companies themselves are average
4. **Group is expensive:** Valuations have become elevated, so unlike materials and energy which are cheap on peak earnings, many / most of the industrials' industries are in the 95th percentile or higher vs. their own history on EV-to-EBITDA
5. **Use margin expectations to find short ideas:** Therefore, it appears that the key to investing today will be further margin expansion. Our judgment is to short stocks where incremental margin expectations are high

OUR INDUSTRIAL ACTIVITY GAUGE IS NO LONGER INCREASING

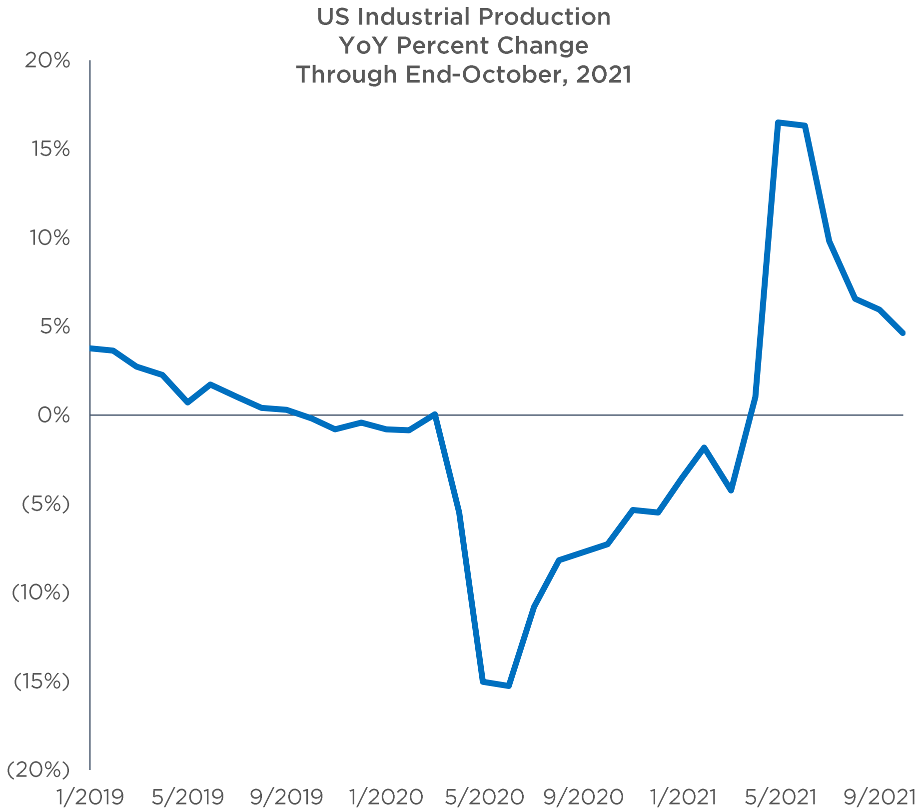
Our industrial activity gauge, which is a broad-based combination of several metrics like C&I loans, Baker Hughes rig count, private nonresidential construction, capacity utilization, new orders of durable goods, PMI, industrial production, and several others show that industrial activity rebounded sharply off the lows of March 2020. However, several signals have begun to roll-over. As of this month, we are no longer in a regime of increasing industrial activity – it seems to have peaked, something we highlighted as a potential outcome in our early September cautious note on machinery and capital goods

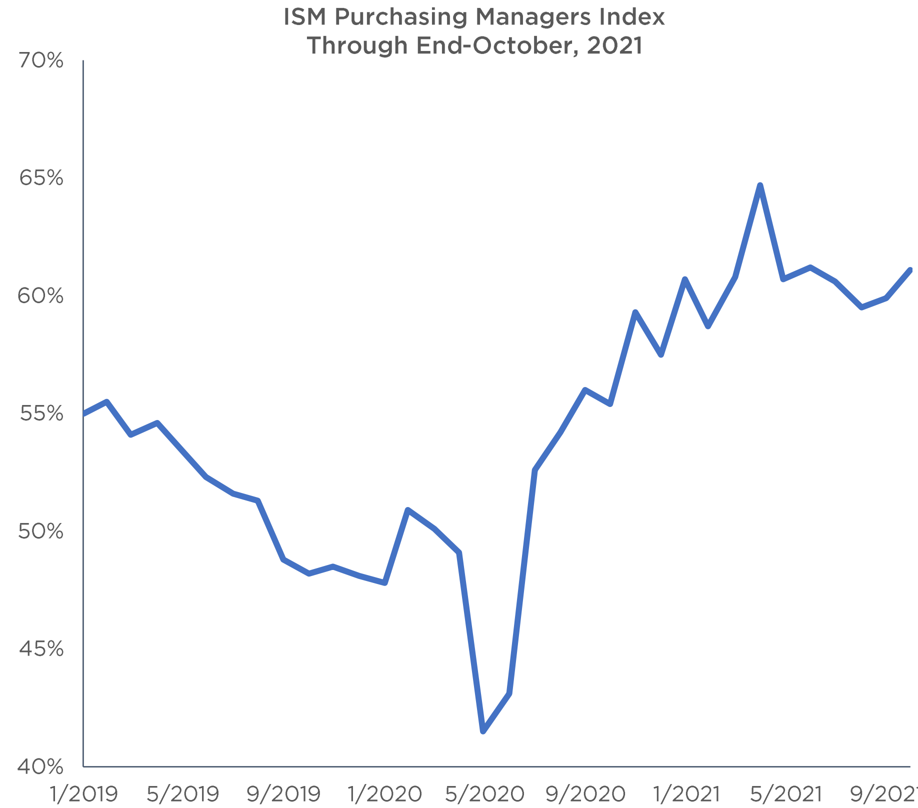
Trivariate's Industrial Activity Signal
Through End-October



INDUSTRIAL PRODUCTION AND PMI IN PARTICULAR HAVE SOFTENED

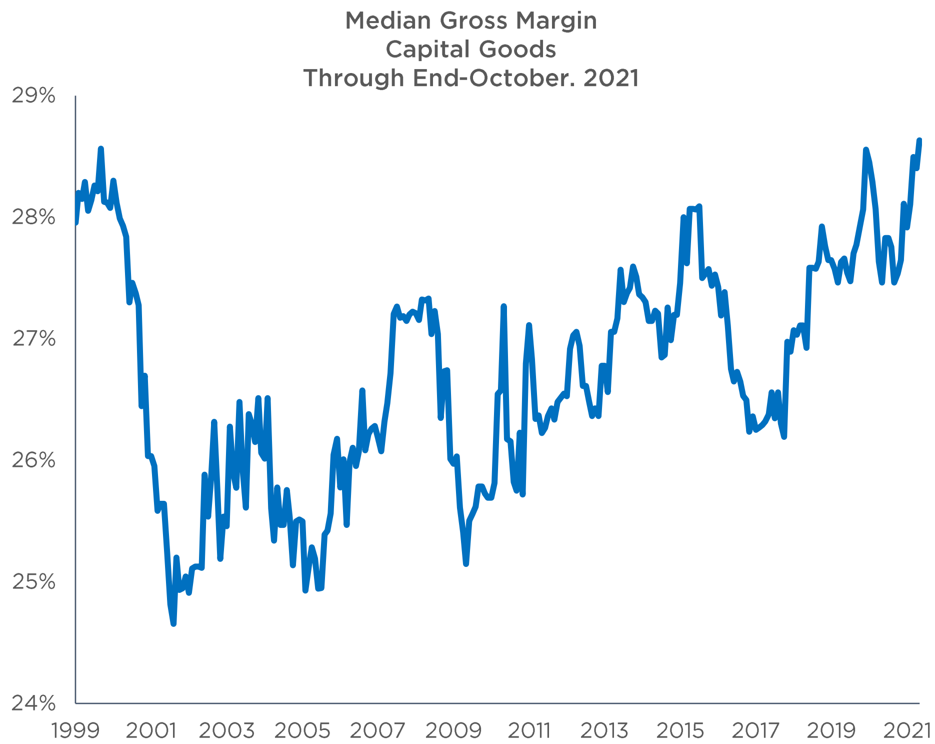
Among the inputs we track, industrial production (left chart) appears to be more sharply rolling over, although ISM purchasing managers index is off of highs (right chart). While both remain high in absolute terms, indicating we are far from a recession, the decline from the peak in May of 2021 is a driver of our judgment that corporate fundamentals likely will not achieve forecasted heights

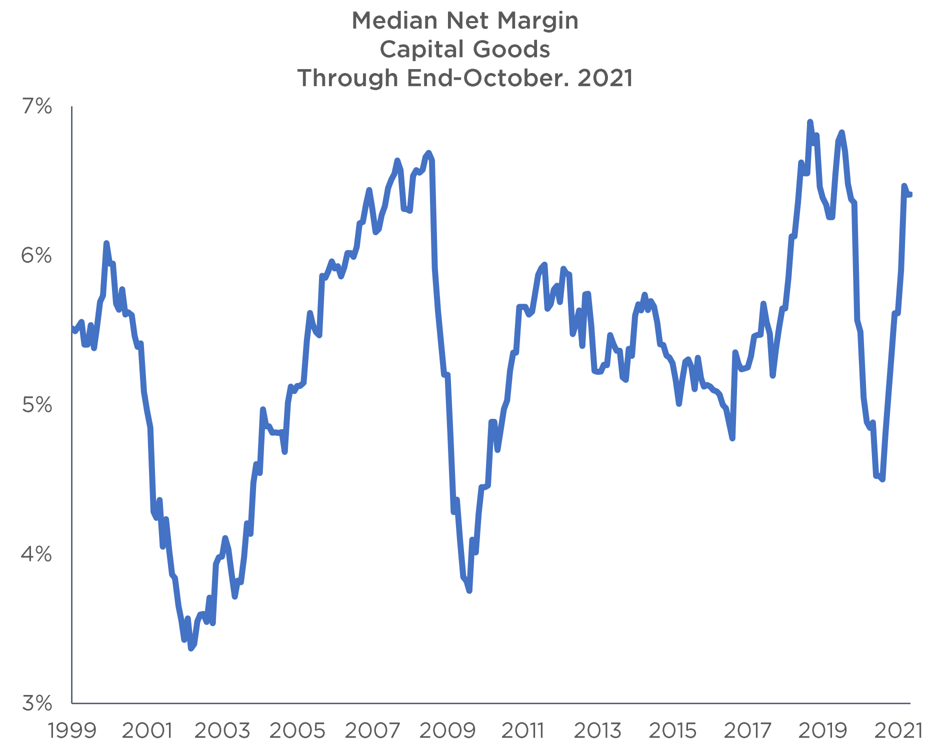




CAPITAL GOODS PROFITABILITY HAS RECOVERED

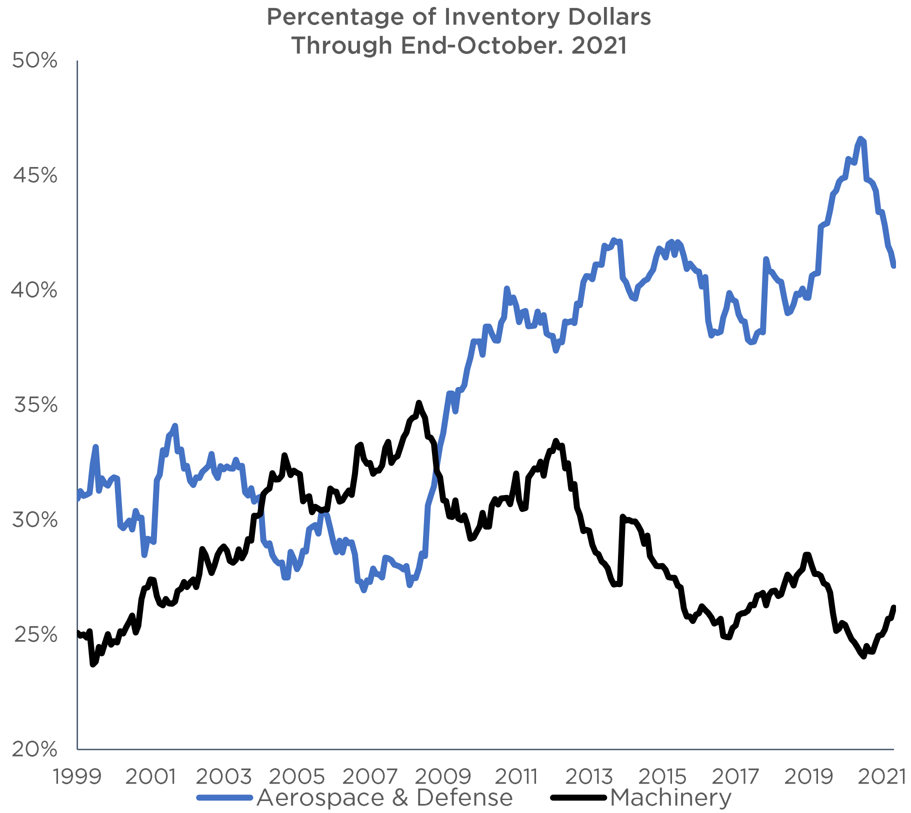
Within industrials, profitability (gross margin) has reached 20-year highs for the Capital Goods industry group, which makes up over 65% of industrials names with market capitalization over $1 billion (left chart). Net margins are also nearing peaks (right chart). With forward estimates for earnings growth strong even from these peak levels, it seems clear to us that stronger industrial activity and limited headwinds to future profitability will need to emerge for these forecast to be realized – and that does not seem likely to us

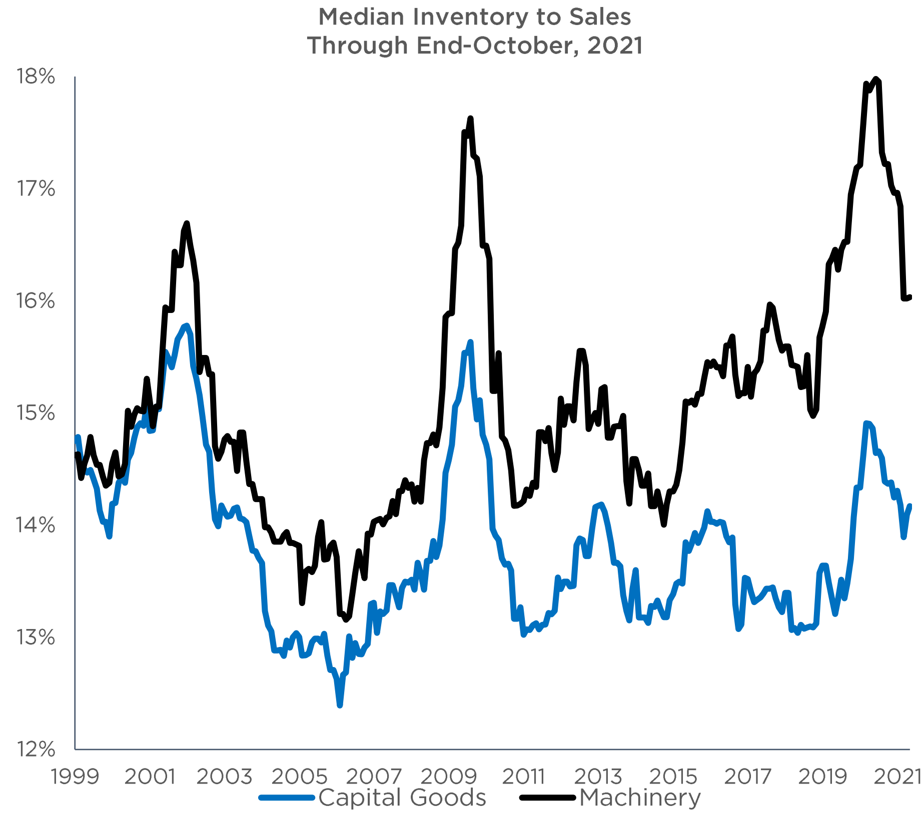




MACHINERY AND CAPITAL GOODS INVENTORY IS NOT LEAN

Margin expansion can be helped if inventory levels are low. However, it is not obvious to us that rising factory utilization will drive better cost absorption from here. Aerospace and defense alone make up over 40% of the industrials sector inventory dollars (left chart), making sector-level aggregation of inventory dollars misleading. Capital goods and machinery inventory levels are above pre-COVID levels, even if they've declined recently (right)

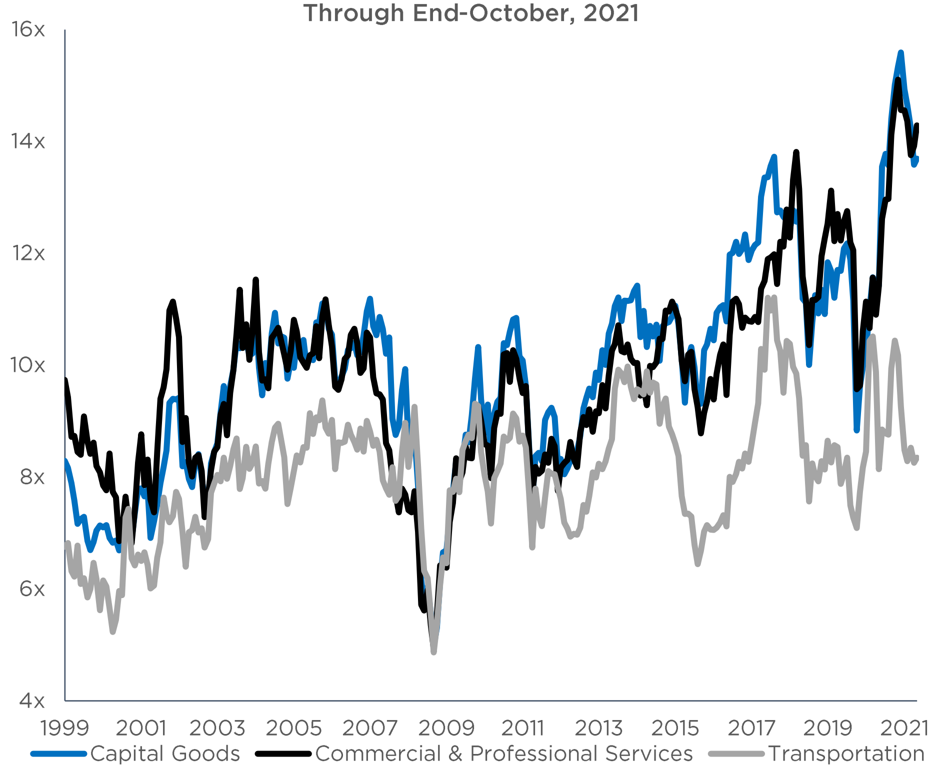




VALUATIONS HAVE EXPANDED FOR INDUSTRIALS

While other cyclicals like materials and energy have seen sharp multiple contraction as there is a view that they are over-earning, that is not the case for industrials, with elevated EV-to-EBITDA (left chart) multiples across capital goods and professional services. Conglomerates, commercial and professional services, machinery, and electrical equipment have rarely, if ever, been more expensive (right chart). Airlines are the lone exception

Median EV-to-EBITDA
Through End-October, 2021

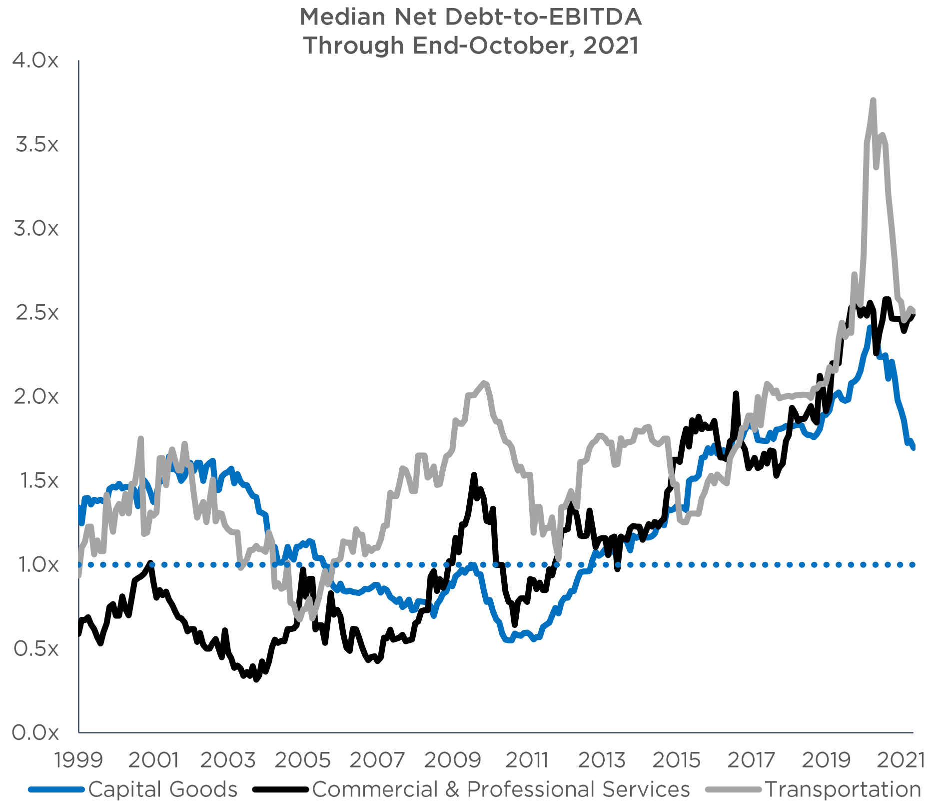


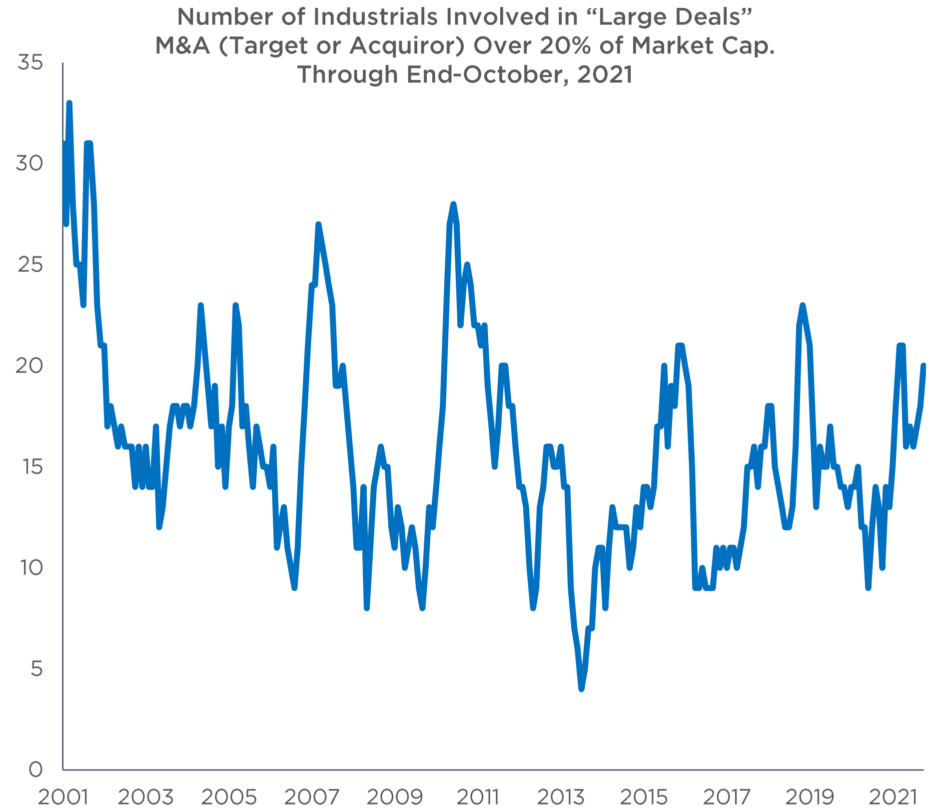
Median EV-to-EBITDA
Percentile Rank vs. History
End-October, 2021

Industrials GICS Industry	Rank
Industrial Conglomerates	100%
Professional Services	99%
Commercial Services & Supplies	99%
Trading Companies & Distributors	97%
Transportation Infrastructure	97%
Machinery	96%
Electrical Equipment	96%
Construction & Engineering	88%
Building Products	87%
Aerospace & Defense	86%
Road & Rail	79%
Air Freight & Logistics	66%
Marine	38%
Airlines	1%

LEVERAGE HAS MODESTLY PICKED UP, M&A NOT PARTICULARLY ACTIVE

Elevated valuations can be at least partially justified if balance sheets have massively improved, or if there has been an outsized amount of M&A in a sector. But that is not the case. Companies on average have higher leverage than they did in previous cycles (left chart) and the current number of industrial-sector deals is roughly at a 20-year average (right chart), meaning there is not sector-related euphoria about a rash of imminent deals





SHORT IDEAS: IT ALL COMES DOWN TO MARGIN EXPECTATIONS

Our conclusion therefore is to short non-growth industrials with near-record profit margins that are forecasted to have improved profitability next year despite the industrial activity roll-over (left chart), or those with high incremental gross margin expectations that screen badly in our quantitative models (right chart). We think these are good places to search for short ideas

High 2022 Incremental Margin Forecasts and Already At / Near Record Profitability End-October, 2021

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
HON	Honeywell International Inc.	Industrial Conglomerates	150.50
CAT	Caterpillar Inc.	Machinery	111.69
CTAS	Cintas Corporation	Commercial Services & Supplies	44.79
ROL	Rollins, Inc.	Commercial Services & Supplies	17.33
PNR	Pentair plc	Machinery	12.24
CFX	Colfax Corporation	Machinery	7.35
WTS	Watts Water Technologies, Inc.	Machinery	6.39
CR	Crane Co.	Machinery	6.03
AIMC	Altra Industrial Motion Corp.	Machinery	3.39
NPO	EnPro Industries, Inc.	Machinery	1.85
CMCO	Columbus McKinnon Corporation	Machinery	1.34

High Forecasted Incremental Margins vs. Current Gross Margins Bottom Half of Trivariate Quantitative Model September 17, 2021

Ticker	Company	Industry Group	Market Cap. (US$ Bil.)
GE	General Electric Company	Industrial Conglomerates	115.16
CAT	Caterpillar Inc.	Machinery	111.69
PCAR	PACCAR Inc	Machinery	31.11
SWK	Stanley Black & Decker, Inc.	Machinery	29.29
IR	Ingersoll Rand Inc.	Machinery	22.59
WAB	Westinghouse Air Brake Technologies Corporation	Machinery	16.95
MAS	Masco Corporation	Building Products	16.00
FBHS	Fortune Brands Home & Security, Inc.	Building Products	13.76
GGG	Graco Inc.	Machinery	12.78
PNR	Pentair plc	Machinery	12.24
AOS	A. O. Smith Corporation	Building Products	11.63
CSL	Carlisle Companies Incorporated	Building Products	11.62
ALLE	Allegion plc	Building Products	11.51
LII	Lennox International Inc.	Building Products	10.95
SNA	Snap-on Incorporated	Machinery	10.92
TTC	The Toro Company	Machinery	10.16

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