

US Equity Markets

2020 Outlook

09 December 2019

In 2019 the market faced two key headwinds, drag from tighter monetary policy and a substantial increase in US/China tariffs, resulting in a global business and profit cycle slowdown. In the US, we estimate that the cumulative damage from Tariffs alone pushed 2019 EPS growth down to ~1% from potential ~8%. Heading into 2020 these drags are expected to at least partially reverse. Easier monetary and fiscal policies are in motion globally with majority of the benefits expected to flow through the economy in the coming quarters. On the trade front, we remain of the view that at a minimum, a partial US/China deal with some tariff roll-back should be reached ahead of 2020 election though the exact timing remains unclear. Global business sentiment should start to heal and help normalize investment activity including inventory restocking as fears related to US/China trade, Brexit, and other one-off shocks to large economies fade (e.g. Italy, India, etc.). **All of the above leads us to believe that the business cycle should begin to gain stronger traction by early 2020, providing further room for market upside and continued style and sector rotation.**

Our 2020 S&P 500 EPS estimate is \$180 (+10% y/y) — it assumes partial US/China tariff rollback. Growth upside will primarily depend on the magnitude and timing of trade deal(s), in our view. We have defended our positive equity stance from beginning of this year (see [2019 Outlook](#)) and in October raised our near-term price target to 3,200 from 3,000 (see [Market Upside](#)). **Next year we see the S&P 500 rising further to 3,400 on global cycle recovery, partial trade deal, pro-growth election-year rhetoric and neutral investor positioning.** We expect most, if not all, of the market upside to be realized ahead of US elections, which generally have been a positive for equities—S&P 500 rose on average 12% through the prior year with a hit rate of 90%. The global low rate environment is likely to keep the equity multiple elevated given high total shareholder yield and increasing bond type exposure of the S&P 500. **While investors increased equity positioning over the past month** (in the aftermath of phase 1 trade progress), **our assessment is that investors have net exposure which is close to historical averages.** Positioning is higher for systematic funds (e.g. volatility sensitive strategies and CTAs in ~75th percentile), but lower for discretionary and fundamental managers (e.g. discretionary hedge funds ~40th percentile). In 2020, we also expect outflows from bonds and inflows into equities funds, which would support equity markets (see [2020 Equity Derivatives Outlook](#)).

Market Volatility and US Election — In our 2019 outlook, we forecasted that median VIX will be around 15-16 this year. Our fundamental fair value model for VIX currently points to a level of ~15, and given the incremental central bank support, our positive view on cycle and trade war developments, we would lower that target by ~0.5 to 1 point relative to last year. In terms of US Presidential Elections, we think that the two most likely outcomes are Trump's re-election or an experienced centrist Democrat, which would be neutral or positive for markets (at least initially). A progressive left Democratic candidate could be a significant downside risk for the market; however, we assign a low probability to this outcome. While we will continue to re-assess potential election scenarios, at the moment we do not think that US elections are a key risk that should keep investors out of risk markets (see [2020 Equity Derivatives Outlook](#)).

At the Style level, we expect the rotation from Momentum into Value (that began end of Aug) **to persist as the global business cycle re-accelerates and puts upward pressure on bond yields and commodities.** History implies the current rotation is still less than half-way through (see Style Positioning section below for more details). Within Momentum, we view Low Vol stocks as possessing the worst risk-reward, while Growth stocks should be less vulnerable due to their superior fundamentals in a moderate growth environment and lower sensitivity to yields. As for Size positioning,

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2020 Equity Market Outlook

S&P 500 Price Target: 3,400; **EPS:** \$180**VIX (Average):** ~14.5**Style Theme:** Momentum to Value Rotation**Sector OWs:** Cyclicals Value: Energy, Materials, Industrials; Defensive Value:Healthcare; GARP: Communication Svcs,**Sector UWs:** Expensive Defensives:

Utilities, Staples, REITs

Theme OWs: Cyclicals, Energy Recovery,

Healthcare Laggards, Trade Deal

Beneficiaries, 5G Plays

Theme UWs: Expensive Defensives, Disconnected ESG Plays

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Bloomberg subscribers can use the ticker JPAMSECY, JPAMCNEX, JPAMEVAL, JPAMHVAL, JPAMFIVG, JPAMXDEF, JPAMRESG to access tracking information on a basket created by the J.P. Morgan Delta One desk to leverage the theme discussed in this report. Over time, the performance of JPAMSECY, JPAMCNEX, JPAMEVAL, JPAMHVAL, JPAMFIVG, JPAMXDEF, JPAMRESG could diverge from returns quoted in our research because of differences in methodology. J.P. Morgan Research does not provide research coverage of this basket and investors should not expect continuous analysis or additional reports relating to it. For more information, please contact your J.P. Morgan salesperson or the Delta One Desk.

Small/Mid-caps is a GARP play relative to Large-caps and could see re-rating on improving growth and credit outlook, as well as pick up in M&A. **In our view, the largest risk to equity portfolios going into 2020 is being implicitly long duration** (i.e. positioned for rates falling/staying low).

At the Sector level — Within the Cyclical complex, we favor Multinational Value (i.e. stocks sensitive to USD, Trade Tariffs, Oil, EM) over Domestic Value, and thus our preference for **Energy (OW)**, **Materials (upgrading to OW from N)** and **Industrials (OW)** over Financials (N) and Consumer Discretionary (downgrading to N from OW). Our preference for Value within the Growth complex results in us favoring **Communications (upgrading to OW from N)** over Technology (downgrading to N from OW), which has been our highest-conviction overweight since end of last year. Within the Defensive complex, we view **Healthcare (upgrading to OW from UW)** as having the most attractive value proposition, relative to **Staples, Utilities and REITs (UWs)** which we see as the most vulnerable sectors. For **investment themes**, we recommend Cyclical, US/China Trade Beneficiaries, Energy Recovery, Healthcare Laggards, and 5G Plays, while avoiding Expensive Defensives and Disconnected ESG Plays (see Thematic Stock Baskets on pages 28-34).

The profit cycle is at an inflection and should rebound. In our view, earnings growth likely bottomed in 3Q and should stabilize in 4Q (+2% y/y) followed by an earnings recovery in 1H20 (+5%) and stronger growth in 2H20 (+10%). Tariffs have been the largest headwind for global growth which, based on our estimates, reduced 2019 S&P 500 earnings growth potential by 7-8%. First-order EPS headwind alone has risen to ~\$6 with the implementation of Phase III (List 4A) and the total impact including second-order effects has been significantly higher at ~\$12 (e.g., lower business investment/capex, inventory de-stocking, weaker commodities, stronger USD, see [Playing with Fire](#)). **Our base case assumption is for a partial trade deal, which would result in stronger EPS growth of 10% next year compared to ~1% in 2019 (2020 EPS \$180 vs. consensus \$178). However, earnings will remain very sensitive to the trade outcome and its timing.** We are assuming following 2020 EPS outcomes under US/China trade scenarios: (1) Full trade deal and entire reversal of tariffs—EPS of \$184 (+12% y/y); (2) Partial deal and reversal of List 4A tariffs—EPS of \$180 (+10%), (3) Trade truce and unchanged tariffs—EPS of \$176 (+7% y/y), and (4) Trade escalation and addition of List 4B tariffs—EPS of \$171 (+4%), see page 10. While many have called for an earnings recession, we have held a more constructive view and continue to expect tariff related headwinds to be transitory. With majority of the announced tariffs having already cycled through earnings estimates, we expect improving corporate sentiment. Our 2020 EPS estimate assumes some pick-up in sales growth, margin recapture, and steady buybacks (see Earnings Model on page 10).

- **Expecting revenue growth of 6% with margin recapture.** Despite lower commodity prices, softer business spending, and trade headwinds, S&P 500 companies are on track to deliver still healthy ~4% top-line growth in 2019. For next year, we are modeling a tick-up to 6% on a tightening labor market in the US, global business cycle recovery, and capex growth. Also, we expect companies to recapture majority of margin compression in 2020. Based on our estimates, rising tariff costs have been a significant drag on S&P 500 margins in the range of 50-75bp through direct and second-order effects. In our view, margins could surpass 2018 record level on stronger global growth, commodity prices, and partial tariff reversal. Lower USD could provide further upside to margins. We believe rising wage concerns have been overstated throughout the cycle despite structural deflationary forces from Tech disruptions, globalization, low participation rate, etc. In fact, large-caps should be net beneficiaries as long as higher wages do not stoke inflation fears and prompt the Fed to raise rates.
- **Rising corporate leverage supported by low rates, record profits, and maturing Tech and Healthcare companies.** S&P 500 net debt to total assets (ex-Financials)

Figure 1: Drivers of EPS Growth

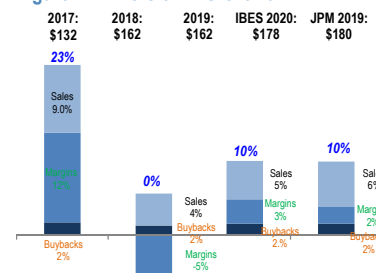


Figure 2: Expect Healthy Sales Growth

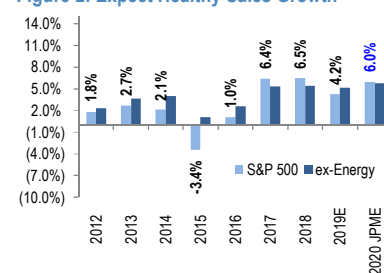


Figure 3: Net Income Margin Recapture

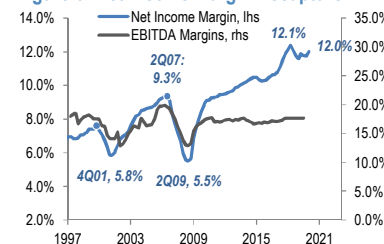


Figure 4: Should Lead to Stronger EPS



Figure 5: EPS Sensitivity — Cost of Tariffs

	US Tariffs		
	\$250b / @ 25%	\$250b / \$140b / @ 25% / @ 15%	\$250b / \$290b / @ 25% / @ 15%
China Tariffs @ 25%	\$4.00	\$5.00	\$6.20
	\$5.10	Current \$6.10	\$7.30
	\$5.30	\$6.30	\$7.50
	Implemented	Implemented	Dec 15 (Potential)

Source: J.P. Morgan US Equity Strategy and Global Quantitative Research

metric crossed above prior cycle peak as companies remain focused on returning capital to shareholders. While pundits have been quick to point out rising leverage as a concern for several years, we have been making a case that US corporates can support much higher levels of indebtedness due to low rates, record profits, more favorable sector mix, and rising equity values. In our view, rising corporate leverage is more sustainable than anytime during last several decades. For instance, during 1990s when corporate leverage was at a similar level (relative to total assets), cost of debt was much higher (8% vs. 3% currently) and profit margins much lower (7% vs. 12%). Also, traditional credit metrics give an incomplete picture of balance sheet health in our view. For example, ability to pay interest has improved significantly over the cycle and is near best levels on sharply higher profits (S&P 500 annual interest expense is only ~\$250b compared to net income of ~\$1.5 trillion). However, if one were to measure interest coverage relative to enterprise income such as EBIT, the picture is less constructive given that much of the policy benefits over this cycle have accrued below the operating-income line (i.e., lower tax rate and interest expense). Further, comparing outstanding debt to book value of equity is less relevant in aggregate due to evolving sector mix from manufacturing (asset-heavy) to services (asset-lite) and failure of GAAP to properly assign a value to intangibles.

- **Another year of strong shareholder capital return of ~\$1.3 trillion.** So far YTD, US corporates repurchased shares at an annual rate of ~\$750b, which is down from 2018 level of ~\$830b. Given ample leverage spread of ~200bp (earnings yield less cost of debt), we believe stock buyback activity is likely to remain elevated despite richer valuation. S&P 500 companies should execute another ~\$750b in buyback programs next year but with a greater focus on boosting income with S&P 500 dividend yield now below 2%. Companies could increasingly turn to M&A for boosting growth next year. A combination of richer equity valuation, low cost of debt, and strong USD make a compelling case for S&P 500 companies to target domestic SMid-caps and international peers.

Profit Cycle supported by an upturn of the Business Cycle. The global business cycle is at an inflection point, poised to reverse a nearly 2-year slowdown led by the manufacturing sector. JPM business cycle indicators (QMIs) for the US and Europe, which lead the cycle by 3 to 6 months, appear to have bottomed and are technically in recovery. Asia QMI, reflecting its manufacturing bias, is already in full-fledged expansion and appears to be leading the other regions, see Figure 7. Notably, after 6 months of sideways drift, China's manufacturing PMI rebounded strongly, rising 0.9 to 50.2 in November. Led by the Fed reversing course this year, we have argued that the change in trajectory of global monetary policy will be a powerful driver of a new intra-cycle recovery, a third reset for an expansion already the longest since 1860. The proportion of global central banks in easing mode has doubled to ~80% from ~40% in April. Historically, this leads an upturn in global manufacturing by 6 to 9 months (see Figure 8). G4 free liquidity, i.e. surplus money growth after adjusting for output growth, has also been rising in-line with falling rates since March relaying similar expected recovery. Correction in global PMI inventory, typically seen during global manufacturing slowdowns, seems considerably far along while output and new orders are inflecting up signaling the start of an upturn, (Figure 9, also see [JPM Global PMI Underlying Improvement](#)). In addition, boost to US housing starts from lower mortgage rates will begin showing in the next couple of quarters (Figure 10) underlining the benefit of easing to this key sector. We see potential for further fiscal easing globally next year—for instance, Japan's stimulus of ~\$239bn, the largest since 2012, in response to US-China trade tensions and to speed disaster recovery; China's bringing forward of ~\$140bn in 2020 special purpose bond allowance for local government spending; possible stimulus by Germany driven by a leftward shift in governing coalition and pressure from Eurozone partners—all providing firepower to the global business cycle recovery.

Figure 6: US Business Cycle Reset

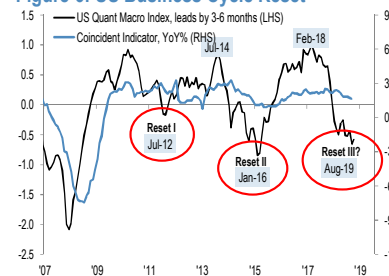


Figure 7: Asia QMI in Expansion



Figure 8: Monetary Easing Leads PMIs

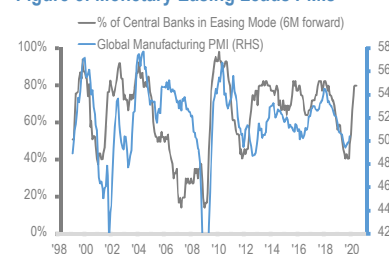


Figure 9: Inventories Restocking?

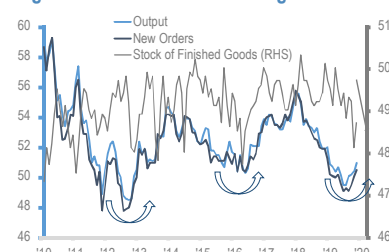
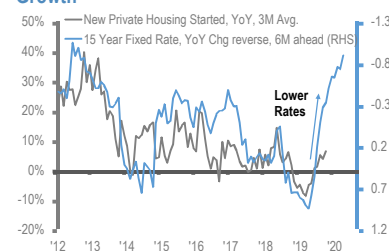


Figure 10: Lower Rates Supportive for Growth



Source: J.P. Morgan US Equity Strategy and Global Quantitative Research

Style Positioning—The rotation out of Momentum into Value stocks since late August has so far only partially corrected the extreme dislocation among styles (see Figure 12 and Figure 13). Momentum, Low Vol and Quality (L/S, sector neutral, equal-weighted S&P 500 quintiles) are down -14%, -9% and -3% respectively since end of August, while Value reversed its 12% YTD drawdown. History implies that the current Momentum/Value rotation is ~40% complete (see [Where Does the Rotation Stand?](#)). While the first phase of this rotation has largely been technical in nature (i.e. short covering of Value), the second phase should be propelled by better macro-fundamental data and confirmation of cycle recovery. Within the US, the degree of Momentum/Value rotation is broadly similar for Large Caps (S&P 500) and Small/Mid Caps (S&P 400, S&P 600), though there are notable exceptions across size (e.g. SMid Energy significantly lags). At the sector level, the rotation has thus far been non-uniform, with majority of convergence occurring within Growth sectors, to a lesser degree within Cyclical and even less within Defensives. Despite the partial rotation, several of the conditions and catalysts driving the reversal highlighted in our prior reports remain applicable (see [Rotation to Value](#), [July Market Commentary](#), [Value Conundrum](#)). Specifically, re-acceleration of the business cycle is becoming more evident (see [Early Signs of Recovery](#)); rates have stabilized; CB monetary easing and fiscal stimulus are in motion; trade tensions have been de-escalating; while Momentum-to-Value positioning still remains stretched. Momentum, in particular Low Vol stocks, remain significantly exposed to duration risk (i.e. if bond yields were to rise). Pick-up in inflation expectations and yields from the current low levels should further fuel the rotation. With the exception of Value and high Beta, all other styles look expensive relative to the market and own history with Growth being relatively less expensive. Growth is also less vulnerable to rising yields and reflation. Looking ahead to 1Q20, we recommend investors overweight Value, stay neutral Growth, and underweight Momentum, Low Vol and Quality.

Sector Positioning—we prefer relative Value plays within Cyclical, Growth, and Defensives, which should benefit from global synchronized recovery and diminishing trade headwinds. In particular, we recommend investors overweight Cyclical (Energy, Materials, Industrials), Communication Services within Growth, and Healthcare within Defensives.

- **We recommend investors favor Communication Services (OW from N) relative to Technology (N from OW).** Technology was our highest conviction overweight this year (see [2019 Sector Outlook](#)), but after a year of strong outperformance, the sector trades at a much higher valuation (forward PE has expanded by ~4.5x compared to 1.5x for the market). Apple and Microsoft have contributed ~50% of the Technology sector's performance YTD, which is likely a difficult feat to repeat given the size of these companies. In our view, Communications is less cyclical, offers similar long-term growth prospect, higher pricing power, and lower relative valuation (19x vs. 22x). We like Communications for its New and Old Media exposures (e.g. GOOG, FB, T, CMCSA, DIS) ahead of 2020 US election, which is expected to be another record year for ad spending. For investors looking for long growth exposure within Tech, we are still recommending Semiconductors for its cyclical exposure and companies that are 5G beneficiaries (see J.P. Morgan 5G Thematic Basket JPAMFIVG <Index> on page 32).
- **Energy is our highest risk/reward OW for next year** given record crowded short positioning, extremely depressed valuation, and peak insider buying. Complacency toward the sector is perplexing — HFs are adding to already crowded short positions, long-only PMs have all-but-abandoned the sector, pension schemes across the World have adopted zero carbon footprint policies, and rating agencies are downgrading bonds with a lag to improving oil and energy fundamentals. A potential US/China trade deal ahead of US elections could weaken USD and set up Oil for a rally. In particular, the market should increasingly focus on second

Figure 11: JPM US Style Views

	Recommendation	Business Cycle	Valuation	Positioning / Sentiment
Value	O/W	++	++	++
Growth	N	+	~	~
Mom.	U/W	--	-	-
Quality	U/W	--	--	-
Low Vol	U/W	--	--	-

Figure 12: Where does the Rotation Stand?

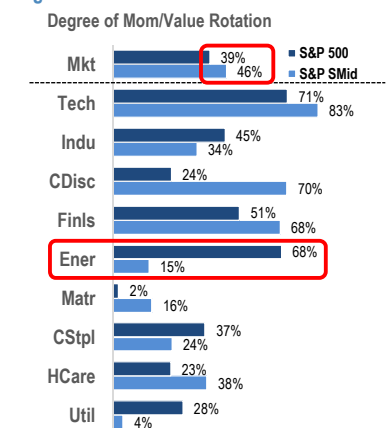


Figure 13: Mom/Value PE Spread Normalizing from Highs

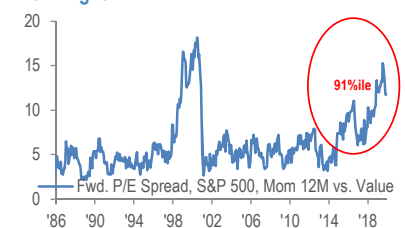
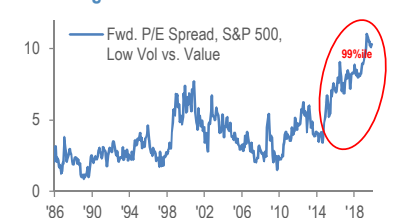


Figure 14: Low Vol/Value PE Spread High, Reversing



Source: J.P. Morgan US Equity Strategy and Global Quantitative Research

derivative of oil supply and demand, budget breakevens which remain >\$65/bbl, slowdown in US shale growth, and weakening outlook for total non-OPEC and non-US production, see [Oil Macro Outlook](#). SMid E&Ps, in particular, are among the most hated names in the sector, trading at a fraction of book value (0.35x). However, in line with insiders, we share a more constructive outlook for the sector and expect fundamentals to improve in the coming quarters, tax related selling to abate, and search for yield could trigger renewed interest in higher yielding bonds next year. See J.P. Morgan Energy Recovery Basket (JPAMEVAL <Index>) on page 30.

- **Materials (upgrading to OW from N), and Industrials (OW)**, which are more levered to the global business cycle recovery than their domestic peers, Discretionary (downgrading to N from OW) and Financials (N). **Materials (OW)** offers product diversity (from hard metals and building materials to chemical and packaging companies), thus see this sector as a more diversified reflation play but lower upside potential to Energy during 2020. Drivers for the sector include improving growth outlook, easing trade rhetoric, and growth in global capital spending (private and public). **Industrials (OW)** is the most direct play on trade resolution, pickup in business investment, weaker USD, and benefits from rising commodity prices. If global manufacturing sees a sustained recovery with inventory restocking from depressed levels, we would expect investor sentiment to improve for the sector with potential investor flows from defensive sectors and Tech (capital spending peer). Also, rollback of tariffs should be a more significant driver of margin for this sector than Technology. The sector could be further supported by recovering end markets driving demand/volumes and favorable 2H20 comps following production cuts through 3Q19.
- **We recommend investors favor Healthcare (upgrading to OW from UW) for its defensive growth.** Healthcare was our non-consensus underweight this past year given its richer relative valuation and political uncertainties. We view Healthcare risk/reward more attractive after a year of sharp underperformance despite continued earnings growth on secular tailwinds (Healthcare 2019 EPS growth 9% vs. S&P 500 1%, 2020 consensus expectation 9% vs. 10%). In our view, some of the political headwinds have eased with increasing acknowledgment that policies such as 'Medicare for All' will likely prove too difficult to implement without bipartisan support. While risks still remain around the Presidential election, drug pricing and the opioid crisis, we see negative investor sentiment already priced-in and beginning to rebound on better than feared outcomes. Within the Global Healthcare sector, US possesses attractive relative valuation and could benefit from cross-regional flows. At the industry level, Biotech is attractive on its favorable relative valuation (13x vs. 17x sector), solid fundamentals, and M&A potential. We also recommend Pharmaceuticals with a preference for Majors versus Specialty on ongoing new product cycle upside, attractive valuation and easing headline risks. With investors seeking defensive growth at a more attractive valuation we could see further rotation from Healthcare Equipment/Suppliers to Providers/Services as the Momentum/Value rotation continues to run its course. See J.P. Morgan Healthcare Laggards Basket (JPAMHVAL) on page 6.
- **We recommend investors continue to reduce exposure to expensive defensives Utilities (UW), Staples (UW), and REITs (UW), given increasing crowding concerns, record high relative valuation, and risk of higher rates.** We see bond proxies vulnerable given rich valuations in spite of lower than market earnings growth potential. These sectors have implicit long duration risk (see page 43 for 10yr and Sector correlation), especially if synchronized business cycle recovery results in better than expected economic growth and stronger inflation. **"Stagflation" fears could resurface for Staples (UW)**, as companies once again find it difficult to pass on rising costs at a time of market share concerns. As

Figure 15: S&P 500 Fundamentals by Sector

	Sales Growth		NI Margin			Earnings Growth/P/E			
	2019	2020	2019	2020	Delta	2019	2020	2019	2020
Energy	-4%	7%	5%	6%	0.7%	-27%	21%	19.8x	16.4x
Materials	-12%	-1%	10%	11%	0.7%	-20%	5%	18.8x	18.0x
Industrials	0%	5%	10%	10%	0.7%	-3%	13%	18.5x	16.3x
Discretionary	4%	7%	7%	7%	0.3%	-3%	11%	24.4x	21.9x
Staples	3%	3%	7%	7%	0.1%	0%	5%	20.7x	19.8x
HealthCare	14%	7%	8%	9%	0.3%	10%	10%	17.8x	16.2x
Financials	7%	0%	20%	19%	-0.3%	3%	1%	12.5x	12.4x
Technology	1%	7%	22%	22%	0.2%	-5%	8%	21.9x	20.3x
Communication S	10%	8%	15%	16%	0.7%	4%	12%	20.9x	18.6x
Utilities	1%	2%	9%	9%	0.3%	16%	0%	18.7x	17.7x
Real Estate	4%	5%	18%	15%	-3.9%	11%	-17%	36.8x	44.4x
S&P 500	4%	5%	11%	12%	0.3%	-2%	8%	19.0x	17.5x
Ex-Energy	5%	5%	12%	12%	0.2%	0%	8%	19.0x	17.6x

Figure 16: S&P 500 Shareholder Yield at ~5%

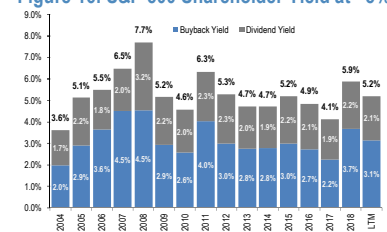
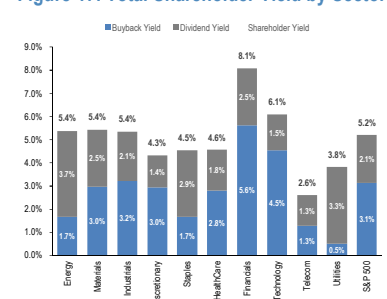


Figure 17: Total Shareholder Yield by Sector



Source: J.P. Morgan US Equity Strategy and Global Quantitative Research

discussed above, we are rotating out of domestic cyclicals, **Consumer Discretionary (downgrading to N from OW)**, and prefer higher beta exposure of global cyclicals. However, we see this sector performing in line with the market on continued favorable labor market trends along with upside from tariff relief (i.e., tariffs have cost an estimated at over \$1,000 per households, see [Early Signs of Recovery](#)). We believe these growth drivers are better captured by Industrials and Commodity sectors and the sector sports a richer PE of 23x than Tech (ex-AMZN trades in line with Communication Services but offers lower growth). While the outlook for **Financials (N)** remains positive, we do not see the sector leading the market higher. Earnings growth is expected to be tepid though Financials should remain a top sector for returning shareholder capital through buybacks and dividends.

Investment Themes

Long Ideas

1. **J.P. Morgan Seasonal Cyclicals Basket (JPAMSECY)** includes stocks best positioned to benefit from a recovery in the business cycle in early 2020. See Page 28 for more details.
2. **J.P. Morgan China/Trade Sensitive Basket (JPAMCNEX)** constitutes of stocks that are the key beneficiaries in an event of US-China trade deal. See Page 29 for more details.
3. **J.P. Morgan Energy Recovery Basket (JPAMEVAL)** identifies Energy stocks that would benefit from a continued recovery in the business cycle and oil prices. See Page 30 for more details.
4. **J.P. Morgan Healthcare Laggards Basket (JPAMHVAL)** identifies healthcare companies with a value tilt that would benefit from a recovery in the business cycle. See Page 31 for more details.
5. **J.P. Morgan 5G Thematic Basket (JPAMFIVG)** is comprised of stocks that are most closely tied to the ongoing 5G rollout. See Page 32 for more details¹.

Avoid Ideas

1. **J.P. Morgan Expensive Defensives Basket (JPAMXDEF)** consists of expensive, low vol stocks with high interest rate risk. See Page 33 for more details.
2. **J.P. Morgan Disconnected ESG Basket (JPAMRESG)** consists of ESG stocks with strong outperformance but weaker fundamentals vs Sector peers. See Page 34 for more details.

Figure 18: LONG Seasonal Cyclicals



Figure 19: LONG China/Trade Sensitive



Figure 20: LONG Energy Recovery



Figure 21: LONG Healthcare Laggards



Figure 22: LONG 5G Thematic



Figure 23: SHORT Expensive Defensives



Figure 24: SHORT Disconnected ESG



Performance only indicative*; Source: J.P. Morgan US Equity Strategy and Global Quantitative Research

¹ We acknowledge the contributions of Priyanka Ranjan of J. P. Morgan India Private Limited

State of the Business Cycle — Early Signs of Global Recovery

Figure 25: US QMI — Bottoming

US QMI is a leading indicator of US Business Cycle

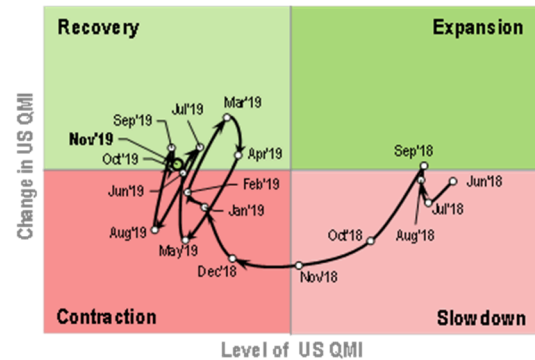
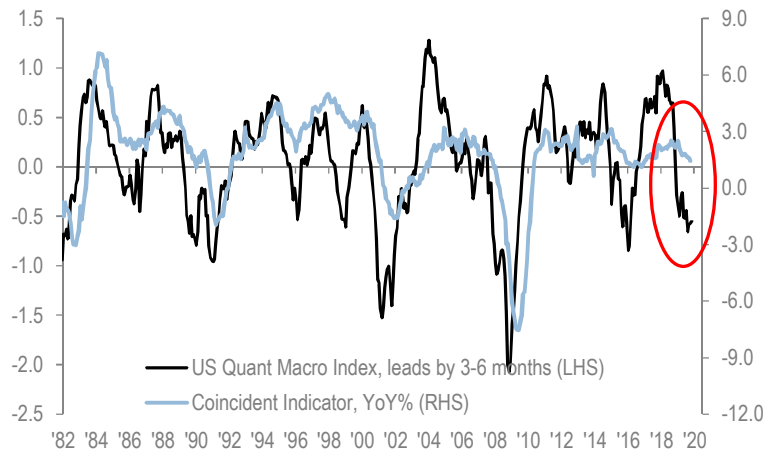
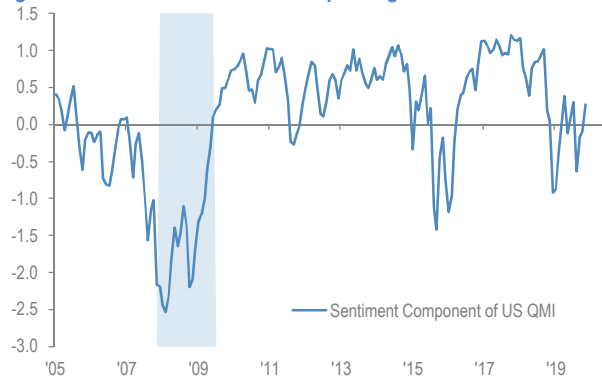


Figure 26: US Growth QMI — Growth Low and Set to Improve



Figure 27: US Sentiment QMI — Improving



The blue bar show the months of recession.

Figure 28: US Liquidity QMI — Normalizing

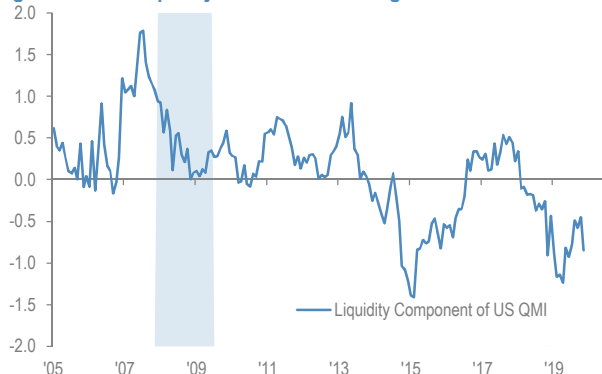
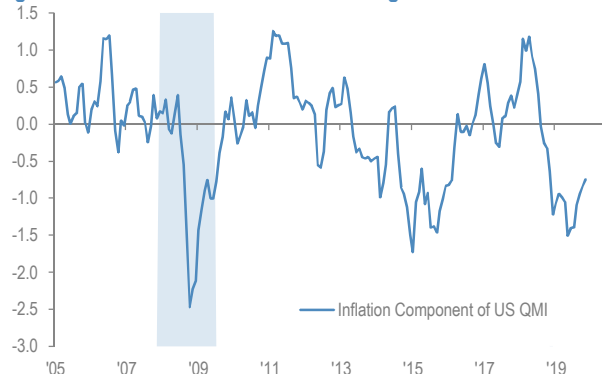


Figure 29: US Inflation QMI — Rebounding from Lows

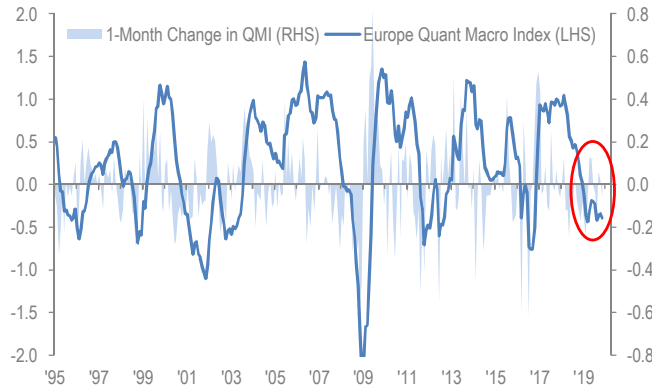


The blue bar show the months of recession.

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 30: Europe QMI — Bottoming

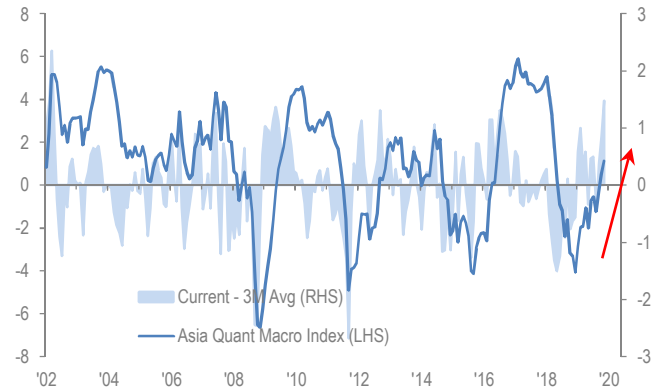
Europe QMI is a leading indicator of European Business Cycle



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 31: Asia QMI – In Expansion, Likely Leading Other Regions

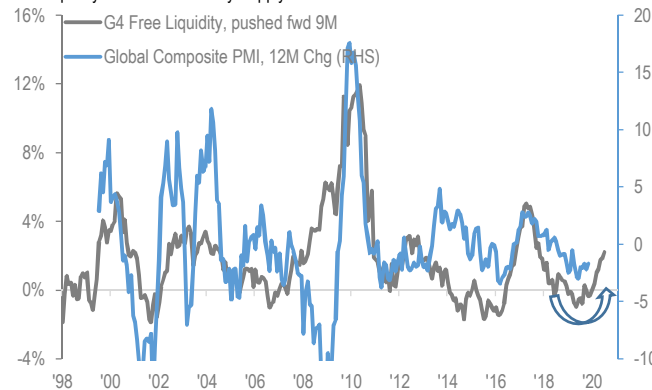
Asia QMI is a leading indicator of Asian Business Cycle



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

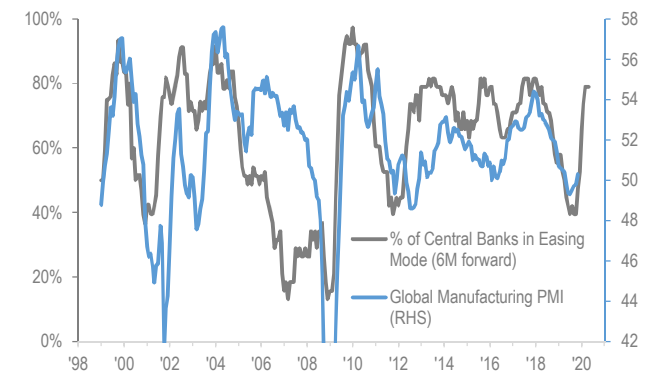
Figure 32: Upturn in G4 Free Liquidity Leads Global Composite PMI

Free Liquidity is Growth in Money Supply in excess of Nominal GDP Growth



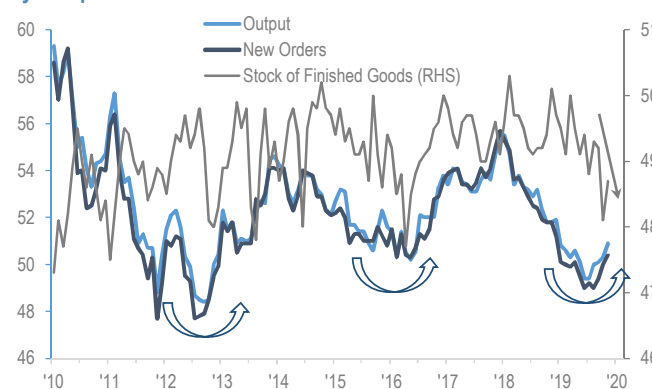
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, U.S. CBP

Figure 33: Global Monetary Easing Leads Manufacturing PMIs



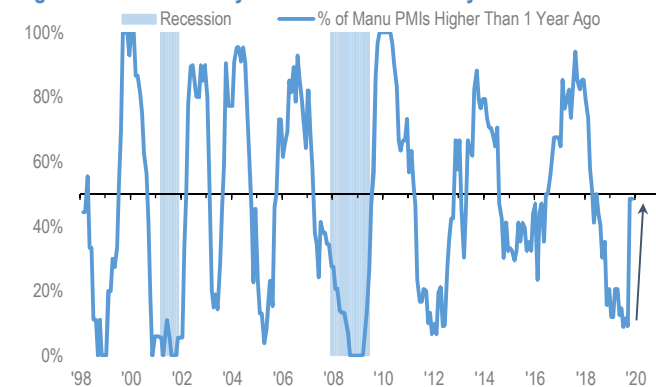
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 34: Inventories Correction, Pick Up in New Orders Suggest Cycle Upturn



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

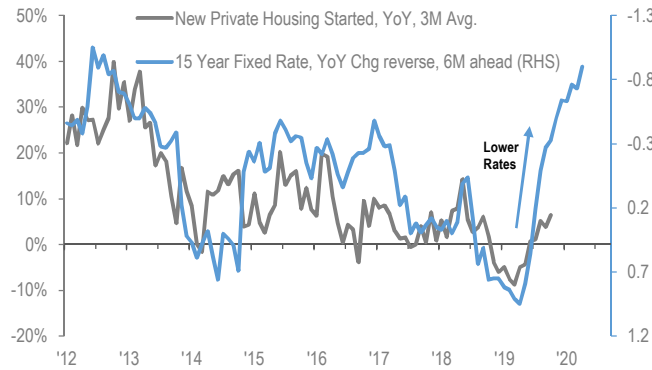
Figure 35: PMI Recovery is Broad Based Globally



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

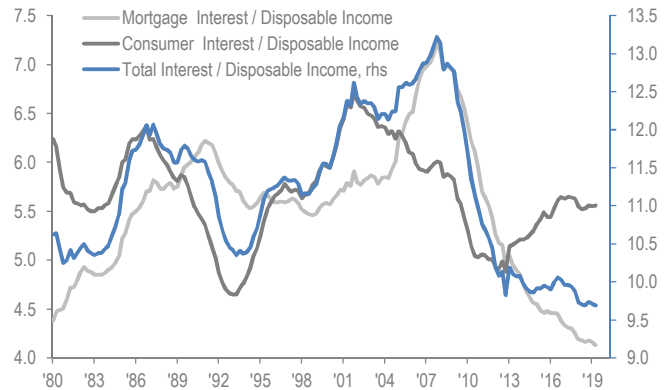
Figure 36: Lower Mortgage Rates Forecast Stronger Housing Market

National average of 15 Year Mortgage Rate vs New Private Housing Starts



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg

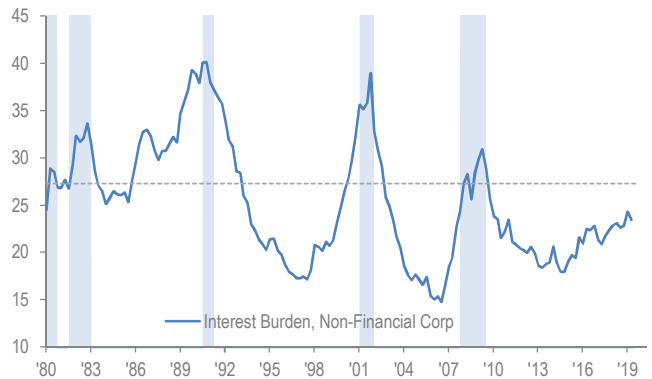
Figure 37: US Consumer Debt Service Ratio at a 40 Year Low



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

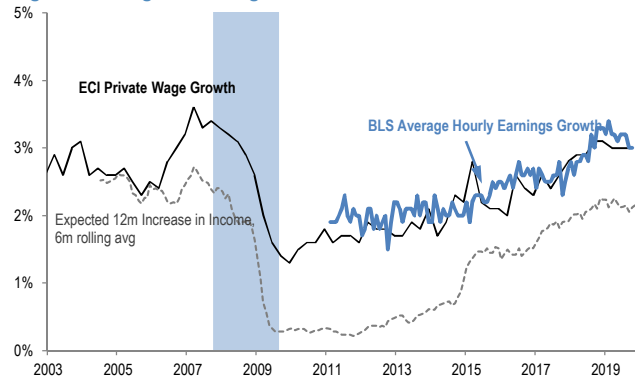
Figure 38: Nonfinancial Corporate Debt Service Burden Manageable

Nonfinancial Corporates: Net Interest/Profits (National Accounts), US



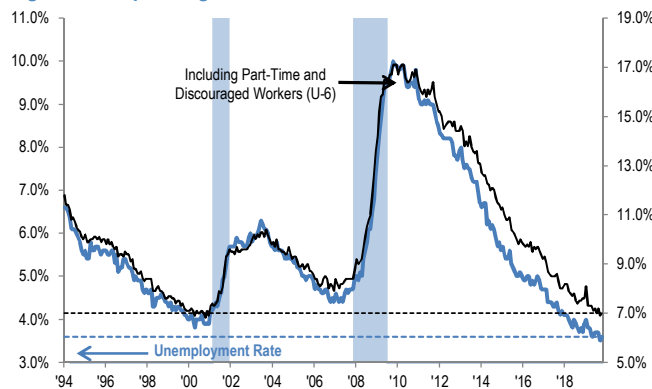
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 39: Wages Growing at Measured Pace



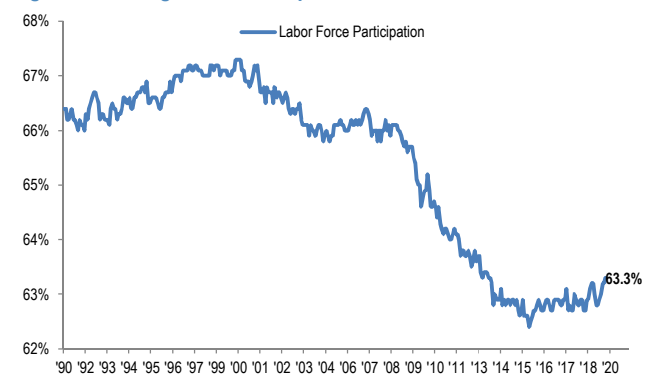
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 40: Expanding Labor Market



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 41: Rising Labor Participation Rate



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Fundamentals Inflecting —10% EPS Growth in 2020 from 1% in 2019

Figure 42: S&P 500 Earnings Model

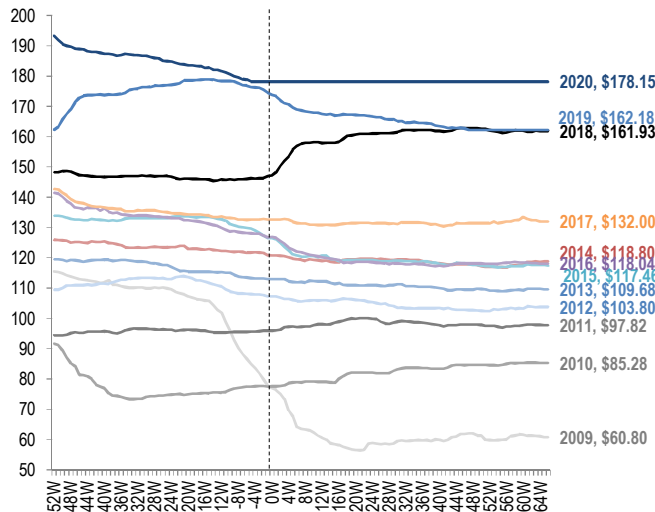
J.P. Morgan US Equity Strategy Estimates

Actual Annual/LTM — Per Share Data											LTM	JPM Strategy (Revenue and Margin Drivers)					
												2020 Trade Scenarios...					
												Full Trade Deal (+++)	Partial Deal (++)	No-Escalation (+)	Trade Escalation (—)	Consensus 2020	
Income Statement												2019					
Net Sales	\$908	\$963	\$1,053	\$1,092	\$1,117	\$1,163	\$1,127	\$1,151	\$1,232	\$1,343	\$1,379	\$1,400	\$1,498	\$1,484	\$1,470	\$1,442	\$1,471
• % chg Y-o-Y	-12.9%	6.0%	9.4%	3.8%	2.2%	4.2%	-3.1%	2.1%	7.0%	9.0%	6.6%	4.2%	7.0%	6.0%	5.0%	3.0%	5.0%
Less: Cost of Goods Sold	642	661	732	755	772	805	787	802	857	932	955						
• % chg Y-o-Y	-16.0%	3.0%	10.7%	3.2%	2.3%	4.3%	-2.2%	1.9%	6.9%	8.8%	6.3%						
• COGS as % of Sales	70.7%	68.7%	69.5%	69.1%	69.1%	69.2%	69.8%	69.7%	69.6%	69.4%	69.3%						
Gross Income	266	301	321	338	345	358	340	349	374	411	423						
• % chg Y-o-Y	-4.1%	13.3%	6.5%	5.1%	2.1%	3.9%	-5.1%	2.6%	7.4%	9.7%	7.5%						
• Gross Margin	29.3%	31.3%	30.5%	30.9%	30.9%	30.8%	30.2%	30.3%	30.4%	30.6%	30.7%						
Less: SG&A Expenses (ex D&A)	127	135	142	148	150	157	151	154	163	174	180						
• % chg Y-o-Y	-5.0%	6.0%	5.3%	4.1%	1.2%	4.7%	-3.7%	2.1%	6.1%	6.7%	5.9%						
• SG&A as % of Sales	14.0%	14.0%	13.5%	13.5%	13.4%	13.5%	13.4%	13.4%	13.3%	13.0%	13.0%						
EBITDA	139	167	179	190	195	202	189	195	211	237	244	242	265	259	254	247	
• % chg Y-o-Y	-3.2%	20.0%	7.5%	5.9%	2.8%	3.3%	-6.2%	2.9%	8.4%	12.0%	8.7%	-35bp	40bp	20bp	0bp	-15bp	
• EBITDA Margin	15.3%	17.3%	17.0%	17.4%	17.5%	17.3%	16.8%	16.9%	17.1%	17.61%	17.67%	17.26%	17.7%	17.5%	17.3%	17.1%	
Less: D&A	46	46	49	53	56	60	65	68	71	75	78						
• % chg Y-o-Y	-6.8%	-0.5%	5.8%	8.7%	5.8%	6.9%	8.1%	4.4%	4.5%	6.0%	7.9%						
• D&A as % of Sales	5.1%	4.8%	4.6%	4.9%	5.0%	5.2%	5.8%	5.9%	5.7%	5.6%	5.7%						
EBIT	93	121	130	137	139	142	124	127	140	162	165						
• % chg Y-o-Y	-1.2%	30.2%	8.1%	4.9%	1.7%	1.9%	-12.2%	2.2%	10.6%	15.0%	9.1%						
• as % of Sales	10.2%	12.5%	12.4%	12.5%	12.4%	12.2%	11.0%	11.0%	11.4%	12.0%	12.0%						
Interest Expense	21	20	19	19	19	19	20	22	25	28	29						
• % chg Y-o-Y	-49.7%	-7.0%	-0.4%	-0.6%	-3.7%	1.5%	5.3%	12.2%	12.2%	11.0%	10.9%	-5bp	5bp	0bp	0bp	-5bp	
• Implied Interest Rate (Int Exp as % Avg Debt)	2.68%	2.58%	2.59%	2.64%	2.50%	2.46%	2.47%	2.63%	2.74%	2.89%	2.89%	2.84%	2.89%	2.84%	2.84%	2.79%	
Pre-Tax Income	85	119	134	142	150	162	153	155	170	193	195						
• % chg Y-o-Y	-0.3%	39.6%	13.0%	6.2%	5.3%	8.1%	-5.9%	1.6%	9.9%	13.3%	6.5%						
Income Taxes	23	33	36	39	40	43	34	36	37	30	30						
• Effective Tax Rate (%)	27.1%	28.0%	27.0%	27.1%	26.4%	26.7%	22.5%	23.2%	21.9%	15.5%	15.6%						
Operating EPS	\$62.02	\$85.49	\$97.84	\$103.76	\$110.39	\$118.83	\$118.20	\$119.08	\$132.95	\$162.91	\$164.30	\$164.00	\$184.00	\$180.00	\$176.00	\$171.00	\$178.15
• EPS chg Y-o-Y	\$0.17	\$23.47	\$12.35	\$5.92	\$6.63	\$8.44	(\$0.63)	\$0.88	\$13.87	\$29.96		\$1.09	\$20.00	\$16.00	\$12.00	\$7.00	\$14.15
• % chg Y-o-Y	0.3%	37.8%	14.4%	6.1%	6.4%	7.6%	-0.5%	0.7%	11.6%	22.5%	10.6%	0.7%	12.2%	9.8%	7.3%	4.3%	8.6%
• Net Income Earnings Margin	6.8%	8.9%	9.3%	9.5%	9.9%	10.2%	10.5%	10.3%	10.8%	12.1%	11.9%	11.7%	12.1%	11.9%	11.7%	11.6%	12.1%
Net Buybacks	(\$0.1)	\$1.4	\$2.49	\$2.00	\$2.56	\$2.77	\$2.62	\$2.77	\$2.71	\$5.08	\$4.87	\$3.87	\$3.66	\$3.66	\$3.81	\$3.97	\$1.75
• % Contribution to EPS	-0.1%	1.7%	2.5%	1.9%	2.3%	2.3%	2.2%	2.3%	2.0%	3.1%	3.0%	2.4%	2.2%	2.2%	2.3%	2.4%	1.1%
• \$'s in billions	-\$10	\$180	\$308	\$252	\$361	\$429	\$427	\$448	\$452	\$738	\$720	\$621	\$600	\$600	\$625	\$650	\$297

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 43: S&P 500 Annual EPS: 2018 – 2020

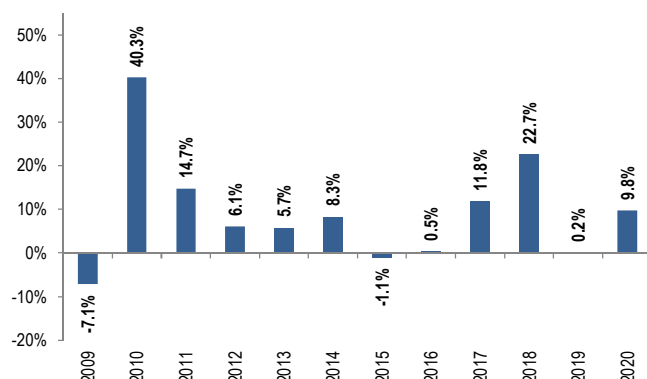
Bottom-up Consensus



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Thomson EPS

Figure 45: Annual EPS Growth Rates

Bottom-up Consensus



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Thomson EPS

Figure 47: S&P 500 EPS Impact from US-China Tariffs

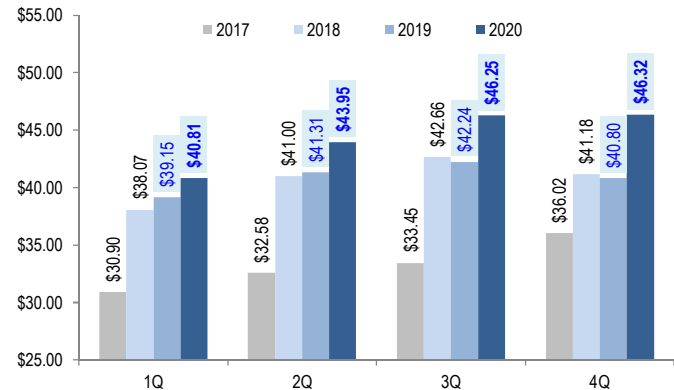
Annual Estimated Impact

	US Tariffs		
	\$250b	\$250b / \$140b	\$250b / \$290b
	@ 25%	@ 25% / @ 15%	@ 25% / @ 15%
China Tariffs @ 25%			
\$50b	\$4.00	\$5.00	\$6.20
\$110b	\$5.10	Current \$6.10	\$7.30
\$120b	\$5.30	\$6.30	\$7.50
	Implemented	Implemented	Dec 15 (Potential)

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 44: Quarterly EPS Comparison

S&P 500 EPS Actual 1Q17-3Q19; Consensus 4Q19-4Q20



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Thomson EPS

Figure 46: US Net Analyst EPS Revisions

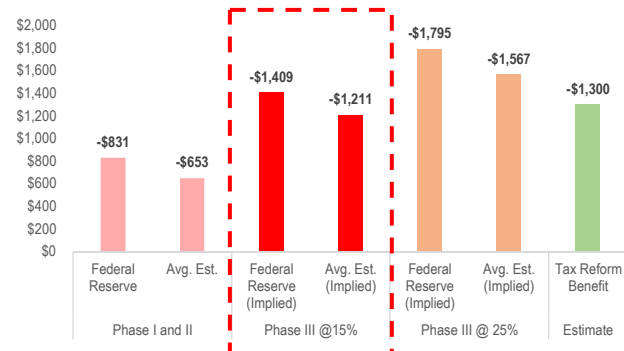
Upgrades minus downgrades divided by total changes

	2019 EPS Growth			2020 EPS Growth		
	10/2019	Current	Delta	10/2019	Current	Delta
Discretionary	4.2%	-0.2%	-4.4%	12.1%	13.0%	0.9%
Staples	1.3%	1.8%	0.5%	7.0%	6.1%	-0.9%
Energy	-21.0%	-27.7%	-6.7%	29.7%	22.1%	-7.6%
Financials	9.1%	8.2%	-0.9%	5.3%	5.0%	-0.3%
Healthcare	7.4%	9.1%	1.7%	9.7%	8.9%	-0.8%
Industrials	0.3%	-1.7%	-2.0%	16.7%	15.1%	-1.6%
Materials	-7.3%	-9.3%	-2.0%	16.0%	14.0%	-2.0%
Real Estate	4.8%	4.4%	-0.4%	6.0%	6.6%	0.6%
Technology	-2.4%	-1.1%	1.3%	12.1%	10.3%	-1.8%
Communication Svcs	2.2%	1.4%	-0.8%	13.1%	11.6%	-1.5%
Utilities	4.2%	4.7%	0.5%	5.1%	4.7%	-0.4%
S&P 500	1.8%	1.1%	-0.7%	11.2%	9.9%	-1.3%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

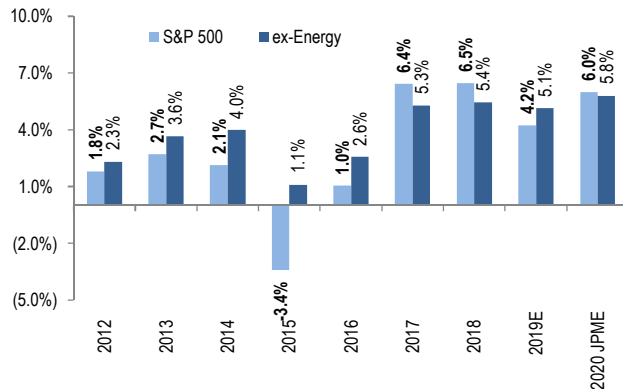
Figure 48: Estimated Cost of Tariffs on Households for Phase III @15%

Phase III Implementation to Eliminate Tax Reform Gains



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 49: Expect Healthy Revenue Growth of 6%
'12-18 Actual, '19-20 Consensus Estimate



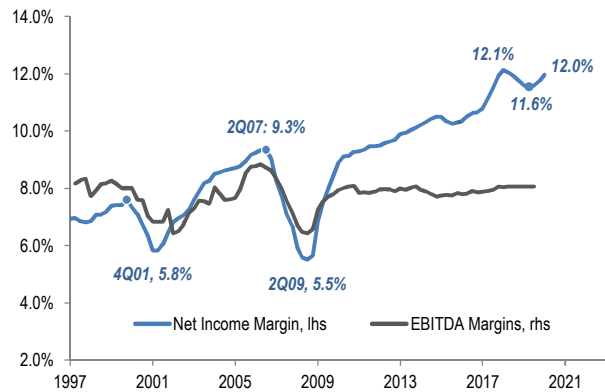
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, FactSet

Figure 50: Consensus Quarterly and Annual Sales Growth
S&P 500 Sectors

	Sales Growth								2019	2020
	2019/1C	2019/2C	2019/3C	2019/4C	2020/1C	2020/2C	2020/3C	2020/4C		
Energy	-0.1%	0%	-8%	-9%	5%	3%	12%	9%	-4.5%	7.3%
Materials	1.5%	-17%	-15%	-16%	-14%	3%	4%	4%	-11.9%	-1.3%
Industrials	3.2%	1%	-1%	-2%	2%	4%	6%	7%	0.4%	4.9%
Discretionary	3.7%	4%	6%	2%	5%	5%	6%	9%	3.8%	6.5%
Staples	2.0%	2%	3%	3%	3%	3%	4%	4%	2.7%	3.4%
HealthCare	14.6%	15%	16%	12%	7%	7%	6%	7%	14.4%	6.7%
Financials	11.5%	3%	2%	14%	-3%	-1%	0%	4%	7.5%	0.0%
Technology	-0.7%	0%	2%	4%	7%	8%	7%	8%	1.2%	7.1%
Communication Svc	11.0%	13%	10%	8%	8%	7%	8%	7%	10.2%	7.5%
Utilities	1.0%	-2%	-1%	4%	2%	3%	3%	0%	0.5%	2.1%
Real Estate	4.7%	4%	5%	3%	4%	5%	5%	6%	4.2%	4.8%
S&P 500	5.8%	4.1%	3.5%	3.7%	3.6%	4.4%	5.6%	6.4%	4.2%	5.0%
Ex-Energy	6.3%	4.5%	4.8%	5.1%	3.4%	4.6%	5.1%	6.1%	5.1%	4.8%

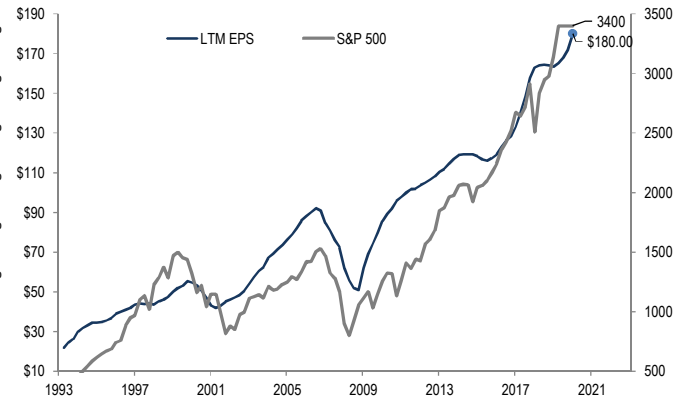
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 51: Companies Expected to Recapture Margins in 2020
S&P 500 Actual and Projections based on Consensus Estimates



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

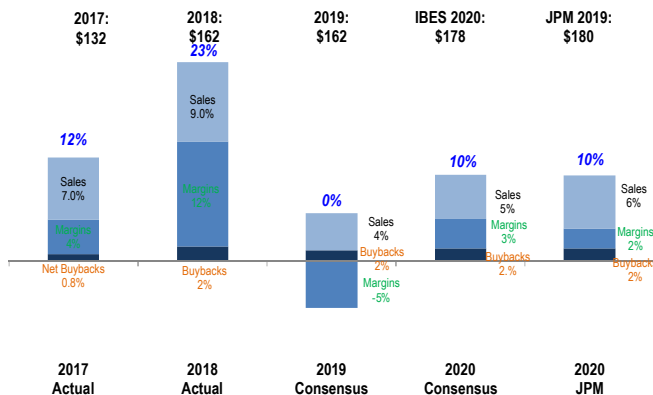
Figure 52: JPM S&P 500 Price Target 3,400 and EPS of \$180 for 2020
Implies Trailing P/E of ~19x



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 53: Drivers of EPS Growth (2017-2020)

Actual, Consensus and JPM Estimates



Source: J.P. Morgan US Equity Strategy & Global Quant Research

Figure 54: Price and Earnings over the Cycle

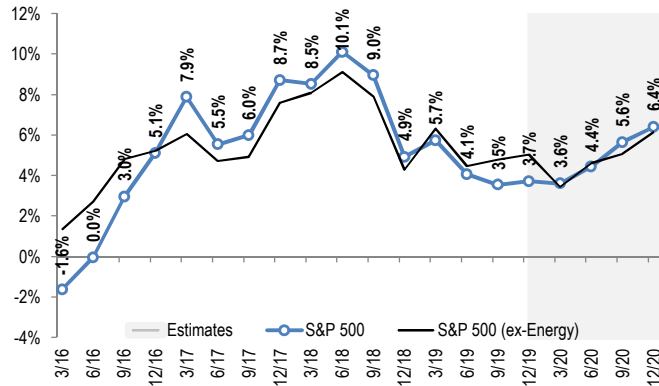
Actual EPS prior to 3Q2019; Consensus IBES Estimate

	S&P 500 Index		S&P 500 EPS		P/E — Contraction/Expansion	
	As of	Level	%	YoY Growth	P/E	Δ
Peak 2007	1,565	10%	\$92.15	4.6%	17.0x	0.9x
2008	903	-42%	\$61.85	-32.9%	14.6x	-2.4x
2009	1,115	23%	\$62.02	0.3%	18.0x	3.4x
2010	1,258	13%	\$85.49	37.8%	14.7x	-3.3x
2011	1,258	0%	\$97.84	14.4%	12.9x	-1.9x
2012	1,426	13%	\$103.76	6.1%	13.7x	0.9x
2013	1,848	30%	\$110.39	6.4%	16.7x	3.0x
2014	2,059	11%	\$118.83	7.6%	17.3x	0.6x
2015	2,044	-1%	\$118.20	-0.5%	17.3x	0.0x
2016	2,239	10%	\$119.08	0.7%	18.8x	1.5x
2017	2,674	19%	\$132.95	11.6%	20.1x	1.3x
2018	2,507	-6%	\$162.91	22.5%	15.4x	-4.7x
2019	3,113	24%	\$164.00	0.7%	19.0x	3.6x
2020	3,400	9%	\$180.00	9.8%	18.9x	-0.1x
Δ 2007-20E	1,548	117%	\$71.85	95%	1.9x	Expansion
CAGR 2007-20E		6.0%		5.2%		

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 55: Quarterly Sales Growth

Actual and Estimates



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 56: Sales Growth Contribution

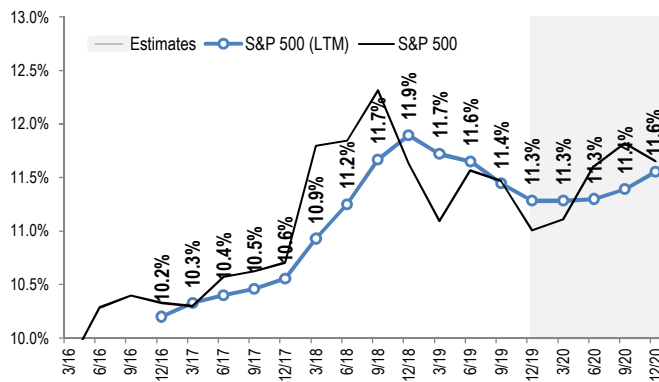
Actual and Estimates

	S&P 500 Sales				Sales Contribution		
	2018	2019E	2020E	% of Total	Sales Δ (\$)	% Chg	to Sales Growth
Energy	\$1,070	\$1,022	\$1,096	8.7%	\$74	7.3%	12%
Materials	\$370	\$326	\$321	2.6%	(\$4)	-1.3%	-1%
Industrials	\$1,385	\$1,390	\$1,459	11.6%	\$68	4.9%	11%
Discretionary	\$1,540	\$1,598	\$1,702	13.6%	\$104	6.5%	17%
Staples	\$1,516	\$1,557	\$1,611	12.8%	\$54	3.4%	9%
HealthCare	\$1,813	\$2,073	\$2,212	17.6%	\$139	6.7%	23%
Financials	\$1,437	\$1,545	\$1,546	12.3%	\$1	0.0%	0%
Technology	\$1,248	\$1,262	\$1,353	10.8%	\$90	7.1%	15%
Communication Svc	\$879	\$968	\$1,041	8.3%	\$73	7.5%	12%
Utilities	\$195	\$196	\$200	1.6%	\$4	2.1%	1%
Real Estate	\$105	\$110	\$115	0.9%	\$5	4.8%	1%
S&P 500	\$11,453	\$11,938	\$12,541	100%	\$603	5.0%	100%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 57: Net Income Margin by Quarter

Actual and Estimates



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 58: Margin Expectations by Sector

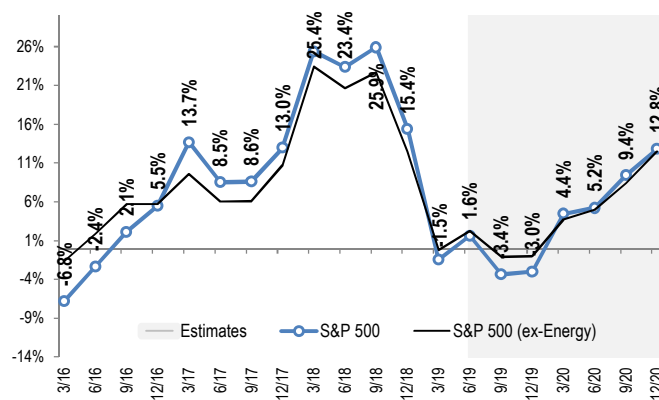
Actual and Estimates

	NI Margin (Avg Last 4Qs)			
	2018	2019	2020	Delta
Energy	7.1%	5.4%	6.1%	0.7%
Materials	11.0%	10.0%	10.7%	0.7%
Industrials	10.0%	9.6%	10.4%	0.7%
Discretionary	7.7%	7.2%	7.5%	0.3%
Staples	6.9%	6.8%	6.9%	0.1%
HealthCare	8.8%	8.5%	8.7%	0.3%
Financials	19.7%	19.6%	19.4%	-0.3%
Technology	23.1%	21.7%	21.9%	0.2%
Communication Svc	15.8%	14.9%	15.6%	0.7%
Utilities	8.6%	8.9%	9.2%	0.3%
Real Estate	17.5%	18.5%	14.6%	-3.9%
S&P 500	11.9%	11.3%	11.6%	0.27%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 59: Net Income Growth by Quarter

Actual and Estimates



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 60: S&P 500 Earnings Growth Contribution

Actual and Estimates

	S&P 500 Earnings				Earnings Contribution		
	2018	2019E	2020E	% of Total	Net Inc. Δ (\$)	% Chg	to Earnings Growth
Energy	\$76	\$55	\$67	4.8%	\$11	20.5%	11%
Materials	\$40	\$32	\$33	2.4%	\$1	4.6%	1%
Industrials	\$136	\$132	\$150	10.8%	\$17	13.0%	16%
Discretionary	\$117	\$113	\$126	9.1%	\$13	11.1%	12%
Staples	\$105	\$105	\$111	8.0%	\$5	4.8%	5%
HealthCare	\$156	\$172	\$189	13.7%	\$17	10.0%	16%
Financials	\$239	\$245	\$248	17.9%	\$2	0.9%	2%
Technology	\$289	\$274	\$296	21.4%	\$22	8.0%	20%
Communication	\$139	\$144	\$162	11.7%	\$18	12.4%	17%
Utilities	\$2	\$2	\$2	0.1%	\$0	5.9%	0%
Real Estate	\$17	\$18	\$15	1.1%	(\$3)	-17.1%	-3%
S&P 500	\$1,298	\$1,276	\$1,382	100%	\$107	8.4%	100%

Source: J.P. Morgan US Equity Strategy & Global Quant Research

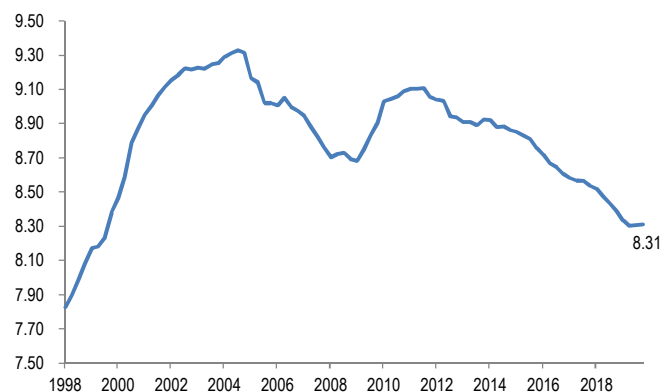
Figure 61: Net Income Margins by Sector

	Actual Net Income Margin						Consensus Bottom-up Estimate				
	2018/2C	2018/3C	2018/4C	2019/1C	2019/2C	2019/3C	2019/4C	2020/1C	2020/2C	2020/3C	2020/4C
Energy	6.5%	7.9%	7.5%	4.7%	5.9%	5.4%	5.6%	5.5%	6.3%	6.4%	6.1%
Materials	12.3%	10.8%	10.0%	9.3%	10.7%	10.5%	9.6%	9.7%	11.1%	11.2%	10.7%
Industrials	10.5%	10.2%	9.8%	9.3%	9.3%	10.5%	9.4%	9.1%	11.0%	10.9%	10.4%
Discretionary	8.0%	8.6%	7.1%	7.3%	7.6%	8.0%	6.0%	7.0%	7.8%	8.3%	6.9%
Staples	7.1%	7.2%	6.8%	6.4%	7.0%	7.1%	6.6%	6.4%	7.0%	7.1%	6.8%
HealthCare	9.0%	9.0%	8.4%	8.5%	8.9%	8.5%	8.0%	8.7%	8.8%	8.8%	8.6%
Financials	19.7%	20.0%	18.4%	20.6%	20.5%	18.5%	19.0%	19.5%	19.3%	19.2%	19.5%
Technology	23.0%	23.6%	23.2%	21.3%	21.5%	22.0%	22.0%	20.9%	21.3%	22.2%	23.0%
Communication	14.1%	16.7%	15.9%	13.8%	15.5%	15.0%	15.3%	15.2%	15.7%	15.7%	15.6%
Utilities	6.0%	7.1%	8.5%	11.5%	6.4%	7.8%	8.6%	11.8%	6.2%	7.7%	9.7%
S&P 500	11.8%	12.3%	11.6%	11.1%	11.6%	11.5%	11.0%	11.1%	11.6%	11.8%	11.7%
ex-Energy	12.4%	12.8%	12.1%	11.7%	12.2%	12.1%	11.5%	11.7%	12.1%	12.4%	12.2%

	Incremental Net Margin — YoY Change in BP						Consensus Bottom-up Estimate				
	2018/2C	2018/3C	2018/4C	2019/1C	2019/2C	2019/3C	2019/4C	2020/1C	2020/2C	2020/3C	2020/4C
Energy	267bp	319bp	308bp	-155bp	-60bp	-243bp	-195bp	78bp	39bp	100bp	50bp
Materials	256bp	160bp	63bp	-143bp	-156bp	-34bp	-35bp	40bp	44bp	72bp	110bp
Industrials	74bp	83bp	148bp	4bp	-124bp	32bp	-38bp	-24bp	170bp	39bp	104bp
Discretionary	70bp	108bp	54bp	10bp	-40bp	-57bp	-116bp	-22bp	17bp	30bp	89bp
Staples	40bp	41bp	5bp	-17bp	-15bp	-6bp	-25bp	3bp	3bp	3bp	25bp
HealthCare	47bp	50bp	29bp	-37bp	-8bp	-49bp	-41bp	22bp	-9bp	30bp	58bp
Financials	219bp	391bp	83bp	-33bp	77bp	-147bp	64bp	-110bp	-121bp	68bp	51bp
Technology	284bp	266bp	78bp	-128bp	-152bp	-154bp	-129bp	-42bp	-25bp	19bp	99bp
Communication	107bp	248bp	219bp	-285bp	140bp	-172bp	-66bp	141bp	25bp	77bp	35bp
Utilities	-28bp	56bp	31bp	43bp	46bp	75bp	5bp	33bp	-19bp	-9bp	113bp
S&P 500	127bp	169bp	92bp	-70bp	-28bp	-85bp	-62bp	1bp	4bp	35bp	64bp
ex-Energy	119bp	159bp	73bp	-65bp	-27bp	-76bp	-55bp	-5bp	-1bp	32bp	67bp

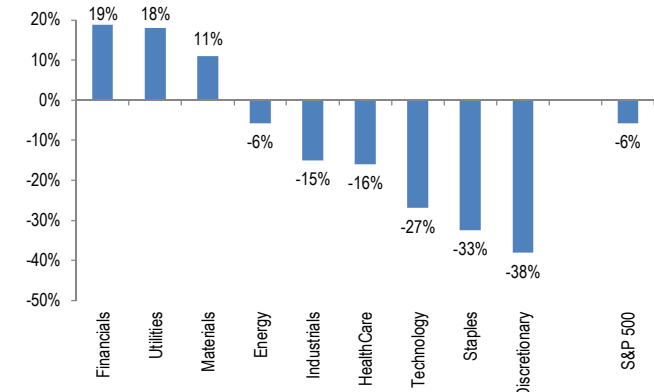
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 62: Historical S&P 500 Divisor
Since 1998



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

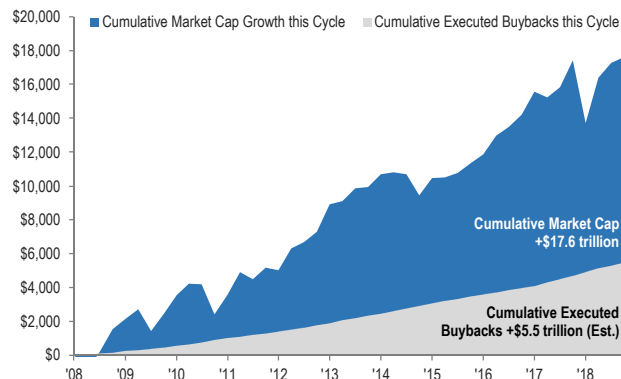
Figure 63: S&P 500 Divisor by Sector
Change since Oct 2007 Peak



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Shareholder Capital Return and Balance Sheet Trends

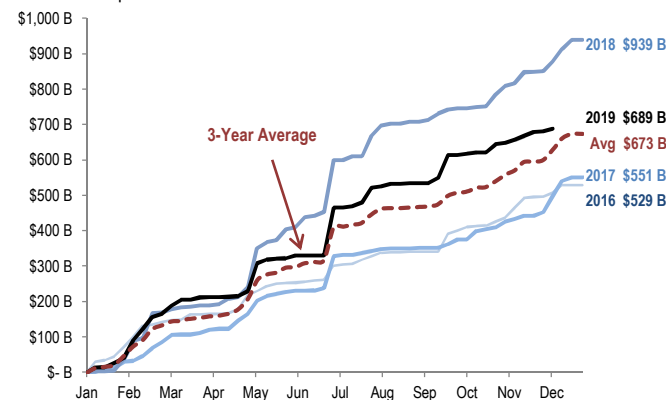
Figure 64: Buybacks Relative to S&P 500 Market Cap Since 2009



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg, Factset

Figure 66: \$ Announced Share Repurchases

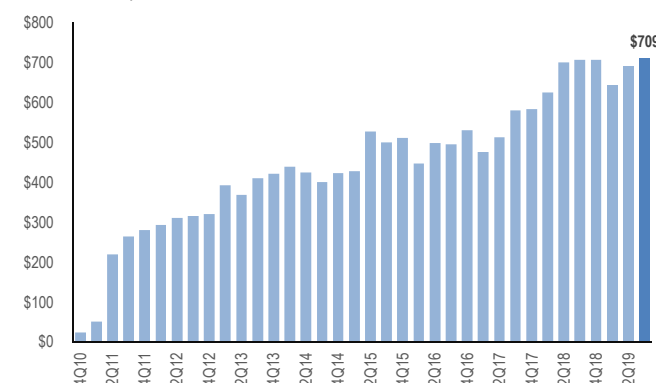
S&P 500 companies



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg

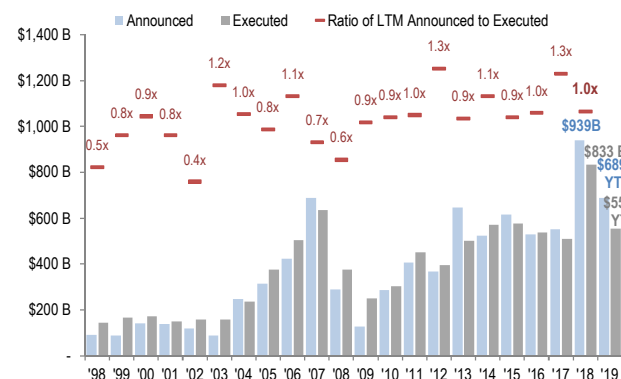
Figure 68: Existing Buyback Program Capacity Near Record Highs

S&P 500 Companies, \$ in Billions



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg

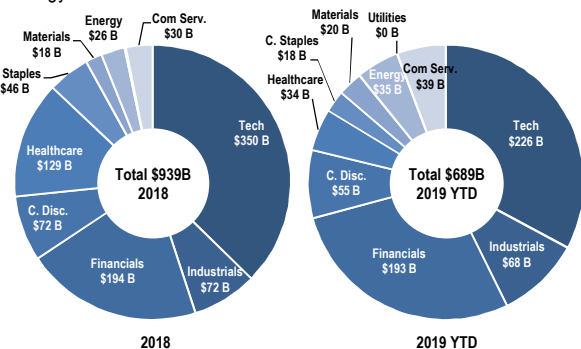
Figure 65: Announced vs. Executed Buybacks



Source: J.P. Morgan US Equity Strategy & Quantitative Research, Bloomberg, Factset

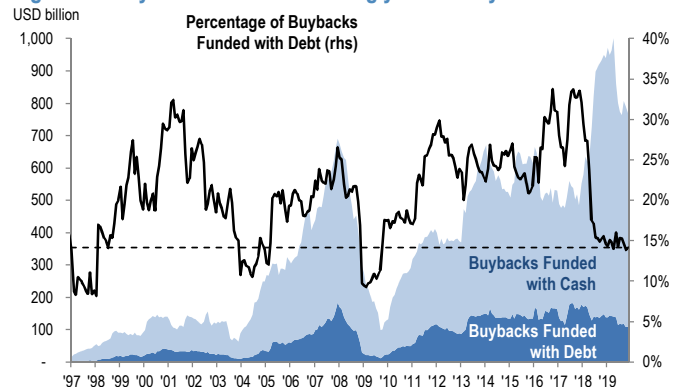
Figure 67: Announced Buybacks By Sector (2019 YTD vs. 2018)

Technology and Financials to Remain Most Active



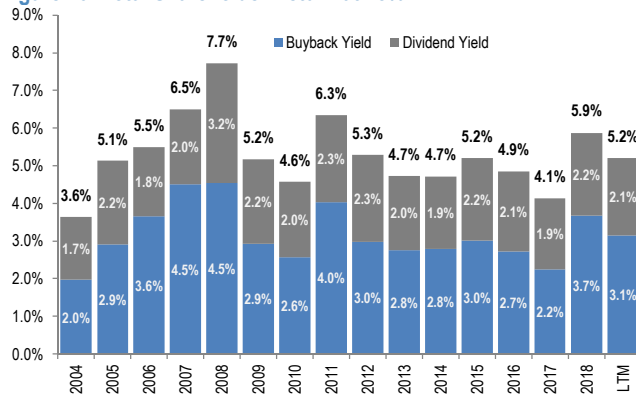
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg

Figure 69: Buybacks Will be Increasingly Funded by Debt



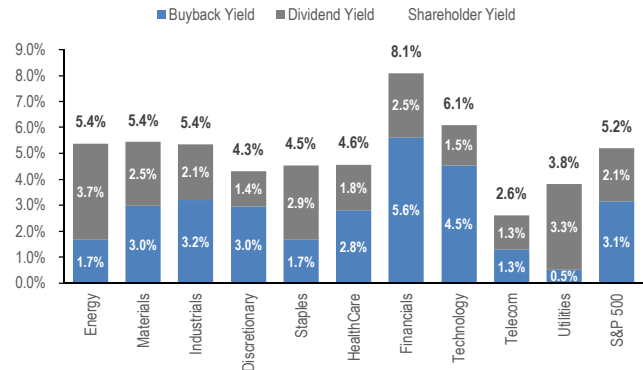
Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bloomberg

Figure 70: Total Shareholder Return at ~5%



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 71: Financials and Tech Leading Capital Return



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 72: S&P 500 Shareholder Return and Payout Metrics

Current Constituents

S&P 500 Index, Current Constituents																
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	4Q2018	1Q2019	2Q2019	3Q2019	LTM
Gross Stock Buybacks	\$340,511	\$277,205	\$279,067	\$439,733	\$375,191	\$447,364	\$514,680	\$550,996	\$544,518	\$539,218	\$816,508	\$227,412	\$207,354	\$164,712	\$183,264	\$782,742
YoY Change	-35%	-19%	1%	58%	-15%	19%	15%	7%	-1%	-1%	51%	59%	6%	-17%	-13%	5%
Less: Equity Issuance	446,461	240,778	117,044	128,266	124,670	118,940	121,814	139,764	102,249	89,046	94,040	20,024	22,286	21,337	40,193	103,841
Net Buybacks	\$-105,950	\$36,427	\$162,023	\$311,467	\$250,522	\$328,424	\$392,867	\$411,232	\$442,269	\$450,172	\$722,468	\$207,387	\$185,067	\$143,376	\$143,071	\$678,901
Net Buyback Yield	-1.4%	0.4%	1.5%	2.8%	2.0%	2.0%	2.1%	2.2%	2.2%	2.2%	3.3%	0.9%	0.7%	0.6%	0.5%	2.7%
Cash Dividend Paid	\$238,447	\$211,646	\$219,490	\$253,453	\$289,550	\$321,114	\$357,031	\$405,397	\$426,035	\$453,645	\$488,502	\$126,368	\$127,998	\$127,226	\$128,761	\$510,353
YoY Change	3%	-11%	4%	15%	14%	11%	11%	14%	5%	6%	8%	10%	9%	5%	5%	7%
Total: Gross Buybacks + Dividends	\$578,958	\$488,851	\$498,556	\$693,186	\$664,742	\$768,477	\$871,711	\$956,394	\$970,553	\$992,862	\$1,305,010	\$353,780	\$335,352	\$291,599	\$312,025	\$1,293,096
Total Shareholder Yield	7.7%	5.2%	4.6%	6.3%	5.3%	4.7%	4.7%	5.2%	4.9%	4.1%	5.9%	1.6%	1.3%	1.1%	1.2%	5.2%
Net Income	\$542,307	\$522,567	\$748,631	\$857,316	\$913,815	\$953,461	\$1,042,535	\$1,049,454	\$1,054,101	\$1,172,287	\$1,436,336	\$364,784	\$339,561	\$363,375	\$370,892	\$1,438,612
Dividend Pay out as % of Net Income	44%	41%	29%	30%	32%	34%	34%	39%	40%	39%	34%	35%	38%	35%	35%	35%
Buybacks as % of Net Income	63%	53%	37%	51%	41%	47%	49%	53%	52%	46%	57%	62%	61%	45%	49%	54%
Total Payout as % of Net Income	107%	94%	67%	81%	73%	81%	84%	91%	92%	85%	91%	97%	99%	80%	84%	90%
Cash flow from Operations	\$1,180,449	\$1,197,785	\$1,421,293	\$1,533,263	\$1,578,669	\$1,632,906	\$1,689,141	\$1,668,795	\$1,735,560	\$1,856,958	\$2,105,172	\$560,426	\$546,693	\$563,362	\$576,616	\$2,247,096
less Capex	\$479,275	\$403,106	\$433,258	\$516,446	\$570,285	\$595,756	\$650,650	\$621,405	\$600,037	\$616,930	\$708,855	\$199,244	\$169,167	\$179,133	\$182,993	\$730,537
YoY Change	8%	-16%	7%	19%	10%	4%	9%	-4%	-3%	3%	15%	13%	4%	2%	4%	6%
Adjusted CFO	\$701,174	\$794,679	\$988,036	\$1,016,817	\$1,008,384	\$1,037,150	\$1,038,491	\$1,047,390	\$1,135,523	\$1,240,028	\$1,396,317	\$361,182	\$377,526	\$384,228	\$393,623	\$1,516,560
Capex as % of CFO	41%	62%	50%	68%	66%	74%	39%	37%	35%	33%	34%	36%	31%	32%	32%	33%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 73: S&P 500 Long Term Debt Schedule (ex Financials)

Debt securities issued by S&P 500 companies and their subsidiaries

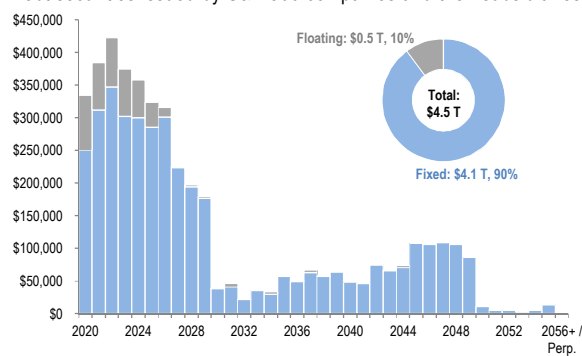


Figure 75: Excess Capital Return Driving Cash Balance Lower

Cash as % of Total Assets

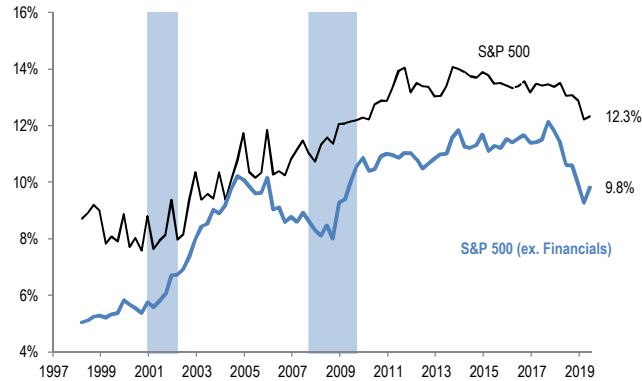


Figure 76: Higher Leverage Supported by Low Rates & Profits

Debt to Total Assets

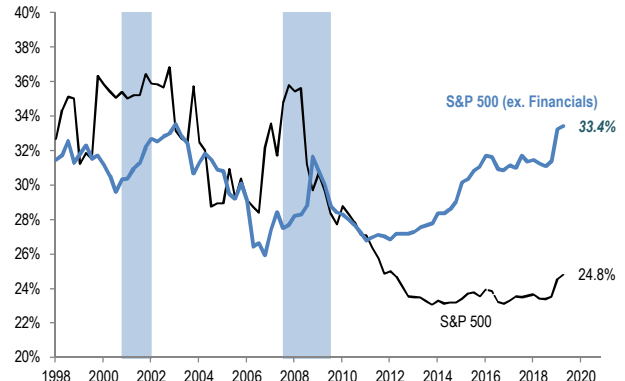


Figure 77: However, Net Debt Should Rise Further

Net Debt to Total Assets

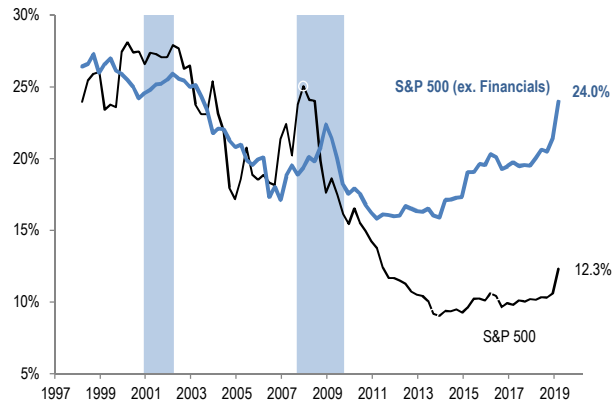


Figure 78: Implied Interest Rate Declining Again

Average Interest Rate

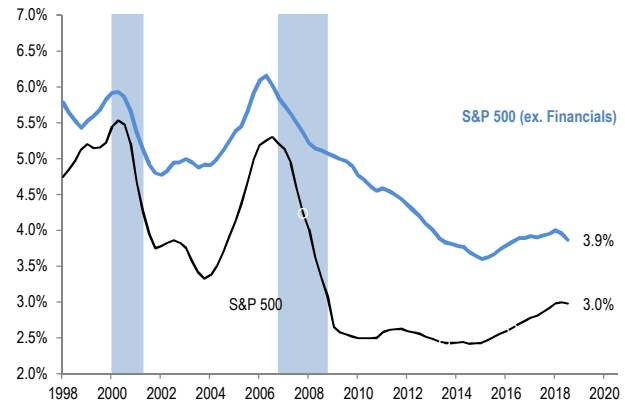


Figure 79: Net Debt to Book and Market Value of Equity

Higher Leverage Supported by Rising Equities

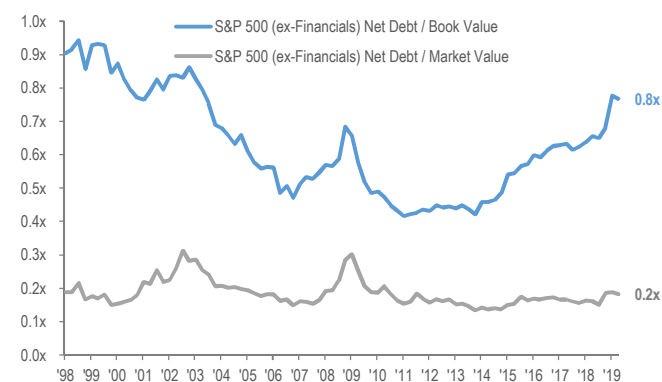
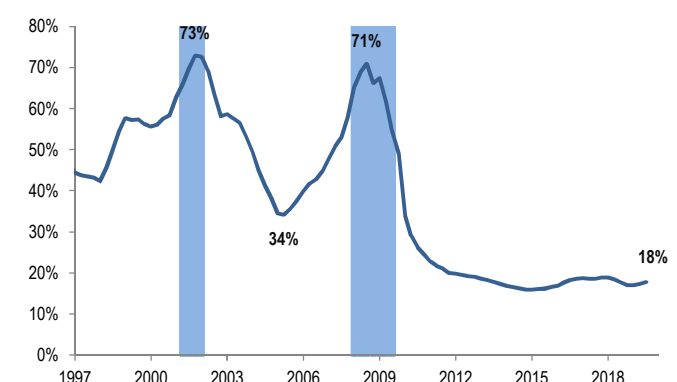


Figure 80: Interest Coverage Remains Strong

Interest Expense as % of IBES EPS



Valuation Supported by Capital Return and Low Rates

Figure 81: Equity Valuation Ex-Cash

PE NTM Multiple 17.6x, ~2x higher than Median

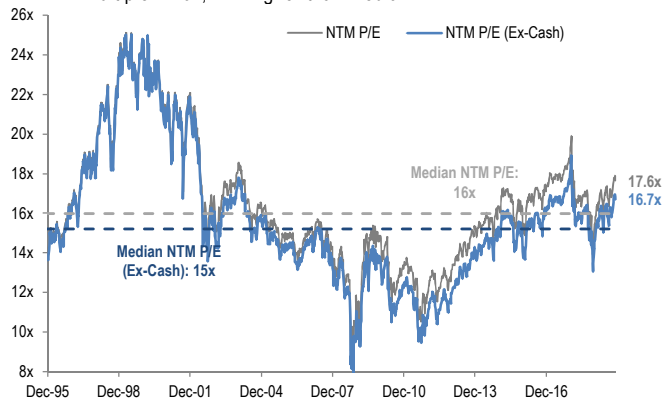


Figure 83: FCF Yield of 4% within Pre-Crisis Range

S&P 500

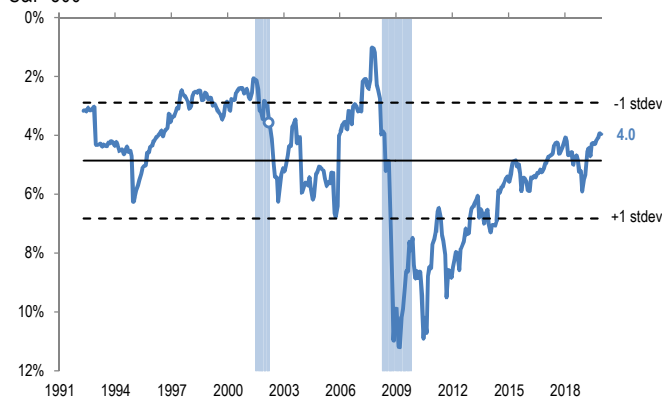


Figure 85: Equities Still Cheaper than High Grade Debt

Earnings Yield less High Grade Bond Yields

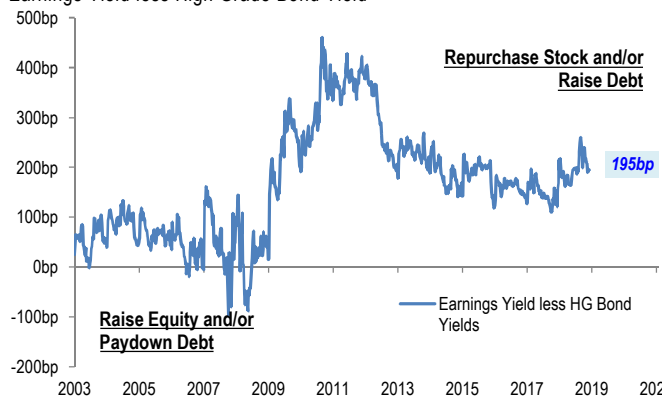


Figure 82: Total Shareholder Return at ~5%

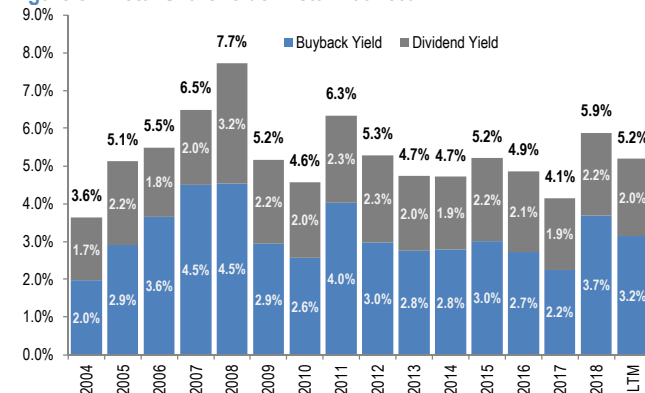


Figure 84: Dividend Yield of 1.9% Higher than DM Bond Yields

S&P 500 Dividend

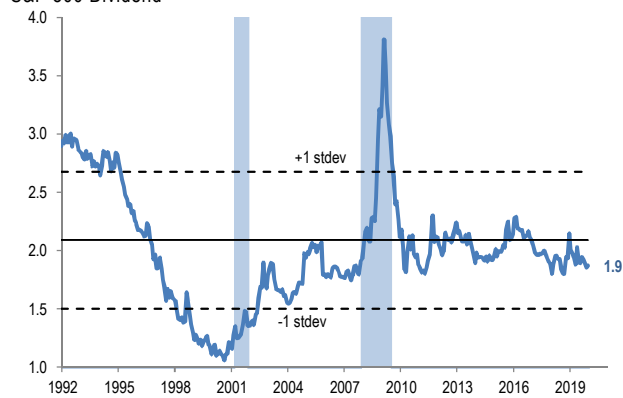


Figure 86: P/E Sensitivity to Rising Yields

1947-present, segmented by GDP growth regime

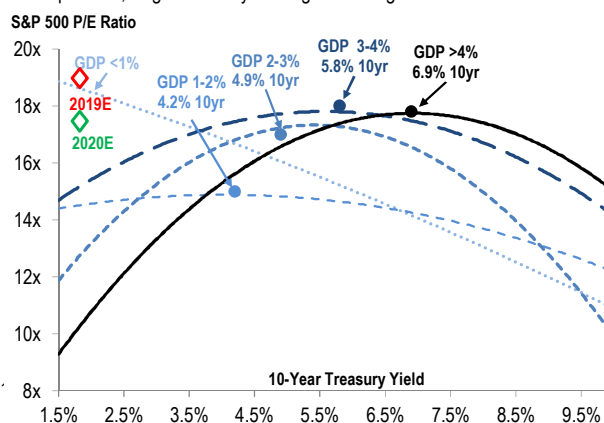


Figure 87: Cross-Asset Valuation

Current vs. History

	Absolute & Relative Valuation, Median					
	Current	3 Months Ago	5Yr Median	10Yr Median	20Yr Median	Curr vs 10yr
S&P 500						
EV/Sales	2.7x	2.6x	2.4x	2.0x	2.3x	0.6x
EV/EBITDA	13.6x	13.2x	12.8x	10.9x	11.5x	2.7x
P/E (Trailing)	20.7x	19.3x	19.7x	18.1x	18.2x	2.6x
P/E (NTM)	19.0x	17.8x	17.7x	16.5x	16.5x	2.5x
Price to Book	3.5x	3.3x	3.1x	2.7x	2.8x	0.8x
FCF Yield	4.0%	4.2%	4.9%	5.8%	5.3%	-1.8%
S&P 500 Sectors (PE NTM)						
Energy	19.9x	18.2x	28.3x	15.2x	14.0x	4.7x
Materials	19.8x	18.7x	18.0x	16.9x	16.7x	2.9x
Industrials	18.7x	17.3x	17.1x	16.5x	16.7x	2.2x
C. Discretionary	22.8x	21.9x	20.2x	18.8x	19.4x	4.0x
C. Staples	21.0x	20.8x	20.2x	18.4x	17.9x	2.6x
Healthcare	16.9x	15.4x	16.3x	15.8x	17.0x	1.2x
Financials	13.5x	12.0x	13.9x	13.5x	13.3x	0.0x
Technology	21.7x	20.7x	18.0x	16.1x	17.3x	5.6x
Telecom	19.0x	17.3x	13.6x	14.4x	15.7x	4.6x
Utilities	20.3x	20.6x	17.4x	16.1x	15.4x	4.2x
International Markets PE (NTM)						
MSCI US	19.4x	18.2x	18.0x	16.7x	16.4x	2.7x
MSCI DM	17.5x	16.4x	16.7x	15.7x	15.6x	1.8x
MSCI EM	13.7x	13.0x	12.5x	12.0x	11.8x	1.8x
MSCI Europe (EMU)	15.2x	14.1x	14.7x	14.0x	13.5x	1.2x
MSCI UK	13.3x	12.8x	14.9x	13.2x	12.3x	0.1x
MSCI Italy	11.4x	10.8x	13.6x	12.0x	11.8x	-0.6x
MSCI Australia	17.0x	16.4x	16.0x	15.3x	15.1x	1.7x
MSCI Hong Kong	14.9x	15.1x	15.9x	16.2x	16.0x	-1.3x
MSCI China	12.6x	12.2x	12.2x	11.3x	12.0x	1.2x
MSCI India	21.6x	18.4x	18.8x	17.7x	17.8x	3.9x
Fixed Income Multiples						
US Bonds (10yr)	56.4x	68.2x	44.0x	41.5x	29.1x	14.9x
Munis (Moody's 10Yr AAA)	60.8x	80.6x	48.3x	43.7x	32.4x	17.1x
JPMorgan US Liquid Index (JULI HG)	30.6x	31.4x	25.8x	24.5x	21.9x	6.1x
JPMorgan High Yield Index	15.7x	15.6x	15.1x	14.9x	13.0x	0.9x

Source: US Equity Strategy & Global Quantitative Research, Bloomberg

Investor Positioning

Figure 88: Equity Beta of Macro and L/S Hedge Funds

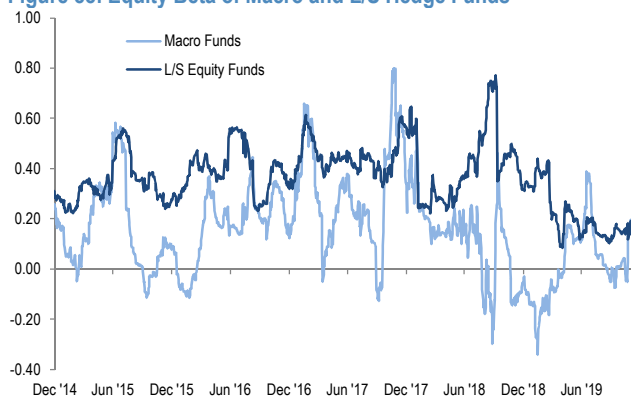


Figure 89: JPM Prime Hedge Fund L/S Equity Ratio

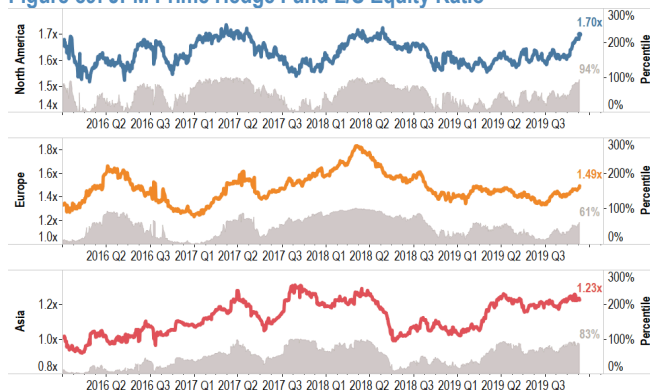


Figure 90: Positioning Signals for Systematic Equity Strategies

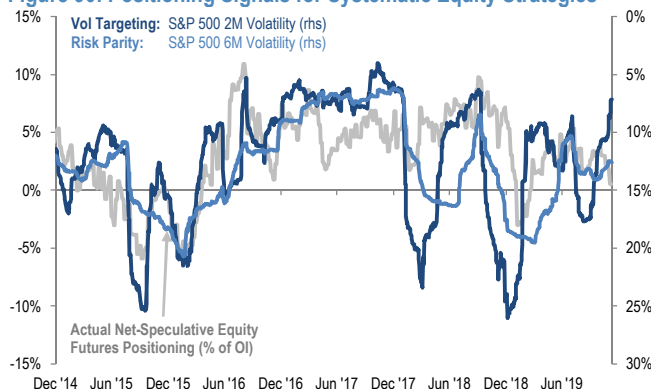


Figure 91: Equity Exposure of Systematic Strategies



Figure 92: Fund Flows — Equity vs. Bonds

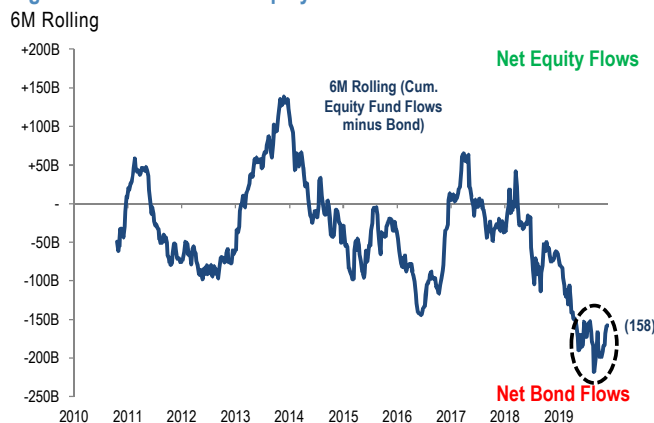
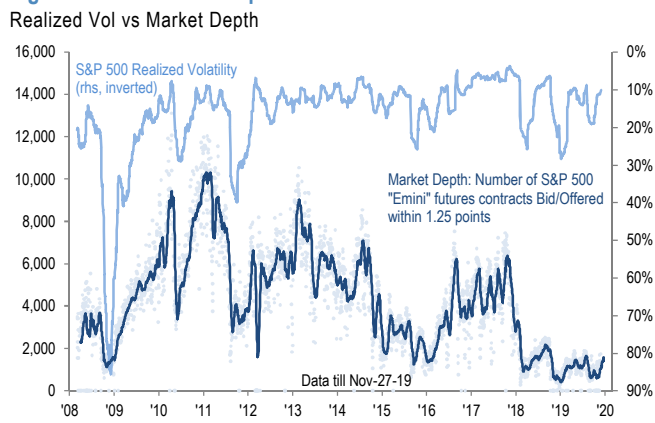


Figure 93: Low Market Depth Environment



Style/Sector Positioning: Mom/Value Rotation ~40% Complete

We expect a rotation from Momentum into Value to continue as the global business cycle re-accelerates, yields move higher, CB monetary easing and fiscal stimulus remain supportive, and trade tensions do not worsen. Momentum to Value positioning remains stretched. Momentum, in particular Low Vol stocks are significantly exposed to duration risk.

Figure 94: Momentum Expensive vs Value/Mkt - At Risk of Reversal

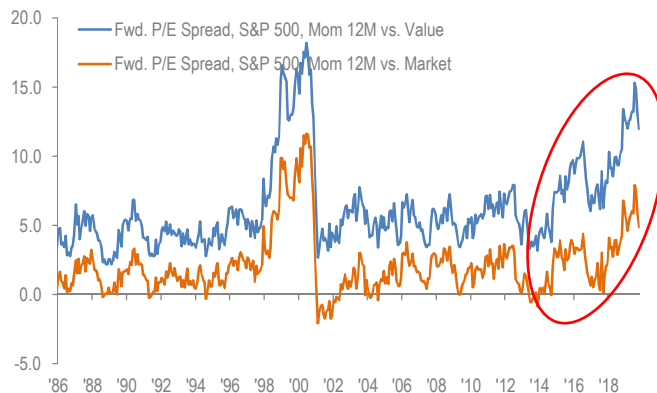


Figure 95: Momentum Correl. With Value and Low Vol Converging

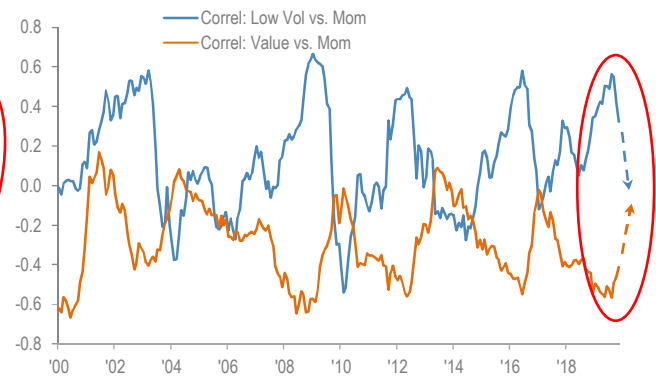


Figure 96: Low Vol Exposed to Duration Risk

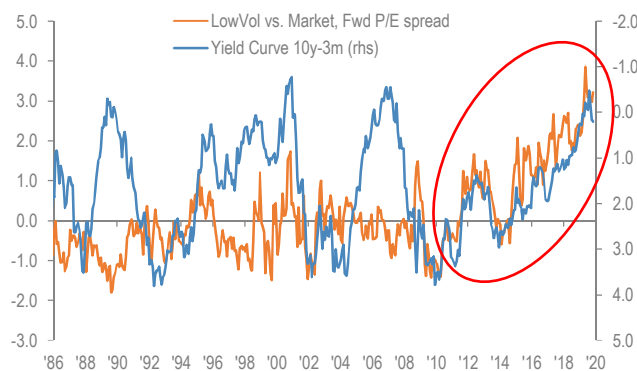


Figure 97: Value at Cheapest Levels in 30 years

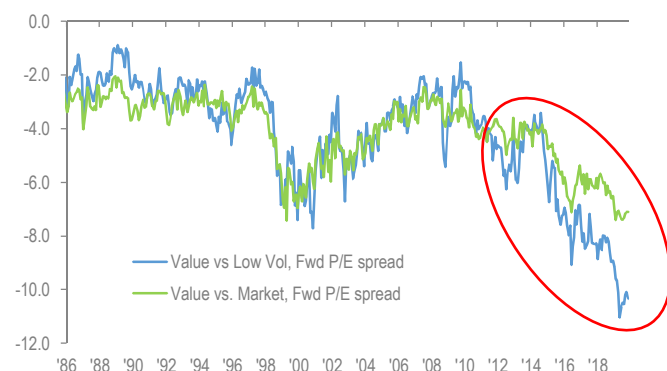


Figure 98: Decomposition of Momentum Portfolio Shows Increase in Share of Growth and Value at the Expense of Low Vol/Quality

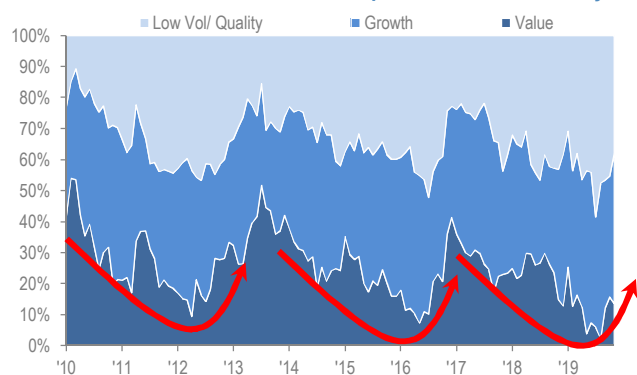
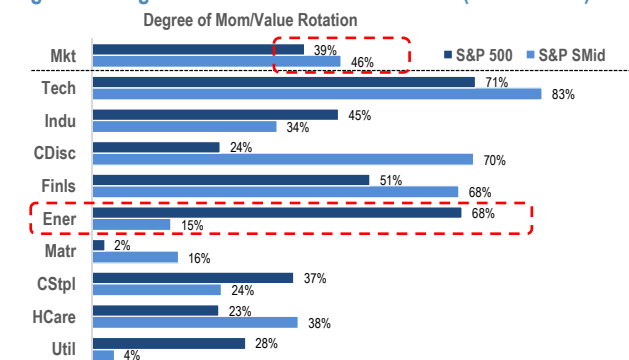


Figure 99: Degree of Momentum/Value Rotation (as of Nov'19)



Source for All Charts: J.P. Morgan US Equity Strategy & Global Quantitative Research

Table 1: US Style Recommendations: Key Metrics

++ = Very Favorable, + = Favorable, ~ = Neutral, - = Unfavorable, -- = Very Unfavorable, NA = Not Applicable

	Recommendation	Business Cycle	Valuation	Valuation		Positioning /Sentiment	Positioning/Sentiment		
				P/B	P / Fwd. Earnings		ETF Flows	Style Short Interest	Momentum Alignment
Value	O/W	++	++	++	++	++	+	+	++
Growth	N	+	~	~	~	~	--	+	-
Momentum	U/W	--	-	-	-	-	--	~	NA
Quality	U/W	--	--	--	--	-	NA	NA	--
Low Volatility	U/W	--	--	--	--	-	-	+	--

For details on the sentiment indicators: [Style Positioning](#), [Maintain Barbell Exposure](#), [Rising Risk of Value Squeeze](#). Style Definitions: [Framework for Style Investing](#).

Figure 100: J.P. Morgan Cycle Investing Framework

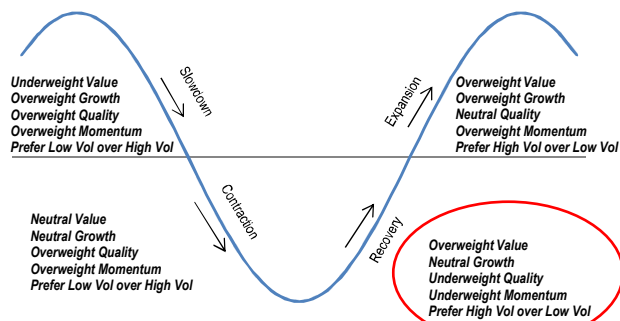


Figure 101: Style Rotation over the Business Cycle

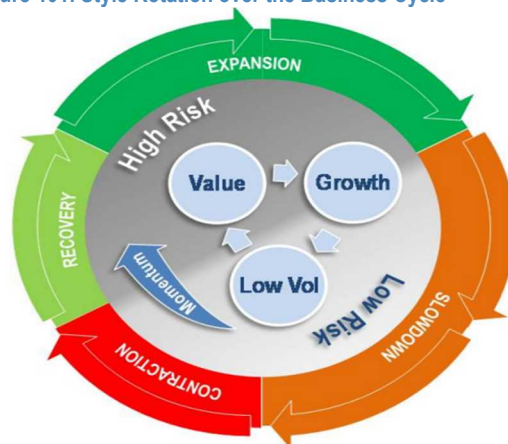


Table 2: US Snapshot of Valuation: Relative to Own History and Relative to the Market (Nov 30, 2019)

	Long Only		Long vs Short		Long vs Market		Long vs Cheapest	
	Current Val.	30yr %ile	Current Val.	30yr %ile	Current Val.	30yr %ile	Current Val.	30yr %ile
Price to Forward Earnings								
Market	17.9x	88%	-	-	-	-	-	-
Value	10.8x	36%	-16.5x	10%	-7.1x	3%	-	-
Growth	19.2x	90%	4.3x	99%	1.3x	86%	8.4x	98%
Quality	20.8x	97%	4.3x	98%	3.0x	99%	10.1x	99%
Mom 12M	22.5x	90%	9.4x	89%	4.6x	88%	11.7x	90%
Low Vol	21.1x	99%	6.0x	98%	3.2x	99%	10.3x	99%
High Beta	14.1x	25%	-4.9x	6%	-3.7x	2%	3.4x	30%
Price to Book Value								
Market	3.5x	98%	-	-	-	-	-	-
Value	1.7x	74%	-9.0x	1%	-1.8x	1%	-	-
Growth	3.5x	83%	0.7x	31%	0.1x	15%	1.9x	82%
Quality	8.8x	100%	6.5x	100%	5.3x	100%	7.1x	100%
Mom 12M	4.7x	85%	2.7x	88%	1.2x	80%	3.0x	86%
Low Vol	4.7x	97%	2.2x	97%	1.2x	94%	3.0x	96%
High Beta	2.6x	48%	-1.0x	26%	-0.9x	1%	0.9x	35%

Source for All Charts: J.P. Morgan US Equity Strategy & Global Quantitative Research

Figure 102: Growth-Based Momentum Crowding Unwound, and Shifting to Low Vol



Figure 103: Quality Expensive vs Market - At Risk of Reversal

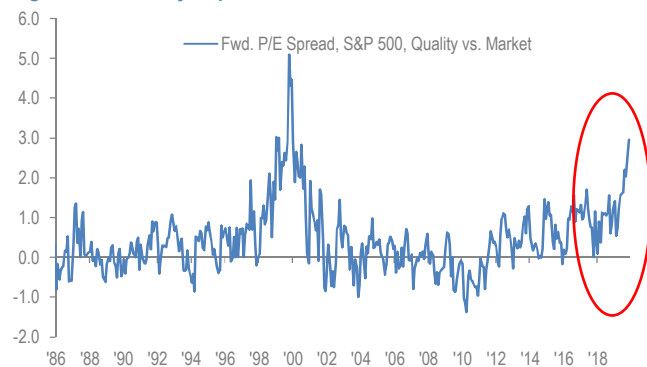
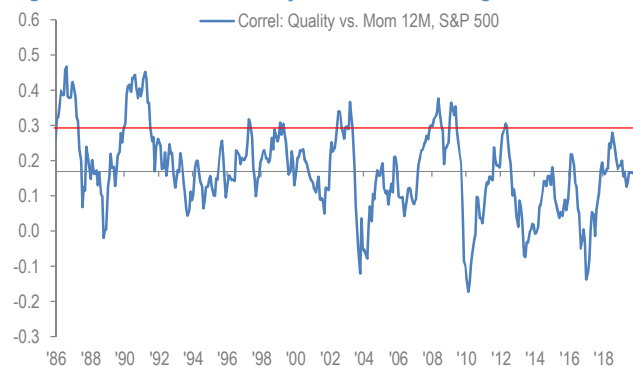


Figure 104: Momentum/Quality Correlation Heading Down



Source for All Charts: J.P. Morgan US Equity Strategy & Global Quantitative Research

Style Performance

Table 3: US Style Performance (%) in the Current Cycle, Sector Neutral (YTD as of 3rd Dec'19)

	Value	Growth	Quality	Mom.	Low Vol	Hi Beta		Value	Growth	Quality	Mom.	Low Vol	Hi Beta
Long-Only Portfolio, Relative to Market, Cap Weighted							Long-Only Portfolio, Relative to Market, Equal Weighted						
2009	28.0	0.8	-0.9	-12.7	-11.3	24.9	33.2	-4.7	-5.1	-21.3	-22.3	34.0	
2010	3.4	0.9	-1.1	11.7	-7.3	9.4	0.5	-0.9	-3.0	1.8	-6.2	6.6	
2011	-5.1	5.8	5.6	-0.3	6.9	-15.6	-3.6	2.4	3.8	-2.0	9.0	-10.2	
2012	10.0	3.7	-0.1	2.1	-0.3	2.8	1.9	1.5	0.0	1.0	-1.9	0.3	
2013	8.6	2.0	-4.8	0.9	-0.6	5.2	10.2	-0.5	-3.2	1.5	-1.9	3.2	
2014	0.2	-0.8	-1.1	0.6	-3.8	-4.8	0.1	0.4	0.6	-0.9	0.0	-4.1	
2015	-5.2	4.0	-3.9	4.6	-0.3	-1.5	-4.9	1.4	-2.3	6.9	2.0	-2.2	
2016	-1.6	-5.2	-1.2	-2.3	-0.7	1.1	1.2	-1.7	-4.6	-3.7	-2.2	4.4	
2017	-3.5	1.8	2.0	3.4	-1.6	0.5	-2.9	1.8	4.8	5.8	0.8	0.0	
2018	-8.7	-1.0	4.9	7.3	5.1	-1.7	-5.6	-1.6	5.7	0.9	4.4	-5.6	
2019 YTD	0.2	0.4	2.2	-8.6	-2.7	-3.6	0.8	-0.6	-1.2	-3.3	1.2	-1.4	
Q1'19	-1.3	3.4	0.8	-0.8	-1.4	1.1	-0.7	1.3	0.2	-0.4	-0.8	1.0	
Q2'19	-0.8	0.7	-3.2	-1.9	1.5	-1.0	-0.7	-0.1	-1.5	-0.2	2.5	-0.8	
Q3'19	0.6	-3.9	4.1	-1.6	0.7	-5.4	0.8	-3.0	0.3	-0.6	2.2	-3.5	
Oct'19	1.0	0.4	0.3	-2.2	-1.9	1.7	0.2	0.8	0.4	-1.2	-1.4	1.6	
Nov'19	1.1	-0.5	0.4	-2.6	-1.9	0.6	1.7	0.3	-0.7	-1.3	-1.5	1.0	
Long-Short Portfolio, Cap Weighted							Long-Short Portfolio, Equal Weighted						
2009	28.2	-10.2	-4.2	-27.9	-42.9	37.7	44.0	-13.1	-24.0	-48.2	-48.3	62.6	
2010	0.4	-3.3	-6.1	5.1	-22.0	12.7	-1.6	-0.3	-7.1	-1.4	-13.6	8.3	
2011	-8.5	12.2	17.1	5.9	22.5	-22.9	-8.3	6.5	8.3	0.0	18.3	-18.3	
2012	10.7	1.3	-6.4	-4.3	-10.9	8.4	3.0	-1.7	-2.7	-2.9	-5.3	2.2	
2013	7.1	-1.8	-11.7	-5.0	-7.4	8.0	15.8	-3.6	-9.1	0.0	-7.8	8.3	
2014	-0.2	-0.9	1.6	1.9	-7.0	-8.6	-2.7	2.4	3.6	1.9	-2.8	-7.4	
2015	-15.4	7.5	-6.7	9.3	-5.0	-0.2	-13.2	4.6	0.8	14.0	4.5	-2.4	
2016	5.6	-7.9	3.6	-8.5	-3.0	-2.4	8.9	-5.6	-4.4	-12.6	-5.4	4.1	
2017	-11.6	11.6	8.4	4.7	-1.4	6.1	-8.4	3.5	7.5	13.7	4.0	2.1	
2018	-17.7	-2.3	6.4	19.6	6.3	-3.5	-12.1	0.6	10.3	7.3	6.3	-10.9	
2019 YTD	2.0	1.3	1.8	-18.7	3.0	1.5	0.8	-0.6	-1.2	-3.3	1.2	-1.4	
Q1'19	-2.9	4.3	0.5	-7.8	-1.2	3.3	-1.7	0.0	-2.2	-5.1	-1.5	3.6	
Q2'19	-0.3	-1.2	-4.7	-2.1	4.1	-0.8	-2.6	-1.6	-3.4	0.0	5.6	-2.2	
Q3'19	2.7	-2.5	5.7	-0.4	5.0	-6.4	1.0	-2.0	-0.9	0.1	5.6	-7.3	
Oct'19	1.7	2.5	0.4	-4.6	-1.9	4.4	0.7	2.0	1.0	-2.1	-1.2	3.3	
Nov'19	1.7	-2.1	-0.2	-5.5	-3.8	2.5	1.9	-0.6	-1.4	-3.9	-2.8	2.5	

Source for All Charts: J.P. Morgan US Equity Strategy & Global Quantitative Research

Similarities to 2016 Momentum-Value Rotation

The unfolding style rotation to cyclical Value from defensive Low Vol / Momentum is reminiscent of the 2015-2016 macro backdrop when a similar cyclical slowdown /contraction led investors to crowd into Low Vol stocks. Like now, the inflated Low Vol valuations (forward P/E spreads) were extreme and decoupled from underlying fundamentals. However, once signs of intra-cycle recovery became apparent, initially high momentum and then Low Vol stocks sold off. This was followed by Value outperformance in 2H16 while growth stayed flat.

Figure 105: Value – Momentum Performance

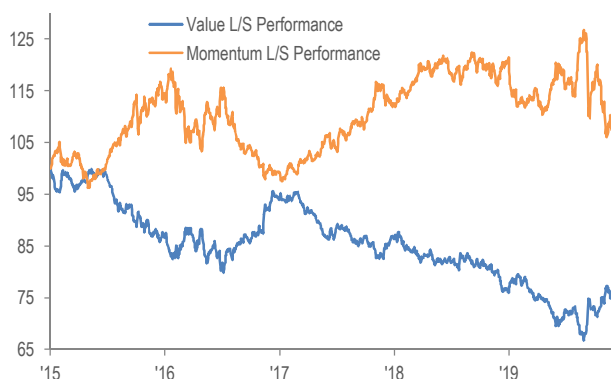
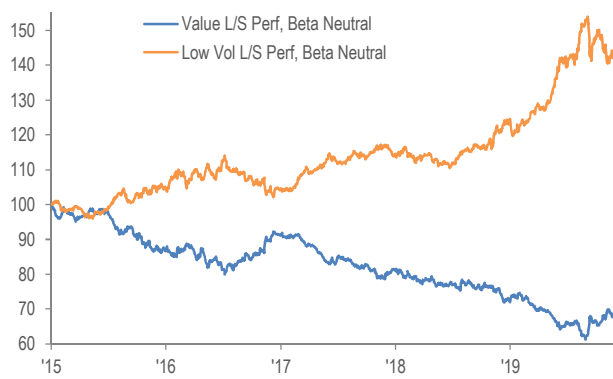


Figure 106: Value – Low Vol Performance



Key Reports in 2016

Value Remains in Vogue, Avoid Low Vol (Nov'16)
Style and Sector Rotation to Accelerate (Nov'16)
Deflating Low Vol Bubble, Growth Cheap (Oct'16)
Low Vol Sector Bubble (Jul'16)
Take Profits in Low Vol & Momentum (Jul'16)
Low Vol Bubble (Jul'16)
Historical Momentum Sell-Offs (Mar'16)
Momentum Crash (Mar'16)
Momentum Sells Off, Value Comeback (Mar'16)
Case for Rotation (Feb'16)
Case for Value (Feb'16)
Momentum Bubble (Jan'16)

Key Reports in 2019

Where does the Momentum/Value Rotation Stand? (Nov 22'19)
Higher Bond Yields Should Boost Cyclical, Value (Nov 08'19)
Rotation to Continue; Hedging-related Portfolio Risks (Oct 28'19)
Rotation to Value from Momentum (Sep 12'19)
Opportunity for Value and High Volatility stocks (Jul 16'19)

S&P 500 Industry – Style Relationship

Figure 107: Sector Exposure to Styles

Industry	Cheap Value	High Growth	Good Quality	High Mom.	Low Vol.
Energy					
Energy Equip & Serv					
Oil, Gas & Cons Fuels					
Materials					
Chemicals					
Construction Materials					
Containers & Packaging					
Metals & Mining					
Industrials					
Aerospace & Defense					
Building Products					
Construction & Engg					
Electrical Equip					
Industrial Conglomerates					
Machinery					
Trading Cos & Distri					
Comm. Serv & Supplies					
Professional Serv					
Air Freight & Logistics					
Airlines					
Road & Rail					
Cons Disc					
Auto Components					
Automobiles					
Household Durables					
Leisure Products					
Textiles, Apparel & Luxury					
Hotels, Rest. & Leisure					
Diversified Consumer Serv					
Distributors					
Internet & Direct Marketing					
Multiline Retail					
Specialty Retail					
Cons Stap					
Food & Staples Retailing					
Beverages					
Food Products					
Tobacco					
Household Products					
Personal Products					
H Care					
H Care Equip & Suppli					
H Care Providers & Servic					
H Care Technology					
Biotechnology					
Pharmaceuticals					
Life Sciences Tools & Serv					
Financials					
Banks					
Diversified Financial Serv					
Consumer Finance					
Capital Markets					
Insurance					
Technology					
IT Serv					
Software					
Communications Equip					
Tech Hardware, Storage					
Electronic Equip, Instrume					
Semiconductors					
Comm					
Diversified Telecom					
Media					
Entertainment					
Interactive Media & Serv					
Utilities					
Electric Util					
Gas Util					
Multi-Util					
Water Util					
Inde Power and Renewable					
REITs					
Equity Real Estate Inv					
Real Estate Mngmt & Dvlpmnt					

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research

Most Favored	Favored	Neutral	Unfavored	Most Unfavored

Style Screens — Value, Growth, Quality, Momentum, Low Vol (Sector Neutral)

Figure 108: US Stocks: Rotate out of Low Vol, Mom and Quality (Stocks to Avoid) and into Value (Stocks to Favor), as of Nov 30th, 2019

	Value (OW)			Growth (N)			Quality (UW)			Mom. (UW)			LowVol (UW)		
	Name	Ticker	Score	Name	Ticker	Score	Name	Ticker	Score	Name	Ticker	Score	Name	Ticker	Score
Top 50 Stocks based on Sector Neutral Scores	Macy'S Inc	M	3.00	Take-Two Interac	TTWO	3.00	Vornado Rlty Tst	VNO	3.00	Marketaxess	MKTX	3.00	Republic Svcs	RSG	2.23
	Hewlett Packa	HPE	3.00	Cabot Oil & Gas	COG	3.00	S&P Global Inc	SPGI	2.91	Msci Inc	MSCI	3.00	Waste Management	WM	1.92
	Dxc Technology C	DXC	3.00	Mgm Resorts Inte	MGM	3.00	Moody'S Corp	MCO	2.59	Copat Inc	CPRT	2.60	Modonalds Corp	MCD	1.86
	Unum Group	UNM	2.97	Schwab (Charles)	SCHW	3.00	Lockheed Martin	LMT	2.56	Target Corp	TGT	2.50	Yum! Brands Inc	YUM	1.75
	United Airlines	UAL	2.91	Wellcare Health	WCG	3.00	T Rowe Price Grp	TROW	2.54	Edwards Life	EW	2.27	Kinder Morgan In	KMI	1.72
	Mylan Nv	MYL	2.85	Evergy Inc	EVERG	2.95	Aon Plc	AON	2.41	Dentsply Sirona	XRAY	2.25	Exxon Mobil Corp	XOM	1.69
	Lincoln Natl Crp	LNC	2.82	Autodesk Inc	ADSK	2.92	Idexx Labs	IDXX	2.34	Transdigm Group	TDG	2.23	Chevron Corp	CVX	1.67
	Quanta Services	PWR	2.81	Duke Realty Corp	DRE	2.76	Public Storage	PSA	2.33	Adv Micro Device	AMD	2.18	Citrix Systems	CTXS	1.59
	Ford Motor Co	F	2.76	United Rentals	URI	2.69	Illinois Tool Wo	ITW	2.19	Chipotle Mexican	CMG	2.14	Ecolab Inc	ECL	1.53
	General Motors C	GM	2.72	Vertex Pharm	VRTX	2.57	Texas Instrument	TXN	2.17	Tyson Foods-A	TSN	2.05	Verisk Analyti	VRSK	1.50
	Prudential Finl	PRU	2.67	Arista Networks	ANET	2.40	Southern Co	SO	2.14	Incyle Corp	INCY	2.02	Verizon Communic	VZ	1.49
	Host Hotels & Re	HST	2.65	Incyle Corp	INCY	2.36	Mastercard Inc-A	MA	2.14	Synchrony Financ	SYF	1.92	Genuine Parts Co	GPC	1.45
	Cbre Group Inc-A	CBRE	2.62	Coty Inc-CI A	COTY	2.34	Simon Property	SPG	2.07	Phillips 66	PSX	1.90	Berkshire Hath-B	BRK/B	1.43
	Xerox Holdings C	XRX	2.56	Amazon.Com Inc	AMZN	2.33	Mettler-Toledo	MTD	2.06	Facebook Inc-A	FB	1.85	Paychex Inc	PAYX	1.42
	Alliance Data	ADS	2.52	Svb Financial Gr	SIVB	2.29	Electronic Arts	EA	2.04	S&P Global Inc	SPGI	1.82	Williams Cos Inc	WMB	1.41
	Exelon Corp	EXC	2.43	Costco Wholesale	COST	2.20	Booking Holdings	BKNG	1.98	Charter Commun-A	CHTR	1.82	Jack Henry	JKHY	1.40
	Marathon Petrole	MPC	2.41	Ulta Beauty Inc	ULTA	2.11	Seagate Technolo	STX	1.98	Lam Research	LRCX	1.81	Oneok Inc	OKE	1.40
	Cvs Health Corp	CVS	2.35	Marathon Petrole	MPC	2.07	Intuit Inc	INTU	1.95	General Electric	GE	1.80	Medtronic Plc	MDT	1.39
	Western Digital	WDC	2.34	Charter Commun-A	CHTR	2.04	H&R Block Inc	HRB	1.92	Valero Energy	VLO	1.79	Hartford Finl Sv	HIG	1.38
	Westrock Co	WRK	2.34	Assurant Inc	AIZ	1.96	Allegion Plc	ALLE	1.89	Keysight Tec	KEYS	1.78	Intercontinental	ICE	1.37
	News Corp-CI B	NWS	2.28	Alexion Pharm	ALXN	1.95	Pepsico Inc	PEP	1.86	Equinix Inc	EQIX	1.77	Aflac Inc	AFL	1.36
	Viacom Inc-B	VIAB	2.23	Linde Plc	LIN	1.95	ConocoPhillips	COP	1.85	Entergy Corp	ETR	1.72	Chubb Ltd	CB	1.35
	Centerpoint Ener	CNP	2.16	Intl Flvr & Frag	IFF	1.93	Vertex Pharm	VRTX	1.85	Moody'S Corp	MCO	1.69	Arthur J Gallagh	AJG	1.35
	Delta Air Li	DAL	2.11	Crme Group Inc	CME	1.92	Rockwell Automat	ROK	1.84	Kla Corp	KLAC	1.67	Ihs Markit Ltd	INFO	1.34
	Archer-Daniels	ADM	2.10	Lennar Corp-A	LEN	1.90	Firstenergy Corp	FE	1.82	Oneok Inc	OKE	1.65	Home Depot Inc	HD	1.34
	Mettlife Inc	MET	2.10	Bristol-Myer Sqb	BMJ	1.85	United Parcel-B	UPS	1.81	Hartford Finl Sv	HIG	1.64	Marsh & McLennan	MMC	1.32
	Walgreens Boots	WBA	2.09	Caterpillar Inc	CAT	1.80	Nike Inc -CI B	NKE	1.78	Air Prods & Chem	APD	1.60	Starbucks Corp	SBUX	1.32
	Centene Corp	CNC	1.99	Cintas Corp	CTAS	1.76	Qualcomm Inc	QCOM	1.77	Kinder Morgan In	KMI	1.59	Phillips 66	PSX	1.31
	Mosaic Co/The	MOS	1.98	Prologis Inc	PLD	1.70	Marketaxess	MKTX	1.68	Southern Co	SO	1.58	Honeywell Intl	HON	1.30
	L Brands Inc	LB	1.95	Global Payments	GPN	1.70	Lamb Weston	LW	1.64	Coty Inc-CI A	COTY	1.54	Equity Residenti	EQR	1.30
	Mckesson Corp	MCK	1.95	Norwegian Cruise	NCLH	1.63	Cbs Corp-B	CBS	1.59	Nvr Inc	NVR	1.52	Allstate Corp	ALL	1.27
	Kroger Co	KR	1.94	Dominion Energy	D	1.62	Cabot Oil & Gas	COG	1.59	Brown-Forman -B	BF/B	1.51	Us Bancorp	USB	1.27
	Fedex Corp	FDX	1.84	Align Technology	ALGN	1.61	3M Co	MMM	1.58	Kansas City Sout	KSU	1.49	Travelers Cos In	TRV	1.27
	Kraft Heinz Co/T	KHC	1.82	Monster Beverage	MNST	1.57	Citrix Systems	CTXS	1.56	Masco Corp	MAS	1.45	Lockheed Martin	LMT	1.24
	Cigna Corp	CI	1.82	Lkq Corp	LKQ	1.56	Packaging Corp	PKG	1.55	Assurant Inc	AIZ	1.44	Western Union	WU	1.22
	Molson Coors-B	TAP	1.82	Adobe Inc	ADBE	1.53	Netapp Inc	NTAP	1.53	Hess Corp	HES	1.44	Accenture Plc-A	ACN	1.22
	Kohls Corp	KSS	1.81	Keycorp	KEY	1.48	Waters Corp	WAT	1.52	PulteGroup Inc	PHM	1.41	Avalonbay Commun	AVB	1.22
	American Airline	AAL	1.79	Lockheed Martin	LMT	1.48	Lowe'S Cos Inc	LOW	1.50	Resmed Inc	RMD	1.41	Autozone Inc	AZD	1.21
	Baker Hughes Co	BKR	1.77	Bank Ny Mellon	BK	1.48	Lyondellbasell-A	LYB	1.49	Tiffany & Co	TIF	1.38	Pepsico Inc	PEP	1.20
	Alaska Air Group	ALK	1.73	Microchip Tech	MCHP	1.46	O'Reilly Automot	ORLY	1.48	Dr Horton Inc	DHI	1.38	Globe Life Inc	GL	1.20
	Textron Inc	TXT	1.69	United Tech Corp	UTX	1.41	Accenture Plc-A	ACN	1.44	Garmin Ltd	GRMN	1.38	Air Prods & Chem	APD	1.19
	Hp Inc	HPQ	1.62	Cbre Group Inc-A	CBRE	1.41	Best Buy Co Inc	BBY	1.44	Fortune Brands H	FBHS	1.36	Merck & Co	MRK	1.19
	Perrigo Co Plc	PRGO	1.62	Nextera Energy	NEE	1.38	Cboe Global Mark	CBOE	1.32	Global Payments	GPN	1.35	Omnicom Group	OMC	1.18
	Centurylink Inc	CTL	1.59	Centene Corp	CNC	1.36	American Express	AXP	1.28	Walt Disney Co	DIS	1.34	Automatic Data	ADP	1.17
	United Rentals	URI	1.55	Keysight Tec	KEYS	1.36	Synchrony Financ	SYF	1.26	Danaher Corp	DHR	1.32	Comcast Corp-A	CMCSA	1.16
	Gap Inc/The	GPS	1.52	Progressive Corp	PGR	1.35	Stryker Corp	SYK	1.26	Hershey Co/The	HSY	1.32	At&T Inc	T	1.15
	Amerisourceberge	ABC	1.48	Chipotle Mexican	CMG	1.31	Xilinx Inc	XLNX	1.26	Kimco Realty	KIM	1.30	Fidelity Nationa	FIS	1.14
	Micron Tech	MU	1.41	Tractor Supply	TSCO	1.28	Coca-Cola Co/The	KO	1.25	Arconic Inc	ARNC	1.27	Linde Plc	LIN	1.13
	Lyondellbasell-A	LYB	1.39	Salesforce.Com	CRM	1.23	Robert Half Intl	RHI	1.22	Carmax Inc	KMX	1.25	Essex Property	ESS	1.13
	American Interna	AIG	1.39	Hunt (Jb) Trans	JBHT	1.22	Target Corp	TGT	1.20	Estee Lauder	EL	1.25	Mondelez Inter-A	MDLZ	1.12

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research. For details about the construction of investment styles, please see our note [Framework for Style Investing](#)

Investment Themes

LONG J.P. Morgan Seasonal Cyclical Basket (JPAMSECY <Index>)

Criteria: The seasonal cyclical basket includes stocks best positioned to benefit from a recovery in the business cycle in early 2020. Russell 3000 stocks are filtered for Liquidity, Market Cap and Cyclical Sectors: Materials, Industrials, Discretionary, and Technology.

- Stocks are ranked by an equal weighted average of the following two parameters: (1) Beta to the market based on 12 months of daily returns (prefer high positive beta); (2) Beta to composite PMI based on 5 years of monthly returns (prefer high positive beta)
- We use the above top 100 stocks in our cyclical basket (JPAMCYCL) and filter for stocks with seasonal outperformance on 1st quarter of the year to get the top 30 stocks that are best positioned for the Recovery in this Business Cycle in early 2020.
- Given our Long recommendation on basket, any stock with a JPM analyst UW rating was excluded.

Figure 109: J.P. Morgan Seasonal Cyclical Basket (JPAMSECY <Index>)

			Company Stats		Price Perf (%)		Technicals				IBES Estimates		Valuation		
			Current	Market	12-mos		Short	Avg Rating	Repurchase	Sales	EPS	EV/			
Ticker	Company	Industry	Price	Cap	Change	YTD	as % of	RSI	1 = Sell	Stock LTM	Growth	Growth	EBITDA	P/E	
							Shr Out	30Day	5 = Buy	% Mkt Cap	NTM	NTM	LTM	NTM	P/B
AMD	Advanced Micro Devices, Inc.	Semiconductors & Semiconductors	\$39.6	\$44,122	86%	115%	11%	64	3.5	0.0%	42%	176%	57.9x	35.9x	20.3x
CAT	Caterpillar Inc.	Machinery	\$141.1	\$77,952	4%	11%	2%	54	3.6	6.5%	-5%	-2%	6.5x	13.1x	5.2x
LRCX	Lam Research Corporation	Semiconductors & Semiconductors	\$264.8	\$38,420	69%	94%	4%	55	4.0	5.5%	10%	17%	11.9x	15.8x	7.8x
CRM	salesforce.com, inc.	Software	\$158.2	\$140,341	11%	16%	2%	52	4.8	0.0%	30%	1%	44.3x	51.4x	4.2x
AMAT	Applied Materials, Inc.	Semiconductors & Semiconductors	\$55.8	\$51,582	50%	71%	2%	53	4.4	4.8%	14%	27%	14.3x	14.5x	6.3x
NFLX	Netflix, Inc.	Entertainment	\$302.9	\$132,729	6%	13%	6%	53	4.0	0.0%	30%	76%	48.5x	55.0x	19.3x
CMI	Cummins Inc.	Machinery	\$178.7	\$27,381	18%	34%	3%	55	3.3	3.9%	-11%	-18%	6.9x	13.9x	3.5x
URI	United Rentals, Inc.	Trading Companies & Distributors	\$153.1	\$11,509	31%	49%	8%	60	4.3	7.6%	4%	6%	5.1x	7.6x	3.2x
BBY	Best Buy Co., Inc.	Specialty Retail	\$80.3	\$21,170	24%	52%	3%	60	3.6	5.0%	2%	3%	6.9x	13.0x	6.8x
PH	Parker-Hannifin Corporation	Machinery	\$199.4	\$25,617	16%	34%	2%	59	3.4	3.4%	4%	-4%	11.5x	17.7x	4.2x
TPR	Tapestry, Inc.	Textiles Apparel & Luxury Goods	\$25.5	\$7,023	-35%	-25%	4%	48	3.7	5.5%	3%	5%	9.5x	9.7x	2.3x
WAB	Westinghouse Air Brake Technology Corporation	Machinery	\$76.5	\$14,664	-19%	9%	8%	54	3.9	0.1%	24%	15%	20.6x	16.1x	1.5x
LB	L Brands, Inc.	Specialty Retail	\$18.1	\$4,994	-45%	-30%	6%	49	3.1	—	1%	-7%	7.1x	7.6x	NA
PVH	PVH Corp.	Textiles Apparel & Luxury Goods	\$100.7	\$7,469	-9%	8%	3%	59	4.3	—	2%	6%	8.3x	10.0x	1.3x
EMN	Eastman Chemical Company	Chemicals	\$75.7	\$10,292	-4%	4%	2%	49	4.2	3.4%	1%	11%	8.7x	9.6x	1.7x
SKX	Skechers U.S.A., Inc. Class A	Textiles Apparel & Luxury Goods	\$40.4	\$5,415	50%	77%	5%	58	4.2	1.6%	13%	17%	7.8x	15.8x	2.9x
TXT	Textron Inc.	Aerospace & Defense	\$45.0	\$10,265	-20%	-2%	3%	43	4.1	8.5%	6%	1%	8.4x	11.7x	1.9x
HOG	Harley-Davidson, Inc.	Automobiles	\$35.9	\$5,536	-15%	5%	12%	47	3.1	7.4%	0%	26%	13.7x	10.4x	3.0x
PII	Polaris Inc.	Leisure Products	\$94.4	\$5,775	-3%	23%	4%	49	4.0	1.9%	6%	8%	9.6x	13.8x	5.7x
OLN	Olin Corporation	Chemicals	\$16.8	\$2,686	-22%	-16%	4%	43	3.6	6.3%	-1%	-34%	6.2x	22.5x	1.0x
PNR	Pentair plc	Machinery	\$44.5	\$7,473	4%	18%	2%	66	3.2	3.3%	4%	11%	14.1x	17.4x	4.0x
ANF	Abercrombie & Fitch Co. Class A	Specialty Retail	\$16.7	\$1,047	-20%	-17%	17%	50	3.0	—	2%	49%	4.2x	13.8x	1.1x
CFX	Cofax Corporation	Machinery	\$34.6	\$4,077	39%	66%	13%	60	3.8	—	-14%	-6%	17.5x	15.6x	1.4x
WLK	Westlake Chemical Corporation	Chemicals	\$67.6	\$8,677	-7%	2%	2%	51	3.2	1.0%	3%	21%	7.3x	14.3x	1.5x
CAR	Avis Budget Group, Inc.	Road & Rail	\$29.8	\$2,199	2%	33%	10%	51	4.0	6.3%	3%	14%	5.3x	7.5x	4.5x
SAIA	Saia, Inc.	Road & Rail	\$88.8	\$2,304	47%	59%	8%	46	4.0	0.2%	9%	17%	9.3x	17.0x	2.9x
GTLS	Chart Industries, Inc.	Machinery	\$53.0	\$1,898	-17%	-18%	9%	40	4.7	0.2%	33%	100%	18.4x	10.8x	1.6x
TRN	Trinity Industries, Inc.	Machinery	\$20.6	\$2,522	-14%	0%	12%	53	3.3	20.4%	-6%	-1%	8.5x	17.6x	1.2x
TEX	Terex Corporation	Machinery	\$28.3	\$2,016	-14%	3%	6%	51	3.0	5.1%	-17%	-32%	6.1x	12.1x	2.3x
CMC	Commercial Metals Company	Metals & Mining	\$21.7	\$2,576	13%	36%	7%	63	3.7	—	2%	8%	5.8x	9.7x	1.6x
Median				\$7,471	3%	14%	4.5%	53	3.8	3.9%	3%	8%	8.6x	13.8x	2.9x

Source: J.P. Morgan US Equity Strategy and Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

LONG J.P. Morgan China/Trade Deal Beneficiaries Basket (JPAMCNEX <Index>)

Criteria: The China/Trade sensitive basket constitutes of stocks that are the key beneficiaries in an event of US-China trade deal. Top 50 stocks from S&P 500 (excl. hard-to-borrow & M&A candidates) are ranked on the following:

- 50% weight: High Revenue to China
- 50% weight: High Mentions of Tariff Concerns in Call Transcripts

Figure 110: J.P. Morgan China/Trade Sensitive Basket (JPAMCNEX <Index>)

Ticker	Company	Industry	Company Stats		Price Perf (%)		Criteria		Technical				IBES Estimates		Valuation		
			Current Price	Market Cap	12-mos Change	YTD	China Exposure Rank	Tariff Mentions Rank	Short as % of Out.	Avg Rating RSI 30Day	1 = Sell 5 = Buy	Repurchase % Mkt Cap	Sales Growth NTM	EPS Growth NTM	EV/ EBITDA LTM	P/E NTM	P/B
APH	Amphenol Corporation Class A	Electronic Equipment Instrum	\$102.7	\$30,450	17%	17%	31	6	1%	55	4.2	2.7%	1%	4%	14.9x	25.8x	7.3x
MTD	Mettler-Toledo International Inc.	Life Sciences Tools & Servic	\$724.0	\$17,631	14%	17%	40	1	4%	51	2.3	3.8%	4%	14%	22.6x	28.9x	40.2x
COTY	Coty Inc. Class A	Personal Products	\$11.6	\$8,776	39%	-42%	35	7	3%	52	3.1	0.1%	-4%	19%	NA	16.2x	2.0x
MCHP	Microchip Technology Incorporated	Semiconductors & Semicond	\$94.2	\$22,514	26%	7%	15	36	13%	48	4.6	0.3%	1%	1%	16.3x	15.6x	4.2x
A	Agilent Technologies, Inc.	Life Sciences Tools & Servic	\$80.4	\$24,866	11%	20%	33	38	2%	60	4.1	3.0%	8%	12%	20.7x	23.1x	5.2x
EL	Estee Lauder Companies Inc. Cl	Personal Products	\$195.6	\$43,529	37%	54%	50	31	2%	52	4.2	3.1%	9%	13%	24.2x	30.9x	15.6x
STX	Seagate Technology PLC	Technology Hardware Storag	\$59.3	\$15,587	38%	42%	41	47	6%	57	3.1	8.4%	4%	22%	9.4x	11.7x	8.8x
MOS	Mosaic Company	Chemicals	\$19.0	\$7,217	-47%	-26%	52	37	4%	43	4.1	1.6%	1%	19%	9.1x	13.1x	0.7x
GLW	Corning Inc.	Electronic Equipment Instrum	\$28.8	\$22,112	-11%	-10%	38	52	3%	44	3.7	4.8%	-2%	-2%	9.6x	15.6x	2.1x
BWA	BorgWarner Inc.	Auto Components	\$42.5	\$8,770	7%	-17%	20	76	3%	52	4.0	1.1%	2%	-1%	5.8x	10.3x	2.0x
FMC	FMC Corporation	Chemicals	\$97.9	\$12,684	36%	19%	24	75	2%	61	4.5	4.1%	5%	11%	13.7x	14.6x	4.8x
SWKS	Skyworks Solutions, Inc.	Semiconductors & Semicond	\$98.4	\$16,758	35%	4%	2	102	4%	59	3.8	4.1%	4%	8%	9.1x	14.7x	4.1x
TEL	TE Connectivity Ltd.	Electronic Equipment Instrum	\$91.0	\$30,424	18%	-4%	37	71	1%	45	3.7	3.6%	-2%	-4%	12.8x	17.1x	2.9x
ADI	Analog Devices, Inc.	Semiconductors & Semicond	\$111.3	\$40,977	21%	25%	64	46	1%	49	4.3	1.5%	-4%	-3%	17.9x	22.3x	3.5x
ITW	Illinois Tool Works Inc.	Machinery	\$172.1	\$55,308	24%	3%	85	26	2%	55	2.7	2.9%	0%	5%	14.3x	21.6x	18.6x
MMM	3M Company	Industrial Conglomerates	\$168.3	\$96,764	-19%	-29%	62	53	2%	48	2.8	2.6%	6%	5%	12.8x	17.4x	9.0x
TXN	Texas Instruments Incorporated	Semiconductors & Semicond	\$118.8	\$111,042	19%	14%	7	110	2%	45	3.6	4.0%	-5%	-7%	17.2x	23.7x	12.4x
BF.B	Brown-Forman Corporation Clas	Beverages	\$67.4	\$20,799	41%	23%	107	11	4%	—	—	1.1%	9%	11%	NA	35.7x	19.4x
AMAT	Applied Materials, Inc.	Semiconductors & Semicond	\$56.7	\$52,377	52%	11%	6	113	2%	52	4.4	4.8%	14%	27%	14.3x	14.7x	6.4x
KLAC	KLA Corporation	Semiconductors & Semicond	\$161.1	\$25,414	63%	53%	11	108	2%	46	4.1	4.2%	20%	24%	16.1x	15.3x	9.6x
AVY	Avery Dennison Corporation	Containers & Packaging	\$128.8	\$10,751	34%	12%	21	99	2%	58	3.5	4.1%	3%	10%	11.2x	18.3x	10.2x
VAR	Varian Medical Systems, Inc.	Health Care Equipment & Su	\$134.5	\$12,229	9%	21%	98	22	2%	65	3.8	1.5%	12%	19%	22.2x	24.3x	6.9x
CAT	Caterpillar Inc.	Machinery	\$143.0	\$79,008	5%	-9%	70	54	2%	53	3.6	6.4%	-5%	-2%	6.5x	13.2x	5.3x
DHR	Danaher Corporation	Health Care Equipment & Su	\$145.7	\$104,646	33%	57%	57	67	1%	58	4.4	0.0%	19%	19%	22.4x	26.1x	3.4x
LRGX	Lam Research Corporation	Semiconductors & Semicond	\$262.9	\$38,147	68%	43%	5	120	4%	52	4.0	5.6%	10%	17%	11.9x	15.7x	7.7x
SEE	Sealed Air Corporation	Containers & Packaging	\$37.4	\$5,771	2%	-24%	97	28	3%	40	3.9	2.2%	5%	8%	14.4x	12.5x	NA
AME	AMETEK, Inc.	Electrical Equipment	\$97.5	\$22,297	33%	35%	111	14	1%	58	4.7	1.7%	7%	12%	16.2x	22.0x	4.6x
IFF	International Flavors & Fragranc	Chemicals	\$140.5	\$15,006	-1%	-8%	22	104	12%	65	3.4	0.1%	4%	8%	17.5x	21.5x	2.5x
QCOM	QUALCOMM Incorporated	Semiconductors & Semicond	\$82.5	\$100,231	42%	29%	3	125	1%	48	4.0	2.1%	20%	31%	10.1x	17.7x	19.2x
PPG	PPG Industries, Inc.	Chemicals	\$128.5	\$30,385	18%	10%	66	62	2%	57	3.7	2.0%	3%	13%	12.8x	18.7x	5.8x
GT	Goodyear Tire & Rubber Comp	Auto Components	\$16.0	\$3,721	-31%	-50%	82	50	4%	52	3.8	0.5%	1%	57%	5.8x	7.3x	0.8x
MDLZ	Mondelez International, Inc. Clas	Food Products	\$52.8	\$76,080	17%	23%	23	111	1%	50	4.7	2.0%	3%	6%	19.9x	19.9x	2.8x
BA	Boeing Company	Aerospace & Defense	\$355.2	\$199,892	2%	20%	92	42	1%	46	3.7	1.7%	41%	387%	33.9x	17.1x	NA
WAT	Waters Corporation	Life Sciences Tools & Servic	\$223.1	\$14,376	12%	15%	36	98	8%	54	2.5	16.8%	4%	13%	18.3x	22.6x	125.8x
XRAY	DENTSPLY SIRONA, Inc.	Health Care Equipment & Su	\$56.7	\$12,611	50%	-14%	55	83	2%	57	3.8	1.3%	4%	19%	19.8x	20.8x	2.5x
IPGP	IPG Photonics Corporation	Electronic Equipment Instrum	\$139.3	\$7,391	-2%	-35%	12	126	7%	51	4.0	1.2%	-1%	2%	14.3x	28.3x	3.1x
APTIV	Apiv PLC	Auto Components	\$94.5	\$24,125	31%	11%	51	88	2%	53	4.3	2.9%	6%	11%	12.7x	17.1x	6.8x
SWK	Stanley Black & Decker, Inc.	Machinery	\$153.3	\$23,300	17%	-10%	140	2	2%	51	4.3	0.1%	5%	8%	14.2x	17.1x	3.1x
XYL	Xylem Inc.	Machinery	\$76.6	\$13,785	5%	12%	72	73	3%	45	3.9	0.3%	4%	11%	19.0x	22.8x	4.8x
XLNX	Xilinx, Inc.	Semiconductors & Semicond	\$90.3	\$22,700	-2%	34%	26	122	2%	41	3.7	2.5%	5%	-5%	21.0x	25.6x	8.4x
FLS	Flowserv Corporation	Machinery	\$48.5	\$6,343	0%	15%	68	85	3%	48	3.3	0.1%	6%	17%	12.7x	19.6x	3.6x
PG	Procter & Gamble Company	Household Products	\$122.7	\$306,041	30%	34%	73	82	1%	54	3.7	2.2%	4%	6%	36.4x	24.2x	6.5x
CMI	Cummins Inc.	Machinery	\$181.3	\$27,770	20%	3%	141	16	3%	54	3.3	3.8%	-11%	-18%	6.9x	14.0x	3.5x
QRVO	Qorvo, Inc.	Semiconductors & Semicond	\$103.0	\$11,962	56%	55%	13	145	3%	67	3.7	6.2%	7%	7%	7.4x	16.2x	2.8x
AMD	Advanced Micro Devices, Inc.	Semiconductors & Semicond	\$38.7	\$43,131	82%	277%	19	143	11%	62	3.5	0.0%	41%	173%	57.9x	35.4x	19.8x
FTNT	Fortinet, Inc.	Software	\$103.9	\$17,774	41%	138%	27	136	2%	69	3.8	1.7%	20%	18%	29.4x	38.4x	14.8x
TMO	Thermo Fisher Scientific Inc.	Life Sciences Tools & Servic	\$313.0	\$125,526	25%	65%	117	51	1%	59	4.6	0.8%	7%	13%	18.9x	23.0x	4.3x
WHR	Whirlpool Corporation	Household Durables	\$142.9	\$9,033	13%	-15%	113	56	9%	42	3.4	1.7%	-2%	3%	7.4x	8.7x	3.0x
ETN	Eaton Corp. Plc	Electrical Equipment	\$92.0	\$38,025	20%	16%	154	17	2%	58	3.9	4.5%	-1%	3%	10.5x	15.5x	2.4x
FFIV	F5 Networks, Inc.	Communications Equipment	\$144.5	\$8,784	-16%	10%	122	49	3%	54	3.5	2.3%	5%	2%	12.2x	13.7x	5.0x
Median			\$22,607		19%	14%	46	59	2.3%	52	3.8	2.2%	4%	11%	14.3x	18.0x	4.9x

Ranks range from 1 to 500 with 1 being the best. Source: J.P. Morgan US Equity Strategy and Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

LONG J.P. Morgan Energy Recovery Basket (JPAMEVAL <Index>)

Criteria The Energy Recovery basket identifies Energy stocks that would benefit from a continued recovery in the business cycle and oil prices. The Russell 3000 Energy stocks were first filtered for tradability (Liquidity, MCap, M&A, hard-to-borrow, Stock Price). The top 30 stocks based on a composite ranking were selected for the basket and further vetted by Stock Analysts. The weighted Composite Ranking was based on:

1. 50% Value score (Cheap preferred)
2. 20% Quality score (Higher Quality preferred)
3. 20% Correlation with Oil (High positive correlation values preferred)
4. 10% Price Target Upside (Higher upside preferred)

Given our Long recommendation on basket, any stock with a JPM analyst UW rating was excluded.

Figure 111: J.P. Morgan Energy Recovery Basket (JPAMEVAL<Index>)

Ticker	Company	Industry	Company Stats		Price Perf (%)		Criteria				Technicals				IBES Estimates		Valuation			
			Current Price	Market Cap	12-mos Change	YTD	Value Score	Quality Score	Correl Oil	Consensus Price Tgt Upside	Short as % of Shr Out.	Avg RSI 30Day	Rating 1 = Buy 5 = Sell	Repurchase LTM	Sales Growth NTM	EPS Growth NTM	EV/ EBITDA LTM	P/E NTM	P/B	FCF Yield
DNR	Denbury Resources Inc.	Oil Gas & Consumable Fuels	\$1.0	\$488	-55%	-41%	1.7	1.1	0.70	32%	18%	46	2.8	0.0%	-5%	-25%	5.4x	3.3x	0.4x	22.7%
LPI	Laredo Petroleum, Inc.	Oil Gas & Consumable Fuels	\$2.3	\$534	-49%	-38%	1.3	1.1	0.50	72%	16%	47	3.5	0.0%	-2%	16%	8.6x	2.6x	0.5x	-0.4%
CPE	Callon Petroleum Company	Oil Gas & Consumable Fuels	\$3.7	\$852	-56%	-43%	0.8	0.5	0.54	100%	38%	45	4.7	8.8%	171%	54%	4.7x	3.5x	0.3x	-42.6%
SM	SM Energy Company	Oil Gas & Consumable Fuels	\$8.5	\$958	-58%	-45%	0.4	0.8	0.65	58%	13%	47	3.7	—	10%	Neg	2.4x	Neg	0.3x	-35.2%
PVAC	Penn Virginia Corporation	Oil Gas & Consumable Fuels	\$25.6	\$387	-56%	-53%	0.5	2.2	0.47	82%	9%	47	5.0	0.0%	2%	-16%	2.9x	3.5x	0.7x	-24.2%
CDEV	Centennial Resource Developme	Oil Gas & Consumable Fuels	\$3.4	\$926	-78%	-70%	0.5	0.3	0.65	80%	6%	45	3.8	0.2%	9%	101%	4.1x	11.2x	0.3x	-58.8%
NOG	Northern Oil and Gas, Inc.	Oil Gas & Consumable Fuels	\$1.9	\$787	-24%	-14%	0.2	-	0.48	77%	7%	50	4.7	4.8%	24%	-13%	2.9x	4.2x	1.5x	-26.8%
OAS	Oasis Petroleum Inc.	Oil Gas & Consumable Fuels	\$2.5	\$797	-65%	-55%	0.8	-0.1	0.59	70%	19%	41	3.2	0.6%	-25%	Neg	4.5x	Neg	0.2x	-24.4%
CEIX	CONSOL Energy Inc	Oil Gas & Consumable Fuels	\$12.7	\$330	-63%	-60%	1.0	1.3	0.26	62%	17%	40	4.6	16.0%	-6%	-46%	3.2x	5.5x	0.7x	46.0%
REGI	Renewable Energy Group, Inc.	Oil Gas & Consumable Fuels	\$18.9	\$735	-30%	-27%	0.6	2.4	0.18	53%	15%	65	5.0	0.5%	9%	-b +	NM	9.5x	1.2x	-5.0%
GPRI	Green Plains Inc.	Oil Gas & Consumable Fuels	\$14.8	\$531	-9%	13%	1.5	0.2	0.28	32%	21%	62	4.7	11.5%	-12%	Neg	11.5x	Neg	0.7x	-6.6%
SWN	Southwestern Energy Company	Oil Gas & Consumable Fuels	\$1.9	\$1,039	-60%	-44%	1.1	0.7	0.27	22%	25%	46	2.6	17.2%	-12%	-47%	3.2x	4.9x	0.3x	-14.8%
LBRT	Liberty Oilfield Services Inc.	Oil Gas & Consumable Fuels	\$8.9	\$674	-49%	-31%	0.1	1.0	0.45	38%	9%	45	4.3	7.2%	-7%	-49%	4.7x	17.6x	1.3x	12.2%
BKR	Baker Hughes Company Class A	Energy Equipment & Services	\$22.2	\$14,408	-3%	3%	0.2	0.4	0.52	30%	3%	49	4.6	1.7%	8%	56%	8.9x	17.3x	0.7x	5.8%
RRC	Range Resources Corporation	Oil Gas & Consumable Fuels	\$3.6	\$903	-75%	-62%	1.2	-1.6	0.46	56%	32%	45	3.4	0.4%	-3%	-92%	NA	87.6x	0.2x	-10.9%
DVN	Devon Energy Corporation	Oil Gas & Consumable Fuels	\$22.4	\$8,665	-17%	-1%	-0.4	0.6	0.69	35%	4%	50	3.9	29.2%	-28%	20%	3.4x	15.8x	1.3x	4.1%
XEC	Cimarex Energy Co.	Oil Gas & Consumable Fuels	\$47.0	\$4,787	-43%	-24%	-0.5	1.5	0.56	36%	8%	51	4.2	0.2%	6%	9%	4.7x	8.8x	1.2x	-0.5%
PDCE	PDC Energy, Inc.	Oil Gas & Consumable Fuels	\$23.0	\$1,440	-32%	-23%	0.1	-0.1	0.49	85%	15%	45	4.6	10.2%	24%	-b +	2.8x	7.8x	0.6x	-17.3%
MTDR	Matador Resources Company	Oil Gas & Consumable Fuels	\$14.5	\$1,688	-37%	-7%	-0.5	0.4	0.71	53%	22%	48	4.5	0.2%	26%	10%	6.0x	11.2x	0.9x	-24.0%
MRO	Marathon Oil Corporation	Oil Gas & Consumable Fuels	\$12.2	\$9,735	-27%	-15%	-0.5	1.0	0.70	39%	3%	50	4.3	6.8%	-10%	-43%	4.1x	25.9x	0.8x	4.1%
INT	World Fuel Services Corporation	Oil Gas & Consumable Fuels	\$42.5	\$2,778	65%	98%	1.7	-0.3	0.21	6%	2%	54	3.7	2.3%	9%	16%	7.5x	14.6x	1.5x	7.4%
PE	Parsley Energy, Inc. Class A	Oil Gas & Consumable Fuels	\$15.8	\$4,438	-22%	-1%	-0.4	0.5	0.56	53%	5%	48	4.7	0.1%	50%	48%	6.2x	9.4x	0.8x	-8.9%
ARCH	Arch Coal Inc Class A	Oil Gas & Consumable Fuels	\$74.1	\$1,115	-9%	-11%	-0.1	1.4	0.23	36%	24%	44	4.7	28.8%	-10%	-23%	2.4x	5.8x	1.6x	26.8%
HAL	Halliburton Company	Energy Equipment & Services	\$21.5	\$18,846	-32%	-19%	-0.5	0.5	0.66	22%	5%	55	4.5	1.6%	-8%	0%	7.0x	16.2x	1.9x	6.0%
EQT	EQT Corporation	Oil Gas & Consumable Fuels	\$8.8	\$2,237	-53%	-54%	0.7	-1.3	0.27	62%	7%	41	4.2	0.4%	-12%	-91%	5.6x	56.8x	0.2x	15.5%
CXO	Concho Resources Inc.	Oil Gas & Consumable Fuels	\$73.9	\$14,852	-43%	-28%	-0.6	1.1	0.55	36%	5%	53	4.5	0.1%	10%	35%	8.3x	18.5x	0.8x	-3.7%
WPX	WPX Energy, Inc.	Oil Gas & Consumable Fuels	\$10.4	\$4,313	-26%	-9%	-0.6	0.4	0.70	43%	9%	51	4.8	1.4%	-7%	107%	3.8x	20.0x	0.9x	0.4%
FANG	Diamondback Energy, Inc.	Oil Gas & Consumable Fuels	\$80.6	\$12,982	-27%	-13%	-0.5	0.3	0.58	56%	5%	46	4.9	3.3%	39%	52%	7.9x	9.2x	0.9x	-16.7%
EOG	EOG Resources, Inc.	Oil Gas & Consumable Fuels	\$72.1	\$41,916	-30%	-17%	-0.8	1.2	0.70	37%	2%	48	4.7	0.1%	3%	-2%	5.9x	15.1x	2.0x	3.4%
COP	ConocoPhillips	Oil Gas & Consumable Fuels	\$60.6	\$66,527	-8%	-3%	-0.8	1.1	0.67	21%	1%	56	4.8	5.5%	-20%	-14%	4.4x	17.8x	1.9x	12.5%
Median			\$1,277		-34%	-23%	0.2	0.6	0.55	0.5	8.9%	47	4.5	1.6%	0%	0%	4.7x	11.2x	0.8x	-2.1%

Source: J.P. Morgan US Equity Strategy and Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

LONG J.P. Morgan Health Care Laggards Basket (JPAMHVAL <Index>)

Criteria The Health Care Laggards basket identifies healthcare companies with a value tilt that would benefit from a recovery in the business cycle. The Russell 3000 Health Care stocks were filtered for tradability (Liquidity, MCap, M&A, hard-to-borrow). The top 30 stocks based on a composite ranking were selected for the basket and further vetted by Stock Analysts. The weighted Composite Ranking was based on:

1. 50% Value score (Cheap preferred)
2. 20% Quality score (Good Quality preferred)
3. 20% Correlation with Value factor (High positive correlation values preferred)
4. 10% Price Target Upside (Higher upside preferred)

Given our Long recommendation on basket, any stock with a JPM analyst UW rating was excluded.

Figure 112: J.P. Morgan Health Care Laggards Basket (JPAMHVAL<Index>)

Ticker	Company	Industry	Company Stats		Price Perf (%)		Criteria				Technicals				IBES Estimates		Valuation			
			Current Price	Market Cap	12-mos Change	YTD	Value Score	Quality Score	Correl with Value	Consensus Price Tgt Upside	Short as % of Out	Avg RSI 30Day	Repurchase 1 = Sell 5 = Buy	Stock LTM % Mkt Cap	Sales Growth NTM	EPS Growth NTM	EV/EBITDA LTM	P/E NTM	P/B	FCF Yield
MYL	Mylan N.V.	Pharmaceuticals	\$18.5	\$9,564	-45%	-32%	3.0	1.0	0.34	37%	5%	50	4.3	0.1%	5%	4%	8.2x	4.1x	0.8x	20.1%
MDRX	Allscripts Healthcare Solutions, Inc.	Health Care Technology	\$10.6	\$1,715	3%	10%	1.8	1.2	0.32	17%	14%	48	3.5	9.1%	0%	9%	13.2x	13.8x	1.3x	3.0%
UHS	Universal Health Services, Inc.	Health Care Providers & Services	\$140.3	\$11,272	2%	20%	1.1	1.7	0.25	12%	3%	47	4.0	6.4%	6%	12%	10.4x	13.0x	2.3x	6.7%
HCA	HCA Healthcare Inc	Health Care Providers & Services	\$138.2	\$46,864	-4%	11%	0.5	-	0.28	13%	1%	58	4.5	2.3%	8%	12%	7.9x	11.9x	NA	7.2%
CAH	Cardinal Health, Inc.	Health Care Providers & Services	\$54.5	\$15,949	-1%	22%	2.4	1.1	0.41	-5%	6%	59	2.9	2.3%	6%	-2%	NA	10.6x	17.8x	-21.2%
UTHR	United Therapeutics Corporation	Biotechnology	\$89.2	\$3,915	-24%	-18%	1.2	1.6	0.09	36%	5%	52	3.3	0.1%	-16%	-to +	NA	9.5x	1.4x	-2.8%
NKTR	Nektar Therapeutics	Pharmaceuticals	\$19.5	\$3,423	-52%	-41%	0.3	2.3	0.17	65%	20%	49	3.8	0.0%	41%	Neg	NA	Neg	2.3x	-10.8%
PRGO	Perrigo Co. Plc	Pharmaceuticals	\$49.7	\$6,765	-20%	28%	1.5	1.0	0.33	7%	4%	46	3.3	0.0%	5%	7%	14.2x	11.8x	1.2x	7.4%
CNC	Centene Corporation	Health Care Providers & Services	\$60.1	\$24,857	-16%	4%	2.4	0.8	0.13	17%	11%	65	4.8	0.4%	10%	11%	7.1x	12.4x	2.0x	6.3%
MD	MEDNAX, Inc.	Health Care Providers & Services	\$25.7	\$2,166	-36%	-22%	3.0	0.5	0.38	-1%	8%	55	3.2	6.7%	1%	2%	NA	7.5x	1.5x	11.7%
MCK	McKesson Corporation	Health Care Providers & Services	\$141.8	\$25,549	14%	28%	2.2	0.7	0.20	10%	2%	49	3.6	8.6%	6%	9%	13.9x	9.3x	3.9x	13.2%
SYNH	Syneos Health, Inc. Class A	Life Sciences Tools & Services	\$54.4	\$5,647	5%	38%	1.3	1.2	0.15	8%	7%	56	4.3	1.2%	7%	14%	15.0x	15.2x	2.0x	5.7%
JAZZ	Jazz Pharmaceuticals Plc	Pharmaceuticals	\$146.5	\$8,285	-3%	18%	0.5	1.2	0.16	18%	5%	64	4.4	7.9%	15%	13%	8.7x	8.4x	2.7x	10.4%
ANTM	Anthem, Inc.	Health Care Providers & Services	\$286.2	\$72,567	-1%	9%	1.6	0.8	0.15	15%	2%	57	4.6	2.7%	16%	26%	7.4x	12.6x	2.3x	6.6%
ACHC	Acadia Healthcare Company, Inc.	Health Care Providers & Services	\$31.9	\$2,825	-6%	24%	2.1	-0.2	0.30	11%	13%	54	3.9	0.1%	7%	18%	30.3x	13.6x	1.2x	1.5%
PINC	Premier Inc. Class A	Health Care Providers & Services	\$39.1	\$2,595	-2%	5%	0.9	1.0	0.18	9%	15%	62	4.0	10.7%	-12%	10%	7.1x	13.3x	NA	17.1%
CVS	CVS Health Corporation	Health Care Providers & Services	\$74.7	\$97,195	-7%	14%	2.7	0.2	0.23	6%	2%	65	4.4	0.1%	5%	-5%	10.3x	10.5x	1.6x	9.2%
CI	Cigna Corporation	Health Care Providers & Services	\$195.3	\$72,941	-13%	3%	1.7	0.0	0.26	13%	2%	63	4.9	2.2%	26%	22%	9.0x	10.5x	1.6x	8.2%
ALXN	Alexion Pharmaceuticals, Inc.	Biotechnology	\$114.1	\$25,238	-7%	17%	0.4	1.0	0.21	32%	2%	56	4.6	1.5%	18%	13%	10.4x	10.1x	2.4x	6.5%
BEAT	BioTelemetry, Inc.	Health Care Providers & Services	\$46.7	\$1,589	-34%	-22%	0.2	1.4	0.17	65%	7%	58	4.6	0.3%	13%	3%	14.9x	22.4x	4.4x	5.6%
LH	Laboratory Corporation of America	Health Care Providers & Services	\$170.3	\$16,535	17%	35%	0.9	1.1	0.13	10%	2%	52	4.1	5.1%	5%	10%	10.6x	14.2x	2.3x	7.3%
HSIC	Henry Schein, Inc.	Health Care Providers & Services	\$68.8	\$10,102	-2%	12%	1.5	0.6	0.33	-1%	12%	58	3.1	4.2%	-4%	1%	11.8x	18.6x	3.6x	6.8%
AVNS	Avanos Medical, Inc.	Health Care Equipment & Supplies	\$33.2	\$1,592	-30%	-26%	0.7	0.4	0.21	27%	5%	43	3.3	0.2%	9%	20%	NA	26.1x	1.3x	-3.5%
EHC	Encompass Health Corporation	Health Care Providers & Services	\$70.6	\$6,956	-6%	14%	0.5	0.9	0.21	11%	2%	58	4.7	0.9%	7%	-4%	11.1x	19.2x	5.2x	6.3%
ABC	AmerisourceBergen Corporation	Health Care Providers & Services	\$87.4	\$18,004	-2%	18%	2.0	0.7	0.13	7%	4%	52	3.6	3.8%	8%	8%	11.3x	11.4x	6.3x	9.3%
GILD	Gilead Sciences, Inc.	Biotechnology	\$66.1	\$83,588	-8%	6%	0.3	1.0	0.26	20%	1%	53	4.1	3.1%	0%	3%	13.7x	9.5x	4.1x	10.5%
BIIB	Biogen Inc.	Biotechnology	\$290.7	\$52,454	-13%	-3%	0.2	1.7	0.24	5%	2%	59	3.4	9.8%	-1%	2%	5.6x	8.8x	3.8x	11.5%
MGLN	Magellan Health, Inc.	Health Care Providers & Services	\$78.5	\$1,921	44%	38%	2.9	1.0	0.05	0%	2%	67	4.3	1.3%	3%	173%	8.2x	16.7x	1.4x	5.4%
BKD	Brookdale Senior Living Inc.	Health Care Providers & Services	\$7.0	\$1,301	-18%	5%	2.2	-0.2	0.11	32%	6%	43	3.4	2.0%	-4%	Neg	9.4x	Neg	1.7x	9.3%
MOH	Molina Healthcare, Inc.	Health Care Providers & Services	\$133.2	\$8,351	-5%	15%	2.0	1.4	-0.02	7%	4%	56	3.8	0.0%	4%	-2%	3.4x	11.3x	4.6x	10.5%
Median			\$8,957		-6%	11%	1.5	1.0	0.21	12%	4.7%	56	4.0	2.1%	6%	9%	10.4x	11.8x	2.3x	7.0%

Source: J.P. Morgan US Equity Strategy and Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

LONG J.P. Morgan 5G Thematic Basket (JPAMFIVG <Index>)

Criteria The 5G thematic basket is comprised of stocks that are most closely tied to the ongoing 5G rollout. Using textual analysis of corporate earnings, conferences and other call transcripts, we identified the top 30 names in S&P 1500 that most strongly associated with the 5G theme based on level and type of discussion. JPM analyst feedback was also incorporated to further refine the list of stocks.

Figure 113: J.P. Morgan 5G Thematic Basket (JPAMFIVG<Index>)

Ticker	Company	Industry	Company Stats		Price Perf (%)		Technicals				IBES Estimates		Valuation			
			Current Price	Market Cap	12-mos Change	YTD	Short as % of Shr Out	Avg Rating RSI 30Day	Repurchase 1 = Sell Stock LTM 5 = Buy Mkt Cap		Sales Growth NTM	EPS Growth NTM	EV/ EBITDA LTM	P/E NTM	P/B	FCF Yield
KEYS	Keysight Technologies Inc	Electronic Equipment Instrum	\$103.2	\$19,351	67%	66%	5%	52	4.2	1.0%	7%	10%	18.5x	19.9x	6.4x	4.7%
QCOM	QUALCOMM Incorporated	Semiconductors & Semicond	\$82.1	\$99,781	41%	44%	1%	50	4.0	2.1%	20%	31%	10.1x	17.6x	19.1x	8.5%
VZ	Verizon Communications Inc.	Diversified Telecommunicat	\$60.5	\$250,339	0%	8%	1%	55	3.5	0.0%	2%	3%	8.5x	12.2x	4.2x	8.6%
AVGO	Broadcom Inc.	Semiconductors & Semicond	\$309.7	\$122,857	30%	22%	2%	55	4.3	6.0%	7%	8%	15.3x	13.2x	5.7x	7.8%
MRVL	Marvell Technology Group Ltd.	Semiconductors & Semicond	\$23.9	\$15,955	48%	48%	5%	44	4.5	1.3%	14%	32%	59.1x	24.4x	2.2x	2.8%
COMM	CommScope Holding Co., Inc.	Communications Equipment	\$13.0	\$2,525	-28%	-21%	7%	50	4.3	0.5%	31%	-1%	24.1x	6.0x	2.1x	-3.9%
SWKS	Skyworks Solutions, Inc.	Semiconductors & Semicond	\$98.8	\$16,836	36%	47%	4%	60	3.8	4.0%	4%	8%	9.1x	14.8x	4.1x	5.4%
T	AT&T Inc.	Diversified Telecommunicat	\$38.1	\$278,321	22%	33%	1%	53	3.8	0.2%	0%	1%	7.6x	10.6x	1.5x	14.0%
QROV	Qorvo, Inc.	Semiconductors & Semicond	\$104.0	\$12,086	58%	71%	3%	69	3.7	6.1%	7%	7%	7.4x	16.4x	2.8x	5.6%
TERO	Teradyne, Inc.	Semiconductors & Semicond	\$62.7	\$10,507	76%	100%	6%	54	3.5	6.0%	14%	22%	14.4x	19.8x	7.1x	4.9%
ADI	Analog Devices, Inc.	Semiconductors & Semicond	\$114.4	\$42,130	24%	33%	1%	53	4.3	1.5%	-4%	-4%	17.9x	23.3x	3.6x	4.8%
XLNX	Xilinx, Inc.	Semiconductors & Semicond	\$90.2	\$22,675	-2%	6%	2%	43	3.7	2.5%	5%	-5%	21.0x	25.5x	8.4x	4.8%
AMT	American Tower Corporation	Equity Real Estate Investmen	\$213.4	\$94,506	30%	35%	1%	48	3.7	0.1%	4%	27%	23.1x	47.0x	18.0x	3.7%
VIAV	Viavi Solutions Inc	Communications Equipment	\$14.6	\$3,348	44%	45%	6%	47	4.6	0.9%	3%	5%	16.6x	19.8x	4.7x	4.8%
ROG	Rogers Corporation	Electronic Equipment Instrum	\$127.0	\$2,358	-1%	28%	4%	43	4.7	0.3%	2%	-4%	14.3x	19.8x	2.6x	4.6%
MTZ	MasTec, Inc.	Construction & Engineering	\$63.5	\$4,849	41%	57%	12%	46	4.7	2.5%	8%	11%	5.9x	11.5x	2.9x	9.9%
TMUS	T-Mobile US, Inc.	Wireless Telecommunication	\$78.3	\$67,026	14%	23%	1%	48	4.5	0.2%	6%	23%	7.8x	16.3x	2.4x	8.2%
DISH	DISH Network Corporation Clas Media		\$33.5	\$8,984	3%	35%	5%	45	3.2	—	-5%	-18%	11.2x	16.1x	1.6x	12.8%
NATI	National Instruments Corporation	Electronic Equipment Instrum	\$41.1	\$5,392	-16%	-9%	1%	46	3.0	2.5%	4%	-6%	18.9x	36.4x	4.6x	3.9%
CCI	Crown Castle International Corp	Equity Real Estate Investmen	\$134.5	\$55,933	17%	24%	1%	48	3.6	0.1%	6%	22%	22.5x	55.5x	4.9x	1.1%
NTCT	NetScout Systems, Inc.	Communications Equipment	\$24.1	\$1,801	-10%	2%	7%	51	3.0	7.1%	4%	10%	15.3x	15.0x	0.9x	6.3%
INTC	Intel Corporation	Semiconductors & Semicond	\$56.0	\$243,687	14%	19%	1%	54	3.4	4.9%	3%	1%	7.3x	12.0x	3.3x	6.8%
FORM	FormFactor, Inc.	Semiconductors & Semicond	\$22.9	\$1,732	39%	62%	3%	60	4.1	0.5%	8%	9%	14.7x	22.4x	2.8x	5.2%
FTNT	Fortinet, Inc.	Software	\$103.6	\$17,714	40%	47%	2%	68	3.8	1.7%	20%	18%	29.4x	38.3x	14.8x	3.2%
COHU	Cohu, Inc.	Semiconductors & Semicond	\$18.1	\$745	-8%	12%	4%	58	5.0	0.2%	7%	193%	NA	17.6x	1.5x	-3.0%
KN	Knowles Corp.	Electronic Equipment Instrum	\$21.5	\$1,968	41%	62%	7%	52	3.7	0.3%	7%	17%	14.0x	16.7x	1.6x	7.5%
TDS	Telephone and Data Systems, In	Wireless Telecommunication	\$23.8	\$2,553	-34%	-27%	3%	45	5.0	0.8%	1%	-19%	5.1x	27.3x	0.6x	11.5%
IDCC	InterDigital, Inc.	Communications Equipment	\$56.2	\$1,751	-25%	-15%	5%	50	5.0	13.9%	11%	372%	12.0x	44.1x	2.2x	3.6%
TTMI	TTM Technologies, Inc.	Electronic Equipment Instrum	\$13.7	\$1,447	15%	41%	13%	60	4.0	0.0%	1%	0%	7.1x	11.0x	1.2x	10.8%
SBAC	SBA Communications Corp. Clas	Equity Real Estate Investmen	\$235.4	\$26,502	38%	45%	2%	48	3.5	2.3%	6%	82%	24.0x	107.6x	NA	3.0%
Median			\$14,020	23%	34%	2.9%	51	3.9	1.3%	6%	9%	14.4x	18.7x	2.9x	5.1%	

Source: J.P. Morgan US Equity Strategy and Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

Short: J.P. Morgan Expensive Defensives Basket (JPAMXDEF <Index>)

Criteria This basket consists of expensive, low vol stocks with high interest rate risk. We exclude any oversold secular growth names from S&P 500 (excl. hard-to-borrow & M&A candidates) and then rank the stocks on the following:

- Low Vol stocks based on sector neutral realized volatility
- Expensive stocks based on sector neutral composite score for P/E, P/B and P/Sales
- Inversely correlated to US 10yr treasury rates

Figure 114: J.P. Morgan Expensive Defensives Basket (JPAMXDEF <Index>)

Ticker	Company	Industry	Company Stats		Price Perf (%)		Criteria			Technicals				IBES Estimates		Valuation			
			Current Price	Market Cap	12-mos Change	YTD	Low Vol Score	Value Score	Correl with US 10y	Short as % of	Avg Rating RSI	Repurchase 1 = Sell Stock LTM	5 = Buy % Mkt Cap	Sales Growth	EPS Growth	EV/ EBITDA	P/E	P/B	FCF Yield
MCD	McDonald's Corporation	Hotels Restaurants & Leisure	\$194.3	\$146,334	3%	9%	1.9	-1.1	-0.21	1%	44	4.4	3.0%	4%	8%	17.8x	22.9x	NA	3.6%
UDR	UDR, Inc.	Equity Real Estate Investme	\$47.5	\$13,914	11%	20%	0.9	-1.1	-0.49	2%	47	3.5	—	11%	-31%	27.6x	116.1x	4.3x	4.8%
MMC	Marsh & McLennan Companies	Insurance	\$107.1	\$54,060	21%	34%	1.3	-1.1	-0.19	1%	60	3.4	0.7%	12%	12%	17.8x	21.0x	7.1x	4.9%
NEE	NextEra Energy, Inc.	Electric Utilities	\$234.3	\$114,501	29%	35%	0.5	-1.5	-0.52	1%	55	4.6	—	5%	7%	15.6x	25.9x	3.1x	2.4%
PEP	PepsiCo, Inc.	Beverages	\$137.3	\$191,456	13%	24%	1.2	-0.7	-0.40	1%	56	3.7	1.5%	5%	7%	17.2x	23.0x	13.6x	3.3%
CL	Colgate-Palmolive Company	Household Products	\$68.1	\$58,348	7%	14%	1.0	-0.8	-0.35	1%	48	3.3	2.2%	4%	5%	17.2x	22.8x	NA	4.6%
JKHY	Jack Henry & Associates, Inc.	IT Services	\$151.1	\$11,625	8%	19%	1.4	-0.8	-0.18	3%	58	3.2	0.6%	8%	9%	21.2x	38.6x	7.9x	3.6%
HSY	Hershey Company	Food Products	\$150.2	\$22,270	39%	40%	1.0	-0.8	-0.33	2%	53	3.0	2.2%	4%	7%	17.9x	24.4x	17.9x	4.6%
EQR	Equity Residential	Equity Real Estate Investme	\$84.3	\$31,287	18%	28%	1.3	-0.5	-0.49	1%	47	3.1	0.0%	5%	-30%	24.2x	56.4x	3.1x	5.3%
KO	Coca-Cola Company	Beverages	\$54.3	\$232,605	8%	15%	0.9	-0.8	-0.34	1%	54	4.0	0.4%	12%	8%	23.6x	24.0x	12.4x	3.1%
INFO	IHS Markit Ltd.	Professional Services	\$72.5	\$29,072	36%	51%	1.3	-0.7	-0.19	2%	61	3.9	0.9%	5%	13%	20.9x	25.1x	3.5x	3.6%
RSR	Republic Services, Inc.	Commercial Services & Supp	\$88.0	\$28,088	14%	22%	2.2	-0.5	-0.24	1%	53	3.8	1.8%	5%	8%	12.3x	25.3x	3.5x	4.5%
PAYX	Paychex, Inc.	IT Services	\$84.6	\$30,268	20%	30%	1.4	-0.7	-0.13	3%	52	2.9	0.7%	10%	13%	18.4x	26.1x	12.0x	4.8%
V	Visa Inc. Class A	IT Services	\$180.6	\$309,309	27%	37%	1.0	-0.9	-0.14	2%	52	4.7	2.8%	14%	19%	22.2x	27.9x	13.4x	4.7%
ES	Eversource Energy	Electric Utilities	\$83.0	\$26,879	21%	28%	0.9	-0.5	-0.52	6%	53	3.7	0.0%	6%	7%	15.8x	22.7x	2.2x	-2.6%
CBOE	Cboe Global Markets Inc	Capital Markets	\$120.2	\$13,330	12%	23%	0.7	-1.2	-0.14	—	55	3.6	0.8%	2%	-2%	17.2x	24.1x	4.0x	4.2%
BF.B	Brown-Forman Corporation	Beverages	\$67.8	\$20,929	42%	43%	0.5	-1.2	-0.21	4%	—	—	1.1%	9%	11%	NA	35.9x	19.5x	2.5%
PG	Procter & Gamble Company	Household Products	\$124.5	\$310,554	32%	35%	0.8	-0.7	-0.32	1%	57	3.7	2.2%	4%	6%	36.4x	24.5x	6.6x	3.9%
APD	Air Products and Chemicals, Inc.	Chemicals	\$228.9	\$50,462	42%	43%	1.2	-1.2	-0.02	1%	53	3.8	0.0%	8%	18%	15.4x	23.5x	4.6x	1.9%
LNT	Alliant Energy Corp	Electric Utilities	\$53.2	\$13,007	17%	26%	0.5	-0.8	-0.53	3%	53	3.5	—	3%	8%	15.1x	22.1x	2.6x	-3.2%
ICE	Intercontinental Exchange, Inc.	Capital Markets	\$93.3	\$51,965	14%	24%	1.4	-1.2	0.01	1%	52	4.5	2.5%	6%	10%	17.4x	22.0x	3.0x	4.8%
AVB	AvalonBay Communities, Inc.	Equity Real Estate Investme	\$215.3	\$30,072	13%	24%	1.2	-0.2	-0.50	2%	52	3.9	0.1%	6%	-30%	25.2x	42.4x	2.8x	5.7%
ORLY	O'Reilly Automotive, Inc.	Specialty Retail	\$442.1	\$33,448	27%	28%	1.0	-1.0	-0.07	1%	59	3.9	5.3%	8%	15%	14.5x	22.2x	201.4x	3.1%
FRT	Federal Realty Investment Trust	Equity Real Estate Investme	\$131.0	\$9,890	-1%	11%	1.0	-0.4	-0.47	3%	45	4.3	0.0%	4%	-3%	23.5x	39.9x	4.3x	5.2%
BAX	Baxter International Inc.	Health Care Equipment & Su	\$82.4	\$42,085	20%	25%	1.0	-0.5	-0.26	1%	50	4.1	5.7%	6%	—	19.3x	22.0x	5.4x	4.2%
AON	Aon plc	Insurance	\$202.2	\$47,345	22%	39%	0.6	-1.2	-0.10	1%	57	3.2	3.6%	7%	17%	18.4x	19.6x	13.6x	4.3%
MAA	Mid-America Apartment Commun	Equity Real Estate Investme	\$134.8	\$15,370	30%	41%	0.9	-0.2	-0.53	2%	53	3.9	0.0%	5%	7%	21.3x	55.0x	2.6x	5.0%
CMS	CMS Energy Corporation	Multi-Utilities	\$61.7	\$17,516	18%	24%	0.2	-1.0	-0.58	2%	50	3.7	—	4%	21%	14.4x	23.1x	3.5x	-3.0%
ADP	Automatic Data Processing, Inc.	IT Services	\$168.6	\$72,940	14%	29%	1.2	-0.7	-0.09	1%	54	3.5	1.4%	8%	17%	20.0x	25.7x	13.6x	5.2%
AEP	American Electric Power Compai	Electric Utilities	\$92.0	\$45,458	18%	23%	0.7	-0.4	-0.53	1%	51	3.7	0.0%	9%	1%	12.9x	20.9x	2.3x	-3.0%
ALLE	Allegion PLC	Building Products	\$121.8	\$11,316	33%	53%	0.8	-1.1	-0.04	5%	66	3.4	1.9%	5%	10%	16.0x	22.9x	16.5x	3.7%
MDT	Medtronic Plc	Health Care Equipment & Su	\$111.9	\$150,042	15%	23%	1.4	-0.1	-0.25	1%	58	4.4	1.2%	5%	9%	17.3x	19.0x	3.0x	4.8%
ATO	Atmos Energy Corporation	Gas Utilities	\$107.0	\$12,769	12%	15%	0.3	-0.8	-0.46	3%	45	3.8	—	18%	8%	15.3x	22.6x	2.2x	-5.1%
AIV	Apartment Investment and Mana	Equity Real Estate Investme	\$52.8	\$7,863	9%	17%	0.0	-1.0	-0.47	2%	49	3.6	6.6%	2%	-93%	21.3x	326.0x	4.6x	10.4%
SPGI	S&P Global, Inc.	Capital Markets	\$268.5	\$65,612	47%	58%	0.6	-1.5	-0.04	1%	59	4.2	2.6%	9%	13%	18.8x	25.8x	189.6x	4.1%
NDAQ	Nasdaq, Inc.	Capital Markets	\$105.2	\$17,245	15%	29%	0.7	-1.0	-0.05	2%	59	3.7	1.4%	4%	9%	15.2x	19.5x	3.2x	5.4%
ROST	Ross Stores, Inc.	Specialty Retail	\$114.2	\$41,291	30%	37%	1.0	-0.8	-0.04	1%	56	4.0	3.1%	7%	10%	15.4x	22.9x	12.6x	3.9%
XEL	Xcel Energy Inc.	Electric Utilities	\$62.0	\$32,517	18%	26%	0.4	-0.6	-0.54	3%	49	3.3	0.0%	6%	11%	13.1x	22.3x	2.5x	-2.5%
ARE	Alexandria Real Estate Equities	Equity Real Estate Investme	\$160.1	\$18,432	29%	39%	0.7	-0.3	-0.45	7%	57	4.4	0.3%	15%	179%	26.6x	54.6x	2.3x	3.5%
HON	Honeywell International Inc.	Industrial Conglomerates	\$173.2	\$123,764	18%	31%	1.3	-0.8	0.01	1%	50	4.6	4.3%	3%	10%	16.2x	19.7x	6.8x	4.4%
OKE	ONEOK, Inc.	Oil Gas & Consumable Fuels	\$70.8	\$29,259	15%	31%	1.4	-1.3	0.11	3%	50	4.1	0.0%	19%	29%	17.9x	18.3x	4.7x	-5.1%
KMI	Kinder Morgan Inc Class P	Oil Gas & Consumable Fuels	\$19.3	\$43,714	13%	25%	1.7	-0.5	-0.04	1%	41	3.9	0.1%	3%	10%	10.2x	18.6x	1.3x	5.6%
MDLZ	Mondelez International, Inc. Clas	Food Products	\$53.3	\$76,800	19%	33%	1.1	-0.2	-0.23	1%	51	4.7	2.0%	3%	6%	20.1x	20.1x	2.9x	4.3%
MKC	McCormick & Company, Incorpo	Food Products	\$171.4	\$21,176	14%	23%	0.3	-0.9	-0.26	6%	61	2.8	0.5%	3%	4%	23.5x	30.3x	6.6x	3.4%
SRE	Sempra Energy	Multi-Utilities	\$147.6	\$41,602	28%	36%	0.3	-0.7	-0.41	6%	55	4.0	0.1%	9%	16%	14.5x	20.9x	2.5x	0.5%
SO	Southern Company	Electric Utilities	\$62.7	\$65,745	32%	43%	0.6	-0.3	-0.47	2%	56	2.5	0.1%	4%	3%	10.1x	19.7x	2.4x	2.3%
DHR	Danaher Corporation	Health Care Equipment & Su	\$147.3	\$105,810	34%	43%	0.9	-0.5	-0.17	1%	59	4.4	0.0%	19%	19%	22.4x	26.3x	3.4x	2.9%
HRL	Hormel Foods Corporation	Food Products	\$45.3	\$24,162	0%	6%	0.6	-0.5	-0.25	7%	64	2.4	0.7%	3%	2%	15.6x	25.5x	4.1x	3.8%
DRE	Duke Realty Corporation	Equity Real Estate Investme	\$35.1	\$12,891	23%	35%	0.5	-0.4	-0.46	2%	55	4.2	0.0%	7%	-49%	29.3x	61.0x	2.6x	7.1%
HLT	Hilton Worldwide Holdings Inc	Hotels Restaurants & Leisure	\$104.2	\$29,396	38%	45%	0.9	-1.0	0.03	2%	61	4.0	4.2%	6%	16%	15.8x	24.3x	NA	4.8%
Median			\$31.902		18%	28%	0.9	-0.8	-0.25	1.6%	53	3.8	0.9%	6%	9%	17.8x	23.8x	4.1x	4.0%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

Short: J.P. Morgan Disconnected ESG Basket (JPAMRESG <Index>)

Criteria This basket consists of ESG stocks with strong outperformance but weaker fundamentals vs Sector peers. We start with a universe of Russell 3000 companies and then further refine down for:

- Stocks with high overall ESG score
- Stocks with Environmental and Social Ranking higher than Governance ranking
- Stocks that outperform their sector index by >5%
- Stocks with weaker fundamentals (ROE, sales growth, earnings growth)

Figure 115: J.P. Morgan Disconnected ESG Basket (JPAMRESG <Index>)

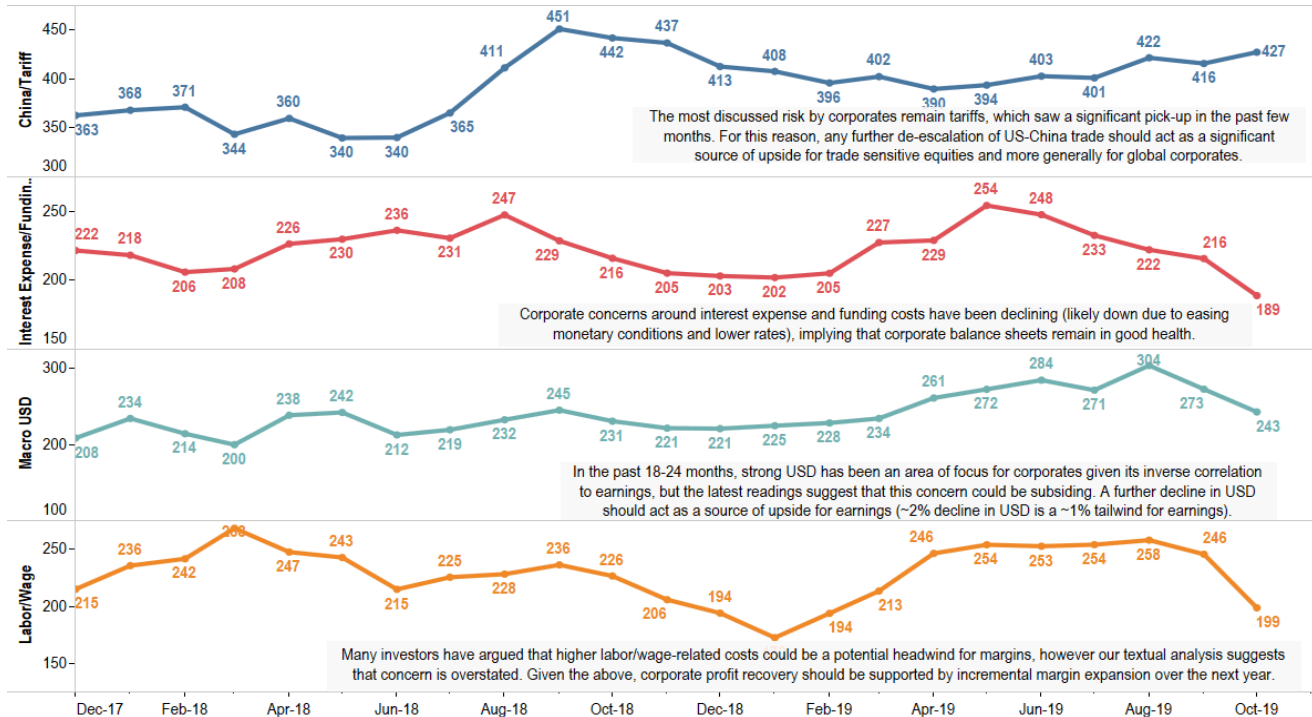
Ticker	Company	Industry	Company Stats		Price Perf (%)		Technicals				IBES Estimates		Valuation			
			Current Price	Market Cap	12-mos Change	YTD	Short as % of Shr Out	Avg Rating 30Day	Repurchase 1 = Sell 5 = Buy %	Stock LTM Mkt Cap	Sales Growth NTM	EPS Growth NTM	EV/EBITDA LTM	P/E NTM	P/B	FCF Yield
KSU	Kansas City Southern	Road & Rail	\$150.4	\$14,903	46%	58%	3%	59	4.2	2.2%	7%	20%	12.5x	18.8x	3.1x	3.3%
BHE	Benchmark Electronics, Inc.	Electronic Equipment Instrum	\$34.8	\$1,309	46%	64%	3%	64	3.7	16.0%	-5%	15%	8.3x	20.8x	1.3x	6.0%
WRB	W. R. Berkley Corporation	Insurance	\$69.7	\$12,804	33%	41%	2%	53	2.5	0.1%	6%	1%	NA	23.3x	2.1x	3.9%
BCPC	Balchem Corporation	Chemicals	\$101.4	\$3,262	17%	29%	2%	53	4.0	0.7%	11%	5%	21.9x	31.2x	4.4x	3.0%
CMG	Chipotle Mexican Grill, Inc.	Hotels Restaurants & Leisure	\$819.7	\$22,784	73%	90%	6%	56	3.6	0.9%	16%	38%	30.8x	45.8x	14.0x	1.7%
PRO	PROS Holdings, Inc.	Software	\$60.5	\$2,577	88%	93%	6%	53	4.6	0.8%	23%	Neg	NA	Neg	16.3x	-0.6%
BCC	Boise Cascade Co.	Paper & Forest Products	\$38.3	\$1,493	44%	61%	3%	64	3.0	0.6%	6%	- to +	8.7x	17.8x	2.0x	5.8%
PLOW	Douglas Dynamics, Inc.	Machinery	\$54.6	\$1,245	47%	52%	1%	69	4.3	0.0%	3%	9%	12.3x	21.7x	4.2x	5.4%
AVY	Avery Dennison Corporation	Containers & Packaging	\$129.9	\$10,847	35%	45%	2%	59	3.5	4.1%	3%	10%	11.2x	18.4x	10.3x	5.9%
INFO	IHS Markit Ltd.	Professional Services	\$72.7	\$29,156	36%	52%	2%	61	3.9	0.9%	5%	13%	20.9x	25.2x	3.5x	3.6%
KEYS	Keysight Technologies Inc	Electronic Equipment Instrum	\$100.8	\$18,902	63%	62%	5%	49	4.2	1.0%	7%	10%	18.5x	19.4x	6.3x	4.8%
JCI	Johnson Controls International pl	Building Products	\$41.8	\$32,207	20%	41%	2%	47	3.4	18.7%	3%	31%	18.2x	15.9x	1.6x	9.0%
CROX	Crocs, Inc.	Textiles Apparel & Luxury G	\$36.7	\$2,515	32%	41%	5%	61	4.6	13.6%	16%	- to +	12.0x	18.6x	21.4x	5.2%
PPG	PPG Industries, Inc.	Chemicals	\$131.1	\$31,007	20%	28%	2%	61	3.7	1.9%	3%	13%	12.8x	19.1x	5.9x	5.4%
ECL	Ecolab Inc.	Chemicals	\$185.1	\$53,340	15%	26%	1%	43	3.5	1.1%	3%	15%	20.7x	28.3x	6.2x	3.3%
Median			\$12,804		36%	52%	2.4%	59	3.7	1.0%	6%	13%	12.8x	20.1x	4.4x	4.8%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research. Note on non-covered companies: This basket has been created to leverage the theme of this research report. It includes companies that are not covered by J.P. Morgan Research and should not be viewed as a recommendation with respect to these companies.

Appendix

Trade Single Largest Downside Risk for Equities

Figure 116: China and Tariffs a source of Uncertainty based on Textual Analysis of Transcripts and Management Calls



Source: J.P. Morgan Equity & Global Quantitative Research

Figure 117: S&P 500 vs. Key US-China Trade Events

Since 2018



Source: J.P. Morgan Equity & Global Quantitative Research

Figure 118: S&P 500 vs. Key US-China Trade Events

Since 2018

#	Date	S&P 500 Level	3D Return	Key Events
1	Apr-04-2018	2,645	(1.2%)	Trump reveals plan for 25% tariffs on \$50b of Chinese imports
2	Jun-04-2018	2,747	0.9%	Trade talks held between US and China in Beijing
3	Jun-15-2018	2,780	(0.4%)	China reacts with its own plan for tariffs on \$50b of US imports
4	Jul-06-2018	2,760	0.5%	US implements tariff on \$34b worth of Chinese imports at 25% met by retaliatory tariffs by China on \$34b of US goods at 25%
5	Jul-10-2018	2,794	0.3%	USTR releases plan for tariffs on \$200b of Chinese imports at 10%
6	Aug-02-2018	2,827	1.1%	Trump urges USTR to consider a 25% tariffs on proposed \$200b of tariffs on Chinese imports instead of 10%
7	Aug-03-2018	2,840	0.6%	China responds to potential \$200b tariff on goods with plan for \$60b of tariffs on US imports at 5-25%
8	Aug-07-2018	2,858	(0.9%)	US releases final list of \$16b of Chinese imports at 25% with China announcing reciprocal tariffs
9	Aug-14-2018	2,840	0.4%	China files WTO claim against US regarding solar panel tariffs
10	Aug-22-2018	2,862	1.2%	Representatives from US-China meet for the first time in DC with no major results
11	Aug-23-2018	2,857	1.4%	US implements tariff on \$16b of Chinese imports at 25% with China retaliating at the same level (total at \$50b each); Further WTO complaint lodged by China
12	Sep-07-2018	2,872	0.6%	US threatens new tariffs on all remaining Chinese imports (>\$250b)
13	Sep-17-2018	2,889	1.5%	US finalizes tariffs list on \$200b of Chinese imports at 10% to be implemented Sept 24, with expectation of 25% rate by Jan 1, 2019
14	Sep-18-2018	2,904	0.9%	China responds with tariff list on \$60b of US imports
15	Sep-22-2018	2,930	(0.2%)	China cancels trade talks in response to escalatory rhetoric
16	Sep-24-2018	2,919	(0.2%)	US implements tariff on \$200b of Chinese imports at 10% with China responding on \$60b of US imports at 10%
17	Oct-25-2018	2,706	(0.8%)	After prolonged period, US-China resume discussions in preparation for Trump-Xi meeting at November G20 meeting
18	Oct-30-2018	2,683	1.5%	Reports of additional tariffs (>\$250b) being implemented if G20 a failure
19	Nov-09-2018	2,781	(2.9%)	Phone call between Treasury Secretary Mnuchin and Vice Premier He
20	Nov-19-2018	2,691	(1.5%)	US releases list of export controls on new technologies (e.g. AI, quantum computing)
21	Dec-02-2018	2,760	(3.4%)	Temporary truce reached following G20 with both US-China agreeing to not raise tariffs until March 1, 2019 and begin negotiations; China agrees to also buy additional US products
22	Dec-14-2018	2,600	(3.6%)	China agrees to temporarily remove US auto tariffs and resumes purchase of soybeans (stopped in July 2018)
23	Jan-07-2019	2,550	1.8%	Official delegations from US-China meet in Beijing
24	Jan-22-2019	2,633	1.2%	US cancels trade planning meeting with Chinese officials in DC over disagreements on IP enforcement
25	Jan-30-2019	2,681	1.6%	US-China talks held in DC and China offers to buy 5m tons of soybeans; Trump announces he will meet with Xi in February
26	Feb-07-2019	2,706	1.4%	Trump says he will not meet Xi in-person until tariff ceasefire expires March 1
27	Feb-11-2019	2,710	1.3%	US-China talks held in Beijing with agreement to keep talks going
28	Feb-21-2019	2,775	0.7%	US-China continue discussions in Washington and Trump announces extension of March 1 trade deal truce based on progress
29	Mar-28-2019	2,815	1.8%	US-China continue talks in Beijing with enforcement mechanisms a point of contention
30	Apr-01-2019	2,867	0.4%	China bans all variants of fentanyl as a goodwill gesture (i.e. US opioid crisis)
31	Apr-03-2019	2,873	0.8%	US-China meeting continues in Washington with expectations of a deal in the next month
32	Apr-10-2019	2,888	0.6%	Treasury Secretary Mnuchin states that US-China agree to establish enforcement offices
33	Apr-30-2019	2,946	(0.0%)	US-China meeting continues in Beijing
34	May-05-2019	2,946	(2.1%)	US threatens raising tariff on \$200b to 25% from 10% on May 10 and on remainder (>\$250b) of Chinese imports in response to Chinese backsliding on commitments
35	May-10-2019	2,881	(1.1%)	US increases tariffs on \$200b of Chinese imports to 25%
36	May-13-2019	2,812	2.3%	China responds with proposed increased tariff rate on \$60b worth of US goods to be implemented on June 1; US schedules hearing on remaining Chinese imports (>\$250b) for June 17; Market supported by positive Trump tweets
37	Jun-26-2019	2,914	1.7%	Ahead of G20, US-China agree to a truce ahead of weekend talks (G20 - Osaka)
38	Jun-29-2019	2,942	1.1%	Trade talk restart mutually agreed upon with no deadline set, suggestion of Huawei ban relaxation
39	Jul-09-2019	2,980	1.1%	Trump issues exemption on 110 products from 25% tariffs that were added in July 2018 (exemption expires July 2020); Comm. Secretary Ross announces licenses to companies selling to Huawei though Huawei would remain on entity list
40	Jul-16-2019	3,004	(0.9%)	Trump again threatens Phase III tariffs (despite promises to the contrary following truce); China Commerce Secretary Shan added to negotiating team, viewed as a hardliner
41	Jul-31-2019	2,980	(4.6%)	Trade talks end in Shanghai with little progress (no deal) but both sides agree to keep talking; Expectations to meet again in September; Goodwill gestures discusses such as China commitments to purchase US AG and China to ease sanctions on Huawei though unclear on any actual agreements
42	Aug-01-2019	2,954	(2.4%)	US announces imposition of 10% tariffs on Phase III products starting 9/1 with threat to 25% if deal not reached soon in response to lack of China purchases of US AG; Shocking announcement following Shanghai talks
43	Aug-02-2019	2,932	(1.6%)	US Commerce Department announces Mexico has supplanted China as the US's largest trading partner through 1H19
44	Aug-05-2019	2,845	3.3%	US Treasury designates China as a currency manipulator (CNY drops to 7 against the USD to >10yr low); China is perceived to devalue currency in response to growing tariff threat though China denies it
45	Aug-06-2019	2,882	1.3%	China exceeds analyst expectation by shoring up CNY and planning sales of CNY-denominated bonds in HK to tighten liquidity; PBOC reassured MNCs that yuan won't weaken significantly (ability to buy/sell USD to remain normal); Certain Chinese companies suspended purchase of US AG
46	Aug-13-2019	2,926	(1.3%)	US announces delays on additional \$300b of tariffs splitting Phase III into List 4A (Sep 1) and List 4B (Dec 15) at a 10% tariff rate to limit the impact to US consumers; An agreement is also reached to resume US-China talks in ~2 weeks
47	Aug-23-2019	2,847	1.4%	China announces retaliatory tariffs of \$75b in two parts (Sep 1 and Dec 15) at 5-25% focusing on US AG, industrial, chemical, pharma and auto products; Trump tweet for American companies to look for alternatives to China; Trump tweet on tariff rate moving from 25 to 30% for Phase I and II on Oct 1
48	Aug-26-2019	2,878	1.6%	Vice Premier He calls for 'calm' amid escalation and Trump tells media that China called to re-enter negotiations
49	Sep-01-2019	2,926	1.7%	As expected, US imposes List 4A tariffs and China retaliates with List 1 tariffs
50	Sep-02-2019	2,926	1.7%	China files WTO claim against US regarding \$300b of new tariffs on Chinese exports (3rd complaint brought by China to the WTO regarding trade)
51	Sep-05-2019	2,976	0.1%	US-China agree to senior level discussion in early October with consultations set to begin mid-September in preparation
52	Sep-11-2019	3,001	(0.1%)	China releases tariff exemption list (e.g. cancer drugs, pesticides, etc.) for one year; Trump tweet on agreement to delay Oct 1 tariffs to Oct 15 as goodwill to China's 70th Anniversary
53	Sep-13-2019	3,007	(0.0%)	China responds to US tariff delay by excluding US AG from additional tariffs
54	Sep-19-2019	3,007	(1.3%)	US-China junior-level talks begin in DC; A visit to Montana/Nebraska by Chinese officials cancelled last minute
55	Sep-20-2019	2,992	(0.2%)	US releases new tariff exemption list for 400 Chinese products, interpreted as a goodwill gesture
56	Sep-24-2019	2,967	(0.2%)	China provides tariff waivers for US soybeans enabling domestic companies to resume purchases
57	Oct-07-2019	2,939	(0.0%)	US puts 28 Chinese companies on 'entity list' given alleged involvement in human rights abuses
58	Oct-11-2019	2,970	0.7%	Trump announces that post discussion, 'Phase I' agreement reached but not yet finalized; China would purchase \$40-50b worth of US AG per year, IP protections and currency management; US would delay Oct 15 tariff increase
59	Oct-18-2019	2,986	0.6%	USTR announces new round of tariff exclusion for products that would be subject to the additional 15% (Oct to Jan-end to submit request)
60	Nov-01-2019	3,067	0.3%	China announces that Vice Premier He, Mnuchin and Heze had a constructive discussion over the phone on key trade concerns and have reached a consensus in principle; WH confirms that progress has been made and that discussions will continue; WTO announces China can impose compensatory sanction on \$3.6b of US imports for US failure to abide by anti-dumping rules on Chinese products (case began >5 years ago, pre-trade war)
61	Nov-07-2019	3,085	0.2%	China Ministry of Commerce states that in principle, both sides have agreed to discuss tariff rollbacks in phases after a phase one deal is signed; Kudlow corroborated Chinese statement
62	Nov-08-2019	3,093	0.0%	Trump contradicts Kudlow indicating that while the Chinese would like to see tariff rollbacks, they may get a partial, not a full rollback

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, FactSet, Bloomberg

Figure 119: Consumption Trend by Category

	% of Total Consumption																	Avg monthly since 1950			
	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Laest	Median	STDev	+/-STDev from Avg	
PERSONAL CONSUMPTION CATEGORIES:																					
Durable goods	15%	14.5%	14.6%	13.6%	12.8%	12.4%	10.5%	10.5%	10.8%	10.9%	10.9%	11.1%	10.5%	10.6%	10.5%	10.5%	10.6%	13.5%	1.5%	-1.9	
Motor v ehicles and parts	6%	6.1%	5.9%	5.7%	5.2%	4.5%	3.4%	3.4%	3.6%	3.7%	3.7%	3.8%	3.8%	3.7%	3.7%	3.6%	3.6%	5.4%	1.0%	-1.7	
Furnishings and durable equipment	5%	4.6%	4.2%	3.5%	3.0%	2.9%	2.5%	2.4%	2.5%	2.5%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.4%	3.6%	1.1%	-1.0	
Recreational goods and v ehicles	2%	2.4%	2.9%	2.8%	3.0%	3.4%	3.1%	3.0%	3.0%	3.1%	3.0%	3.0%	2.8%	2.8%	2.8%	2.9%	2.9%	2.8%	0.5%	0.2	
Other durable goods	1%	1.4%	1.6%	1.6%	1.6%	1.6%	1.6%	1.7%	1.7%	1.7%	1.7%	1.7%	1.6%	1.6%	1.6%	1.5%	1.6%	1.6%	0.1%	-0.2	
Nondurable goods	42%	37.1%	33.1%	28.2%	23.9%	22.3%	22.5%	23.1%	22.8%	22.5%	21.6%	20.8%	20.6%	20.6%	20.5%	20.5%	20.5%	29.9%	8.1%	-1.1	
Food and beverages (off-premises)	21%	16.9%	14.6%	11.4%	9.0%	7.7%	7.7%	7.8%	7.7%	7.5%	7.5%	7.3%	7.4%	7.2%	7.2%	7.1%	7.1%	12.2%	5.2%	-1.0	
Clothing and footwear	9%	7.5%	6.5%	5.5%	4.7%	3.5%	3.1%	3.2%	3.2%	3.2%	3.2%	3.1%	2.9%	2.9%	2.8%	2.8%	2.8%	5.6%	2.2%	-1.3	
Gasoline and other energy goods	5%	4.3%	4.5%	4.0%	2.7%	3.0%	3.3%	3.8%	3.8%	3.6%	3.4%	2.5%	2.2%	2.3%	2.5%	2.3%	2.3%	4.0%	1.0%	-1.8	
Other nondurable goods	8%	8.4%	7.5%	7.3%	7.5%	8.0%	8.3%	8.4%	8.4%	8.4%	8.6%	8.7%	8.3%	8.2%	8.2%	8.3%	8.3%	7.9%	0.4%	1.1	
Household Expenditures (for services)	44%	46.8%	50.7%	56.4%	61.2%	62.8%	64.3%	63.8%	63.5%	63.6%	63.9%	64.6%	65.6%	65.8%	65.7%	65.9%	65.8%	58.4%	6.8%	1.1	
Housing and utilities	17%	17.2%	17.1%	18.4%	18.2%	18.1%	18.7%	18.3%	18.1%	18.1%	18.1%	18.1%	18.4%	18.4%	18.3%	18.3%	18.3%	18.1%	0.6%	0.4	
Health care	5%	5.9%	8.6%	11.4%	14.1%	15.0%	16.6%	16.5%	16.6%	16.5%	16.4%	16.7%	17.0%	17.0%	16.8%	17.0%	16.9%	12.5%	3.9%	1.1	
Transportation services	3%	2.8%	3.2%	3.2%	3.6%	3.3%	2.9%	2.9%	2.9%	2.9%	3.0%	3.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.2%	0.3%	0.4	
Recreation services	2%	2.1%	2.3%	2.7%	3.6%	3.8%	3.8%	3.7%	3.8%	3.8%	3.8%	3.8%	4.0%	4.1%	4.0%	4.0%	4.0%	3.1%	0.8%	1.2	
Food services and accommodations	6%	6.1%	6.7%	6.7%	6.4%	6.0%	6.1%	6.1%	6.2%	6.3%	6.4%	6.6%	6.8%	6.7%	7.0%	7.0%	7.0%	6.3%	0.3%	2.1	
Financial services and insurance	4%	4.4%	5.2%	6.4%	7.4%	7.7%	7.5%	7.4%	7.1%	7.3%	7.5%	7.7%	7.7%	8.0%	7.9%	7.9%	7.9%	6.8%	1.4%	0.8	
Other services	8%	8.3%	7.8%	7.6%	8.0%	8.7%	8.9%	8.8%	8.8%	8.7%	8.7%	8.7%	8.3%	8.3%	8.3%	8.4%	8.4%	8.2%	0.5%	0.3	
Nonprofit Institutions	2%	1.6%	1.6%	1.8%	2.1%	2.6%	2.7%	2.6%	2.7%	2.7%	2.6%	2.7%	3.1%	3.0%	3.2%	3.1%	3.1%	1.9%	0.5%	2.5	

Note: Green if greater than last period, Red if less than last period.

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period.

Figure 120: Investment Trend by Category

	% of Total Private fixed investment																				Avg monthly since 1999			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Latest	Median	STDev	+/- STDev from Avg
PRIVATE FIXED INVESTMENT:																								
Structures	23%	23%	20%	18%	17%	16%	17%	20%	22%	22%	18%	17%	18%	17%	18%	17%	16%	16%	16%	16%	15%	18%	2.5%	-1.0
Commercial and health care	9%	9%	8%	7%	7%	6%	6%	7%	8%	6%	5%	4%	4%	4%	4%	5%	5%	5%	5%	5%	4%	6%	1.7%	-1.0
Manufacturing	2%	2%	1%	1%	1%	1%	1%	2%	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	0.5%	-0.4
Power and communication	3%	3%	3%	3%	2%	2%	2%	3%	4%	5%	4%	3%	4%	3%	4%	3%	4%	3%	3%	3%	3%	3%	0.6%	-0.4
Mining exploration, shafts, and wells	3%	4%	3%	3%	3%	4%	4%	4%	4%	4%	4%	5%	5%	5%	5%	3%	2%	3%	4%	3%	3%	4%	0.8%	-0.6
Other structures	4%	4%	4%	3%	3%	3%	3%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	0.6%	-0.5
Equipment	31%	31%	30%	30%	30%	31%	33%	34%	34%	32%	36%	39%	39%	39%	39%	39%	37%	38%	38%	38%	38%	35%	3.7%	0.9
Information processing equipment	8%	8%	8%	8%	8%	9%	9%	11%	12%	13%	14%	13%	13%	13%	12%	12%	14%	15%	15%	16%	15%	12%	2.7%	1.2
Industrial equipment	9%	8%	8%	8%	7%	7%	7%	8%	8%	8%	7%	8%	8%	8%	8%	7%	7%	7%	7%	7%	7%	8%	0.5%	-0.4
Transportation equipment	9%	8%	8%	7%	7%	8%	8%	8%	6%	3%	7%	8%	9%	10%	10%	11%	9%	8%	9%	8%	8%	8%	1.6%	0.0
Other equipment	7%	7%	8%	8%	8%	8%	8%	8%	8%	8%	9%	9%	9%	9%	9%	9%	7%	8%	8%	8%	8%	8%	0.7%	-0.6
Intellectual property products	18%	19%	19%	19%	19%	19%	19%	21%	23%	27%	27%	27%	25%	25%	24%	24%	27%	27%	27%	29%	29%	24%	3.7%	1.4
Software	8%	8%	8%	8%	9%	8%	9%	9%	11%	13%	12%	12%	12%	12%	12%	12%	11%	12%	13%	13%	14%	11%	2.0%	1.1
Research and development	8%	9%	9%	8%	8%	8%	8%	9%	10%	11%	11%	11%	10%	10%	10%	9%	13%	12%	12%	13%	13%	10%	1.7%	2.2
Entertainment, literary, and artistic originals	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	3%	2%	3%	3%	3%	3%	0.3%	-0.4
Residential	28%	28%	31%	33%	34%	33%	30%	25%	20%	19%	19%	18%	18%	19%	19%	20%	20%	19%	18%	18%	18%	20%	5.9%	-0.3
Structures	27%	28%	31%	32%	33%	33%	30%	25%	20%	19%	18%	17%	18%	19%	18%	20%	19%	19%	18%	17%	17%	19%	5.9%	-0.3
Equipment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	1.9
Residual	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%	-1%	-1%	-1%	0%	0.6%	-1.9

Note: Green if greater than last period, Red if less than last period.

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period.

Figure 121: Government Spending Trend by Category

	% of Total Private fixed investment																				Avg monthly since 1999				
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Latest	Median	STDev	STDev from Avg
Federal & State/Local Spending																									
Total: Consumption Expenditure	80%	80%	80%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	80%	81%	81%	81%	81%	81%	81%	80%	80%	80%	0.7%	0.6
Total: Gross investment	20%	20%	20%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	20%	19%	19%	19%	19%	19%	19%	20%	20%	20%	0.8%	-0.6
Structures	12%	12%	12%	12%	12%	12%	11%	11%	11%	11%	10%	10%	10%	9%	9%	9%	9%	8%	9%	9%	9%	9%	10%	1.5%	-1.0
Equipment	3%	3%	3%	3%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	5%	5%	5%	5%	0.6%	0.6
Software	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	1%	0.3%	3.1
Research and development	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%	5%	0.3%	-1.6
Federal Portion:	33%	33%	33%	34%	35%	36%	37%	37%	37%	38%	39%	41%	41%	41%	40%	39%	39%	38%	38%	38%	39%	39%	38%	2.7%	0.2
Consumption expenditures	26%	26%	26%	26%	27%	28%	28%	28%	28%	29%	30%	32%	32%	32%	31%	31%	30%	30%	30%	30%	30%	30%	30%	1.9%	0.2
Structures	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	1%	0.2%	-1.5
Equipment	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	0.5%	0.6
Intellectual property products	4%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	0.3%	-0.1
National defense	21%	21%	20%	21%	22%	23%	24%	24%	24%	25%	26%	26%	27%	26%	25%	24%	23%	23%	23%	23%	23%	23%	23%	1.8%	0.0
Nondefense	12%	12%	12%	13%	13%	13%	13%	13%	13%	13%	14%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	14%	1.2%	1.2
State and Local Portion:	67%	68%	68%	67%	65%	64%	63%	63%	63%	62%	61%	59%	59%	59%	60%	61%	61%	62%	62%	62%	61%	61%	62%	2.8%	-0.2
Residual	-1%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%	-0.2

Note: Green if greater than last period, Red if less than last period.

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period.

Figure 122: Net Exports Trend by Category

	Net Exports (Exports less Imports) YoY of Change, \$'s in billions																						LTM
Goods & Services	12/99	12/00	12/01	12/02	12/03	12/04	12/05	12/06	12/07	12/08	12/09	12/10	12/11	12/12	12/13	12/14	12/15	12/16	12/17	12/18	12/19		
Foods, feeds, and beverages	\$1.9	\$1	\$2	(\$1)	(\$1)	(\$6)	(\$10)	(\$10)	\$1	\$18	\$11	\$15	\$18	\$22	\$20	\$17	(\$1)	(\$1)	(\$6)	(\$15)	(\$8)		(\$19)
Industrial supplies and materials	(\$78)	(\$133)	(\$120)	(\$115)	(\$147)	(\$214)	(\$297)	(\$334)	(\$332)	(\$412)	(\$176)	(\$222)	(\$280)	(\$252)	(\$194)	(\$175)	(\$75)	(\$54)	(\$55)	(\$49)	(\$7)		(\$30)
Capital goods except automotive	\$15	\$9	\$23	\$6	(\$4)	(\$19)	(\$24)	(\$19)	(\$16)	(\$1)	\$17	(\$3)	(\$19)	(\$24)	(\$24)	(\$47)	(\$67)	(\$74)	(\$110)	(\$133)	(\$65)		(\$134)
Automotive vehicles, parts, and engines	(\$103)	(\$115)	(\$113)	(\$124)	(\$129)	(\$138)	(\$140)	(\$149)	(\$137)	(\$112)	(\$77)	(\$114)	(\$122)	(\$152)	(\$157)	(\$170)	(\$198)	(\$201)	(\$202)	(\$214)	(\$111)		(\$224)
Consumer goods except food and automotive	(\$163)	(\$195)	(\$199)	(\$227)	(\$249)	(\$275)	(\$298)	(\$319)	(\$334)	(\$325)	(\$281)	(\$320)	(\$341)	(\$338)	(\$345)	(\$360)	(\$399)	(\$392)	(\$407)	(\$444)	(\$229)		(\$454)
Other general merchandise	(\$9)	(\$15)	(\$16)	(\$15)	(\$14)	(\$14)	(\$16)	(\$12)	(\$9)	(\$8)	(\$9)	(\$10)	(\$13)	(\$16)	(\$19)	(\$24)	(\$31)	(\$32)	(\$37)	(\$44)	(\$25)		(\$50)
Net exports of goods under merchanting	\$0	\$0	\$0	\$1	\$1	\$2	\$1	\$1	\$2	\$1	\$1	\$0	\$1	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$0		\$0
Nonmonetary gold	(\$1)	\$0	\$1	\$0	\$1	\$0	\$1	\$3	\$4	\$5	\$4	\$3	\$17	\$18	\$16	\$7	\$9	\$2	\$9	\$11	\$5		\$10
Maintenance and repair services n.i.e.	\$3	\$2	\$4	\$4	\$3	\$3	\$4	\$3	\$4	\$4	\$6	\$7	\$6	\$9	\$11	\$14	\$14	\$16	\$18	\$22	\$12		\$23
Transport	(\$6)	(\$12)	(\$12)	(\$10)	(\$16)	(\$21)	(\$23)	(\$21)	(\$13)	(\$9)	(\$2)	(\$3)	(\$2)	(\$1)	(\$4)	(\$3)	(\$9)	(\$12)	(\$13)	(\$15)	(\$9)		(\$18)
Travel (for all purposes including education) /I/	\$33	\$34	\$26	\$22	\$18	\$18	\$21	\$21	\$30	\$41	\$38	\$50	\$61	\$61	\$79	\$86	\$91	\$83	\$76	\$70	\$32		\$65
Insurance services	(\$6)	(\$8)	(\$13)	(\$18)	(\$19)	(\$22)	(\$21)	(\$30)	(\$37)	(\$46)	(\$49)	(\$47)	(\$41)	(\$39)	(\$37)	(\$34)	(\$32)	(\$33)	(\$33)	(\$25)	(\$15)		(\$28)
Financial services	\$11	\$11	\$12	\$16	\$19	\$25	\$28	\$33	\$42	\$46	\$50	\$57	\$61	\$60	\$74	\$82	\$77	\$74	\$81	\$81	\$38		\$78
Charges for the use of intellectual property n.i.e.	\$34	\$35	\$33	\$34	\$38	\$43	\$49	\$59	\$71	\$73	\$67	\$75	\$87	\$86	\$89	\$88	\$85	\$78	\$77	\$73	\$34		\$69
Telecommunications, computer, and information serv	(\$1)	(\$0)	\$0	\$1	\$1	(\$0)	(\$3)	(\$2)	(\$2)	(\$2)	(\$4)	(\$4)	(\$0)	(\$1)	(\$2)	(\$1)	\$1	\$2	\$2	\$2	\$2		\$3
Other business services	\$17	\$16	\$19	\$19	\$19	\$21	\$22	\$20	\$27	\$25	\$27	\$30	\$29	\$33	\$31	\$34	\$37	\$44	\$50	\$54	\$28		\$56
Government goods and services n.i.e.	(\$6)	(\$5)	(\$7)	(\$11)	(\$14)	(\$14)	(\$11)	(\$8)	(\$6)	(\$9)	(\$10)	(\$11)	(\$7)	(\$5)	(\$3)	(\$4)	(\$0)	(\$3)	(\$3)	(\$2)	(\$2)		(\$3)

Note: Green if greater than last period, Red if less than last period.

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period.

Figure 123: S&P 500 Large-Cap Performance

Sectors and Industries

2016	2017	2018	Year-to-Date	Start of Bull Market					
Industry	%Chg	Industry	%Chg	Industry	%Chg				
Metals & Mining	51%	Internet & Catalog Retail	47%	Power Producers/Energy Traders	36%	Computers & Peripherals	66%	Internet & Catalog Retail	2866%
Construction Materials	44%	Personal Products	47%	Internet & Catalog Retail	27%	Personal Products	56%	Real Estate Mngmnt & Dvlpmnt	2059%
Construction & Engineering	32%	Life Sciences Tools & Svcs	44%	Software	16%	Construction Materials	51%	Consumer Finance	1037%
Road & Rail	32%	Computers & Peripherals	42%	Life Sciences Tools & Svcs	15%	Real Estate Mngmnt & Dvlpmnt	46%	Building Products	1017%
Machinery	30%	Health Care Technology	42%	Health Care Equip & Supplies	13%	Building Products	46%	Computers & Peripherals	916%
Energy Equipment & Svcs	28%	Power Producers/Energy Traders	39%	Communications Equipment	12%	Software	41%	Road & Rail	781%
Semiconductors	27%	Machinery	39%	Health Care Prv drs & Svcs	5%	Household Durables	41%	Software	775%
Diversified Financial Svcs	26%	Software	39%	Pharmaceuticals	5%	Semiconductors	39%	Life Sciences Tools & Svcs	699%
Commercial Svcs & Supplies	23%	Aerospace & Defense	39%	Road & Rail	4%	Auto Components	38%	Health Care Technology	691%
Oil Gas & Consumable Fuels	23%	Real Estate Mngmnt & Dvlpmnt	38%	Multiline Retail	4%	IT Serv ices	36%	Media	684%
Electronic Equip & Instruments	22%	Auto Components	36%	IT Services	3%	Health Care Technology	36%	Health Care Prv drs & Svcs	657%
Commercial Banks	21%	Semiconductors	36%	Diversified Financial Svcs	2%	Commercial Svcs & Supplies	35%	Specialty Retail	647%
Trading Cos & Distributors	21%	Road & Rail	33%	Text tiles/Apparel	1%	Consumer Finance	35%	Household Durables	646%
Air Freight & Logistics	21%	Electronic Equip & Instruments	33%	Electric Utilities	0%	Commercial Banks	33%	Commercial Banks	626%
Containers & Packaging	18%	Health Care Equip & Supplies	30%	Food & Staples Retailing	-1%	Electrical Equipment	33%	Aerospace & Defense	611%
Diversified Telecom Svcs	18%	Hotels Restaurants & Leisure	30%	Commercial Svcs & Supplies	-1%	Trading Cos & Distributors	33%	Diversified Financial Svcs	582%
Consumer Finance	18%	IT Services	29%	Multi-Utilities	-2%	Multiline Retail	32%	Airlines	576%
Electrical Equipment	17%	Health Care Prv drs & Svcs	28%	Specialty Retail	-2%	Aerospace & Defense	30%	Auto Components	572%
Aerospace & Defense	16%	Capital Markets	26%	Household Products	-3%	Media	30%	Semiconductors	549%
Communications Equipment	15%	Electrical Equipment	24%	Diversified Consumer Svcs	-3%	Life Sciences Tools & Svcs	29%	IT Serv ices	548%
Power Producers/Energy Traders	15%	Chemicals	24%	Hotels Restaurants & Leisure	-3%	Construction & Engineering	28%	Machinery	512%
Insurance	15%	Communications Equipment	23%	REITs	-6%	Capital Markets	28%	Hotels Restaurants & Leisure	481%
Multi-Utilities	15%	Trading Cos & Distributors	23%	Bev erages	-6%	Household Products	27%	Textiles/Apparel	480%
Media	14%	Diversified Financial Svcs	21%	S&P 500	-6%	Specialty Retail	27%	Insurance	468%
Computers & Peripherals	14%	Text tiles/Apparel	21%	Biotechnology	-7%	Health Care Equip & Supplies	26%	Electronic Equip & Instruments	453%
Capital Markets	11%	Commercial Banks	20%	Real Estate Mngmnt & Dvlpmnt	-8%	S&P 500	25%	Automobiles	447%
Electric Utilities	11%	Metals & Mining	20%	Computers & Peripherals	-8%	Insurance	25%	Trading Cos & Distributors	436%
Tobacco	11%	S&P 500	19%	Media	-9%	Road & Rail	24%	REITs	420%
Airlines	10%	Commercial Svcs & Supplies	19%	Aerospace & Defense	-10%	Food & Staples Retailing	24%	Health Care Equip & Supplies	417%
S&P 500	10%	Specialty Retail	18%	Trading Cos & Distributors	-10%	Machinery	24%	Biotechnology	402%
Distributors	9%	Consumer Finance	18%	Semiconductors	-11%	Containers & Packaging	24%	S&P 500	365%
Internet & Catalog Retail	9%	Biotechnology	17%	Diversified Telecom Svcs	-12%	Text tiles/Apparel	24%	Personal Products	351%
Software	9%	Household Durables	17%	Insurance	-13%	Electronic Equip & Instruments	23%	Commercial Svcs & Supplies	349%
IT Services	8%	Containers & Packaging	17%	Chemicals	-13%	REITs	23%	Containers & Packaging	333%
Food Products	8%	Air Freight & Logistics	16%	Electronic Equip & Instruments	-14%	Food Products	23%	Electrical Equipment	324%
Leisure Equipment & Products	8%	Beverages	16%	Personal Products	-15%	Distributors	23%	Distributors	319%
Chemicals	7%	Diversified Consumer Svcs	14%	Electrical Equipment	-16%	Hotels Restaurants & Leisure	23%	Chemicals	308%
Industrial Conglomerates	6%	Insurance	14%	Machinery	-17%	Industrial Conglomerates	21%	Capital Markets	305%
Building Products	6%	Distributors	13%	Capital Markets	-17%	Electric Utilities	20%	Multiline Retail	304%
Household Durables	6%	Airlines	11%	Airlines	-17%	Diversified Telecom Svcs	20%	Construction Materials	300%
Health Care Equip & Supplies	5%	Food & Staples Retailing	11%	Oil Gas & Consumable Fuels	-17%	Leisure Equipment & Products	19%	Power Producers/Energy Traders	272%
Health Care Prv drs & Svcs	3%	Household Products	11%	Consumer Finance	-18%	Bev erages	19%	Food & Staples Retailing	245%
Hotels Restaurants & Leisure	2%	Tobacco	11%	Commercial Banks	-18%	Metals & Mining	17%	Beverages	244%
Specialty Retail	2%	Pharmaceuticals	10%	Leisure Equipment & Products	-19%	Multi-Utilities	16%	Industrial Conglomerates	236%
Household Products	2%	Building Products	10%	Food Products	-19%	Chemicals	16%	Multi-Utilities	230%
Multiline Retail	1%	Multi-Utilities	8%	Distributors	-19%	Internet & Catalog Retail	16%	Pharmaceuticals	228%
REITs	0%	Automobiles	8%	Air Freight & Logistics	-22%	Health Care Prv drs & Svcs	15%	Air Freight & Logistics	225%
Bev erages	0%	Construction & Engineering	8%	Health Care Technology	-22%	Biotechnology	14%	Communications Equipment	216%
Automobiles	-3%	Media	7%	Construction Materials	-23%	Tobacco	14%	Tobacco	199%
Food & Staples Retailing	-3%	Electric Utilities	7%	Containers & Packaging	-23%	Power Producers/Energy Traders	12%	Food Products	197%
Pharmaceuticals	-4%	REITs	7%	Construction & Engineering	-24%	Automobiles	11%	Household Products	184%
Auto Components	-4%	Multiline Retail	5%	Building Products	-26%	Air Freight & Logistics	10%	Leisure Equipment & Products	146%
Life Sciences Tools & Svcs	-6%	Construction Materials	1%	Metals & Mining	-26%	Airlines	10%	Electric Utilities	137%
Real Estate Mngmnt & Dvlpmnt	-9%	Oil Gas & Consumable Fuels	-1%	Automobiles	-29%	Diversified Financial Svcs	9%	Diversified Telecom Svcs	91%
Biotechnology	-14%	Food Products	-2%	Industrial Conglomerates	-29%	Pharmaceuticals	7%	Construction & Engineering	87%
Text tiles/Apparel	-16%	Diversified Telecom Svcs	-6%	Auto Components	-30%	Oil Gas & Consumable Fuels	4%	Oil Gas & Consumable Fuels	47%
Personal Products	-17%	Industrial Conglomerates	-11%	Tobacco	-34%	Communications Equipment	3%	Metals & Mining	20%
Health Care Technology	-21%	Leisure Equipment & Products	-15%	Household Durables	-35%	Energy Equipment & Svcs	-4%	Energy Equipment & Svcs	2%
Diversified Consumer Svcs	-31%	Energy Equipment & Svcs	-17%	Energy Equipment & Svcs	-42%	Diversified Consumer Svcs	-7%	Diversified Consumer Svcs	-37%
Energy	24%	Technology	37%	Health Care	5%	Technology	41%	Technology	670%
Financials	20%	Materials	21%	Utilities	0%	Telecom	29%	Discretionary	658%
Telecom	18%	Discretionary	21%	Discretionary	0%	Financials	27%	Financials	500%
Industrials	16%	Financials	20%	Technology	-2%	Industrials	26%	Industrials	413%
Materials	14%	Health Care	20%	S&P 500	-6%	S&P 500	25%	S&P 500	365%
Utilities	12%	S&P 500	19%	Staples	-11%	Staples	23%	Health Care	358%
Technology	12%	Industrials	19%	Financials	-15%	Discretionary	22%	Materials	245%
S&P 500	10%	Staples	10%	Industrials	-15%	Utilities	19%	Staples	220%
Discretionary	4%	Utilities	8%	Telecom	-16%	Materials	19%	Utilities	180%
Staples	3%	Energy	-4%	Materials	-16%	Health Care	16%	Telecom	104%
Health Care	-4%	Telecom	-6%	Energy	-20%	Energy	3%	Energy	41%

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research. As of 12/6/2019

Figure 124: Top Sector Performance – S&P 500

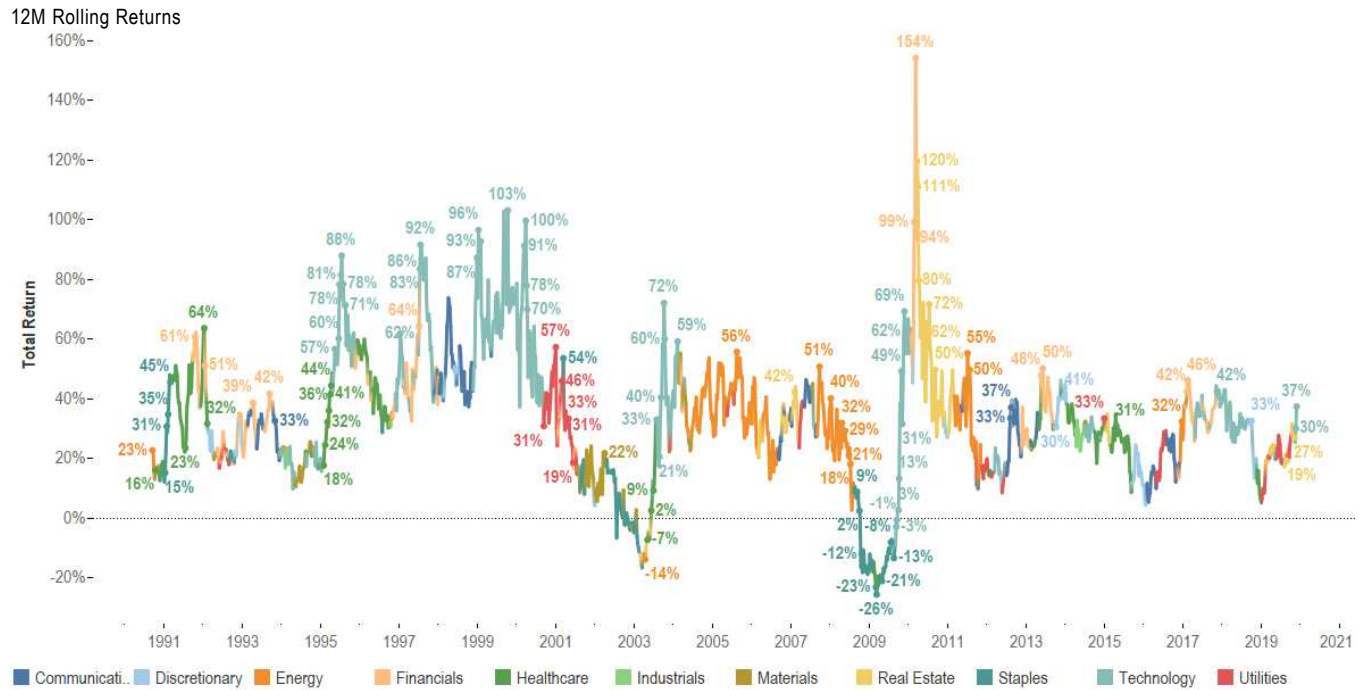


Figure 125: Worst Sector Performance – S&P 500

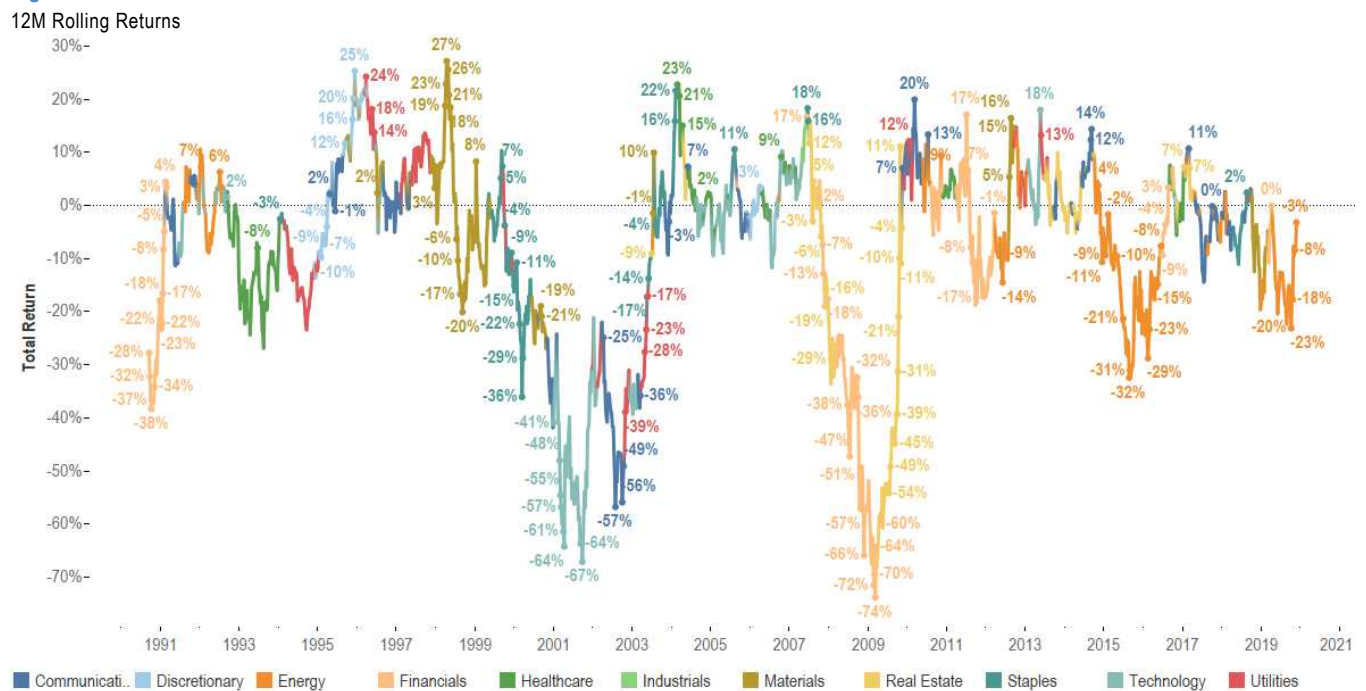
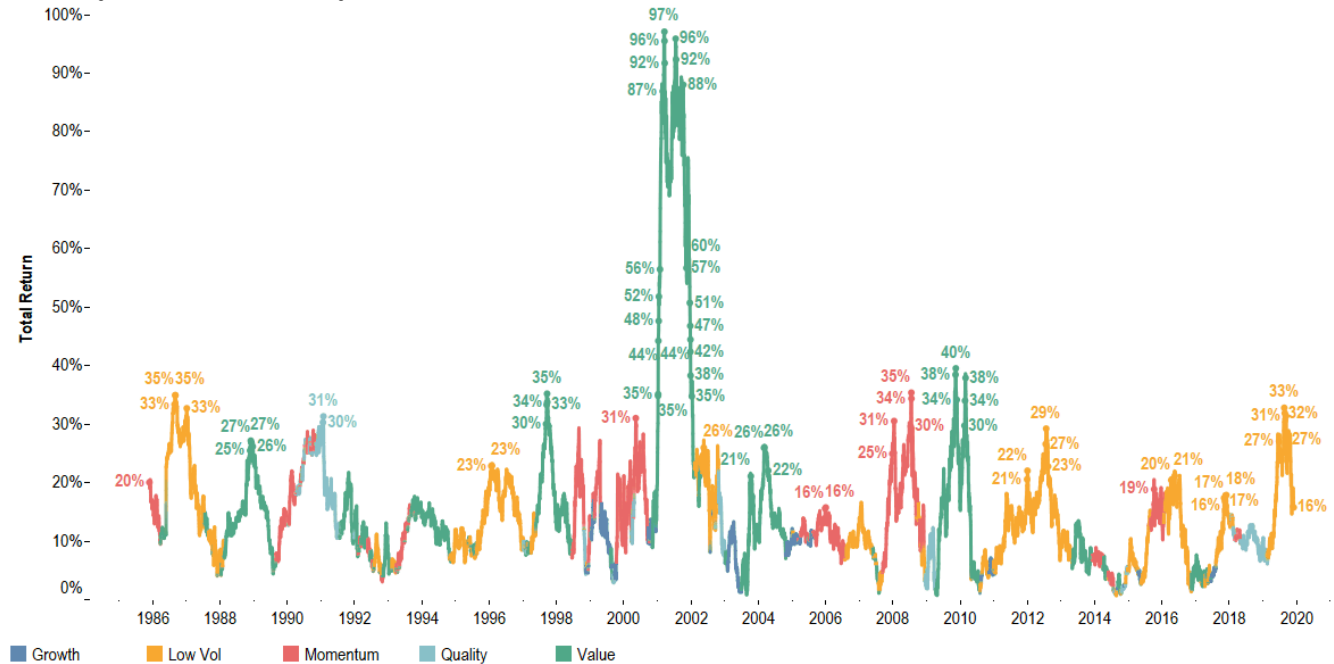


Figure 126: Best Performing Style – S&P 500

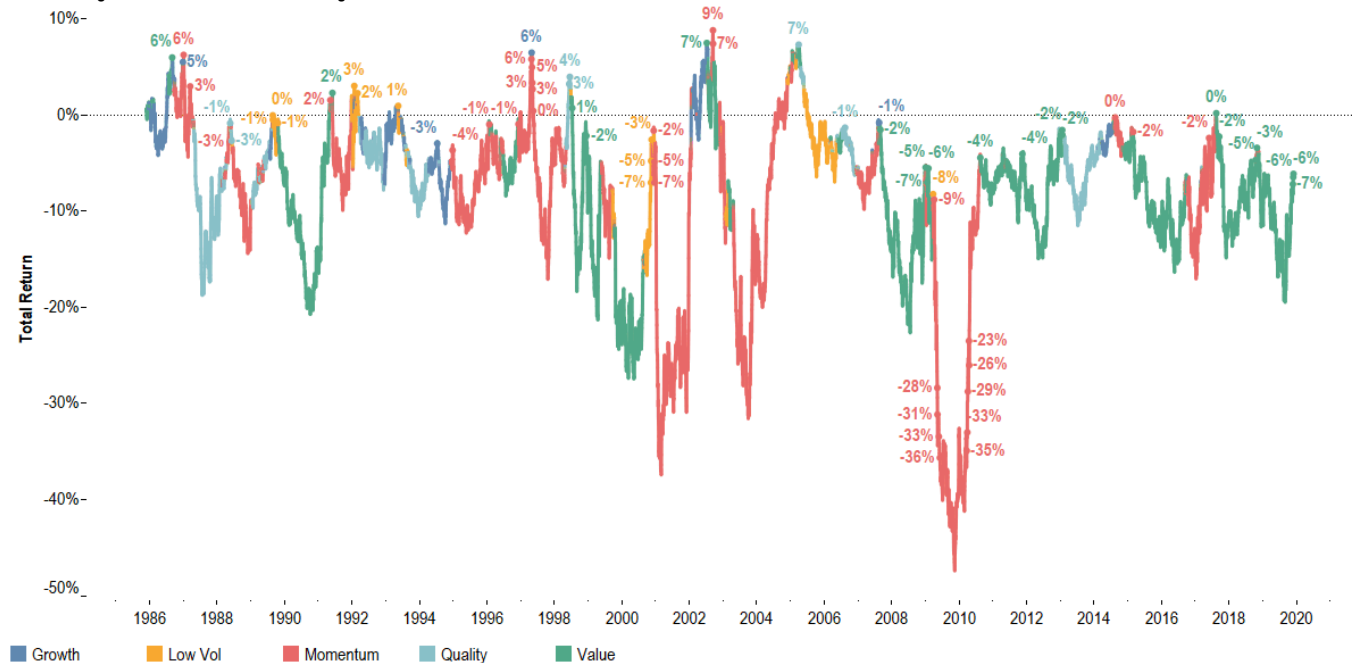
12M Rolling Returns, Beta Neutral, Long/Short



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period.

Figure 127: Worst Performing Style – S&P 500

12M Rolling Returns, Beta Neutral, Long/Short



Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, Bureau of Economic Analysis. Note: Green if greater than last period, Red if less than last period

Figure 128: Sales Growth, Net Income Margin, Earnings Growth, and Valuation

	Sales Growth						NI Margin (Avg Last 4 Qs)				Earnings Growth						Valuation — PE			
	2020/1C	2020/2C	2020/3C	2020/4C	2019	2020	2018	2019	2020	Delta	2020/1C	2020/2C	2020/3C	2020/4C	2019	2020	2019	2020		
Energy	5%	3%	12%	9%	-4.5%	7.3%	7.1%	5.4%	6.1%	0.7%	23%	10%	32%	19%	-26.8%	20.5%	19.8x	16.4x		
Materials	-14%	3%	4%	4%	-11.9%	-1.3%	11.0%	10.0%	10.7%	0.7%	-13%	6%	11%	16%	-20.5%	4.6%	18.8x	18.0x		
Industrials	2%	4%	6%	7%	0.4%	4.9%	10.0%	9.6%	10.4%	0.7%	0%	24%	10%	18%	-2.9%	13.0%	18.5x	16.3x		
Discretionary	5%	5%	6%	9%	3.8%	6.5%	7.7%	7.2%	7.5%	0.3%	2%	8%	10%	25%	-3.1%	11.1%	24.4x	21.9x		
Staples	3%	3%	4%	4%	2.7%	3.4%	6.9%	6.8%	6.9%	0.1%	3%	4%	4%	7%	0.4%	4.8%	20.7x	19.8x		
HealthCare	7%	7%	6%	7%	14.4%	6.7%	8.8%	8.5%	8.7%	0.3%	10%	6%	10%	14%	10.1%	10.0%	17.8x	16.2x		
Financials	-3%	-1%	0%	4%	7.5%	0.0%	19.7%	19.6%	19.4%	-0.3%	-3%	-5%	6%	7%	2.6%	0.9%	12.5x	12.4x		
Technology	7%	8%	7%	8%	1.2%	7.1%	23.1%	21.7%	21.9%	0.2%	4%	6%	8%	12%	-5.0%	8.0%	21.9x	20.3x		
Communication Svcs	8%	7%	8%	7%	10.2%	7.5%	15.8%	14.9%	15.6%	0.7%	19%	8%	14%	10%	3.6%	12.4%	20.9x	18.6x		
Utilities	2%	3%	3%	0%	0.5%	2.1%	8.6%	8.9%	9.2%	0.3%	9%	2%	8%	3%	16.4%	5.9%	18.7x	17.7x		
Real Estate	4%	5%	5%	6%	4.2%	4.8%	17.5%	18.5%	14.6%	-3.9%	-9%	-40%	-14%	11%	10.7%	-17.1%	36.8x	44.4x		
S&P 500	3.6%	4.4%	5.6%	6.4%	4.2%	5.0%	11.9%	11.3%	11.6%	0.27%	4.6%	6.1%	9.7%	12.8%	-1.8%	8.4%	19.0x	17.5x		
Ex-Energy	3.4%	4.6%	5.1%	6.1%	5.1%	4.8%	12.4%	11.9%	12.1%	0.24%	3.9%	5.9%	8.7%	12.5%	-0.2%	7.8%	19.0x	17.6x		
Software	10%	9%	10%	11%	10.4%	10.2%	28.4%	28.9%	28.2%	-0.7%	6%	4%	8%	12%	12.6%	7.5%	19.2x	17.9x		
Interactive Media & Services	20%	19%	18%	18%	20.7%	18.7%	27.2%	22.2%	22.9%	0.6%	52%	12%	22%	13%	-1.5%	22.1%	23.9x	19.6x		
Banks	0%	0%	0%	4%	2.2%	1.1%	26.8%	26.8%	26.2%	-0.6%	-6%	-8%	5%	5%	1.9%	-1.3%	9.8x	9.9x		
IT Services	11%	12%	8%	6%	5.0%	9.4%	19.7%	19.9%	20.8%	0.9%	12%	15%	17%	13%	6.1%	14.2%	21.2x	18.6x		
Oil Gas & Consumable Fuels	6%	3%	12%	10%	-5.0%	7.7%	7.3%	5.6%	6.2%	0.6%	21%	9%	32%	18%	-28.0%	19.8%	19.7x	16.4x		
Pharmaceuticals	13%	11%	10%	13%	4.0%	11.8%	27.5%	28.0%	28.7%	0.7%	16%	6%	21%	29%	3.6%	17.4%	31.2x	26.6x		
Technology Hardware Storage	5%	5%	4%	6%	-1.6%	5.1%	18.3%	16.5%	16.6%	0.1%	6%	6%	2%	8%	-11.1%	5.9%	19.6x	18.5x		
Internet & Direct Marketing Retail	18%	17%	16%	16%	17.6%	16.8%	6.6%	5.7%	5.8%	0.1%	-5%	9%	31%	46%	1.7%	19.3%	55.3x	46.4x		
Semiconductors & Semiconductor Equipment	4%	8%	9%	10%	-7.3%	7.6%	33.2%	27.7%	27.6%	-0.1%	-3%	4%	8%	20%	-22.8%	7.4%	21.0x	19.6x		
Health Care Equipment & Supplies	8%	8%	8%	8%	4.8%	8.1%	19.2%	20.0%	20.6%	0.6%	12%	9%	11%	12%	9.4%	11.2%	35.3x	31.8x		
Equity Real Estate Investment Managers	3%	3%	4%	5%	2.5%	3.8%	21.0%	22.6%	17.6%	-5.0%	-9%	-42%	-16%	11%	10.5%	-19.1%	74.0x	91.5x		
Health Care Providers & Services	6%	6%	5%	6%	18.0%	6.0%	3.4%	3.4%	3.4%	0.0%	6%	6%	5%	9%	19.3%	6.5%	23.5x	22.1x		
Capital Markets	3%	1%	2%	3%	0.5%	2.2%	26.7%	25.5%	25.3%	-0.1%	-1%	0%	1%	6%	-4.1%	1.6%	24.5x	24.1x		
Aerospace & Defense	12%	20%	17%	17%	4.2%	16.3%	9.5%	7.7%	10.0%	2.2%	4%	202%	35%	45%	-15.3%	50.0%	24.2x	16.1x		
Specialty Retail	4%	4%	4%	4%	2.8%	3.9%	7.8%	7.7%	7.8%	0.1%	5%	5%	5%	7%	1.0%	5.7%	20.2x	19.1x		
Biotechnology	8%	5%	6%	5%	4.4%	6.0%	39.1%	39.7%	39.4%	-0.3%	6%	0%	4%	10%	5.9%	5.1%	40.6x	38.6x		
Insurance	4%	3%	3%	4%	4.6%	3.3%	9.4%	10.1%	10.3%	0.2%	0%	-2%	13%	12%	12.8%	5.6%	27.0x	25.6x		
Food & Staples Retailing	3%	4%	4%	4%	2.7%	3.8%	2.8%	2.7%	2.7%	0.0%	0%	2%	1%	5%	-0.5%	1.9%	21.6x	21.1x		
Diversified Telecommunications	1%	1%	1%	1%	3.2%	0.9%	13.8%	14.2%	14.3%	0.1%	3%	3%	1%	0%	6.3%	1.7%	26.6x	26.2x		
Hotels Restaurants & Leisure	4%	6%	6%	6%	5.0%	5.4%	15.1%	14.2%	14.7%	0.5%	2%	9%	13%	11%	-1.5%	9.4%	22.2x	20.3x		
Entertainment	23%	6%	10%	7%	19.0%	10.7%	16.9%	13.5%	13.7%	0.1%	8%	17%	13%	10%	-4.8%	11.7%	76.1x	68.1x		
Chemicals	-22%	3%	4%	4%	-17.3%	-4.1%	11.8%	11.9%	13.0%	1.1%	-11%	8%	11%	12%	-16.5%	4.7%	18.9x	18.1x		
Beverages	5%	3%	3%	3%	5.8%	3.5%	17.7%	16.5%	17.0%	0.4%	6%	5%	6%	9%	-1.5%	6.2%	23.5x	22.1x		
Household Products	2%	2%	3%	3%	2.5%	2.6%	15.8%	16.8%	16.9%	0.1%	4%	0%	2%	6%	9.1%	3.2%	12.9x	12.5x		
Machinery	-3%	-3%	-1%	0%	2.4%	-2.0%	11.1%	11.0%	11.0%	0.0%	-8%	-4%	-2%	4%	1.9%	-2.8%	16.2x	16.7x		
Industrial Conglomerates	-11%	-11%	1%	1%	-10.9%	-5.2%	9.4%	10.1%	11.4%	1.3%	1%	2%	7%	18%	-4.2%	7.2%	19.4x	18.1x		
Media	2%	3%	7%	4%	8.1%	4.2%	9.7%	10.5%	11.2%	0.8%	9%	4%	20%	15%	16.4%	11.9%	53.3x	47.6x		
Food Products	0%	3%	4%	3%	1.8%	2.5%	8.9%	8.1%	8.4%	0.4%	2%	8%	8%	11%	-7.3%	7.2%	17.9x	16.7x		
Communications Equipment	-2%	-1%	1%	5%	2.0%	0.6%	24.5%	25.1%	25.0%	-0.2%	-2%	-1%	-2%	5%	4.8%	-0.1%	73.4x	73.4x		
Multi-Utilities	3%	5%	6%	-10%	8.3%	0.4%	7.4%	7.4%	7.8%	0.4%	9%	-3%	9%	0%	15.8%	4.8%	940.5x	897.7x		
Life Sciences Tools & Services	6%	7%	6%	6%	4.6%	6.4%	17.6%	18.3%	18.8%	0.5%	8%	11%	8%	10%	8.7%	9.3%	128.9x	117.9x		
Tobacco	2%	3%	4%	3%	0.8%	3.2%	31.4%	32.2%	33.0%	0.8%	6%	4%	5%	8%	3.5%	5.6%	112.7x	106.7x		
Road & Rail	0%	2%	5%	5%	-0.9%	3.1%	22.8%	23.3%	24.2%	0.9%	0%	7%	9%	11%	1.4%	6.9%	18.7x	17.5x		
Textiles Apparel & Luxury Goods	2%	5%	5%	6%	2.3%	4.8%	10.3%	9.9%	10.5%	0.6%	11%	17%	8%	11%	-1.6%	11.2%	24.2x	21.8x		
Consumer Finance	5%	4%	5%	7%	5.4%	5.2%	18.1%	17.7%	17.3%	-0.4%	1%	-3%	4%	9%	3.5%	2.9%	71.1x	69.1x		
Air Freight & Logistics	3%	2%	4%	4%	1.2%	3.3%	7.4%	6.8%	6.7%	-0.2%	-2%	-5%	3%	8%	-6.4%	0.7%	14.2x	14.2x		
Energy Equipment & Services	2%	0%	5%	7%	0.3%	3.4%	4.5%	4.1%	5.1%	1.0%	47%	15%	33%	27%	-8.6%	28.9%	21.5x	16.7x		
Commercial Services & Supplies	6%	5%	5%	6%	5.5%	5.5%	12.1%	12.5%	12.8%	0.3%	9%	7%	4%	11%	9.2%	7.7%	27.7x	25.8x		
Multiline Retail	3%	3%	3%	3%	2.8%	3.3%	4.6%	4.5%	4.6%	0.1%	4%	6%	6%	8%	1.8%	6.2%	18.4x	17.3x		
Electrical Equipment	-1%	0%	1%	1%	1.7%	0.3%	12.5%	12.8%	12.9%	0.0%	-1%	-2%	0%	6%	3.9%	0.6%	19.2x	19.0x		
Electronic Equipment Instruments	0%	1%	4%	8%	1.3%	3.0%	12.1%	11.8%	11.7%	0.0%	-7%	-5%	6%	18%	-1.6%	2.6%	184.1x	179.4x		
Airlines	4%	4%	5%	5%	4.1%	4.5%	7.2%	7.8%	7.4%	-0.4%	-11%	2%	-2%	2%	13.6%	-0.7%	8.3x	8.3x		
Automobiles	0%	-1%	3%	15%	-5.4%	3.6%	5.1%	4.4%	5.2%	0.8%	0%	8%	0%	299%	-18.5%	22.9%	7.4x	6.1x		
Household Durables	3%	4%	4%	4%	0.7%	3.5%	8.8%	8.2%	8.3%	0.1%	8%	10%	-5%	9%	-5.8%	4.8%	12.7x	12.1x		
Professional Services	4%	4%	4%	4%	4.2%	4.1%	14.0%	15.4%	15.9%	0.5%	9%	3%	4%	16%	14.4%	7.8%	23.4x	21.7x		
Containers & Packaging	-1%	0%	2%	3%	1.1%	0.7%	8.1%	7.4%	7.2%	-0.3%	-12%	-10%	0%	13%	-7.6%	-2.7%	14.5x	14.9x		
Building Products	-1%	-1%	1%	4%	-11.5%	0.6%	9.1%	8.8%	9.4%	0.6%	15%	3%	5%	12%	-14.5%	7.7%	19.1x	17.7x		
Personal Products	2%	3%	4%	5%	3.0%	3.9%	9.9%	10.7%	11.4%	0.7%	9%	17%	9%	10%	11.4%	10.5%	492.2x	445.4x		
Metals & Mining	3%	6%	9%	4%	-8.4%	5.5%	10.6%	3.7%	4.4%	0.6%	-36%	17%	50%	95%	-70.3%	16.2%	24.1x	20.7x		
Trading Companies & Distributors	4%	3%	3%	3%	8.0%	3.4%	12.6%	12.4%	12.1%	-0.3%	-1%	-1%	-1%	6%	6.2%	0.7%	14.9x	14.8x		
Auto Components	1%	4%	5%	9%	-2.4%	4.7%	9.4%	8.3%	8.8%	0.5%	5%	4%	9%	30%	-13.9%	11.5%	16.0x	14.4x		
Construction Materials	6%	8%	7%	7%	12.0%	7.1%	12.1%	13.4%	14.9%	1.5%	17%	21%	17%	21%	23.9%	19.2%	28.3x	23.7x		
Distributors	2%	2%	1%	3%	4.2%	1.9%	5.0%	4.9%	5.1%	0.2%	4%	5%	6%	8%	2.0%	5.7%	16.6x	15.7x		
Construction & Engineering	7%	9%	5%	6%	-5.5%	7.1%	4.2%	4.8%	4.9%	0.1%	-9%	40%	4%	14%	8.7%	10.2%	14.3x	13.0x		
Health Care Technology	3%	3%	4%	6%	6.0%	4.2%	15.3%	15.1%	16.9%	1.9%	15%	14%	21%	17%	4.9%	17.0%	1473.1x	1259.4x		
Real Estate Management & Construction	8%	9%	8%	9%	10.7%	8.5%	5.3%	5.4%	5.5%	0.1%	3%	15%	18%	6%	13.6%	9.9%	990.8x	901.8x		
Leisure Products	9%	2%	7%	6%	3.3%	5.8%	10.7%	10.4%	11.7%	1.3%	-21%	-8%	22%	41%	0.4%	18.9%	27.7x	23.3x		
Diversified Consumer Services	1%	5%	0%	1%	-0.7%	1.2%	22.4%	13.7%	12.6%	-1.1%	-4%	4%	-2%	-5%	-39.2%	-7.0%	10.9x	11.8x		

Source: J.P. Morgan US Equity Strategy & Global Quantitative Research, FactSet

Figure 129: Sector and Industry Correlations to Macro Drivers and Style Factors

		Correlations to Macro Drivers								Correlations to Factors											
		USD		US BY 10yr		WTI Oil		Inflation Breakeven		High Beta		Value		Momentum		Growth		Quality		Low Vol	
GICS #	S&P 500 Sector/Industries	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr	2yr	10Yr
10	Energy	(17.9%)	(26.9%)	28.2%	22.7%	59.5%	62.3%	29.7%	18.6%	24.4%	15.0%	22.2%	26.0%	(22.4%)	(26.4%)	(21.7%)	(19.7%)	(26.4%)	(24.7%)	(34.6%)	(24.3%)
101010	Energy Equipment & Services	(22.5%)	(30.6%)	42.1%	28.5%	61.2%	59.4%	37.7%	28.4%	26.7%	19.9%	36.3%	28.1%	(38.2%)	(28.9%)	(25.2%)	(13.9%)	(32.1%)	(25.2%)	(45.4%)	(29.6%)
101020	Oil Gas and Consumable fuels	(16.2%)	(23.3%)	24.4%	19.1%	56.8%	58.2%	27.0%	13.8%	23.5%	12.6%	18.9%	24.1%	(18.8%)	(24.4%)	(20.5%)	(20.5%)	(24.1%)	(22.8%)	(31.4%)	(21.2%)
15	Materials	(6.3%)	(28.7%)	18.8%	19.6%	(7.3%)	25.4%	6.0%	22.0%	24.0%	23.4%	24.8%	23.2%	(21.8%)	(22.2%)	(14.6%)	(9.3%)	(19.9%)	(21.1%)	(15.9%)	(24.2%)
151010	Chemicals	(1.8%)	(17.5%)	21.1%	13.7%	(9.0%)	16.0%	5.9%	16.0%	23.3%	20.8%	25.2%	17.5%	(20.2%)	(16.7%)	(12.5%)	(6.6%)	(15.0%)	(12.5%)	(13.7%)	(19.3%)
151020	Construction Materials	8.1%	(3.0%)	(12.0%)	10.4%	(6.9%)	7.1%	(20.3%)	3.9%	3.3%	4.5%	(6.9%)	2.5%	3.2%	(4.5%)	1.3%	(2.4%)	(16.6%)	(13.0%)	(4.7%)	(6.6%)
151030	Containers & Packaging	(0.4%)	(4.7%)	10.1%	8.3%	(8.2%)	2.2%	4.3%	(0.8%)	0.8%	3.0%	16.9%	11.9%	(20.5%)	(13.7%)	(29.7%)	(5.2%)	(23.0%)	(10.3%)	(1.9%)	(5.9%)
151040	Metals & Mining	(30.9%)	(40.4%)	8.6%	13.2%	10.3%	31.0%	15.6%	22.7%	28.0%	21.3%	15.4%	26.9%	(15.6%)	(27.6%)	0.7%	(14.8%)	(15.4%)	(26.3%)	(24.9%)	(25.1%)
20	Industrials	(6.0%)	(6.3%)	37.9%	24.9%	6.0%	8.2%	16.1%	21.9%	12.6%	4.4%	30.0%	25.1%	(24.5%)	(22.7%)	(17.5%)	(14.3%)	(15.5%)	(9.1%)	(14.7%)	(8.9%)
201010	Aerospace & Defense	(5.8%)	3.2%	18.0%	8.4%	7.8%	(2.1%)	12.0%	8.1%	(2.2%)	(6.4%)	(1.6%)	2.7%	8.9%	1.5%	(8.9%)	(7.1%)	(7.6%)	(0.4%)	7.0%	7.0%
201020	Building Products	(1.2%)	(11.4%)	7.1%	16.7%	(10.2%)	7.1%	(3.5%)	15.1%	(0.9%)	(5.8%)	19.3%	(0.1%)	(23.0%)	(0.6%)	(19.4%)	(9.3%)	(25.9%)	(16.6%)	(7.5%)	(0.8%)
201030	Construction & Engineering	(15.9%)	(11.0%)	18.9%	29.6%	16.4%	31.5%	23.4%	27.7%	0.9%	11.3%	16.7%	23.3%	(5.4%)	(13.5%)	(17.5%)	(8.9%)	2.9%	(18.2%)	(8.6%)	(15.5%)
201040	Electrical Equipment	(11.7%)	(5.7%)	40.0%	23.3%	11.4%	19.5%	21.4%	19.2%	24.8%	11.1%	38.8%	22.3%	(37.9%)	(23.6%)	(17.4%)	(12.6%)	(19.6%)	(11.6%)	(30.0%)	(13.5%)
201050	Industrial Conglomerates	(12.2%)	(4.5%)	13.1%	12.8%	18.8%	2.6%	(5.1%)	6.2%	6.4%	(2.2%)	18.7%	17.3%	(15.4%)	(19.7%)	(10.2%)	(14.4%)	(9.7%)	(0.9%)	5.0%	1.1%
201060	Machinery	(16.6%)	(22.4%)	42.6%	29.8%	4.6%	24.1%	21.2%	29.0%	17.5%	16.2%	32.9%	27.0%	(36.0%)	(26.9%)	(9.0%)	(10.9%)	(15.8%)	(19.4%)	(28.1%)	(21.5%)
201070	Trading Companies & Distributors	3.2%	4.3%	30.7%	15.6%	(0.8%)	12.6%	9.8%	12.6%	14.1%	9.0%	22.3%	18.2%	(23.1%)	(16.8%)	(9.3%)	(8.3%)	(0.9%)	(0.5%)	(29.8%)	(11.0%)
202010	Commercial Services & Supplies	17.2%	19.6%	(38.0%)	(16.3%)	(38.1%)	(20.0%)	(29.0%)	(12.4%)	(20.7%)	(17.0%)	(30.9%)	(9.1%)	33.4%	9.7%	25.3%	13.2%	27.5%	10.7%	43.7%	21.9%
202020	Professional Services	12.4%	(1.6%)	(8.5%)	3.4%	(10.5%)	(1.0%)	(9.0%)	8.4%	(18.6%)	(9.8%)	(21.5%)	(11.2%)	22.5%	8.7%	1.8%	4.3%	1.5%	(3.4%)	16.6%	6.8%
203010	Air Freight & Logistics	9.8%	5.0%	24.0%	2.2%	(11.7%)	(11.1%)	15.7%	4.7%	5.2%	0.9%	31.5%	14.9%	(27.8%)	(17.1%)	(27.3%)	(10.1%)	4.8%	2.8%	(17.9%)	(6.2%)
203020	Airlines	15.0%	11.2%	27.2%	1.3%	(21.5%)	(21.3%)	9.8%	0.1%	22.0%	2.7%	41.2%	11.1%	(31.1%)	(1.2%)	(11.9%)	4.3%	(15.8%)	(1.1%)	(26.7%)	(3.3%)
203040	Road & Rail	6.6%	(5.9%)	31.2%	16.4%	12.4%	12.1%	15.0%	18.3%	20.9%	8.5%	29.9%	17.7%	(29.2%)	(17.2%)	(10.3%)	(8.8%)	(16.3%)	(10.2%)	(32.0%)	(13.9%)
25	Consumer Discretionary	(0.3%)	6.2%	6.5%	0.6%	7.1%	(3.9%)	(1.7%)	7.4%	3.3%	(9.5%)	(0.1%)	(18.8%)	3.9%	17.8%	(5.3%)	12.0%	1.8%	1.1%	(24.6%)	5.5%
251010	Auto Components	(19.9%)	(18.5%)	28.0%	21.7%	8.4%	14.1%	21.4%	26.9%	15.4%	8.6%	36.0%	23.0%	(38.0%)	(19.5%)	(28.2%)	(10.3%)	(25.8%)	(19.6%)	(25.0%)	(14.5%)
251020	Automobiles	1.8%	(8.4%)	9.1%	13.8%	(12.6%)	6.2%	0.7%	15.0%	23.7%	10.4%	30.2%	16.6%	(24.0%)	(12.1%)	(25.9%)	(9.8%)	(28.8%)	(14.6%)	(25.6%)	(11.2%)
252010	Household Durables	(10.5%)	(15.3%)	(10.8%)	5.3%	(15.2%)	7.4%	(15.1%)	16.0%	10.8%	0.7%	16.0%	6.3%	(19.0%)	(5.7%)	0.0%	(1.7%)	(17.2%)	(24.8%)	(12.1%)	(5.6%)
252020	Leisure Equipment & Products	(0.6%)	2.7%	10.8%	(4.8%)	(17.3%)	(13.4%)	2.1%	(3.8%)	3.5%	0.7%	11.9%	9.1%	(12.6%)	(13.1%)	(25.7%)	(9.3%)	(25.3%)	(11.9%)	(5.0%)	(2.3%)
252030	Textiles & Apparel	1.2%	3.3%	16.7%	5.4%	(4.1%)	0.9%	8.7%	13.2%	17.6%	(3.3%)	17.3%	(3.3%)	(9.3%)	1.4%	(13.1%)	13.8%	0.4%	8.7%	(19.0%)	4.9%
253010	Hotels Restaurants & Leisure	18.6%	18.4%	(23.5%)	(21.7%)	(39.1%)	(26.5%)	(22.8%)	(17.0%)	(1.0%)	(0.7%)	(13.0%)	(27.6%)	19.8%	27.6%	(1.8%)	12.3%	5.6%	11.8%	21.1%	12.1%
253020	Diversified Consumer Services	(9.9%)	9.1%	(1.0%)	(1.5%)	(11.4%)	(7.9%)	(16.1%)	(5.6%)	10.0%	(0.6%)	6.8%	4.2%	(10.8%)	(4.6%)	0.2%	3.0%	5.4%	6.0%	(7.8%)	0.8%
255010	Distributors	(3.6%)	5.0%	22.0%	(1.0%)	(8.5%)	(8.4%)	0.5%	(6.2%)	20.7%	(6.0%)	33.9%	4.2%	(27.6%)	(6.2%)	(30.0%)	(13.0%)	(17.0%)	4.4%	(12.0%)	10.0%
255020	Internet & Catalog Retail	(12.7%)	(3.9%)	7.7%	2.5%	30.8%	9.6%	4.4%	9.5%	(9.3%)	(5.8%)	(21.2%)	(31.8%)	14.4%	22.4%	14.5%	20.7%	1.3%	2.4%	(15.3%)	3.6%
255030	Multiline Retail	12.7%	14.9%	(1.0%)	(9.7%)	(17.0%)	(12.5%)	(6.8%)	(6.1%)	15.0%	(4.4%)	17.1%	10.1%	0.1%	1.2%	(13.4%)	(1.6%)	16.5%	9.7%	(12.8%)	10.2%
255040	Specialty Retail	2.3%	11.3%	2.2%	(5.9%)	(4.4%)	(11.1%)	1.3%	(6.1%)	9.0%	(8.3%)	13.6%	(2.2%)	(3.8%)	7.6%	(12.7%)	3.2%	17.4%	11.2%	(21.3%)	11.7%
30	Consumer Staples	15.1%	13.5%	(30.0%)	(45.6%)	(35.5%)	(34.5%)	(20.9%)	(38.4%)	(9.3%)	(13.1%)	(0.7%)	(16.4%)	3.9%	11.2%	(12.3%)	(2.8%)	7.3%	17.1%	28.3%	20.6%
301010	Food & Staples Retailing	3.7%	14.6%	(7.3%)	(29.6%)	(18.7%)	(28.4%)	(12.6%)	(25.4%)	(0.2%)	(9.1%)	14.9%	3.8%	(6.5%)	0.5%	(22.0%)	(7.8%)	5.7%	14.1%	0.5%	13.9%
302010	Beverages	16.9%	10.3%	(33.0%)	(39.8%)	(42.3%)	(30.8%)	(20.3%)	(32.8%)	(9.1%)	(12.2%)	(14.9%)	(23.1%)	15.1%	15.6%	(4.3%)	1.7%	4.7%	13.7%	38.9%	20.4%
302020	Food Products	17.0%	12.5%	(27.7%)	(36.9%)	(32.4%)	(22.3%)	(23.7%)	(30.5%)	(17.0%)	(11.2%)	(0.7%)	(13.9%)	5.7%	11.0%	(8.2%)	(1.1%)	1.9%	9.3%	29.4%	14.4%
302030	Tobacco	1.4%	(1.7%)	(8.8%)	(29.6%)	(10.1%)	(15.2%)	2.2%	(21.4%)	(4.1%)	(8.6%)	1.9%	(12.7%)	(3.0%)	7.5%	(7.3%)	(0.2%)	1.6%	10.5%	9.4%	10.6%
303010	Household Products	17.6%	16.8%	(32.2%)	(38.4%)	(29.2%)	(32.7%)	(24.9%)	(37.0%)	(5.2%)	(7.8%)	(0.2%)	(13.9%)	1.9%	6.5%	(5.4%)	(4.7%)	10.7%	16.0%	28.0%	17.2%
303020	Personal Products	3.6%	(7.7%)	(12.3%)	(3.3%)	(23.5%)	(6.9%)	(7.3%)	(1.3%)	0.2%	(4.8%)	(7.5%)	(9.6%)	4.4%	1.0%	3.5%	0.5%	4.0%	1.3%	(3.8%)	4.2%
35	Health Care	(7.9%)	11.6%	(24.8%)	(29.5%)	(18.2%)	(29.7%)	(11.3%)	(23.5%)	(29.1%)	(9.2%)	(17.0%)	(13.5%)	22.0%	12.5%	6.2%	6.4%	7.6%	12.7%	24.8%	7.4%
351010	Health Care Equip & Supplies	(7.4%)	(3.4%)	(25.8%)	(20.1%)	(10.8%)	(24.3%)	(11.9%)	(13.8%)	(36.6%)	(13.0%)	(52.1%)	(25.1%)	47.7%	20.2%	31.4%	10.4%	12.9%	8.0%	35.5%	14.9%
351020	Health Care Providers & Services Inc	3.2%	7.5%	0.7%	(6.8%)	(10.4%)	(12.1%)	5.7%	(12.6%)	(12.3%)	1.6%	9.5%	10.5%	6.1%	3.8%	(10.8%)	6.4%	(2.4%)	2.9%	5.8%	(2.3%)
352010	Biotechnology	(14.7%)	5.6%	(11.7%)	(18.7%)	5.8%	(14.8%)	(10.4%)	(8.7%)	(14.3%)	(9.8%)	(6.9%)	(13.4%)	(2.0%)	2.6%	14.1%	12.0%	10.6%	13.7%	(3.6%)	2.5%
352020	Pharmaceuticals	(2.5%)	15.2%	(31.4%)	(31.6%)	(27.8%)	(30.5%)	(15.7%)	(26.9%)	(16.1%)	(6.3%)	(5.5%)	(8.6%)	13.8%	9.9%	(5.1%)	(5.3%)	4.6%	10.6%	29.8%	9.1%
352030	Life Sciences Tools & Services	(18.0%)	(4.8%)	3.8%	1.4%	3.0%	(4.3%)	4.2%	6.5%	(9.0%)	(2.5%)	(13.6%)	(15.3%)	4.6%	5.1%	1.5%	10.3%	(7.1%)	(0.7%)	(0.9%)	(1.9%)
40	Financials	2.4%	1.2%	45.9%	42.2%	(14.2%)	4.7%	28.2%	25.4%	13.3%	9.9%	42.3%	37.5%	(38.4%)	(25.4%)	(20.2%)	(19.7%)	(21.8%)	(20.8%)	(18.3%)	(13.0%)
401010	Banks	2.2%	12.5%	48.1%	42.2%	(7.6%)	8.2%	32.4%	23.0%	26.0%	16.6%	52.8%	39.0%	(51.6%)	(29.5%)	(23.4%)	(21.7%)	(28.3%)	(22.2%)	(33.7%)	(19.3%)
402010	Diversified Financial Services	7.0%	(10.7%)	22.8%	32.0%	(19.4%)	0.6%	16.0%	25.0%	(4.2%)	6.6%	13.9%	23.1%	(10.3%)	(13.4%)	(10.6%)	(11.2%)	4.4%	(7.2%)	5.5%	(6.2%)
402020	Consumer Finance	7.9%	1.1%	29.4%	21.8%	10.8%	3.3%	14.6%	4.7%	(11.4%)	(0.3%)	20.7%	21.3%	(19.5%)	(12.1%)	(23.3%)	(5.7%)	(15.6%)	(8.9%)	(2.6%)	(2.6%)
402030	Capital Markets	(3.0%)	(4.7%)	40.1%	45.2%	(9.3%)	12.7%</														

Additional Basket Methodology

In order to keep the baskets relevant to the investment theme, J.P. Morgan reserves the right to review the following at any time:

- **Basket methodology.** This is to ensure the rules of the basket remain relevant following any structural changes to the theme. This may include ensuring that the sector exposure of the basket remains broadly consistent with the investment theme.
- **Basket change implementation.** J.P. Morgan will consider extending the implementation of changes to the basket composition from one trading session to any period up to five trading sessions in the event that a material increase in the liquidity or capacity of the basket is required to minimize market impact.

Corporate actions may affect the baskets. The composition of a custom basket is typically adjusted in the following manner:

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